UNIVERSITY OF ALBERTA

FACULTY OF MEDICINE AND DENTISTRY

Biomedical Sciences Review

Prepared for: Dr. Hemmelgarn, Dean Faculty of Medicine and Dentistry; circulation beyond the Dean is at the Dean's discretion.

Prepared by: Biomedical Sciences Working Group

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Biomedical Sciences Working Group

This report was prepared by the Biomedical Sciences Working Group. Members of the working group were selected through a self-nomination and election process as outlined in the Terms of Reference (Appendix A). The group included representatives from across the Faculty of Medicine and Dentistry (FoMD), including faculty at different career stages, trainees, staff, and academic leaders. All members contributed to the development of the report through participation in working sessions, sub-group activities, and iterative review of content. The content reflects collective input from the group, though not all members necessarily endorse every element of the report. The following individuals (listed in alphabetical order) served as members of the working group:

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- **Tom Stelfox**, MD, PhD, Deputy Dean (working group chair)

Executive Summary

Biomedical science is a cornerstone of education, research, and innovation in the FoMD. This review, informed by local, national and international data and broad community engagement, provides a future-facing strategy to strengthen and position biomedical sciences for long-term success in the FoMD.

The review identifies both challenges and opportunities across three key domains: education, research, and institutional environment. The accompanying options for action are designed to be concrete, actionable, and achievable within current resource constraints. They are intended to help the Dean build on existing strengths to ensure the biomedical science ecosystem remains vibrant and sustainable.

Key themes emerging from the review include:

- **Supportive Academic Environment:** Standardizing expectations, aligning policies and enhancing recognition of biomedical education and research contributions.
- **Educational Impact:** Advancing innovative and high-value undergraduate and graduate biomedical education aligned with student, market and Faculty needs.
- **Collaborative Culture and Shared Success:** Prioritizing collaboration, shared infrastructure, and inclusive faculty engagement in collective success.
- **Organizational Structure:** Ensuring that the Faculty's organizational structure is future oriented, adaptable and enabling of long-term success.
- **Strategic Positioning for the Future:** Focusing on maintaining research excellence, diversifying revenue sources, and organizing biomedical science to best address current and future challenges and opportunities.

This review is not an end point, but a catalyst for change - the need to continually evolve and adapt to meet the challenges and take advantage of the opportunities to advance education and research. It reflects a shared belief that biomedical sciences are essential to the Faculty's mission and future, and that with focus, alignment, and collective will, the Faculty can ensure that biomedical sciences continue to thrive.

1. INTRODUCTION

The working group was tasked to review the current state of biomedical sciences within the Faculty and identify bold opportunities for future success in education, research, and societal impact—reinforcing the FoMD's strong and ongoing commitment to biomedical sciences.

The review was motivated by three forces shaping the Faculty's biomedical sciences community:

- Budgetary: An ongoing decrease in the number of university base-budget-funded faculty members due to declines in post-secondary education funding.
- Education: Demand for undergraduate biomedical science training has grown, and expectations for program content and delivery are evolving.

- Research: Scientific research is becoming increasingly team-based, interdisciplinary, and technology-driven, requiring agility and innovation.

While these trends present challenges, they also offer substantial opportunities to build an even more collaborative, innovative, and high-performing biomedical sciences community. With strategic decision-making the FoMD can position itself for success in biomedical science education, research, and societal impact (see Appendix B).

1.1 Mandate

The Biomedical Sciences Working Group was established to advise the Dean on how to position biomedical sciences in the Faculty for future success. Its mandate was to oversee a review process, lead internal consultations, coordinate an external review, and develop a summary report outlining key findings and options for action.

The overarching question guiding this review was: given the rapid evolution of health sciences and changing higher education landscape, how can the FoMD position biomedical sciences to extend its legacy of excellence and ensure continued leadership in education, research, and societal impact?

1.2 Scope of Work

The review focused on the future direction of biomedical sciences in the FoMD. Specifically, the working group examined:

- The overall biomedical science ecosystem's performance, sustainability and adaptive capacity.
- Opportunities for evolution in education and research.
- Ways to build on the Faculty's reputation and strengths.

The scope included all biomedical science faculty – fundamental scientists (PhD) and clinician-scientists (faculty members doing biomedical research and having a clinical license in Alberta), regardless of primary departmental affiliation. The group adopted the term 'biomedical sciences'—defined as education and research focused on the biological, cellular, molecular, and physiological basis of health and disease (Canadian Institutes of Health Research [CIHR])—in place of the term 'basic sciences' used in the initial terms of reference (subsequently refined by the working group).

Purpose and Use. This report presents options for action to inform the Dean's decision-making. The options are not prescriptions or recommendations. Many elements of biomedical science in the FoMD already work very well; the options are intended to complement current strengths and, where appropriate, suggest targeted refinements. Distribution of the report and next steps will be determined by the Dean.

2. PROCESS AND APPROACH

The working group adopted a consensus-based approach and met 16 times throughout the review period (January 31, 2025 through September 30, 2025). Meetings achieved quorum (50% + 1) and followed the Terms of Reference (Appendix A).

The group operated under the following principles:

- Commit to curiosity and open-mindedness.
- Ensure all voices are heard, with trainees and early-career members having the opportunity to speak first.
- Foster an environment conducive to constructive and candid conversation.

To guide forward-thinking discussion, the group applied the 'red and blue ocean' framework by Kim and Mauborgne. The red ocean represents high competition for limited resources. The blue ocean represents new, unoccupied opportunity spaces. The working group aimed to envision how biomedical sciences in the FoMD could transition from an environment increasingly characterized by 'red ocean' characteristics to a 'blue ocean' mindset.

2.1 Sub-Groups and Work Bundles

The working group identified six essential areas of work:

1. Define success for biomedical sciences in the FoMD.

2. Conduct a baseline assessment and use those data to generate future projections.

3. Synthesize relevant literature on the future of biomedical sciences.

4. Perform an environmental scan of peer institutions.

5. Engage our biomedical sciences community for input and feedback.

6. Coordinate an external review.

All members contributed to work bundles one and six. Work bundles two through five were led by sub-groups, with iterative discussion with and feedback from the full working group. Findings from the first five bundles were synthesized to identify concrete, relevant, and actionable options for the Dean and are summarized in this report. The external reviewers will provide a separate report to the Dean documenting their observations and recommendations.

3. SUMMARY OF WORK COMPLETED

3.1 Definition of Biomedical Sciences Success

The success of biomedical sciences in the FoMD is driven by excellence and impact in three key areas: education, research, and service. Biomedical sciences focus on

understanding health and disease through groundbreaking research, training future scientists and clinicians and making meaningful societal contributions. The following outlines potential goals to help guide the Faculty in sustaining and growing excellence in biomedical sciences.

Aspirational Goals for Success:

1. Excellence in Research

Research success is measured by the impact of discoveries and their potential to improve health. Key factors include:

- **Innovative Research:** Success means producing groundbreaking research that deepens our understanding of health and disease.
- **Sustained Funding:** Success relies on securing competitive, peer-reviewed funding from recognized national and international research agencies (e.g., Tri-Agency funding programs, New Frontiers in Research Fund, Canada Foundation for Innovation). These external investments directly support research activities and translate into institutional investments that further augment the research enterprise (University Budget Model).
- **Intellectual Property and Translation:** Successful research can lead to innovations that inform clinical research, benefit health and result in licensing agreements that attract investment.

2. Excellence in Education and Training

Success in education is about recruiting, supporting, and preparing the next generation of scientists and educators for careers in academia, industry, government, NGOs and healthcare. Key factors include:

- **Recruitment, Retention, and Career Progression:** Success is measured by how well students and postdoctoral fellows are recruited and progress in both their training and careers.
- **Quality of Training Programs:** Success includes high funding rates for competitive training awards and impactful scholarly output. Programs must be adaptable to the evolving needs of students, which includes ensuring valuable research opportunities for undergraduate students.
- **Innovative Teaching and Mentorship:** Institutional success depends on effective and innovative curricula. Mentorship and coaching to help students and postdoctoral fellows succeed in their careers is a key objective.

3. Service to Society

Our contribution to society is crucial to success. This includes engagement with the scientific community and broader public. Key factors include:

- **Meeting Societal Needs:** Success means addressing society's most pressing needs, including those of historically underserved communities.

- **Leadership:** Success is reflected in contributions to education and research focused organizations, including peer review and external consultation roles.
- **Community Engagement:** Successful service involves partnering with the community, connecting with alumni, and contributing expertise to education, research, and health initiatives.

4. Institutional Environment

Success depends on ensuring a strong institutional environment. This includes people, culture and resources. Key components include:

- **Culture:** A strong positive culture rooted in excellence, inclusion, and collaboration is essential to institutional success. This includes an environment that values diversity, collegiality, ethical practices and a commitment to integrity.
- **Collaboration:** Collaboration amplifies the impact of biomedical science. This includes partnerships within and beyond the Faculty that span biomedical disciplines and the clinical sciences.
- **Core Facilities:** Successful research depends on well-supported facilities that are accessible and used by internal researchers and external collaborators. Facilities must be equipped with state-of-the-art technology and staffed with skilled personnel.

5. Financial Sustainability

To ensure long-term success, the Faculty must develop strategies for the financial sustainability of biomedical science. This includes:

- **Diversifying Revenue Streams:** In addition to government funding, there is a need to grow tuition revenue and pursue private sector partnerships, NGO grants and philanthropy. A broader revenue base will stabilize finances and enable talent recruitment and retention.
- **Supporting Entrepreneurial Activities:** Encouraging the commercialization of teaching and research innovations through technology transfer, licensing, and spin-off companies will generate additional revenue to support educational activities and research.
- **Cost-Efficient Operations:** Align and deploy financial and human resources where they deliver the greatest benefit for teaching and research.

3.2 Baseline assessment and future projections

A baseline assessment and forward-looking projections were developed to provide a clear understanding of the current state of biomedical sciences in the FoMD and to anticipate future trends. The analysis focused on faculty members and students to enable timely and feasible data collection. While not described in detail here, the biomedical sciences community also includes academic teaching staff, faculty service officers, administrative professionals, and technical staff among others who are critical to its success. Data displays are available in Appendix C.

Key observations from the baseline assessment include:

- As of March 30, 2024, there were 611 faculty members in the FoMD, of whom 184 were primarily focused on biomedical science.
- Of the 184 biomedical science faculty, 134 (73%) were fundamental scientists (PhD) and 52 (27%) were clinician-scientists (faculty members undertaking CIHR theme 1 research and having a clinical license in Alberta).
- By rank, 114 (64%) were full professors, 50 (27%) were associate professors, and 20 (11%) were assistant professors.
- Of the biomedical faculty, 64 (35%) had primary appointments in five biomedical departments (Medical Microbiology and Immunology n=18; Biochemistry n=16; Physiology n=11; Pharmacology n=10; Cell Biology n=9).
- The remaining 120 biomedical faculty held primary appointments in 12 clinical departments (Medicine n=32; Surgery n=18; Oncology n=14; Pediatrics n=13; Medical Genetics n=9; Psychiatry n=9; Laboratory Medicine and Pathology n=7; Obstetrics and Gynecology n=5; Radiology and Diagnostic Imaging n=5; Anesthesiology and Pain Medicine n=3; Ophthalmology and Visual Sciences n=3; Dentistry and Dental Hygiene n=2).
- Average job profile time allocation for biomedical faculty was 56% research, 27% teaching, 14% administration, and 7% clinical/professional activities.
- Total research revenue for biomedical sciences faculty in 2023–24 was $78M, including $22M from Tri-Agency sources (primarily CIHR and NSERC).
- From 2020 to 2024, between 187 and 209 students graduated annually from six undergraduate biomedical science programs (biochemistry, cell biology, immunology & infection, neuroscience, pharmacology, physiology) jointly offered with the Faculty of Science. Overall undergraduate enrollment in FoMD-offered courses for these programs grew from 5,939 in 2015/16 to 7,915 in 2024/25.
- From 2020 to 2024, the number of students annually graduating with an MSc or PhD ranged from 75 to 82 (33–42 MSc; 35–40 PhD), and the number of postdoctoral fellows ranged from 90 to 98.

Looking ahead, financial constraints—including government funding that does not account for increases in faculty and staff salaries due to merit, cost-of-living adjustments, or collective agreements, as well as the end of the Alberta Heritage Foundation for Medical Research transition support fund (currently funding 16 biomedical faculty positions) in 2027—are expected to significantly impact faculty numbers. Projections suggest a 25–40% decrease in university base-budget-funded biomedical science faculty in the coming years, as retirements outpace recruitment. Importantly, these changes are expected to occur through attrition; no job losses are anticipated. The number of biomedical science faculty is projected to range from five to 10 in biomedical departments (median 6, interquartile range 6–9) and from one to 28 in clinical departments (median 6, interquartile range 3–9). While these challenges are real, they can be managed effectively. With a clear vision and proactive, strategic decision-making, the FoMD can position biomedical sciences for future success in education, research, and societal impact.

3.3 Literature synthesis

A literature synthesis was conducted using Google Scholar, PubMed, institutional websites, and public reports to examine strategies employed by leading organizations to strengthen biomedical science. Of more than 300 publications identified, a curated selection informed the working group's discussions. The synthesis is organized across six thematic opportunity areas: Collaborative Culture; Sustainable and Diversified Funding Models; Environment and Infrastructure Optimization; Strategic Educational Transformation; Administrative and Operational Effectiveness; and Research Excellence and Incentivization.

This section briefly summarizes key themes from the published literature and illustrates how institutions respond to challenges and opportunities in biomedical science. The full, referenced synthesis is in Appendix D. This material is descriptive rather than evaluative. It should be read alongside the other work bundles; it does not assess the FoMD.

Collaborative Culture

Contemporary biomedical research increasingly involves collaborative, team-based approaches, which are more likely to produce greater scientific and translational impact than individual efforts. Effective collaboration, however, can be hindered by siloed structures, weak communication, and incentive systems favoring individual achievements. Building strong research teams requires intentional structural design, supportive leadership, trust, and transparent communication. Adaptive models such as co-leadership and multi–principal investigator structures help sustain collaboration amid changing scientific or regulatory landscapes. In addition, training programs that develop competencies in interdisciplinarity (integration of knowledge and methods from multiple disciplines), communication, and project management are reported to be essential to cultivate a workforce capable of sustaining collaborative team science.

Sustainable and Diversified Funding Models

Biomedical research faces growing competition, slower grant growth, and increasing concentration of awards among fewer investigators, which has prompted institutions to pursue strategies that balance short-term stability with long-term sustainability. Approaches reported to be effective include integrating internal revenue streams with external partnerships and data-informed fundraising; adopting transparent funds-flow models; and operating shared core facilities as cost-recovery centers. Additional strategies such as expanding tuition-based programs; leveraging industry partnerships through licensing and commercialization; and diversifying funding via philanthropy, foundations, or crowdfunding provide financial flexibility. Finally, building robust university endowments can ensure long-term stability by transforming donations into perpetual income that can sustain strategic initiatives, operations, and innovative research projects.

Environment Optimization

An optimized research environment, supported by well-designed spaces, equitable policies, and strong institutional frameworks, is essential for productivity and collaboration. Effective practices include engaged leadership, which aligns mission with

faculty needs; adoption of evolving international frameworks (e.g., SCOPE, DORA, Leiden Manifesto), which promote diversity and career development; and emphasis on open science, networking, and support of early-career researchers. Physical proximity, flexible labs, and shared spaces foster collaboration, while core research facilities serve as vital resource hubs. Workload models that equitably distribute teaching, research, and service further enhance efficiency and institutional effectiveness.

Strategic Educational Transformation

Leading institutions report using interdisciplinary, learner-centered, and technology-driven approaches together with professional development and integration of global perspectives. Notable examples of educational transformation include promoting interdisciplinary curricula that break down silos and foster collaboration and critical thinking. Learner-centered methods, such as active workshops and problem-based learning, improve student engagement. Digital tools, including online platforms, virtual and augmented reality, and artificial intelligence, enable flexible learning while emphasizing ethics and digital literacy. Professional development through entrepreneurship and industry-focused training equips graduates for diverse careers. Incorporating diverse global perspectives into curricula promotes collaboration and innovation to address health challenges like pandemics and health inequities.

Administrative and Operational Effectiveness

Administrative operations have become central to advancing biomedical research, shifting from supportive functions to key drivers of productivity and efficiency. Streamlined structures enable faculty to focus on teaching and discovery while upholding compliance and institutional stability. Strategies include a centralize-for-scale and empower-for-innovation approach with streamlined centralized administrative services, coordinated management of shared research facilities and bottom-up, faculty-led initiatives. Faculty support systems that establish clear workload expectations, promote best practices, and ensure accountability improve balance across teaching, research, and clinical responsibilities. Strategic, coordinated resource allocation, often supported by restructuring, consolidation of academic units, establishing sustainable research institutes, and modeling to inform future decision-making has the potential to maximize equity, sustainability, and collaboration.

Research Excellence and Incentivization

Research excellence in biomedical science depends on aligning institutional structures, individual motivations, and societal needs. Modern approaches balance traditional metrics like grants and publications with measures of impact. High-performing institutions foster environments that promote networking, collaboration, and community relevance, while recognizing diverse contributions and adapting to evolving demands. Excellence is driven by talented researchers supported by strong leadership, with postdocs and graduate students fueling productivity, undergraduates fostering faculty development, and physician-scientist programs strengthening translational impact. A strong research culture emphasizes career security, wellbeing, mentorship, and accountability, supported by transparent leadership and collaboration. Finally, attracting and retaining top talent requires competitive recruitment packages and

inclusive incentive frameworks that reward rigor and meaningful contributions, while discouraging rushed publication or risk aversion.

3.4 Environmental scan

The environmental scan aimed to understand how biomedical sciences are structured and supported at peer institutions and to identify factors that contribute to success. The working group initially considered a broad set of parameters but, given time constraints, focused on data that were readily available and comparable.

The CIHR-funded database was used to compare the number of grants to biomedical researchers at various institutions. Scopus was searched using specific research subject areas for numbers of publications across institutions. The number of people in biomedical departments across Canada was determined from departmental websites. Numbers of graduate students supervised and undergraduate students taught by biomedical faculty were obtained from the University Acorn Tableau database. Finally, a short survey was sent to the chairs of all biomedical departments across Canada to identify environmental factors that best supported success or were barriers to success of biomedical researchers. Approximately 10% of those sent a survey responded and the top three responses were summarized as a qualitative description. The data are presented in Appendix E and where they overlap with those presented in section 3.2 may slightly differ due to differences in definitions, data sources and time periods of analysis.

Key observations include:

- 64 faculty have primary appointments in five biomedical science departments.
- FoMD biomedical science departments have on average fewer faculty members (n=13) than other University of Alberta Faculties with departments (n=28) and U15 institutions with biomedical science departments (n=39).
- Over the past 5 years, CIHR funding and publication rates for biomedical science faculty members have remained stable relative to other similar-sized faculties.
- Increased undergraduate student enrollment poses a future teaching challenge and potential opportunity.
- Graduate student numbers have remained relatively constant with some growth in the number of MSc students in clinical departments. Biomedical science departments have a higher ratio of PhD students to MSc students.
- The national survey responses suggest:
    - Key structural pillars of departmental success: Strong support systems including administrative support, proximity of faculty and research labs, and resource sharing.
    - Impediments to progress: Limited strategic resource allocation, fragmented environments, and a lack of institutional vision.

3.5 Community consultations

A high volume, structured engagement and communication plan (Appendix F) was developed to foster awareness and participation across the Faculty in the biomedical sciences review. FoMD staff, students and faculty were engaged through a variety of channels.

Awareness communications

- **13 email newsletters** were sent to all FoMD members from January to May 2025 with information about the review. Each email had a strong open rate (62 - 85%). The average number of opens for each email was approximately 4,221.
- Approximately **60 posters** were distributed across FoMD spaces promoting the town hall events.
- **Two town halls** were held with **more than 200 attendees in total** at these events either online or in-person.
- **A web page** (uab.ca/biomedical-review) provided information on the review goals, plans, working group meeting minutes and participation information. Between February 28 and August 7, 2025, the website received 313 unique visitors and 576 page views.
- The Deputy Dean presented information about the review at eight Department Chairs meetings from December 2024 through September 2025.
- Department Chairs and Institute Directors were requested to relay information about the review to their members through meetings, conversations and email.

Gathering Input

Input from members of the Faculty was gathered in a structured manner three ways.

- **One online survey** was distributed across the Faculty inviting students, staff and faculty to provide input. **109 survey responses were collected.**
  - The majority of survey respondents were faculty members (68%) with a minority being support staff (12%) and students, postdoctoral fellows and research associates (20%). Most respondents self-reported their work to be biomedical (58%).
- **Four focus groups** were held with staff, students and faculty with **52 attendees**.
- **A world café** was conducted at an **FoMD senior leadership retreat** with **57 attendees**.

Summary of Key Themes and Findings

Below are the dominant themes identified from survey responses, focus groups and the world café. A comprehensive list of the ideas and insights shared by members of the Faculty are available in Appendix G, Appendix H and Appendix I.

1. Interdisciplinary and Interdepartmental Collaboration

There is a need to reinforce systems and structures that encourage and facilitate more collaboration across disciplines (including biomedical and clinical scientists), departments and faculties at the University.

Goal:

- Encourage collaboration in education and research. This will in turn strengthen student educational experiences and help researchers secure more funding and lead to larger societal impacts.
- Encourage knowledge and resource sharing, and operational/administrative collaboration. When individuals have more opportunities to discuss, share, and learn from each other, it may support adopting more effective administrative and operational processes and sharing resources by fostering stronger relationships and a better understanding of each other's needs and successes.

2. Faculty Roles, Recognition, Retention and Support

Support ongoing improvement of mechanisms to recognize and support teaching, research, and service through flexible job profiles, merit systems, acknowledgements and professional development. Encourage and support biomedical scientists in clinical departments with teaching duties to contribute to biomedical course-based teaching and clarify expectations around teaching in job profiles.

Goal: To encourage alignment of Faculty member activities with individuals' strengths and Faculty needs.

3. Education Innovation and Curriculum Reform

Regularly review curricula (approximately every three years) and expand student exposure to emerging ways of learning, new ideas and novel technologies, and diverse career options (beyond academia) through new program and micro-credential course offerings, career guidance, internships and co-ops.

Goal: Micro-credential courses can increase revenue while providing students with responsive skillsets for modern workforces. Internships with industry and career guidance will prepare students for viable careers.

4. Equipment

Continue to increase faculty member awareness and use of Core services, available equipment and space for sharing.

Goal: Strategic communal investment in and sharing of equipment and space resources will increase the efficiency and effectiveness of the Faculty's biomedical research ecosystem.

5. Faculty Structure and Roles

Departments may need to be reorganized and/or reduced in number so that there are enough faculty members in each department to ensure the viability of department-based education (courses, programs, graduate students, postdoctoral fellows), research (teams/groups), and service (leadership, program administration) activities.

Goal: Sustainable and vibrant biomedical community.

6. Communication, Outreach, and Societal Impact

Boost public awareness and support of the FoMD's biomedical science activities and translational impact through public talks, social media and community outreach activities.

Goal: Increase public advocacy, student recruitment and funding support by demonstrating biomedical sciences impact.

3.6 External review

To complement its internal activities, the working group developed Terms of Reference (Appendix J) for an external review of biomedical sciences in the FoMD. The purpose of the review is to obtain strategic advice from experts outside of the FoMD on how to proactively position the Faculty's biomedical sciences community to extend its legacy of excellence and ensure continued leadership in education, research, and societal impact.

Three reviewers were selected: one internal to the University of Alberta but external to the FoMD, and two external to the University. The reviewers were chosen to ensure disciplinary diversity, with representation from both fundamental and clinician-scientists. A long list of 30 potential candidates was developed by the working group. The following experts were invited and accepted:

- **Dr. Ted Allison**, University of Alberta
- **Dr. Lynne Postovit**, Queen's University
- **Dr. Marie-Josée Hébert**, Université de Montréal

Given the distributed nature of biomedical sciences across 17 departments, eight research institutes, and multiple undergraduate and graduate training programs, the reviewers have been asked to provide high-level strategic input on organizational structure and critical processes.

The review is intended to complement the working group's internal consultation and analysis. Based on this work, reviewers have been asked to consider five specific questions:

1. What can we do to build stronger collaboration to enhance educational innovation and research impact?
2. How do we ensure our undergraduate and graduate biomedical sciences training programs are best positioned to prepare students for future careers in health sciences?
3. What can we do to reduce reliance on government funding sources and diversify revenue?
4. What can we do to promote a culture of high education and research performance?
5. How can the FoMD's organizational structure be optimized to better support productivity and well-being of a biomedical sciences community with fewer biomedical faculty members?

The external review was held September 15–16, 2025. Reviewers have been asked to submit a brief report focused on key observations and strategic recommendations in response to these questions. Their findings will be reported separately to the Dean.

4. OPTIONS FOR ACTION

Working group members developed options for action to inform strategic decisions to position the FoMD for sustained success in biomedical science education, research, and societal impact. These options are intended to set the Faculty up for future success within current and anticipated environmental and fiscal conditions; budgetary savings are not their primary purpose. Through an iterative review, the group retained proposals judged to be (i) relevant to the challenges and opportunities identified, (ii) material in impact, and (iii) actionable within the Faculty context at the time. The working group recognized that many elements of the biomedical sciences ecosystem already functioned well; the options were designed to complement these strengths rather than restate activities that were already in place. Where existing efforts were effective but under-scaled or might benefit from adjustment, the group proposed targeted expansion or refinement and would like to acknowledge the work already underway across the community. Deliberations were intentionally limited to what to do; questions of who, when, and how to implement—and how these options aligned with or built on existing initiatives—will be defined by the Dean and Faculty. The working group recommends that implementation of any of the options for action be led by fundamental scientists to ensure credibility, effectiveness, and alignment. The group anticipates successful implementation will require considerable time and attention, sustained commitment from the Dean, customization and flexibility to manage unintended consequences and evolving circumstances.

Options were organized around six opportunity areas identified by the group: Sustainable and Diversified Funding Models; Research Excellence; Administrative and Operational Effectiveness; Collaborative Culture; Strategic Educational Transformation; and Infrastructure Optimization (consensus was not achieved for any options for this opportunity area). The section begins with two foundational options considered prerequisites for success across the portfolio, followed by options in the remaining areas.

Foundational Options

1. **Reaffirm and Communicate the Central Role of Biomedical Sciences within the Faculty:** Implement a Faculty-wide strategy to reaffirm the integral role of biomedical sciences in advancing the Faculty's academic mission. This initiative should:

    - Clearly communicate the essential contributions of biomedical science to education, research, and innovation within the Faculty. This includes ensuring awareness of how foundational research informs our understanding of the biological, cellular, molecular, and physiological basis of health and disease.
    - Highlight institutional commitments and future investments in biomedical science to build confidence and morale among educators and researchers.
    - Leverage communications, leadership engagement, and planning processes to ensure all Faculty members recognize biomedical science as a core pillar of the Faculty.

- Identify additional opportunities to celebrate the scholarly and societal impacts of biomedical scientists.

2. **Strengthen and Extend the Collaborative Culture for Shared Success in Biomedical Science:** Create and implement a Faculty-wide strategy that actively promotes collaboration and shared success in biomedical science. This strategy should:
   - Recognize and reward collaborative behaviours in teaching contributions, funding decisions, and leadership opportunities.
   - Promote increased consideration of shared success metrics into strategic planning and performance reviews to reinforce alignment and mutual accountability.
   - Create practical opportunities—like shared education initiatives, collaborative grant calls or joint infrastructure planning—that promote cooperation.

Enhance Collaborative Culture

Research institutes are the Faculty's primary engines for cross-disciplinary collaboration. Building on work already underway, they are well positioned to co-lead, pilot, and evaluate the following options—in partnership with departments and programs—to strengthen (not duplicate) existing institute activities and infrastructure.

1. **Revitalize the Faculty-wide Seminar Series to Strengthen Connections:** Redesign and relaunch the FoMD seminar series to foster meaningful dialogue among fundamental scientists and clinician-scientists.

2. **Inter- or trans-disciplinary Faculty Hiring:** Continue to explore interdisciplinary opportunities with new faculty hires. Trials of embedding a preference for candidates with a demonstrated commitment to and skills in inter- or trans-disciplinary education/research aligned with the Faculty's strategic or emerging strengths could be undertaken.

3. **Use Space Planning to Promote Collaboration:** Creating physical environments that foster interaction—such as shared offices, open collaboration areas, meeting rooms, and whiteboard-equipped collision spaces—designed to bring together individuals from different departments, disciplines, and backgrounds.

4. **Strengthen Digital Tools that Connect Faculty Members to Enable Collaboration:** Enhance and maintain an intuitive, regularly updated digital platform that makes faculty expertise, education/research methods, and equipment easily searchable. Prioritize functionality and engagement to ensure the tool is widely adopted and supports collaboration across disciplines, departments and institutes.

5. **Implement a Faculty-Wide Mentorship Strategy to Promote Collaboration:** Develop and implement a mentorship strategy that connects faculty across disciplines, career stages, and education/research domains. The goal is to foster connections, build teams, strengthen research culture, and support career development through structured, cross-disciplinary mentorship relationships.

Build Sustainable and Diversified Funding Models

1. **Strengthen Strategic Philanthropy to Support Biomedical Sciences:** Develop a faculty-wide strategy to support biomedical sciences through philanthropic initiatives aligned with education and research priorities. This would involve defining collective funding priorities (e.g., graduate student support, professorships/chairs, bridge/seed funding) and creating tailored donor engagement opportunities (e.g., institute tours, donor briefs).

2. **Elevate Biomedical Sciences Through Public Engagement and Policy Leadership:** Develop structured efforts to raise awareness among the public and policymakers of the societal impact of biomedical sciences in the Faculty. Tactics could include:

    - A public engagement campaign, such as a Dean's Lectureship series, to showcase to the public the relevance of biomedical science to health, innovation, and economic development and position the Faculty as a thought leader in biomedical education and research.
    - Public forums, media briefings, and social media outreach to build public awareness and influence policy priorities.
    - Profile biomedical science community engagements and successes in the FoMD Annual Impact Report and FoMD newsletters.

3. **Build Clinician-Scientist Capacity:** Make the training, recruitment, and retention of clinician-scientists a strategic priority. Strengthen collaboration between clinical departments, biomedical departments, and the research institutes, and use these partnerships to leverage salary-support programs for academic physicians—such as the Academic Medicine and Health Services Program (AMHSP)—to recruit and retain biomedical science–focused clinician-scientists.

Foster Administrative and Operational Effectiveness

This section addresses a central question for the Faculty: how best to organize biomedical sciences as the number of university base-budget-funded faculty members declines.

The working group elected to present two paths representing the boundaries of multiple approaches considered: a distributed, multi-department structure (Path A) and a concentrated structure (Path B). These two paths are purposefully presented as bookends to define the decision space. Options exist between them—for example, the current number (or smaller number) of biomedical science departments with formal cross-appointment frameworks, or a phased sequence that pilot tests elements of each path.

At a glance:

- **Path A —** Distributed structure: maintain a multi-department biomedical sciences structure.
- **Path B —** Concentrated structure: form a consolidated biomedical sciences department with facilitated cross-appointments between departments.

Path A — Distributed structure: Maintain five biomedical departments

- Under Path A, the Faculty would continue with five biomedical departments (~40 primary faculty projected in 5–10 years) and additional fundamental scientists (~40 projected) dispersed across clinical departments.
- The focus would be on enhancing coordination and collaboration across existing units—with measures outlined in the "Enhance Collaborative Culture" section—while retaining the current organizational structure.
- To safeguard sustainability, the Faculty would establish a minimum primary-faculty complement and review window (e.g., a minimum of X FTE over any 2–3 year period); if a department falls below the threshold, a planned merger or administrative integration into another department would be triggered to protect programs and people.

Potential benefits of Path A

- Continuity and identity: Preserves existing departmental identities, relationships, and mentorship structures; lowest immediate disruption.
- Training program alignment: Maintains alignment with the majority of existing biomedical undergraduate and graduate training programs.
- Local leadership and agility: Department-level decision-making may remain nimble for discipline-specific issues.
- Administrative familiarity: Uses known processes and systems, reducing the near-term need for retooling and retraining.
- Incremental change: Allows stepwise adjustments (including mergers as needed) as faculty numbers decrease, avoiding a single major restructuring.

Potential risks of Path A (and how they could be managed)

- Operational fragility: Small units are more vulnerable to retirement/attrition shocks; minimum-complement thresholds and proactive merger planning for individual departments would be essential.
- Diffuse voice and influence: Strategic advocacy may be fragmented across multiple small units; formal cross-departmental forums and shared planning could help align priorities.
- Inter-departmental competition: Resource competition and survival anxieties can increase friction; transparent allocation principles and conflict-resolution mechanisms could help.
- Uneven student experience: Program coherence and advising may vary by department; common curriculum standards and administrative processes can mitigate.
- Prolonged uncertainty and change fatigue: Sequential mergers could extend the period of change; publish a clear roadmap and timeline, with periodic reviews, to reduce uncertainty.

Path B — Concentrated structure: Strategically concentrate biomedical science expertise

Under Path B, expertise would be concentrated to achieve critical mass.

Component 1 — Consolidate biomedical science departments into a single unit
Bring together faculty, trainees, and staff from the five biomedical science departments (Biochemistry, Cell Biology, Pharmacology, Physiology, and Medical Microbiology & Immunology) into one department with discipline-based divisions as needed to preserve identity and depth.

Component 2 — Facilitate strategic cross-appointments
Establish a default expectation—and streamlined process—for cross-appointments of fundamental scientists with primary appointments in clinical departments to the consolidated biomedical department, with clearly defined expectations (e.g., teaching, peer review, seminars) and benefits (e.g., access to shared resources). Include an exception/opt-out mechanism for fit, workload, or programmatic considerations. Encourage reciprocal cross-appointments for fundamental scientists whose primary appointment is in the consolidated biomedical department to a relevant clinical department, where this strengthens translational links and team science.

Potential benefits of Path B

- Critical mass and resilience: Builds a sustainable core (~40 primary faculty plus ~40 adjuncts via cross-appointments projected in 5–10 years) to support education, research, service, and governance.
- Clarity and voice: Provides a single academic home for fundamental science and a strong unified voice for strategy and advocacy across the Faculty.
- Flexibility with identity: Discipline-based divisions preserve critical mass while allowing fields to evolve without repeated structural changes.
- Funding: Cross-appointments leverage access to clinical departments' alternative funding streams, including philanthropy tied to clinical care.
- Academic leadership: Ensures fundamental scientists are led and mentored by fundamental scientists (primary or adjunct leadership), clarifying expectations for teaching, research, and promotion.

Potential risks of Path B (and how they could be managed)

- Loss of identity: Faculty members may feel loss of academic identity; initial divisional alignment with existing departmental disciplines (and mechanisms for faculty members to transfer between divisions), naming conventions, and recognition practices would be needed to sustain identity and morale.
- Disciplinary dilution risk: Depth could weaken if divisions are under-resourced; transparent planning and resource allocation within the new department and division-level leadership could mitigate.
- Student recruitment signals: Applicants seeking named disciplines may worry about fit; clear program maps could help mitigate loss of appeal.

- Translational connectivity: Collaboration between fundamental scientists with primary appointments in clinical departments and clinician-scientists could decrease; reaffirming research institute mandates to promote collaboration and joint space/cores would help bring these groups together.
- Perception and trust: Given the long history of debate, some may fear a predetermined outcome for this path; explicit communication that there are two broad paths that bookend a continuum of options, and that the working group's mandate did not include making a recommendation will be important.

The choice before the Faculty

With a smaller biomedical community on the horizon, the strategic question is how best to organize for the future. This section presents two broad paths that bookend many potential options along a continuum—distributed to concentrated structures—for the Dean's consideration, each with benefits, risks, and scope for customization or phasing.

Foster Strategic Educational Transformation

1. **Strategically Evolve Undergraduate Biomedical Science Education:** Launch a coordinated review and renewal of undergraduate biomedical science education to ensure it is innovative, sustainable (faculty members and finances), and aligned with student, Faculty, and market needs. This strategy should:
    - Engage students, university (e.g., Faculty of Science) and external (e.g., industry, government) partners to guide the evolution of existing programs and the design of new offerings.
    - Promote high-value education through innovative formats such as certificates, online/hybrid delivery, and modular programs.
    - Rationalize course offerings and strategically expand enrollment to support educational innovation and optimize revenue generation.
    - Ensure programs operate on a financially sustainable model, with program revenues meeting or exceeding the costs of delivery.
    - Support faculty members by aligning opportunities for recognition and advancement in education with those in research.
    - Provide meaningful teaching opportunities for graduate students and postdoctoral fellows (e.g., teaching assistantships, co-teaching) as part of their development.

2. **Develop a Sustainable and Diversified Funding Strategy for Graduate Students and Postdoctoral Fellows:** Establish a coordinated funding strategy that aligns faculty supports (e.g., operating grants), external funding opportunities and philanthropic contributions to provide reliable, equitable, and diversified financial support for graduate students and postdoctoral fellows. This strategy should:
    - Encourage and support graduate students and postdoctoral fellows to apply for external funding.
    - Prioritize sustainability to ensure consistent support across funding cycles.

- Facilitate transparent communication about available funding streams.
- Encourage partnerships with philanthropic and industry donors.
- Support both academic excellence and financial accessibility for trainees.

3. **Align and Standardize Teaching Expectations Across the Faculty:** Build upon existing policies to further equitable and transparent teaching expectations for all faculty members—regardless of primary appointment (biomedical or clinical department)—to ensure balanced contributions and recognition across the Faculty.
   This approach should:
   - Ensure that all faculty members contribute meaningfully to teaching and are appropriately recognized, regardless of the program or department in which they teach.
   - Calibrate teaching expectations for clinician-scientists to reflect their clinical and research responsibilities.
   - Leverage teaching capacity across departments and reduce disparities in teaching loads to enhance equity and instructional quality.

Foster a Culture of Research Excellence

1. **Adopt a Standard Faculty Workload Model:** Implement the University's standard 40:40:20 workload as the default starting point for all academic positions, applied proportionally to the academic portion of clinical roles. The explicit purpose is to align assigned FTE with faculty members' demonstrated strengths and performance and with Faculty needs. Allow time-limited, renewable adjustments to increase or decrease teaching, research or service FTE based on: career stage (e.g., expanded research FTE to support early-career establishment); performance (e.g., increased teaching FTE for documented teaching excellence or awards; increased research FTE for sustained grant and publication success); and evolving roles (e.g., increased service FTE for leadership appointments). Adjustments should protect time for high-performing faculty to focus on their highest-impact activities, while rebalancing effort for others toward areas where they can contribute most. All adjustments are supported by clear documentation, deliverables, and periodic review (e.g., annually), and may be renewed or revised as circumstances change. Embed this model into relevant documents and performance evaluations to ensure consistency, transparency, and equity across the Faculty.

2. **Prioritize Internal Peer Review of Funding Applications:** Continue and expand internal grant review, making meaningful participation a core expectation of faculty members' research contributions. Provide training, recognize contributions (e.g., FEC priority), and align incentives (e.g., institutional bridge funding eligibility) to strengthen a culture of shared responsibility and research excellence.

3. **Standardize Approach to Start-up Funding:** Reinforce and standardize a Faculty-wide policy for research start-up funding that ensures timely and time-limited support for newly recruited research-intensive faculty—regardless of department or institute affiliation. Promote consistent application across funding sources, build awareness and trust in available bridging mechanisms, and allow flexibility for special circumstances (e.g., parental leave).

5. CONCLUSION

This review offers a roadmap to support biomedical sciences in achieving their full potential within the FoMD. The options for action align our academic mission with structures, resources, and strategic opportunities—addressing current and emerging challenges with a forward-looking, solutions-oriented approach.

Throughout this process, the working group has listened carefully, engaged widely, and grounded its recommendations in a spirit of collaboration and respect. The review does not prescribe a single way forward. Rather, it presents a menu of actionable options that can guide leadership decisions, planning, and resource allocation in the months and years ahead.

The strength of the Faculty lies in its people—and biomedical scientists, both fundamental and clinician-scientists, are central to its continued impact. Investing in their success is an investment in the future of health education, research, and innovation.

Now is the time to act. By making deliberate, well-supported choices, the Faculty can sustain and grow a cohesive, collaborative, and resilient biomedical sciences enterprise—one that advances discovery, trains the next generation, and improves lives in Alberta and beyond.

UNIVERSITY OF ALBERTA

Faculty of Medicine & Dentistry

University of Alberta
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Edmonton, Alberta, Canada T6G 2R7

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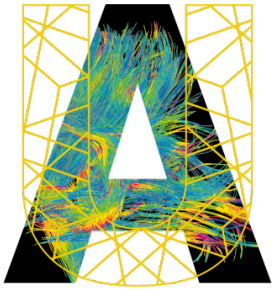
Appendices



Biomedical Sciences Review Report

Appendix A.

Working Group Terms of Reference

UNIVERSITY OF ALBERTA

FACULTY OF MEDICINE & DENTISTRY
Biomedical Science Working Group

Original development Date: November 1, 2024

Most Recent Approval Date: March 2, 2025

Most Recent Editorial Date: February 26, 2025

Office of Accountability:	Dean of Faculty of Medicine and Dentistry
Office of Administrative Responsibility:	Office of the Dean of Faculty of Medicine and Dentistry
Approver:	Dean's Executive Committee
Scope:	**Terms of Reference**

Overview:

The Biomedical Science Working Group (referred to here as the Working Group) is advisory to the Dean, Faculty of Medicine & Dentistry. The Working Group will use a consensus decision-making approach and shall function in accordance with these Terms of Reference. **The primary purpose of this Working Group is to develop and oversee a review of Biomedical Science in the Faculty of Medicine & Dentistry and consider changes that would ensure ongoing success in research, education and service. The Working Group will lead the internal consultation and review, as well as the external consultation and review, and use the information to bring forward a final summary report and recommendations.**

Overarching question:

Given the evolution of biomedical health sciences, and the international, national and local higher education (research, education and service) landscape, what is the optimal environment for biomedical science (research, education and service) in the FoMD, to build on our reputation and excellence in research, education and service?

Guiding Principles in Considering Biomedical Science Environment:

- The Working Group will act in the best interests of the entire Faculty of Medicine & Dentistry
- The Working Group and process will be collaborative and transparent with broad consultation, communication and engagement
- Recommendations will be made based on data and evidence as much as possible, including both internal data as well as models from other faculties of medicine
- Recommendations will be future focused, ensuring that we build upon our reputation and excellence in research, education and service
- Recommendations will be made regarding a biomedical science environment that ensures the future success of biomedical science and the Faculty overall

- Recommendations will consider the overall environment of the Faculty to support collaboration in research, education and service, with an aim to create an agile and coordinated environment, focusing on synergies and interdisciplinarity where appropriate to facilitate timely innovative response to the health challenges nationally and globally
- Recommendations will aim to empower faculty, trainees and staff to be innovative
- Efficiencies and savings through administrative restructuring have been undertaken and are ongoing, therefore consideration of cost-savings is not the primary purpose of this work
- Number of tenure-track faculty alone should not guide the decisions; consideration should be given regarding research expertise, educational programming and service needs, irrespective of tenure-track faculty number
- Recommendations will consider involvement in teaching at both the undergraduate, as well as graduate and postgraduate levels

Goals of Optimal Biomedical Science Environment:

- An effective, efficient, sustainable and adaptive biomedical science ecosystem
- Enhance collaboration and partnerships, improve efficiencies, and minimize complexity
- Enhance opportunities for interdisciplinary teaching and research
- Build on our reputation and excellence in research and education

Governance and Reporting:

The Chair of the Working Group is the Deputy Dean. Updates will be provided to the Dean's Executive Committee, Department Chairs, Institute Directors and Faculty Council by the Chair.

Membership:

Chair: Deputy Dean
Members:

- 3 early-career biomedical science faculty members (within 10 yrs of appointment)
- 1 mid-career biomedical science faculty member (11 - 19 yrs post appointment)
- 1 senior career biomedical science faculty member (20-plus yrs post appointment)
- 1 biomedical science department chair (current or past)
- 1 clinical department chair (current or past)
- 1 undergraduate science training program coordinator (current or past)
- 1 associate dean graduate studies
- 1 vice-dean of research (basic)
- 1 institute director (current or past)
- 1 academic department manager
- 1 administrative/technical support staff (subsequently added by working group)
- 1 graduate student studying in biomedical science
- 1 postdoctoral fellow training in biomedical science

Individuals interested in joining the working group will self-nominate. If there are more nominations than positions available in a category, a faculty-wide vote will be taken. Additional appointments by the Dean may be required to ensure diversity of expertise and experience.

Other groups and Departments will be consulted and invited to meetings as relevant, to discuss and understand unique needs, such as the Mike Petryk School of Dentistry, Office of Education, Office of Research, Research Institutes.

Others may be invited to participate in various aspects of the Working Group activities, based on their expertise and experience.

The purpose of the Working Group is to solicit, collect and synthesize data to provide the Dean with recommendations. Membership and meeting attendance is not substitutable.

Meetings Process:

- The Working Group will meet weekly initially or at the call of the Chair.
- The quorum for all meetings will be 50% + 1 of the members. Quorum may be waived by consensus of the committee and approval of the Chair.
- All recommendations to the Dean will be made by consensus. If consensus does not emerge through discussion, then the Chair of the Working Group will make the final decision regarding the recommendations.
- A final report with recommendations will be provided to the Dean.
- Meeting minutes will be retained.

Appendix:

Process and Activities of Working Group:

1. Working Group develops and undertakes internal consultation and review. Activities may include:
    - Identification of materials and information required to inform the review – which would be put together by the Dean's office
    - Town hall(s)
    - Surveys of faculty, students and staff
    - Faculty Council and Executive Council – input and consultation
    - Round tables (by discipline, or other considerations)
2. Working Group oversees external review
    - External reviewers – at least 2 external reviewers with biomedical science and leadership expertise, as well as one 1 internal reviewer (external to FoMD but internal to the University of Alberta, to provide insight and input on UA policies, procedures etc.).
3. Working Group develops final summary report with recommendations, considering both internal and external reviews

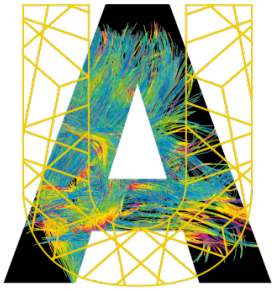
Timeline Considerations:

- November – consultation and input from DEC (Nov 4) and Department Chairs (Nov 13)
- November 28 – FoMD town hall – consultation and input from faculty broadly
- December – TOR consultation and input from DEC (Dec 2) and Department Chairs (Dec 11)
- January – Expressions of interest for Working Group membership; Working Group established
- February – Internal review process launched

- May-June – external review
- September 30, 2025 – final report submitted to Dean, Faculty of Medicine & Dentistry

Considerations:

- Alignment with partners: Research Institutes, undergraduate and graduate programs, other collaborators
- Alignment by discipline
- Ideal size for adequate support to be most effective
- Ideal support for PhD faculty (Pillar 1 biomedical; Pillars 2,3,4 clinical/health services/public health)



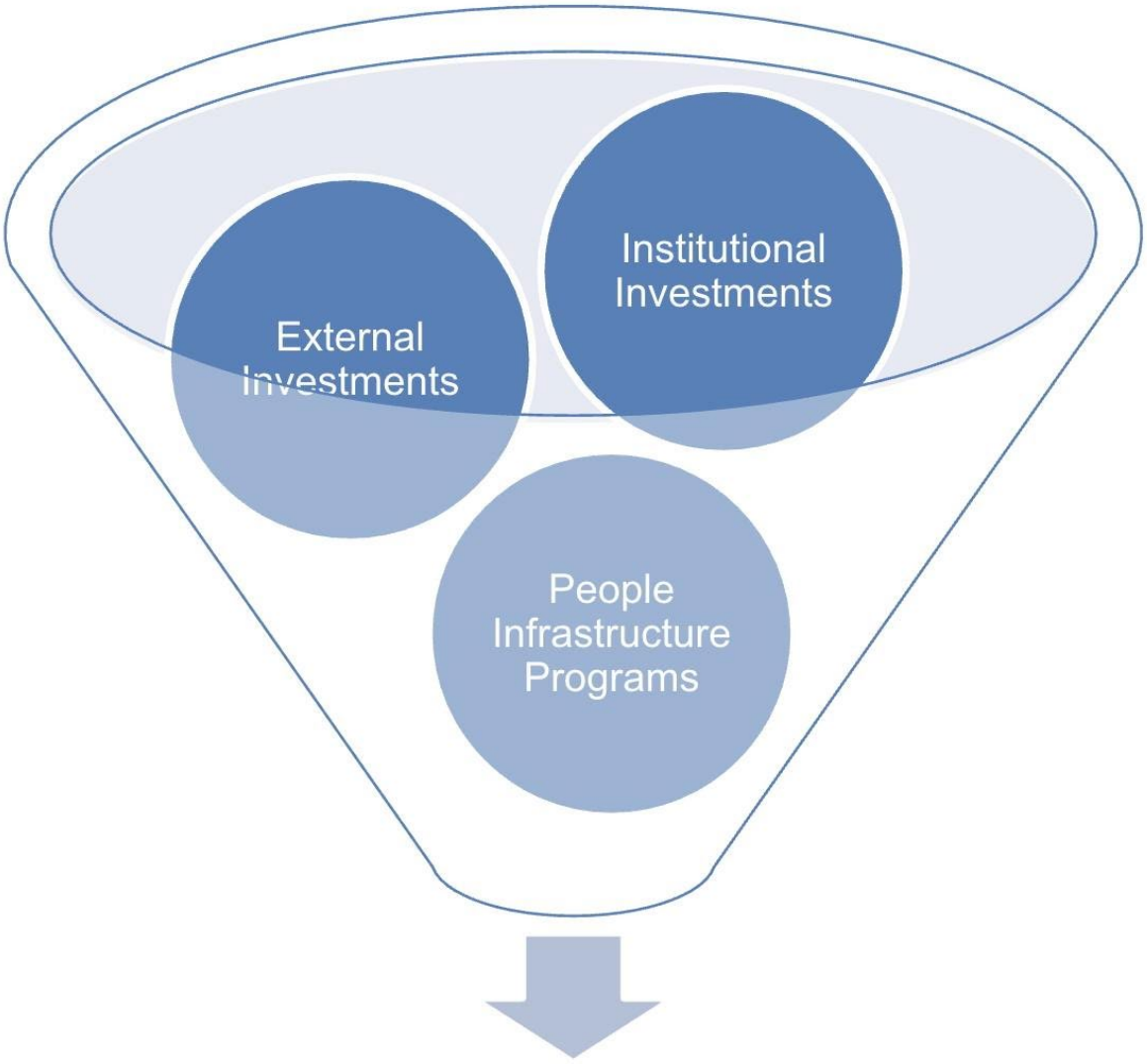
Biomedical Sciences Review Report

Appendix B.

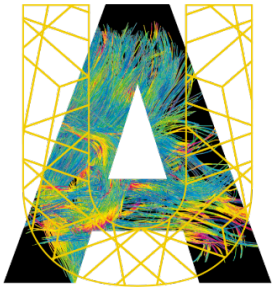
A Model for Conceptualizing Biomedical Science In the Faculty of Medicine and Dentistry

A Model for Conceptualizing Biomedical Science

In the Faculty of Medicine and Dentistry



Breakthrough Discoveries
Trained Scientists, Educators & Professionals
Societal Impact



Biomedical Sciences Review Report

Appendix C.

Faculty of Medicine and Dentistry
Current State and Future Projections

Faculty of Medicine & Dentistry Biomedical Sciences – Current State and Projections

This appendix provides detailed data displays and background information supporting Section 3.2 (Baseline Assessment and Future Projections). It contains source data, assumptions, and analysis methods underlying the summary included in the main report. Data charts illustrate the current state and projected trends in the biomedical sciences community within the Faculty of Medicine & Dentistry (FoMD).

Data Sources and Methods

The following data sources and definitions were used to support the analysis presented in this appendix:

Definitions:

- The CIHR theme / pillar 1 definition was used to define "biomedical faculty".
- "Clinician scientists" were defined as faculty members undertaking theme 1 research and having a clinical license in Alberta.

Data sources:

- Peoplesoft HCM was used to identify faculty and postdoctoral fellows.
- Department chairs verified biomedical faculty based on the CIHR theme / pillar 1 definition.
- The UAlberta Strategic Analysis Acorn Tableau Databooks were used to obtain faculty numbers, research revenue, and student enrollments.
- Graduate & Postdoctoral Studies provided graduate student thesis titles.
- The Web of Science Core Collection was used to identify publications by faculty members

Analysis:

- Faculty were included in a fiscal year if their salary was paid by the UAlberta and they had an appointment on March 30 of that year.
- Research revenue was classified based on the nominated principal applicant.
- Biomedical graduate students were identified based on their thesis title.
- Biomedical postdoctoral fellows were identified based on their supervisor

Projections and Assumptions

Projections were developed based on the current composition of faculty, anticipated retirements, and budget constraints. The following assumptions were used in modeling future scenarios:

Assumptions with some certainty:

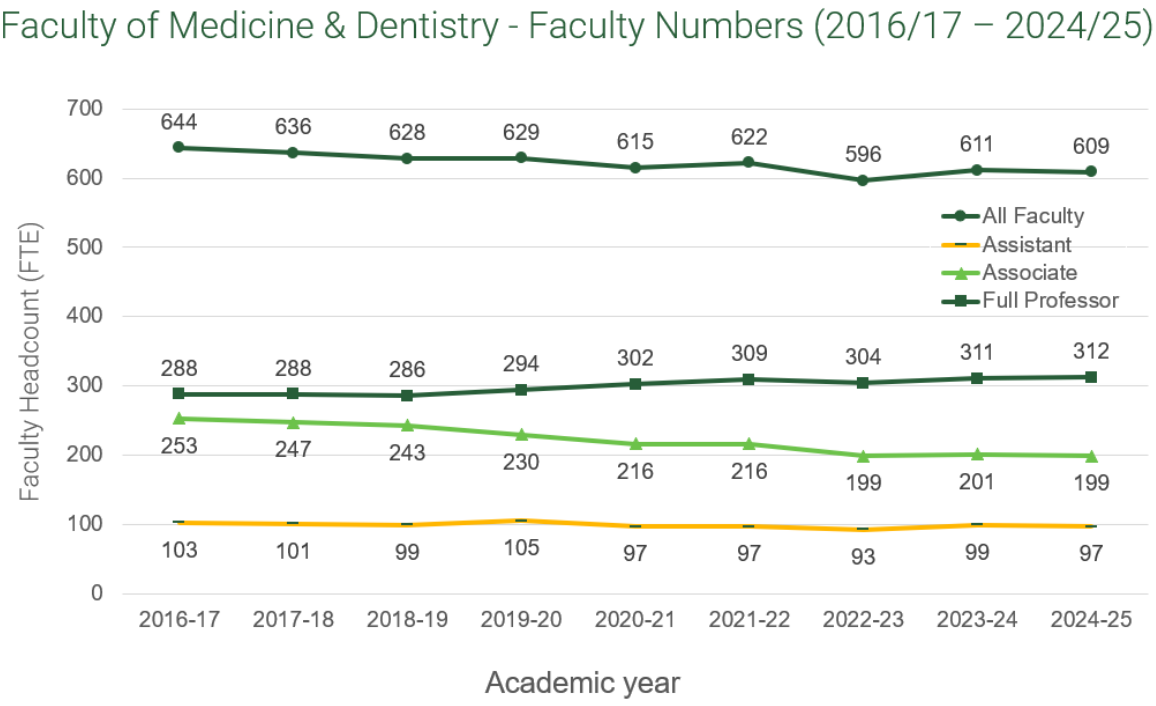
- The AHFMR transition fund expires in 2027 and is providing salary and benefits for 18 faculty members at a total cost of ~$3.2M / year. Sixteen of these positions are biomedical scientists and their salaries will move to the base budget.
- The FoMD is required to submit a balanced budget

Assumptions with little certainty:

- The future settlement between the Association of Academic Staff of the University of Alberta (AASUA) and the University is unknown and is modelled as +3%/year x 4 years based on the Non-Academic Staff Association (NASA) and University of Alberta agreement.
- The FoMD university base budget remains stable (no increase or decrease).
- The cost-of-living adjustment (COLA) and merit is budgeted at ~+3-4%/year.

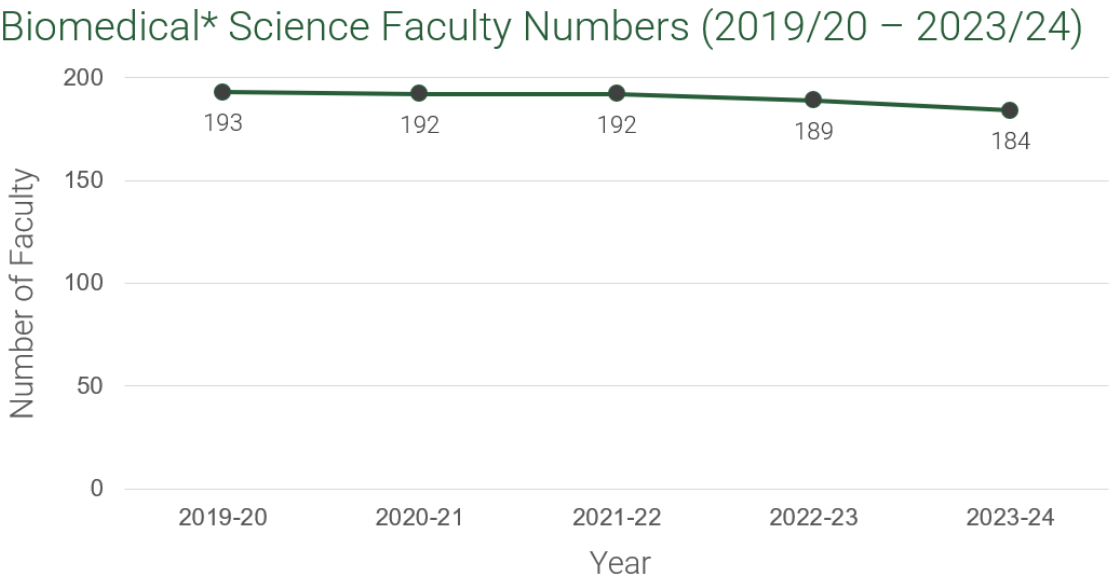
- FoMD budget categories (e.g., faculty salaries, support staff salaries, materials) remain proportionally stable.
- Distribution of PhD scientists working in Pillars 1 to 4 remains stable.
- Number of clinician scientists working in biomedical sciences remains stable (an optimistic assumption - while alternative funding sources are available to support clinician scientist salaries, fewer physicians are pursuing careers as clinician scientists).
- Changes to faculty is through strategic hiring and attrition (no job losses).
- Most newly hired faculty members will be assistant professors.
- Most faculty who leave the university will be full professors

Figure 1. Number of FoMD faculty members over time



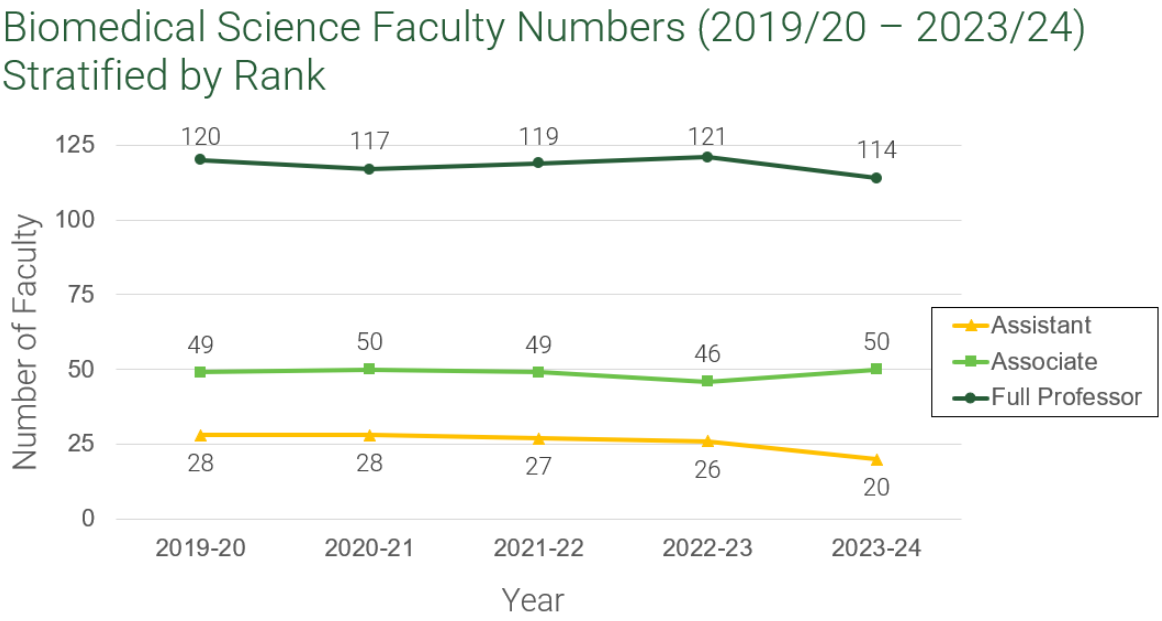
- There were 611 faculty members in the FoMD on March 30, 2024, of which 184 were biomedical scientists.

Figure 2. Number of biomedical science faculty members over time



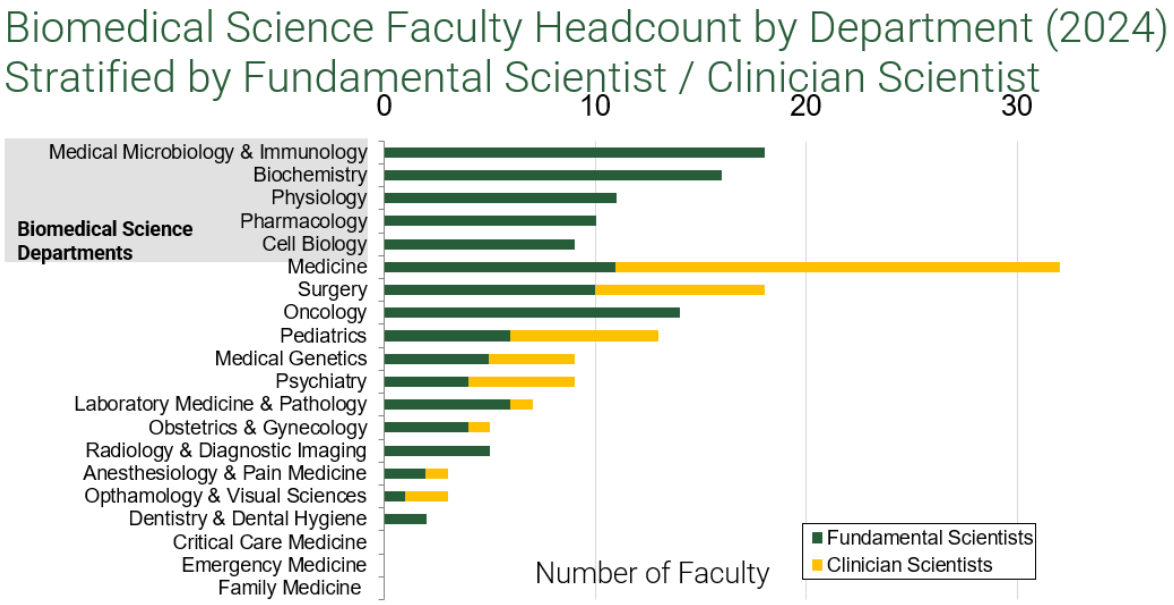
*Biomedical science faculty were identified based on pillar data in FARM, searching publications, and using the CIHR pillar 1 definition. The 2024 biomedical science faculty list was verified by department chairs.

Figure 3. Rank distribution of biomedical faculty members over time



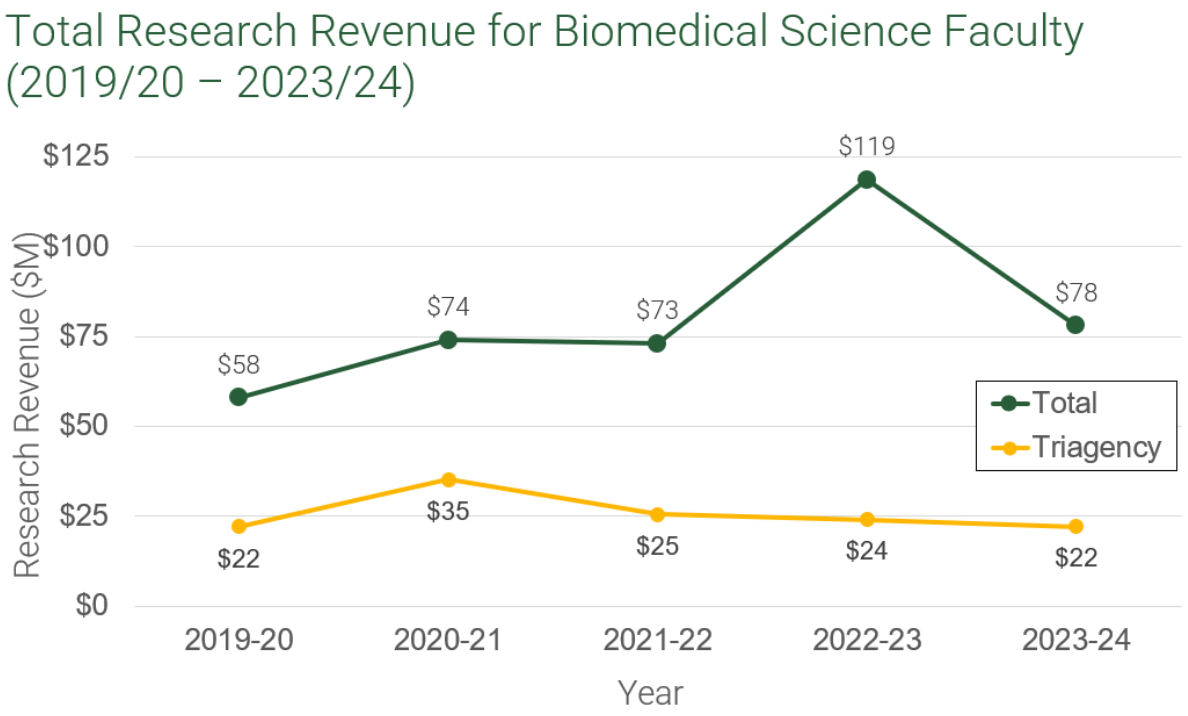
- As of March 30, 2024, 114 (64%) of the biomedical faculty were full professors, 50 (27%) were associate professors, and 20 (11%) were assistant professors.

Figure 4. Distribution of biomedical science faculty by department



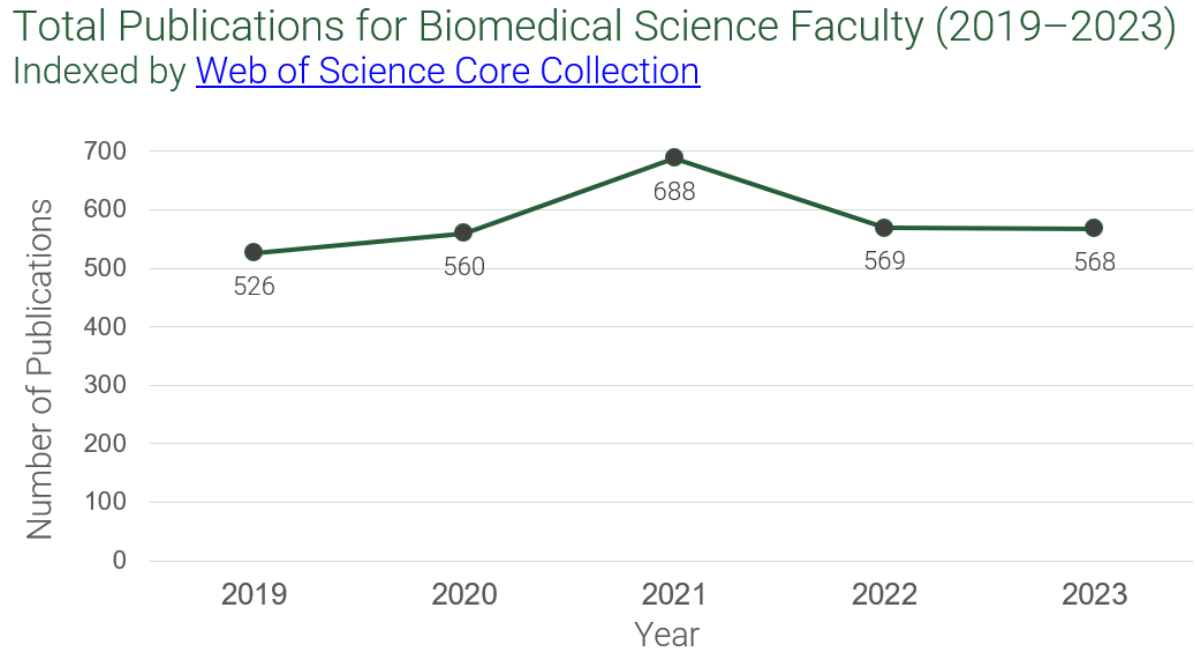
- 64 biomedical faculty (35%) had primary appointments in the 5 biomedical departments in the FoMD (Medical Microbiology & Immunology n=18; Biochemistry n=16; Physiology n=11; Pharmacology n=10; Cell Biology n=9).
- 70 (52%) of the fundamental scientists and 52 (100%) of the clinician scientists had their primary appointments in one of 15 clinical departments (Medicine n=32; Surgery n=18; Oncology n=14; Pediatrics n=13; Medical Genetics n=9; Psychiatry n=9; Laboratory Medicine and Pathology n=7; Obstetrics and Gynecology n=5; Radiology and Diagnostic Imaging n=5; Anesthesiology and Pain Medicine n=3; Ophthalmology and Visual Sciences n=3; Dentistry and Dental Hygiene n=2).

Figure 5. Biomedical science faculty research revenue over time



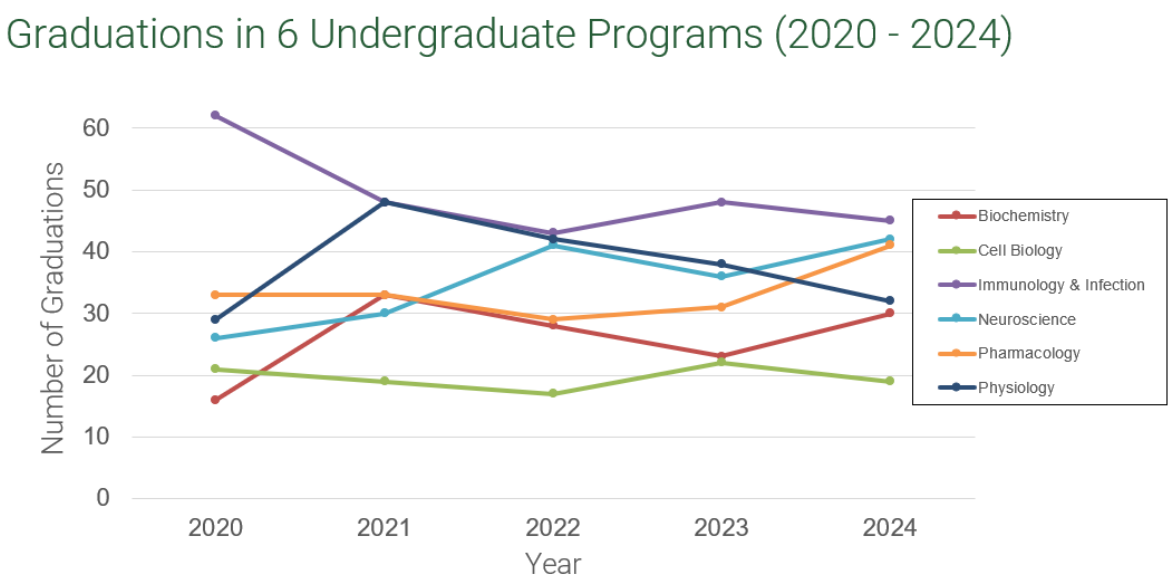
- The total research revenue received by biomedical scientists in the FoMD was $78M in 2023-24, including $22M from the Tri-Agencies (primarily CIHR and NSERC).

Figure 6. Biomedical science faculty publications over time



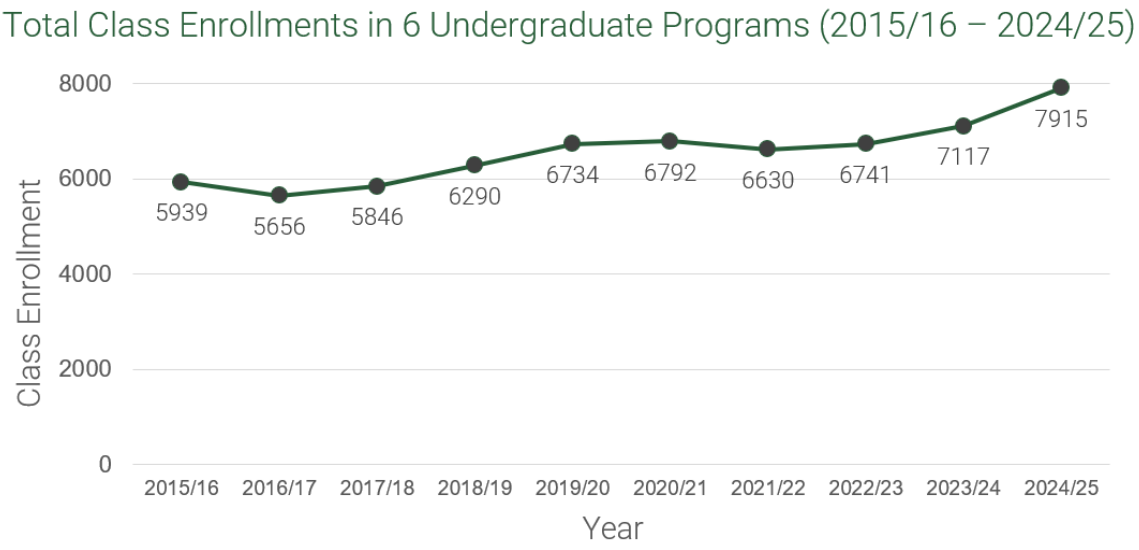
*2024 not shown as publications are not fully indexed

Figure 7. Number of students graduating from undergraduate biomedical science programs over time



- 2020 through 2024 there were between 187 and 209 students who graduated annually from the six undergraduate biomedical science programs (biochemistry, cell biology, immunology & infection, neuroscience, pharmacology, physiology) that the FoMD jointly offers with the Faculty of Science.

Figure 8. Number of students enrolled in biomedical science program classes in the FoMD



- The number of undergraduate students enrolled in FoMD offered courses for these six programs grew from 5,939 in 2015/16 to 7,915 in 2024/25.

Figure 9. Number of biomedical science students graduating with an MSc or PhD over time

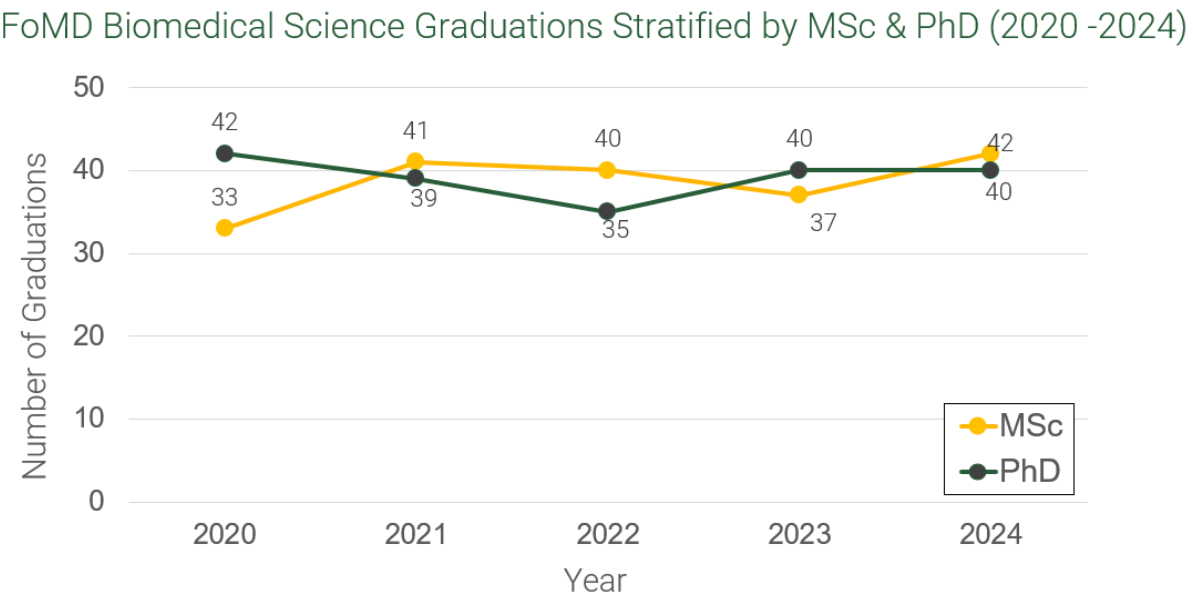
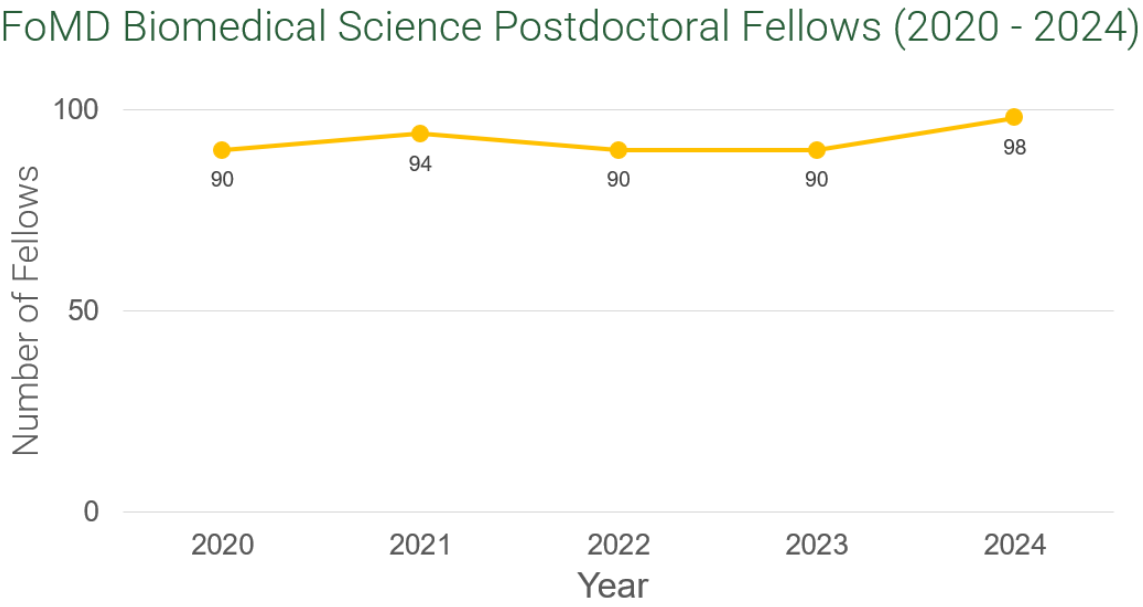
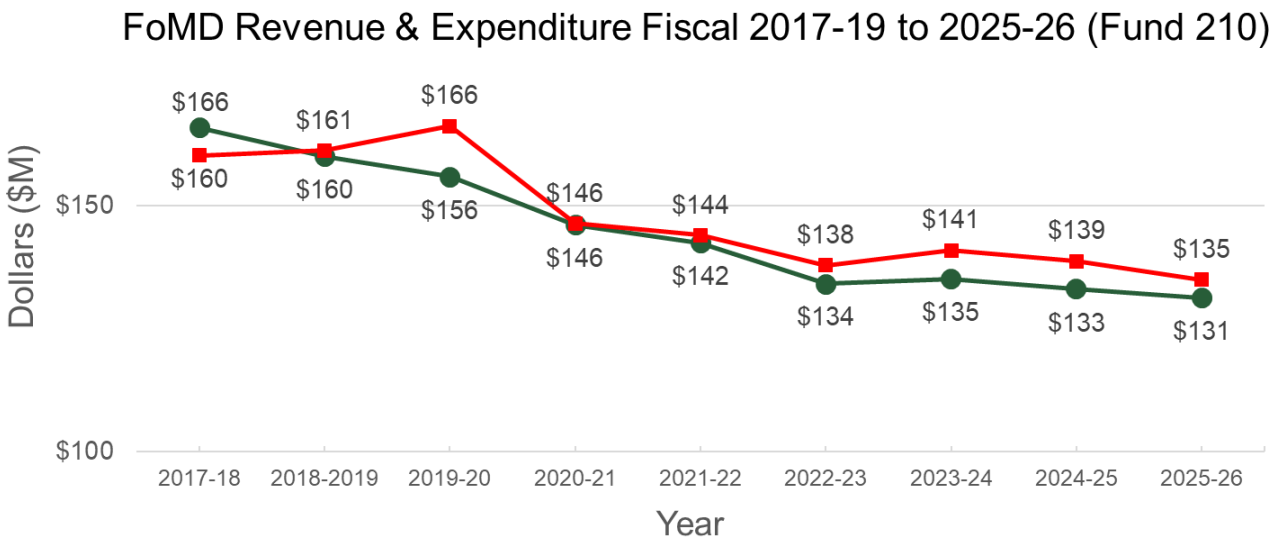


Figure 10. Number of biomedical science postdoctoral fellows over time



*Biomedical science postdoctoral fellows identified by supervisor and biomedical science faculty list.

Figure 11. FoMD base budget revenues and expenditures over time



- The gap between Faculty revenues and expenditures is accounted for by funding from the AHFMR transition fund to produce a balanced budget. The AHFMR transition fund will end in 2027.

Figure 12. Projected number of biomedical science faculty over time

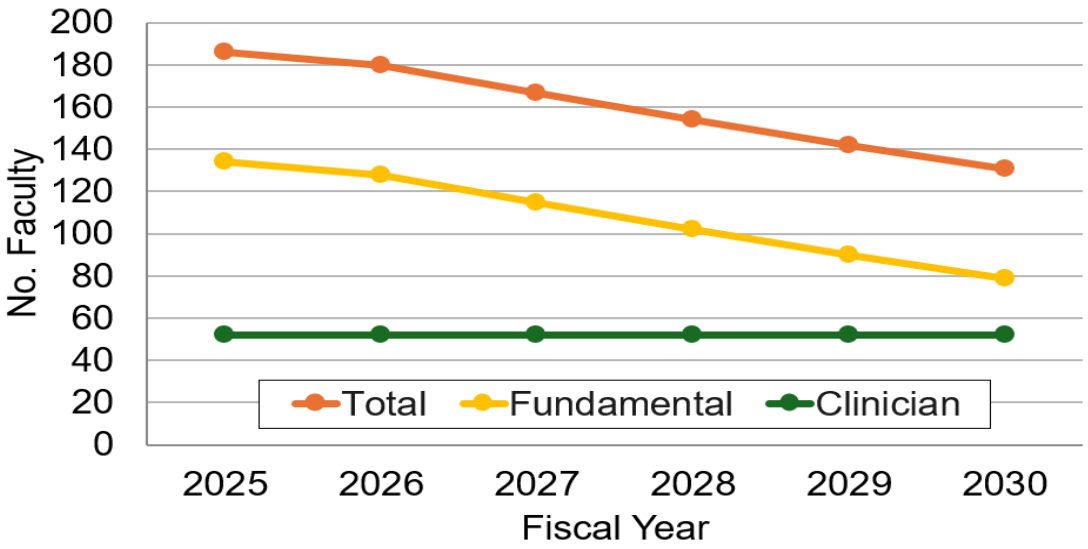
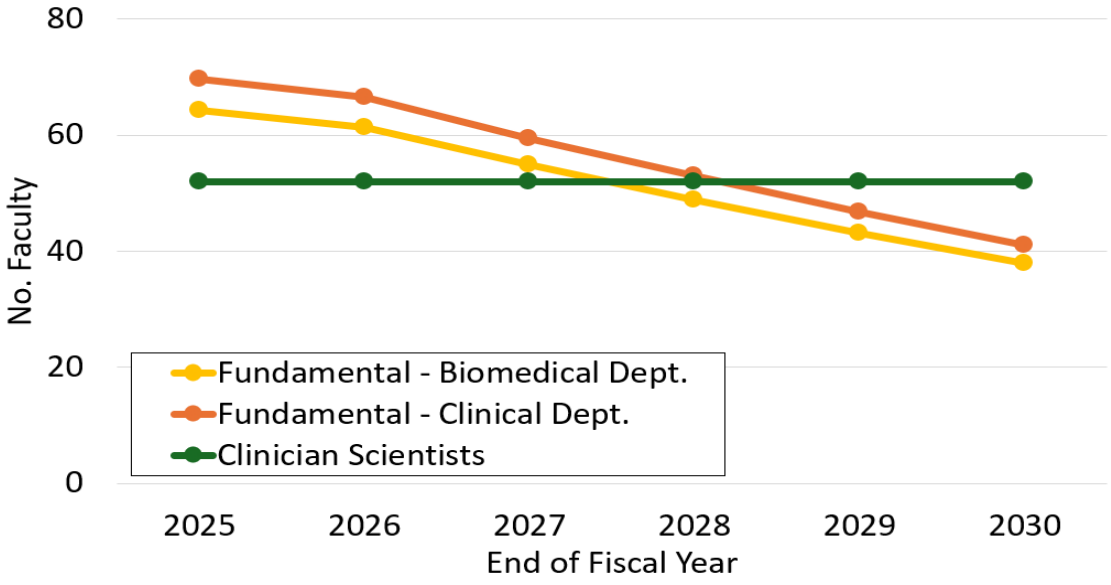
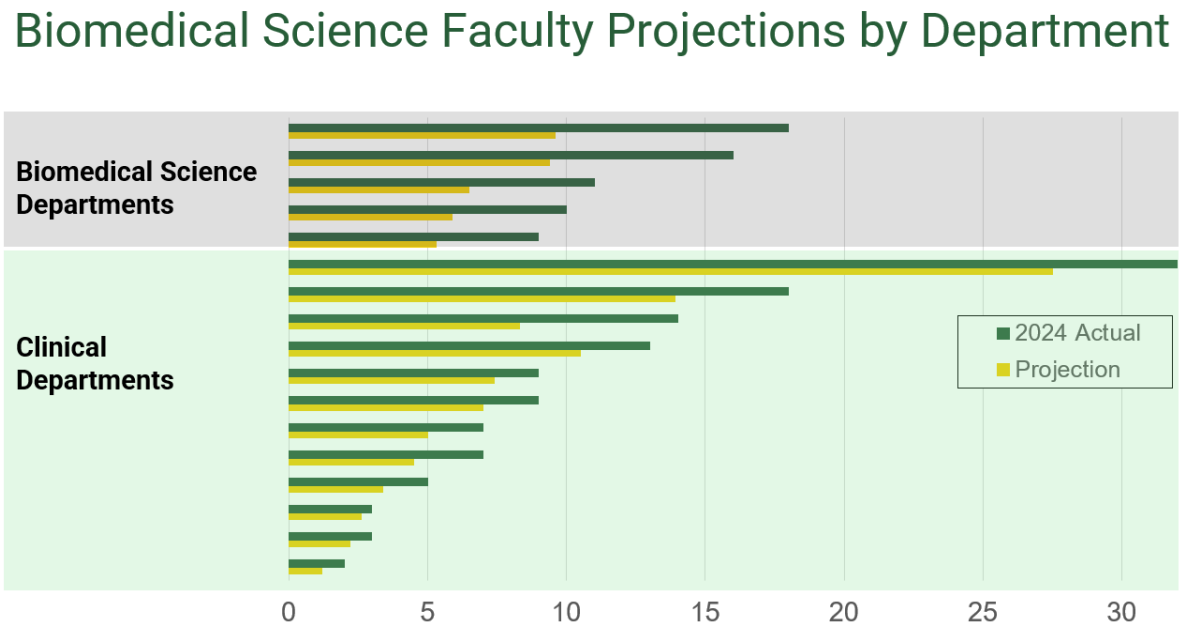


Figure 13. Projected number of biomedical science faculty over time by biomedical and clinical departments

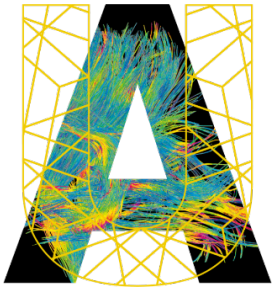


- A 25-40% decrease in the number of university-base budget-funded biomedical science faculty members is projected in the coming years as our recruitment of new faculty members does not keep up with retirements of current faculty members.

Figure 14. Projected number of biomedical science faculty by department over time



- The number of biomedical science faculty members is projected to range from five to 10 in biomedical departments (median 6, interquartile range 6-9) and one to 28 in clinical departments (median 6, interquartile range 3-9).



Biomedical Sciences Review Report

Appendix D.

Literature Synthesis

Report from the Literature Synthesis Subgroup

The objective of the literature synthesis subgroup was to gather insights from published studies, websites and public reports on how other institutions have effectively achieved optimal focus and organization in biomedical science. The literature synthesis is descriptive rather than evaluative. It should be read alongside the other work bundles; it does not assess the FoMD.

We primarily used Google Scholar and PubMed to search for academic publications, and Google to explore universities and other academic institutions. From more than 300 publications, we selected the most relevant ones to inform the working group's discussions on six key opportunities: Collaborative Culture & Interdisciplinary Integration; Sustainable and Diversified Funding Models; Environment Optimization; Strategic Educational Transformation; Administrative & Operational Effectiveness; and Research Excellence & Incentivization. This summary is organized around these six areas.

Collaborative Culture & Interdisciplinary Integration

- Modern biomedical research often requires interdisciplinary collaboration but establishing effective relationships can be challenging[1,2].
- Teams produce more publications, patents, and breakthroughs than single investigators[3].
- Factors promoting collaboration include interpersonal relations, funding context, sectoral context (academic, corporate, governmental), and organizational structure[4].
- Many institutions struggle with structural barriers, communication gaps, and misaligned incentives that prevent meaningful cross-departmental integration[2] (Collaboration between Basic and Clinical Scientists).
- Interdisciplinary research involves breaking down knowledge and identities, managing disciplinary differences, and navigating inherent ambiguities with self-reflective questions[5,6].
- **Successful strategies for enhancing interdepartmental collaboration**
  - Building collaborative research environments requires intentional design of physical and administrative structures that support interdepartmental interaction[7,8].
  - Leadership Strategies for Fostering Collaborative Culture. Interdepartmental collaboration depends particularly on effective coordination between department chairs and team leaders, requiring leadership skills that can bridge different disciplines, professional cultures and research traditions (Collaboration is a key skill in academia).
- **Communication and Trust Building:** Transformative biomedical research requires effective communication, trust-building, adaptive leadership, and collaborative frameworks[3,9-11].
  - Team-based research, while potentially more impactful, incurs high coordination costs. Success demands structured communication strategies that bridge departmental gaps facilitating cross-departmental collaboration by ensuring all members understand regulatory expectations.
  - Research on collaborative team science indicates that without trust, team dynamics risk deteriorating over time, ultimately undermining the scientific goals at the center of collaborative efforts [12].
- **Adaptive and Distributed Leadership**. Adaptive leadership is crucial, involving flexible models that respond to changing scientific and regulatory landscapes.
  - Implementing co-leadership models and distributed leadership structures can balance individual achievements with team objectives[12-16].
- **Multi-principal investigator (PI) models,** increasingly necessary for complex biomedical challenges, acknowledge team leadership and formalize role definitions, decision-making, and conflict resolution, supported by regular meetings and shared vision development[13,14,17].
- **Team science and multidisciplinary models** like the Affinity Research Collaborative (ARC)[1,8] and Multidisciplinary Translational Teams (MTTs)[14] exemplify successful approaches. ARCs unite interdisciplinary teams around common research goals, using rigorous peer review and institutional support, while MTTs bridge basic research and clinical application, blending academic and industry methodologies.
  - Training programs that emphasize interdisciplinary competencies, communication skills, and project management capabilities are essential for developing the workforce needed for successful translational research[14,17].

Sustainable and Diversified Funding Models

- Sustainable funding in biomedical sciences requires combining internal financial reforms with innovative external partnerships. Studies show increasing competition and concentration of awards among fewer investigators, with slower grant growth[18,19] (Canadian Medical Research revenues). Successful institutions balance immediate needs with long-term strategy, developing diverse revenue streams to support research and education amidst evolving market conditions.
- **Internal revenue diversification** is crucial for sustaining biomedical research amid fluctuating funding landscapes. Innovative strategies include next-generation funds-flow models that promote transparency, equity, and productivity, exemplified by initiatives like UCSF Basic Science Funds-Flow (BSFF).
- **Core Facility Revenue Generation**. Converting shared research facilities into full-cost recovery centers enables institutions such as Vanderbilt and Simon Fraser University to generate self-sufficient revenue streams through strategic equipment investments and digital cost-recovery platforms. There are other examples in the literature[20,21].
- **Educational revenue sources** are expanding with tuition-generating programs like Professional Science Master's degrees, to subsidize traditional research-focused graduate education (e.g. UBC, Georgetown, University of Denver and others).
- **External partnerships with industry** further enhance revenue, leveraging departmental expertise for billable biotech work and collaborative research[22-24]. Technology transfer activities, including licensing, startup facilitation, and commercialization, forge long-term relationships providing ongoing research contracts, employment opportunities, and revenue streams beyond initial agreements[25].
- **Alternative funding sources** include private foundations offering flexible support tailored to institutional needs. Data-driven fundraising strategies, utilizing alumni data and tailored outreach, have improved engagement, especially supporting scholarships and legacy giving[26]. Crowdfunding has emerged as a supplementary mechanism, especially effective for projects with societal impact and high participation from students and junior investigators, although funding sizes are typically smaller than traditional grants[27-29].
- **Endowment and long-term investment strategies** involve developing university endowments, which support operations, strategic initiatives, and high-risk research. Endowed gifts convert episodic donations into perpetual operating income. Endowments such as those at Stanford and UCSF provide stability during cyclical droughts and fund pilot projects in biomedical science.

Environment Optimization

Optimizing environment and infrastructure enhances collaborative research and boosts productivity by integrating spatial design, organizational frameworks, and cultural evolution with technological systems.

- Effective leadership is essential in managing operations, faculty, and community programs, requiring genuine engagement with campus leadership and faculty in decision-making processes. The institution should foster alignment between its culture, mission, and structural goals.
- Frameworks and international actions have emerged to promote a healthier research culture. These include the SCOPE framework, DORA, the Leiden Manifesto[30], and the ISRIA, all aiming to address issues like diversity, career paths, and recognition.
- Optimal research environments prioritize networking, collaboration, and productivity. The Royal Society[31] and Wellcome Trust[32] highlight peer esteem, open science, career mobility, and support for early-career researchers (ECRs) as critical for research quality.
- Successful collaboration often emerges from physical co-locations across disciplines, open and flexible laboratory designs, and informal shared spaces designed to foster collaborative interactions[7,33-36].
- Shared core research facilities act as hubs for biomedical researchers, enabling resource sharing, reducing redundancy, and providing access to advanced technology, thereby fostering collaboration[37-39]. These facilities are crucial for researchers, in particular ECRs, as they enhance research productivity and expand collaborative networks[40].
- The optimization of faculty workload distribution to promote greater flexibility and equity is crucial for advancing faculty satisfaction, improving student outcomes, and increasing institutional productivity[41-43].

Strategic educational transformation

- Transforming biomedical education requires comprehensive systemic changes in institutional culture, faculty development, assessment methods, and student engagement, driven by emerging trends in curricula, teaching, and learning technologies[44-46]. Key strategies include interdisciplinary learning, learner-centered approaches, technology integration, professional development, and global perspectives, all supported by strong institutional commitment[44,47-49] (McGill University).
- **Interdisciplinary learning.** The most significant transformation strategy involves breaking down traditional departmental boundaries to create integrated biomedical learning experiences [44,50]. Universities like the Queen's University, University of Saskatchewan, McGill[51], University of Virginia and Boston University[44] have redesigned curricula to emphasize critical thinking, communication, and collaboration across disciplines, better preparing students for diverse careers and societal needs.
- **Learner-centered and lifelong learning** approaches enhance engagement, retention, and application of knowledge[52]. Active learning strategies such as workshops, role-playing, and problem-based learning outperform traditional lectures, fostering deeper understanding and collaboration[53-55].
- **Technology-Enhanced Learning Environments and Artificial Intelligence**, including online platforms, virtual and augmented reality, and interactive digital tools, are revolutionizing biomedical education[56,57]. These tools offer flexible, accessible options for diverse audiences, enabling personalized, self-paced learning[56]. Additionally, rapid advances in artificial intelligence requires curricular updates to include AI literacy, ethics, and the preservation of core biomedical skills[57].
- **Professional development** is critical, especially as a significant portion of biomedical PhD graduates pursue careers beyond academia[49,58,59 60]. Training programs focusing on industry, entrepreneurship, and business skills are becoming popular. Examples like Colorado State's career courses[58], NYU's biomedical entrepreneurship programs[61], and New York Medical College's comprehensive career services[62] prepare students for various professional pathways.
- **Global and collaborative perspectives** are increasingly integrated into curricula, emphasizing social, environmental, and policy considerations. Such education fosters interdisciplinary collaboration, critical thinking, and innovation to address complex health challenges, including pandemics and health inequities[49].
- Finally, **faculty development and institutional support are** essential for sustainable transformation[47]. Leaders must manage cultural and structural barriers through continuous faculty training, strategic resource allocation, and supportive policies. Senior administrators play a pivotal role in embedding these innovations into institutional operations, ensuring ongoing adaptation and impact in biomedical education.

Administrative & Operational Effectiveness

Administrative support in biomedical research has evolved from a peripheral function to a critical determinant of research productivity and scientific advancement[63]. Administrative structures should deliver flexible funding mechanisms, shared resource allocation, and streamlined approval processes[8,14]. Evidence shows that biomedical sciences departments can achieve research excellence with fewer resources by optimizing structure, faculty support and resource allocation.

- **Organizational structure:** Efficient, effective, and communicative administrative support is crucial in helping research teams navigate requirements and obstacles[63]. The University of Alberta and McGill University exemplify comprehensive centralized models. Strategic management of core research facilities represents a critical component of operational excellence in biomedical sciences (FoMD- U of A, UBC). Boston University's Evans Center for Interdisciplinary Biomedical Research adopted a "bottom-up" model, forming Affinity Research Collaboratives (ARCs) based on faculty-driven initiatives rather than top-down collaborative structures, fostering organic collaboration[1,8].
- **Faculty support:** To improve faculty satisfaction, productivity, and retention, institutions should share best practices, establish clear standards for academic time, and build accountability. This approach assists faculty in balancing their research, teaching, clinical, and service responsibilities[63-66].
- **Resource allocation** promotes excellence, relevance, and financial sustainability amid complex research, clinical, and educational demands[67,68] (UK R&I). Successful institutions use strategic planning including departmental restructuring and consolidation strategies (Queen's University, Faculty of Education- U of A)[69]. In addition, numerous mathematical models have been developed to help institutions maximize accessibility and maintain an even distribution of resources among various departments and research areas[42,68,70]. The shift to centralized, strategic resource allocation improves efficiency, collaboration, and accountability compared to decentralized models[67].

- **Departmental Merging and Consolidation.** Merging departments into larger units is common practice for reducing overhead and promoting interdisciplinary collaboration[71]. Historically, universities merged departments and created institutes to adapt to economic, political, and scientific changes[72-74]. U.S. medical schools reduced traditional departments, favoring new interdisciplinary ones (e.g. neuroscience and genetics)[75,76]. Despite mergers, the total number of basic science departments has stayed steady over 25 years while new institutes grew[77-81].
  - Larger departments demonstrate higher research productivity, with high-performing individuals contributing significantly to overall output[82-84].
  - Several universities have restructured their departments by merging disciplines and establishing new interdisciplinary education programs. Notable examples include the University of Arizona, Cedars-Sinai Medical Center, UCSD School of Medicine, University of Rochester School of Medicine, University of Washington School of Medicine (as detailed in reference[69]), Queen's University and the University of Saskatchewan.

Research Excellence & Incentivization

Sustained excellence in biomedical science depends on aligning the motivations of individual researchers, institutions, funders, and society. Creating a culture of research excellence requires strong leadership, adequate resources, meaningful recognition systems, and sustained commitment to both traditional research excellence and emerging paradigms of engaged, translational research.

- **Characteristics of High-Performing Research Units.** High-performing research units prioritize a quality environment defined by networking, collaboration, and impact. Key elements include community involvement, innovative promotion and tenure practices, responsiveness to changing community needs, adaptability, strong people and leadership, and supportive institutional strategies. These align with the evolving concept of scientific excellence and a new social contract for science[85-88].
- **People and Research Excellence.** Research excellence is primarily driven by excellent researchers. Recruiting and retaining top talent, particularly those with research training (PhDs), senior status (professors), international experience, and externally funded salaries is key[88].
  - Postdoctoral fellows significantly contribute to productivity, mentorship, and infrastructure[89,90], while graduate students support research and innovation[91].
  - Undergraduate research courses and programs improve faculty balance between productivity and student development, boosting job satisfaction, mentorship skills, collaboration, and long-term professional relationships[92-94].
  - Physician scientists are supported through initiatives such as Physician Scientist Training Programs and MD/PhD programs which promote careers in biomedical research[95]. Translational training programs further enhance impact by connecting basic science with patient care[96].
- **Research Culture, Values and Leadership**. A recent report[97] identifies key elements of a strong research culture: job security and career progression; wellbeing and equal opportunity; teamwork and collaboration; and research quality and accountability.
  - High-performing units invest in staff training, mentorship, grants, and performance incentives[88].
  - Leadership builds trust through transparency, strategic communication, and accountable autonomy. Explicitly shared values and hands-on leadership foster a supportive environment, clear goals, and organizational excellence[88,98].
  - Universities that are more structurally committed to interdisciplinary research experienced an increase in research activity, as measured by number of articles published and number (and dollar amount) of NIH grants received[99].
- **Measurements of Research Excellence.** Research success is traditionally measured by grants and publications. New evaluation methods are emerging to capture impacts on patients, communities, and policymakers beyond traditional metrics[100-102].
- **Optimization and Incentivization.**
  - Establishing new research structures like institutes and networks enhances infrastructure but faces challenges from short funding cycles[103].
  - Incentives to attract top talent include competitive salaries, research-focused workloads, startup packages, and supportive culture[88].

- Building capacity for innovation and entrepreneurship requires faculty training, seed funding, and industry engagement. Policies should recognize nontraditional outputs like innovation and engaged research[87].
- Adopting inclusive incentive frameworks: Incentive frameworks should be designed to influence behavior toward rigorous, high-impact research while discouraging outcomes such as rushed publication or risk aversion[104].

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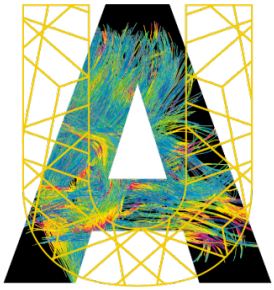


Biomedical Sciences Review Report

Appendix E.

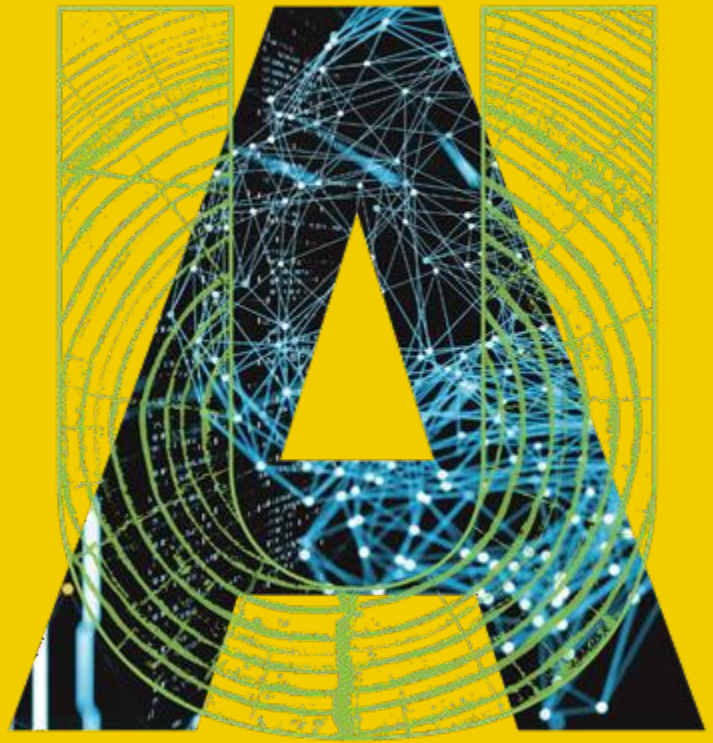
Environmental Scan Results

Biomedical Sciences Working Group

Environmental Scan Results

April 25, 2025 revised
June 4, 2025, finalized
June 24, 2025

UNIVERSITY OF ALBERTA



Outline

1. Departmental Structure (UofA / U15)
2. Research
3. Teaching
4. Environment

Abbreviations: FoMD, Faculty of Medicine & Dentistry

University of Alberta Department Structure for Faculties with Departments

Medicine & Dentistry
n=609 d=20
n/d: Av=30 min=5 max=186

Arts
n=304 d= 16
n/d: Av=19 min=1 max=31

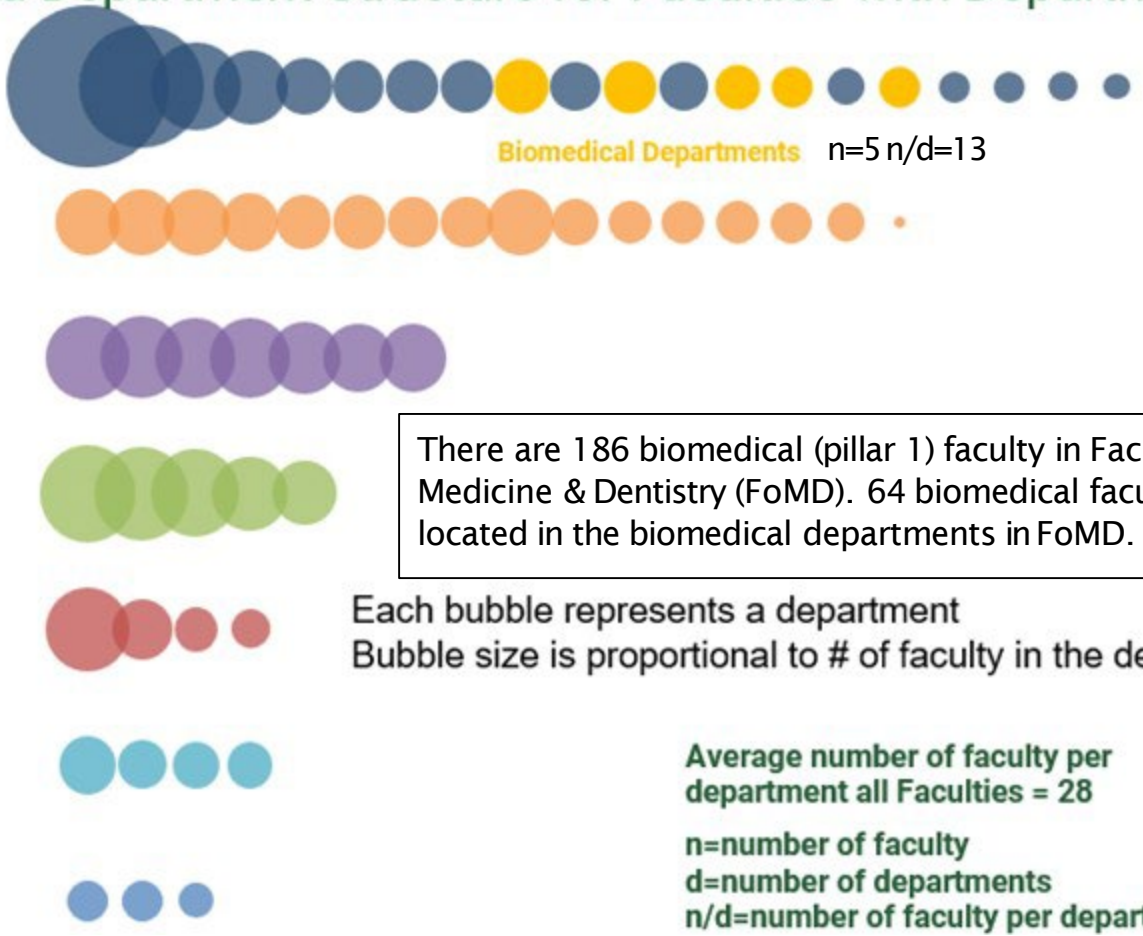
Science
n=290 d=6
n/d: Av=41 min=32 max=49

Engineering
n=255 d=5
n/d: Av=51 min=30 max=67

Agricultural Life & Environmental Science
n=100 d=4
n/d: Av=25 min=11 max=49

Business
n=72 d=4
n/d: Av=18 min=15 max=24

Rehabilitation Medicine
n=3 d=3
n/d: Av/min/max=11



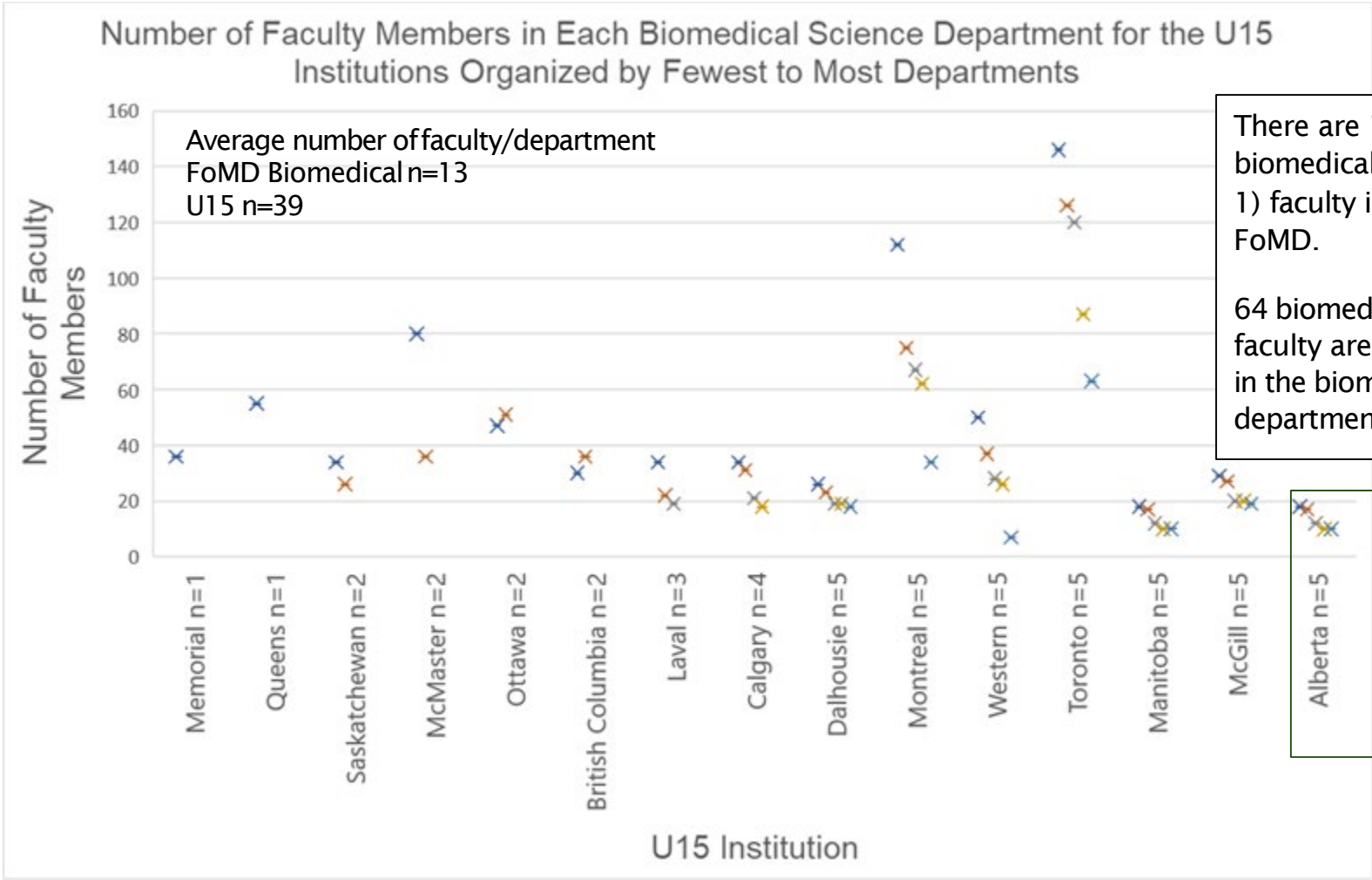
There are 186 biomedical (pillar 1) faculty in Faculty of Medicine & Dentistry (FoMD). 64 biomedical faculty are located in the biomedical departments in FoMD.

Each bubble represents a department
Bubble size is proportional to # of faculty in the department

Average number of faculty per department all Faculties = 28

n=number of faculty
d=number of departments
n/d=number of faculty per department

Data source: UAlberta Institutional Data and Analytics Acorn Tableau



There are 186 biomedical (pillar 1) faculty in the FoMD.

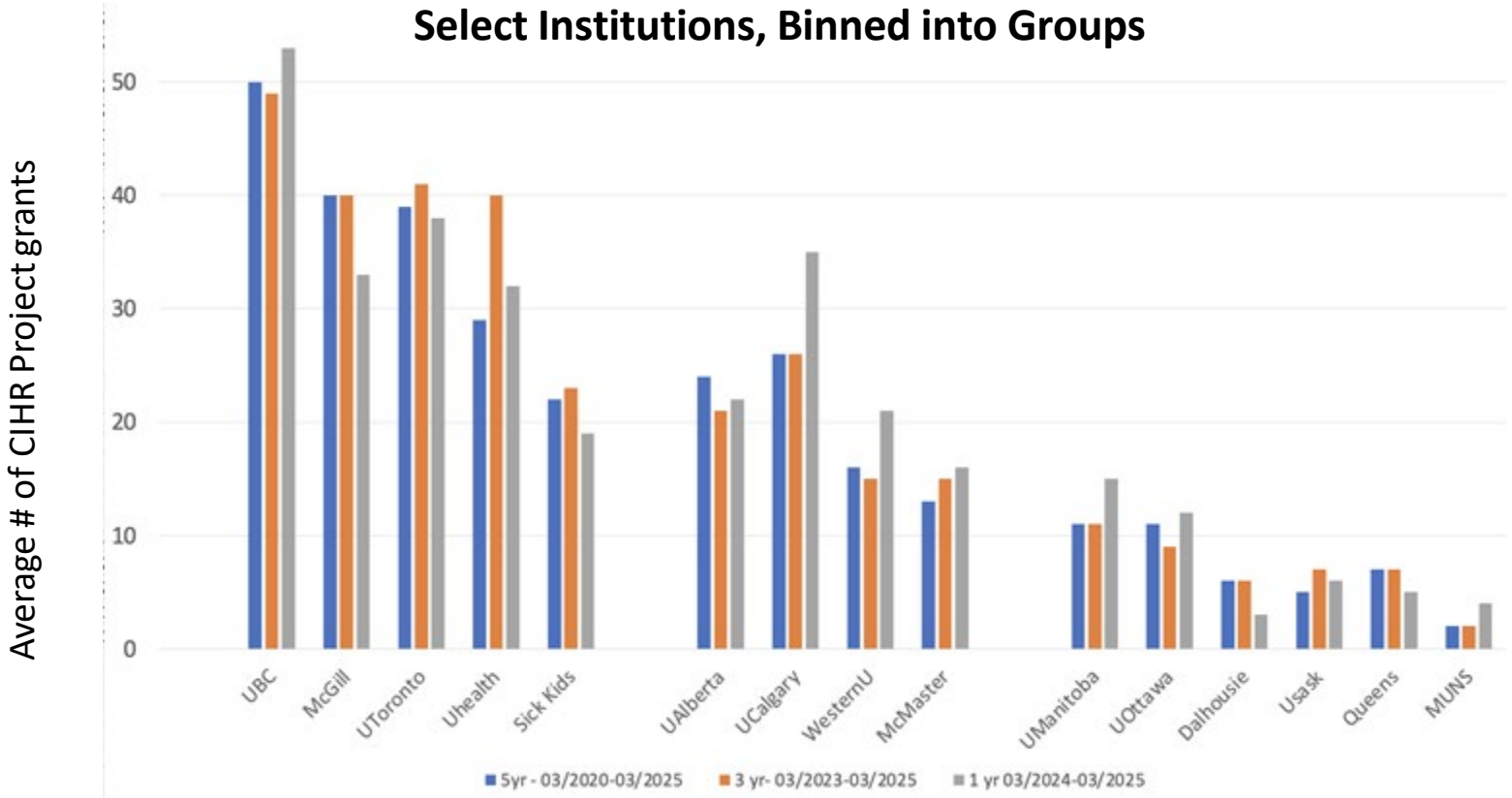
64 biomedical faculty are located in the biomedical departments.

Data source: U15 websites and UAlberta Institutional Data and Analytics Acorn Tableau

Outline

1. Departmental Structure (UofA / U15)
2. **Research**
3. Teaching
4. Environment

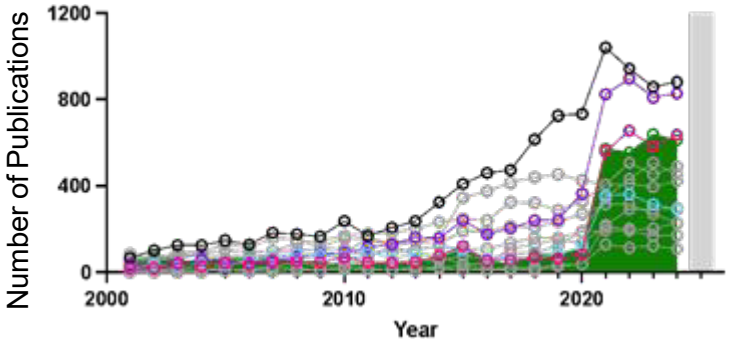
Average # of CIHR Pillar I Project Grants Awarded over 5, 3 and 1 Years - for Select Institutions, Binned into Groups



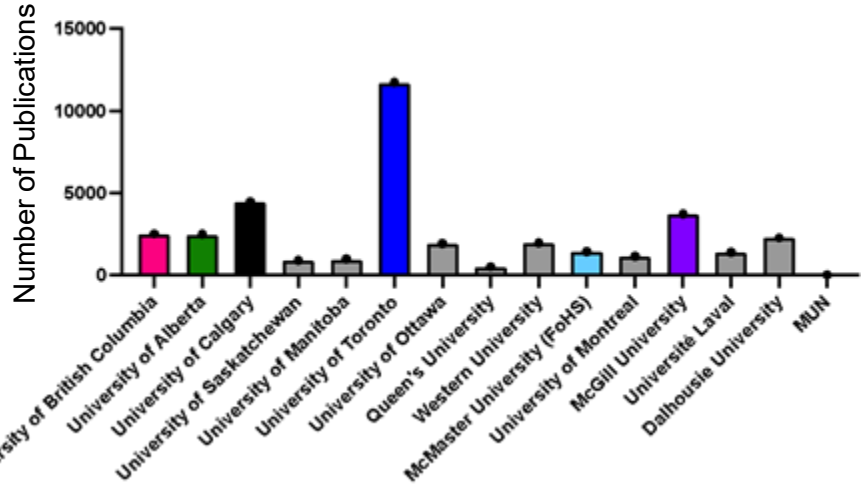
Conclusion: UAlberta has maintained strong CIHR funding when comparing funded CIHR grants. The last 5, 3 and 1 years show the trends are maintained over the last 5 years. *Average number of pillar 1 (biomedical) CIHR grants to each institution (not just biomedical departments) over the indicated years. Data source: CIHR Funding Decision Database based on the nominated principal applicant. Uhealth = University Health Network in Toronto. MUNS: Memorial University*

U15 Biomedical Science Publications*

Science Publications Across Time (sans U of T)

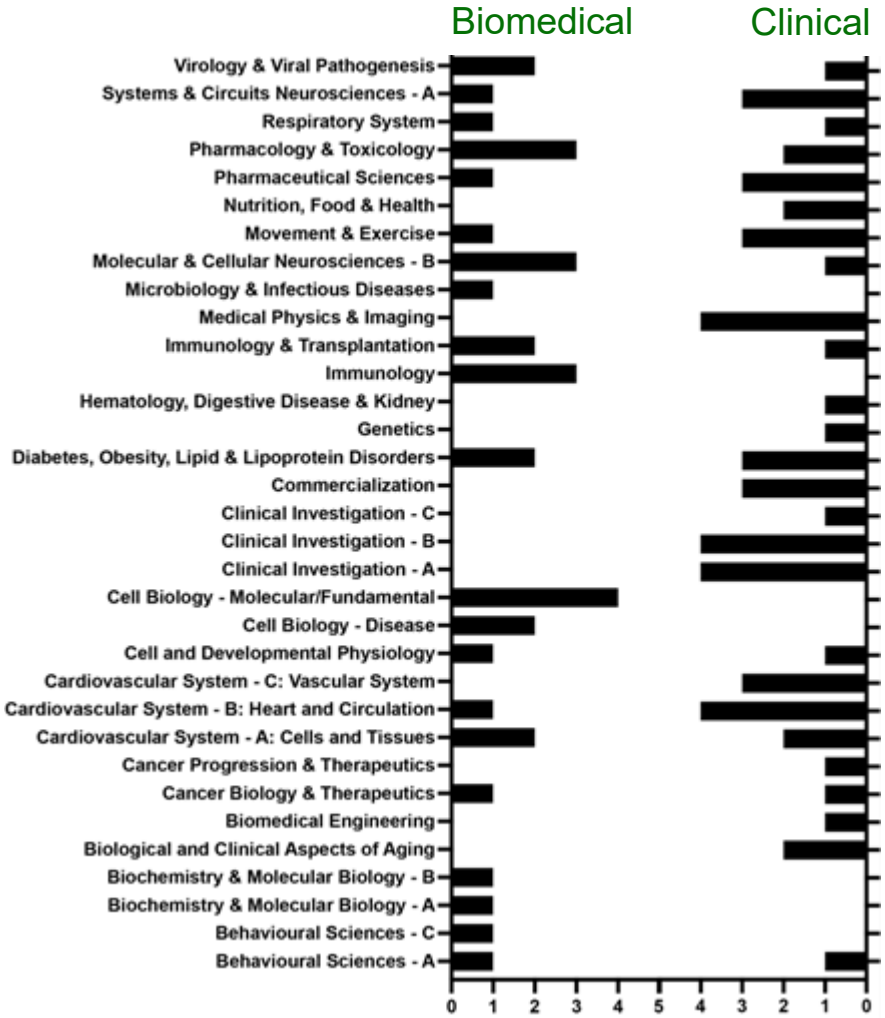


2020-2024 Total Publications



Conclusion: Number of biomedical science publications by UofA faculty has remained competitive over the period of 2020-24. *(*Data from SCOPUS and combined searches for publications in the categories of 1) Biochemistry, Genetics and Molecular Biology; 2) Neuroscience; 3) Pharmacology, Toxicology and Pharmaceutics; and 4) Immunology and Microbiology. Total numbers of publications per year (left) and total for the period 2020 -24. Note that the colors are the same for the institutions in both graphs. Publications are from the entire UofA campus.)*

Number of Pillar 1 CIHR Grants Funded by each Committee to Principal Investigators from either Biomedical or Clinical Departments

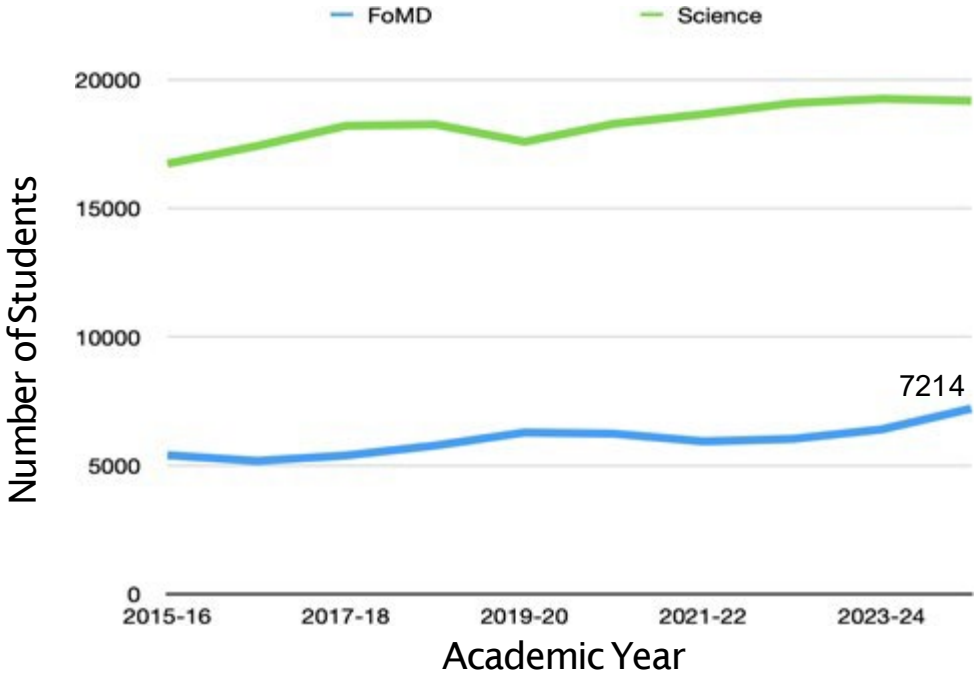


Conclusion: Researchers from biomedical and clinical departments secured Pillar 1 CIHR grants from similar but non-overlapping CIHR committees revealing different research interests of researchers from the two department groupings. *Pillar 1 CIHR grants received from 2020-2024 inclusive were downloaded from the CIHR database and sorted by the CIHR committee that funded the grant and by the department (biomedical or clinical) of the nominated PI.*

Outline

1. Departmental Structure (UofA / U15)
2. Research
3. **Teaching**
4. Environment

Service Teaching by faculty in FoMD Biomedical Departments and Faculty of Science (FoS)



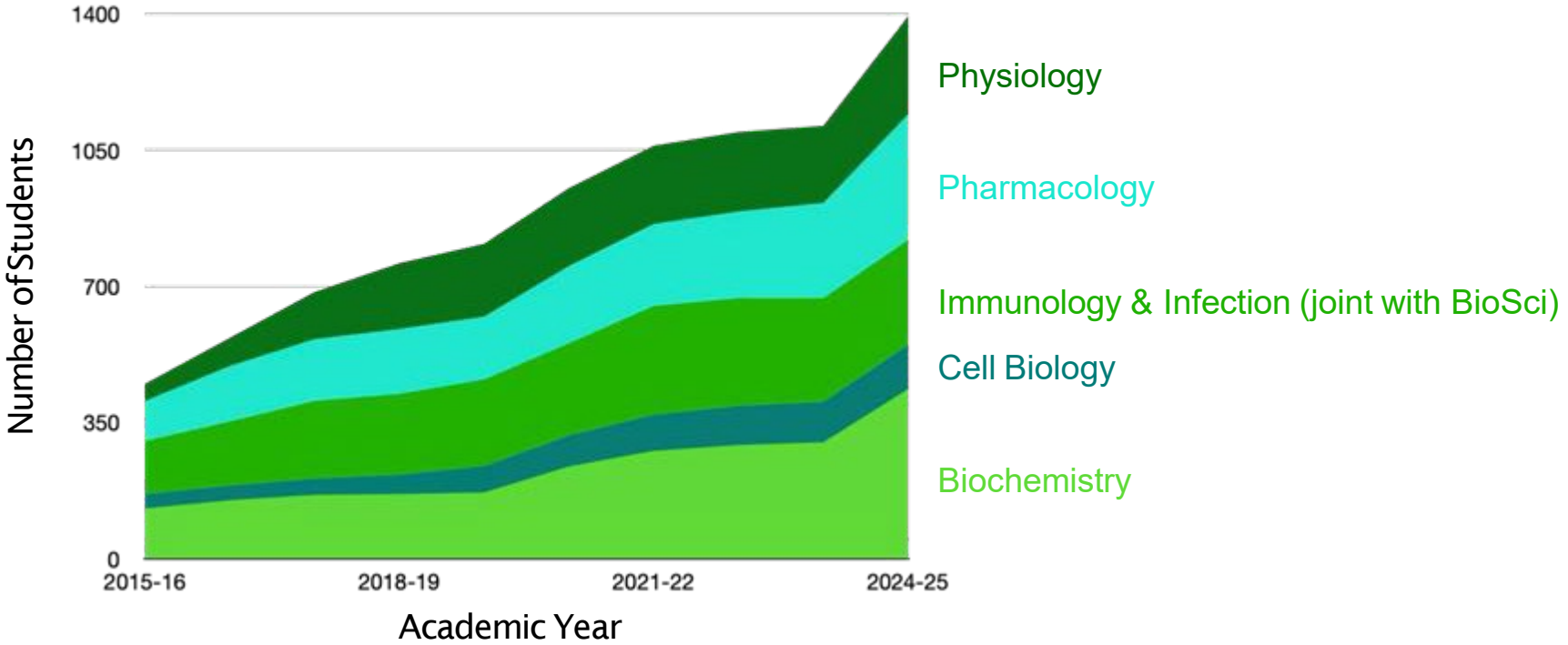
Service Teaching: Reflects the number of students enrolled in programs in Faculties different from the faculty teaching the courses (e.g. students in FoS Programs taking courses taught by FoMD faculty)

FoMD courses: Biomedical depts only
FoS courses: Biological Sciences and Chemistry only

❖<u>of Faculty</u>
FoMD Biomedical: 67
FoS BioSci: 49
FoS Chem: 34

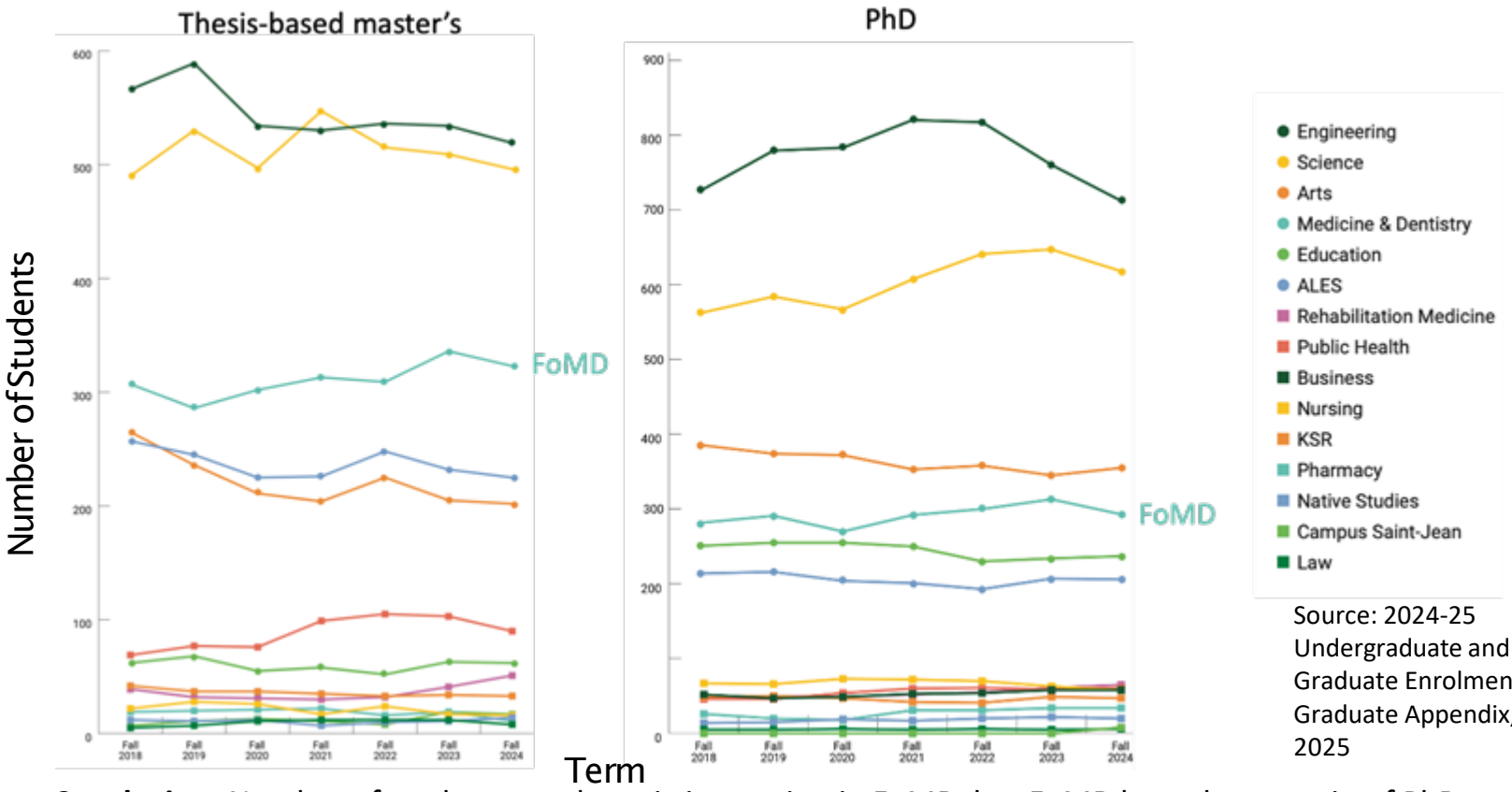
Conclusion: FoMD biomedical departments undertake a substantial amount of service teaching to students enrolled in programs outside of the FoMD. Student numbers have increased from a low of 5178 in 2016-17 to 7214 in 2024-25. (Data source: UAlberta Institutional Data and Analytics Tableau Acorn)

Students Enrolled in Programs in FoMD Biomedical Departments



Conclusion: Enrollment (Fall headcount) in undergraduate science programs in FoMD biomedical departments has grown substantially over the past decade while faculty numbers have decreased. Note that the Neuroscience program is not included since this is administered by the Faculty of Science and taught by instructors from multiple Faculties. (Data source UA Institutional Data and Analysis Acorn Tableau)

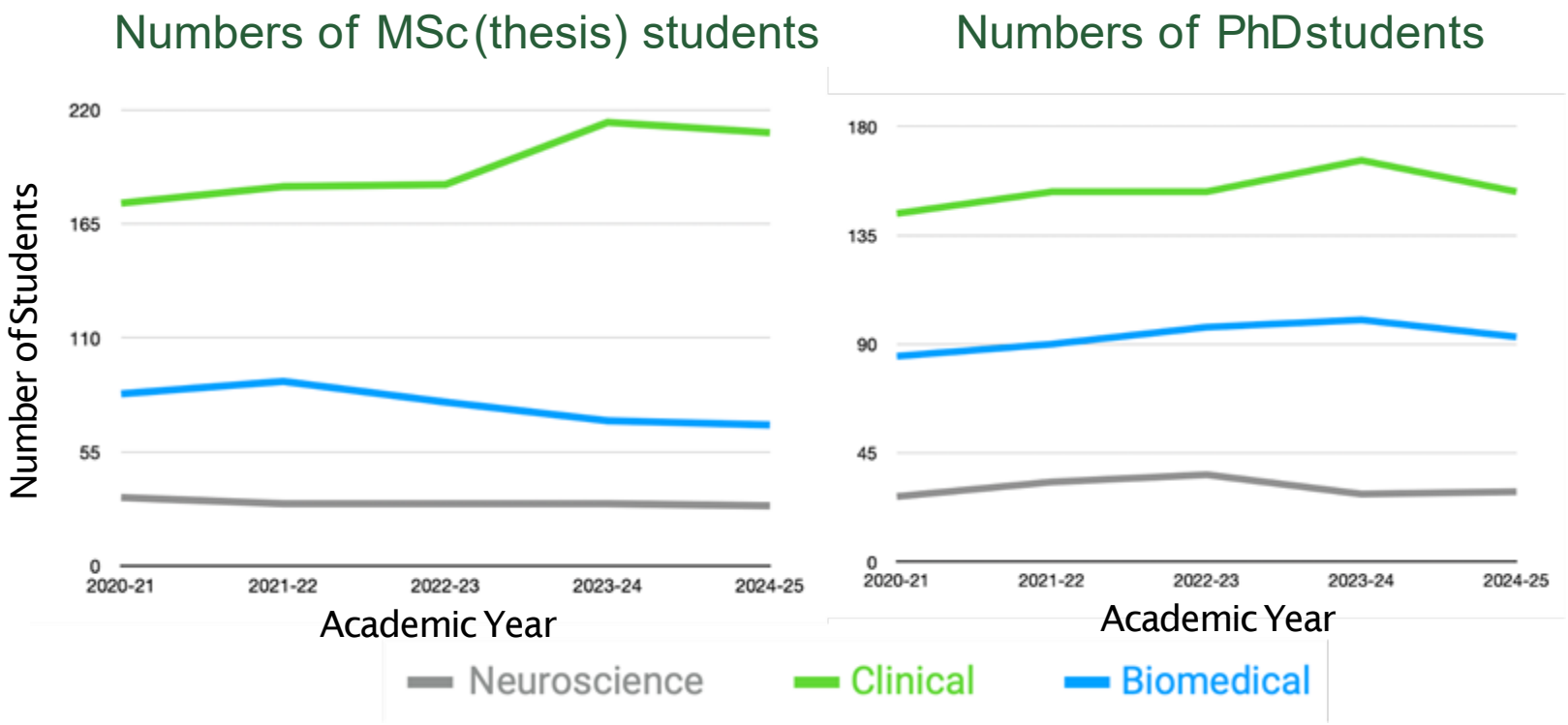
Graduate Student Numbers at U of A Stratified by Faculty



Source: 2024-25 Undergraduate and Graduate Enrolment Report, Graduate Appendix, Jan 2025

Conclusion: Number of graduate students is increasing in FoMD, but FoMD has a lower ratio of PhD to MSc students than other Faculties at the U of A.

Numbers of MSc and PhD Students Enrolled in Clinical, Biomedical, and Interdepartmental (Neuroscience) Programs



Conclusion: Most of the growth is in MSc students in clinical departments but biomedical departments have more PhD than MSc students. (Data source: UA Institutional Data and Analysis Tableau Acorn)

Outline

1. Departmental Structure (UofA / U15)
2. Teaching
3. Research
4. **Environment**

National Survey Results Summary: Structural Parameters that Contribute to Success

Sources: Survey sent to U15 universities (respondents: Ottawa, Manitoba, Montréal, Dalhousie, Calgary, Saskatchewan, McMaster, Sherbrooke, Western, excludes UofA) + web review of 1,600 websites (U15)

Three prominent **structural parameters appear to significantly contribute to the success** of departments, along with justifications based on the provided responses:

1. **Efficient and Dedicated Support Systems:** This encompasses both administrative and technical support. Several respondents highlighted the importance of skilled administrative teams for smooth operations (finance, HR, curriculum, student support), dedicated financial staff for grant management, and access to research coordinators for grant applications. Furthermore, the presence of technical staff and core platforms is seen as essential for facilitating innovative research. These support systems alleviate the burden on faculty, allowing th em to focus more on research and teaching.

2. **Physical Proximity and Collaborative Spaces:** The clustering of department members, offices, and labs within the same building or on the main campus was frequently mentioned as a crucial factor. This spatial localization fosters collaboration, facilitates the sharing of resources (equipment, technology, and ideas), and contributes to a stronger sense of departmental cohesion and community. The developme nt of shared spaces and common governing structures further enhances this collaborative environment.

3. **Strategic Resource Management and Sharing:** A strong commitment to sharing resources, whether physical infrastructure, equipment, or even human resources (like faculty with dedicated teaching roles), appears to be a significant contributor to success. This approach maximizes the utilization of available resources, promotes efficiency, and allows departments to support a wider range of research acti vities and accommodate diverse needs without being solely dependent on individual funding or seniority.

National Survey Results Summary: Structural Parameters that are Challenges to Success

Sources: Survey sent to U15 universities (respondents: Ottawa, Manitoba, Montréal, Dalhousie, Calgary, Saskatchewan, McMaster, Sherbrooke, Western, - excludes UA) + web review of 1,600 websites (U15)

Synthesis of the three most prominent structural parameters that present challenges to success:

1. **Limitations in Space and Infrastructure:** Several responses highlight challenges related to insufficient space for growth, fragmented locations hindering collaboration, and aging or underfunded core infrastructure and equipment. These limitations directly impede research capacity, faculty recruitment, and the ability to foster a cohesive and modern research environment.

2. **Inadequate and Centralized Resource Allocation:** A recurring challenge is the perceived lack of sufficient institutional funding at the departmental level and a centralized budget model that can hinder strategic development and innovation. Departments express concerns about limited autonomy in resource allocation, difficulties in supporting core platforms, and an inability to align resources with revenue generation or research intensity.

3. **Administrative Burden and Lack of Strategic Support:** Many respondents point to the increasing burden of administrative tasks and paperwork, which detracts from research and teaching activities. Additionally, a lack of clear institutional vision, strategic resource allocation, and consistent support for faculty development and recruitment are seen as significant impediments to departmental growth and long-term success.

National Survey Results Summary: Structural Parameters that Contribute to Success

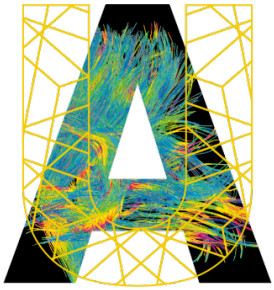
Sources: Survey sent to U15 universities (respondents: Ottawa, Manitoba, Montréal, Dalhousie, Calgary, Saskatchewan, McMaster, Sherbrooke, Western, -excludes UA) + web review of 1,600 websites (U15)

Addressing Key Factors for Departmental Advancement

- **Prioritized Structural Improvement: Reduce Administrative Burden.** Overwhelming paperwork and administrative tasks are a top concern, significantly hindering faculty time for research and teaching. Streamlining processes and increasing support are crucial for boosting productivity and morale.

- **Critical Environmental Factors for Thriving:**
  - **Reliable Funding:** Consistent grant support and strategic institutional investment in research are essential.
  - **Collaborative Culture:** An environment that encourages interdisciplinary work and reduces bureaucratic hurdles is vital.
  - **Infrastructure Renewal:** Mechanisms for maintaining and upgrading research equipment are necessary for staying competitive.

Key Takeaway: By prioritizing the reduction of administrative burdens and fostering a supportive environment characterized by stable funding, collaboration, and infrastructure investment, the department can significantly enhance its success and growth.



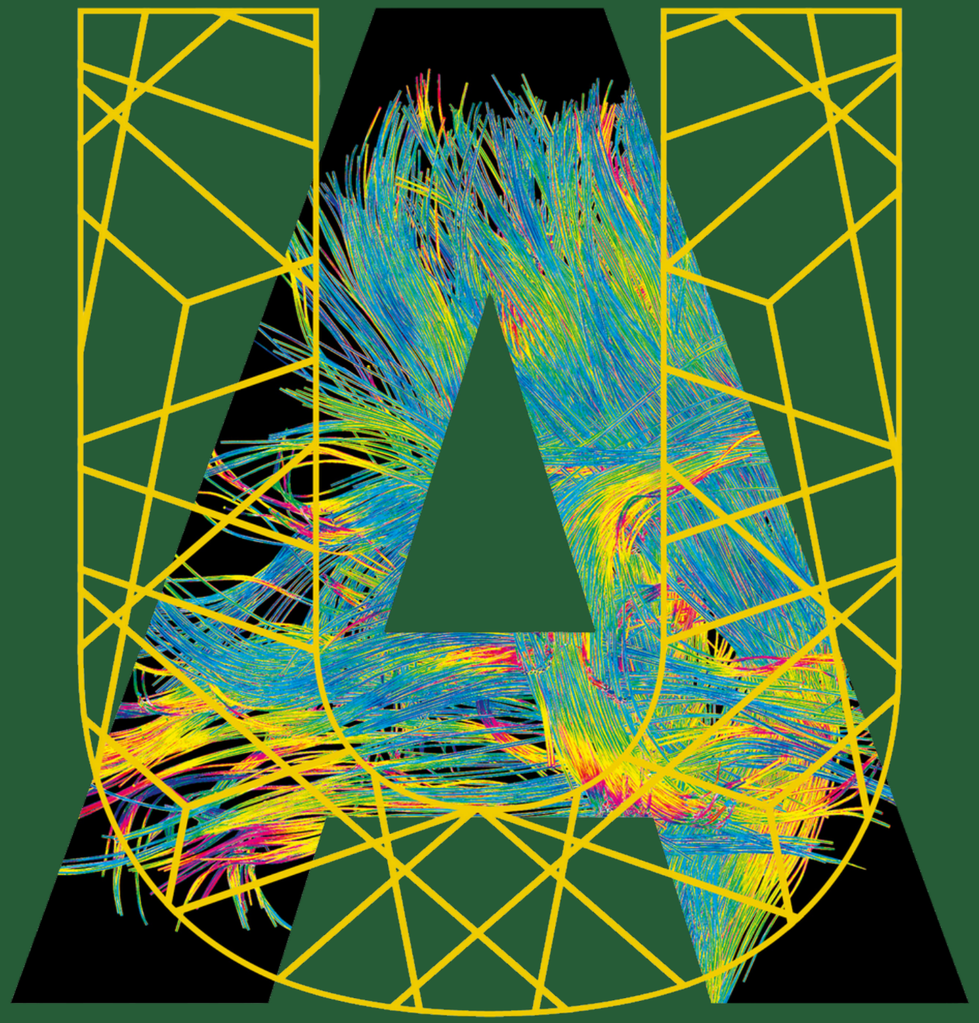
Biomedical Sciences Review Report

Appendix F.

Community Engagement Plan

FoMD Biomedical Science Review

Community Engagement Plan



UNIVERSITY OF ALBERTA

Agenda

- Deliverables
- Goals
- Audiences
- Risks & considerations
- Key messages
- Engagement tools
- Timeline
- Discussion & questions

Sub-working group deliverables

1. **Engagement plan**
   How we'll collect input from FoMD internal stakeholders.

2. **Engagement summary**
   Highlighting key themes collected through the engagement process.

Goals

- Identify the **best methods** to gather input from FoMD faculty, staff, and students.
- Ensure the FoMD community **feels heard, included and informed** in the review process.
- Ensure the FoMD community is **aware of how they can support the review process and provide input.**
- Clearly **communicate the purpose** of the review and **potential to benefit** the FoMD community and the University.
- **Empower FoMD community members and leaders with key messaging** about the review to accurately answer questions, address concerns and misinformation, and champion recommendations.

Audiences

- Faculty
- Researchers (including graduate students, postdoctoral fellows and technical staff)
- Administrative & Support Staff
- Department Chairs, Directors & Associate Chairs
- Institute Directors, Associate Directors & Leadership
- Undergraduate and graduate Directors
- FoMD Leadership
- Current Students (undergraduate)
- Core services management
- U of A Postdoctoral Fellows Association

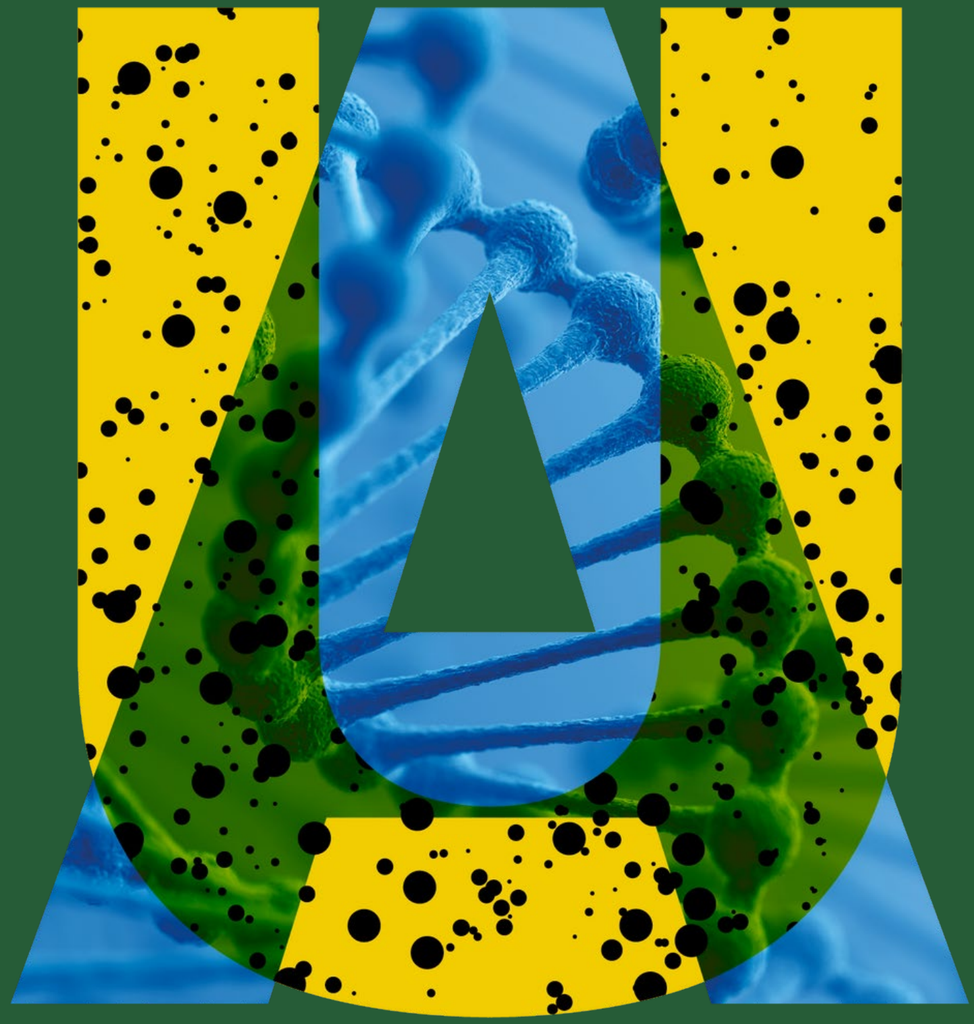
Risks & Considerations

Low Engagement

Students, staff and faculty across the FoMD are extremely busy. There is already a lot of meeting, event and email noise to compete with. We will need to be clear on what the incentive is for participation, and offer multiple engagement channels.

Perceptions, Resistance to Change & Change Fatigue

There is a deeply rooted narrative and anxiety among staff and faculty about the review. We need to facilitate open dialogue, provide evidence-based rationale, and collaborate with engagement champions.



Key Messages

Primary

The success of biomedical science is critical

FoMD acknowledges the important role of sciences for our shared academic and research missions.

FoMD is taking a proactive approach

This review will prepare us to adapt to evolving funding, technology, research and education landscapes.

A review is in progress

The FoMD is undertaking a review of the environment of biomedical science units to understand how we can strengthen adaptability and resilience of research and education. The review has no predetermined results and recommendations will be based on the information collected.

Get involved

Your insights about structures, challenges, successes, and opportunities in biomedical sciences research, education and service are necessary and appreciated to inform the final recommendations provided to the Dean.

Key Messages

Secondary

Your peers are leading the review

The biomedical science working group is made up of 19 FoMD volunteer staff, students, faculty, and researchers and is initiatied by the Faculty.

Learn more about the review process

The working group is guiding internal and external consultations and providing ongoing updates about its findings throughout the year. Using the data gathered, they will bring forward a final summary and recommendations to the Dean in fall 2025.

What do we need to know?

5 Areas of Exploration

- Research Productivity & Funding
- Academic Programs & Curriculum
- Operational Efficiency & Infrastructure
- Faculty & Staff Satisfaction and Developments
- Student Experience & Support

Insight Collection

Surveys

One survey sent to each audience group:

- Faculty - notanonymous
- Researchers (including graduate students, postdoctoral fellows and technical staff)
- Administrative & SupportStaff
- Department & Institute Leadership: Chairs, Directors, Associate Chairs,etc.

Focus Groups/Interviews

- Two events held for each audience group
- Maximum 20 people in attendance
- Develop a guide for conducting focus group discussion

Awareness Tools

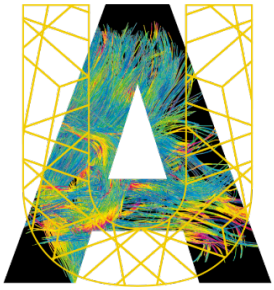
- Town Hall Meetings: April, June, Oct
- Chair ongoing meetings - add as standing item on agenda
- Institute Directors Steering meetings - add as standing item on agenda
- Biomedical Science Review Webpage
- Newsletters (Dean's Message, FoMD Update, Research Bulletin, Dept Newsletters)
- Individual Emails to faculty, staff and student lists
- Posters

Timeline

March 21	Present plan to BSRWG
Mar 31	Incorporate feedback
April 1 - 11	Prepare materials (surveys, focus groups agendas, invites, etc.)
April 14 - May 15	Deploy engagements tools
May 30	Leadership Retreat
June 2 - 13	Prepare engagement summary
Sept/Oct	Town Hall

Leading with Purpose.

UNIVERSITY OF ALBERTA



Biomedical Sciences Review Report

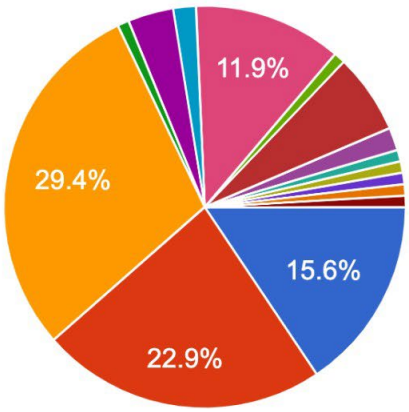
Appendix G.

Survey Respondent Characteristics

FoMD Biomedical Sciences Review Survey Respondent Summary

Please select the primary category you fall into:

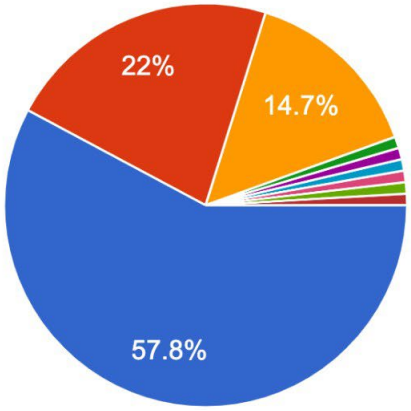
109 responses



- Faculty member for fewer than 10 years
- Faculty member for 10-20 years
- Faculty member for more than 20 years
- Academic teaching staff
- Research associate
- Technical staff
- Support staff
- Undergraduate student
- Graduate student
- Postdoctoral fellow
- Clinical Academic Colleague
- Alberta Cell Therapy Manufacturing
- research manager
- Faculty leadership
- FSO
- MAPS

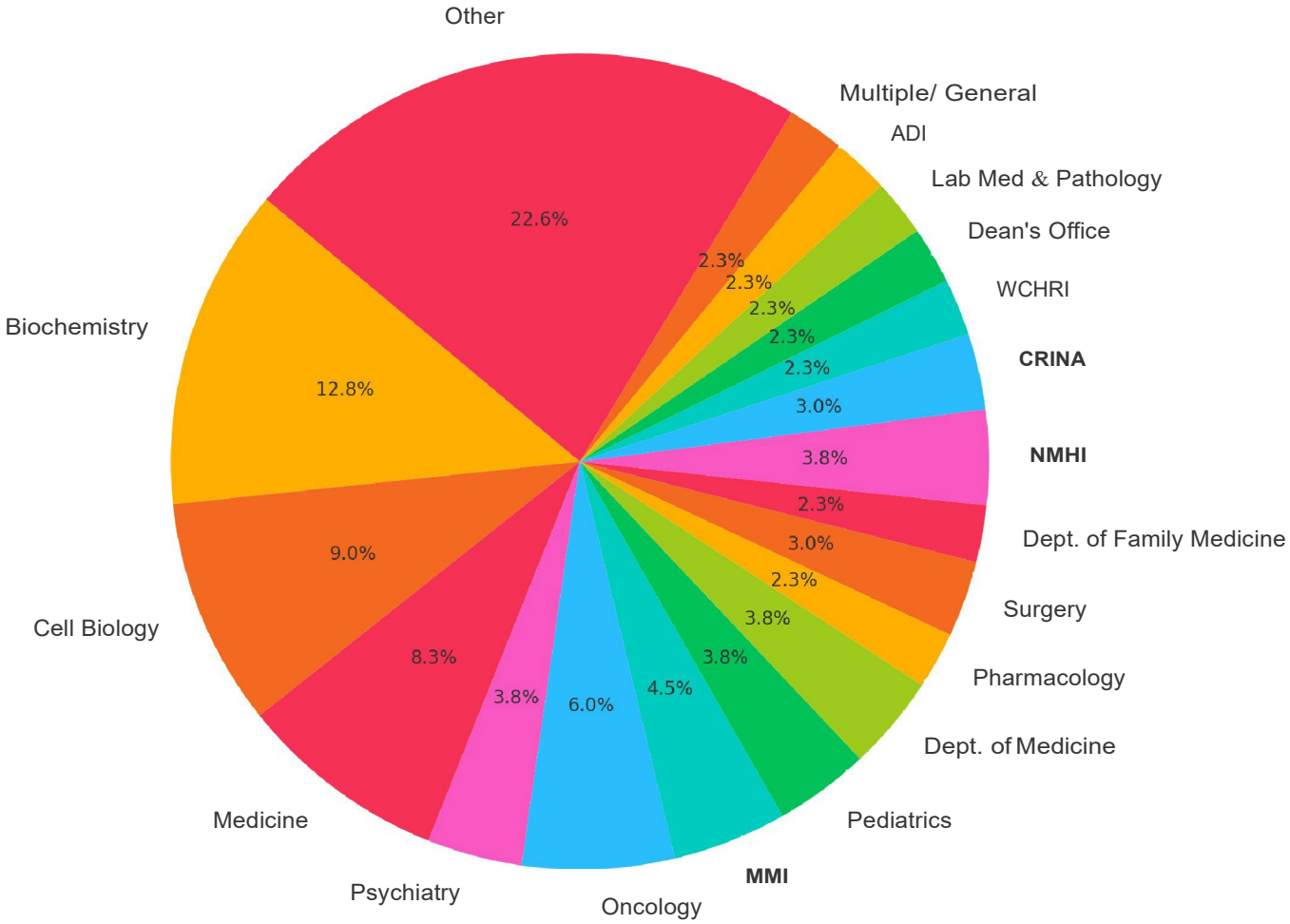
Please select the discipline you primarily work/study in:

109 responses



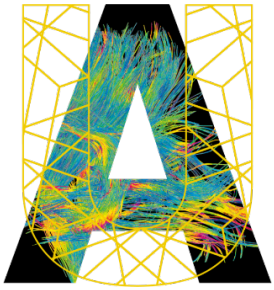
- Biomedical sciences (pillar 1)
- Clinical sciences (pillar 2)
- Health services (pillar 3)
- Public health (pillar 4)
- Artificial Intelligence applications to clinical medicine
- split of pillars 2-3
- Health professions education
- Pillars 2 and 3
- Administrative support

Affiliation Distribution by Program/Department/Institute



Categories placed under "Other" (less than 3 respondents):

Family Medicine	2
Neurology	1
Emergency Medicine	1
Radiology	1
Medical Genetics	2
Physiology	2
Dentistry	2
Reproductive Sciences	2
CVRI / CVC	2
iSMART Institute	1
ACURE	1
ARC	1
Computing Science / Science	1
Ob/Gyn	1
Advanced Cell Exploration Core	1
Flow CytometryCore	1
BSAT	1
Training Program	1
ACTM (Alberta Cell Therapy Manufacturing)	2
CEGIIR	1
BOMRU	1



Biomedical Sciences Review Report

Appendix H.

Survey Data

Biomedical Sciences Review - Raw Survey Responses

What current aspects of biomedical sciences research in the FoMD are working well and important for future success?

- Translational opportunities
- Vaccine development, oncology research, neurodegenerative disease research, and public health/medical research
- biomedical science (basic) department community (small but together)
- Basic biomedical science research
- Unsure
- The expertise and dedication of our Researchers
- Support from the cores
- Core facilities
- I don't know
- Investment in core facilities, inc. microscopy, flow core, ACE and animal services
- Some excellent researchers, rapidly growing strong programs in physiology, pharmacology
- The hires in the last 10 years have been generally excellent
- Collaborations between research groups throughout the Faculty and across campus.
- Cell Biology as a department is functioning well
- Department of medicine research including neurobiology, pharmacology, and genetics
- strong, well connected group of biomedical faculty. Existing cores work well. Institutes help focus strengths and collaborations. We our biomedical faculty is fairly well connected to clinical faculty (both in proximity to the hospitals and engagement through institutes). This is a relatively rare scenario in Canada and could be emphasized more.
- Core facilities are doing well, but there is always room for improvement. The basic science departments have their own programs (e.g. undergrad and graduate students), which is great, and making them more uniform is also a good thing.
- Core facilities, collaborative efforts
- Core facilities have helped fill gap of accessibility to research tools
- high quality researchers with high standards for the graduate students resulting in impactful research
- Good interaction with hospital foundations
- translational research e.g. immunology, cardiology, surgical related biomed research
- The grouping of colleagues in departments is important for future success. The department provide for core expertise and focus on needs that is required for

success. Also, the department structure supports a network of people for education (both undergraduate and graduate) and facilitates research.

- Basic research is progressing well, even though funding support is insufficient.
- Climate change and health, precision health
- All AI applications to accessible data (e.g., IBD, Healthlink)
- My department has a strong culture of reserach and teaching excellence.
- Collegial strength of the individual biomedical science departments; Continued quality of research and teaching in these departments in spite of chronic Canadian underinvestment in scientific research
- Not sure
- 1. CIHR funded PIs tend to be adept at finding collaborators in different Departments/Faculties 2. Most lab buildings are reasonable modern
- Presence of the core facilities are esential and have excellent people running them with high technical skills that are required to run the machines we have in FoMD. Collegiality and Research Excellence in my adjunct department (Cell Biology) is supportive in terms of developing ideas for grants, providing strong training programs, stimulating new ideas for projects. Research courses for undergraduates are important for training and recruitment of students. Provision of Bridge Funding through Institutes or Office of Research are important to help maintain a program to get the next competition to be successful in obtaining data to get a grant. Internal OoR review process on grants is essential and works well. Also through Institutes.
- The process of grant review (including internal review) is working well
- Core facilities are mostly working well. CRINA research institute is a strong supporter of cancer researchers--it functions well both for engagement of the cancer research community and as advocates for funds.
- Pandemic preparedness - neuroscience - ECR funding success
- 1. Graduate student support: It is great that we currently have individuals directly looking after our graduate students, ensuring their stipends, committees etc are good - it is critical that someone helps PIs look after the admin aspects of graduate students as we focus on the training and lab aspects 2. The institutes and seminars such as the Immmunet seminars provide opportunities for researchers in FoMD to share their research, provide travel awards etc 3. Having a chair that can unite and bring forward the needs of researchers seems essential, as there seems limited other ways "walk needs up the chain". Therefore the chair provides at least a strategy to try and represent the researchers research, admin and teaching needs. In other words - preserving (and ideally even expanding) roles like the chair that are directly responsible for listening to- and responding to- researcher needs. 4. My department (MMI) continues to offer direct support. For example, Leanne Van-dyke is great for managing our finances, Tabitha for graduate student, Sherri? for undergraduate teaching etc. We should not remove such individuals - who are directly accountable to researchers. If such individuals are replaced by higher admin that are not directly accountable to the researchers, then this will continue to add more admin burden on the researchers.

- Don't know.
- Some core facilities are excellent such as Flow cytometry and cell imaging. The visiting speaker fund is important but under funded. Biochemisty stores is an asset. Graduate students are an asset
- strong core facilities; visiting speaker fund
- na
- Core facilities. NACTRC.
- There are a few key stars - diabetes, virology are stand outs with high ratings in other areas
- Committed and enthusiastic researchers, availability of patients etc.
- The ability to combine clinical and research into my position
- The good working relationship between basic and clinical scientists within some of the departments.
- Molecular Imaging
- Labs that are independently funded either by CIHR grants or other equivalents, newer start-up labs with CRC funding and equivalent
- research in rehabilitation mechanisms and techniques
- Core facilities are the biggest strength
- Privatly owner, invested biomedical companies are working well, becaue there is pressure to work.
- The FoMD is an excellent example of a late-20th Century School of Medicine in its administration, organization, and execution of its activities (teaching, research, service, etc.).
- Biomedical research, culture of excellence, emphasis on success, success in grant capture
- Productivity, innovative/ responsive
- Collaboration within the department and between departments biomedical researchers share a comradery Good variety of research going on in FOMD Centres of excellence in some areas of research (diabetes, pandemic preparedness, cryo-em, car-T, etc)
- Visiting speaker fund - great and essential program; requires more money Biochem store is great and essential research fair was very useful and informative Expensive equipments (CFI funded) are not always put to good use (especially those not in core facilities); more efforts and funding to promote and enable usage is needed administrative staff should decrease in proportion to academic staff core facilities - some fantastic such as flow cytometry and cell imaging; others not so much (transgenic core?)
- Core facilities, Grant writing workshops, Research days, Graduate student financial support/scholarships/awards
- Specializations and focuses of research and graduate programs
- Strong departments in basic biomedical sciences with excellenf cohort of faculty, excellent reserarch history past and present as well as well integrated research and teaching programs (including undergraduate and graduate).

- Scientific quality of the course and program
- mostly all of them based on their scientific profiles
- The cores with which I interact (Sequencing) are quite effective. My lab environment is well managed. Health and Safety is easy to manage and the HSE team is communicative and helpful.
- We have some strong core facilities (e.g. imaging, flow) that provide immense support for research at reasonable cost. The Department of Cell Biology is a strong support for basic scientists.
- training for grad students and residents is good.
- Love the access to experiential learning for Honours Undergraduate students doing a thesis project. Expands the URI initiatives.
- Sharing resources and collaborating
- Cores are well managed
- U of A is known for its strength in biomedical research (ie fundamental research) and attracts strong students at undergrad and grad levels drawn to these strong programs. Cell biology and MMI are particular areas of strength and punch above their weight in terms of grant capture
- The core facilities are a success story, where access and maintenance are centralized and the latest equipment is available.
- None
- From what I understand with my limited understand of the subject, I believe that the current aspect is good.
- teaching
- Clinical Research
- Preclinical radiochemistry research
- Integrated multi-disciplinary research groups within the current Departmental and Institute structure and the training programs affiliated with these
- Some of the core services work well, and it is very important to have central cores to support research in the individual labs
- Fundamental research plays an essential role in FoMD by advancing biomedical discoveries and healthcare, supporting evidence-based practices, and contributing to education and critical thinking. It provides an environment of discovery and innovation. It helps faculty, physicians, and students develop the skills needed to analyze emerging evidence, understand research methodologies, and ultimately become informed and effective biomedical professionals.
- The access to the library database (PUBMED) is important. At times this can be challenging to access but is important.
- Neuroscience
- Patient databases
- Basic and applied research both need to be a focus
- Instrumentation to the core facilities and efforts to keep them on track with current fields is decent and getting better.
- 1. Core facilities 2. Biochemistry stores 3. Visiting speaker fund 4. FARM database

- Access to research grants as well as assigned research teams and research students as needed.
- Teaching the basics
- small departments that work with large institutes
- We have a core of strong researchers in varying disciplines all of whom are bringing significant resources to the faculty.
- Innovative research; sustained funding.
- Administrative support (but definitely needs more support)

What critical changes are needed to support future success of biomedical sciences research in the FoMD?

- Increase in knowledge exchange activity to bring additional funding into the area
- Integration with clinical researchers
- Utilizing lab and office space. There is many many labs and offices that are empty, not being used, with many other labs needing this space and not being allowed to use it. This is because of tenured professors that do not use their space anymore but won't give it up. This results in the university paying money for new spaces when current spaces aren't even being used. Taking even more money away from actual research and education.
- Increased support for graduate studies, more opportunities for research development outside of graduate degrees
- engage Pillar I researchers in clinical departments with basic departments (all should have adjunct appointment in basic science departments), eliminate inter-departmental competition for bodies, promote collaborations, establish critical size for better collaborations and student experience (minimum 40-50 faculty/department), engage institutes,
- AI in health care
- Unsure
- Support systems such as HR, payroll, contracts management seem overwhelmed. Services are slow - by the time we are able to hire personel, and get contracts signed the grant has almost expired and we are scrambling to spend the money or complete the project. It becomes stressful and inefficient.
- Change of leadership
- Improved access to Alberta Health and Alberta Health Services datasets including ConnectCare for the purposes of clinical research.
- I regard the current departmental structure as obsolete and potentially counterproductive. With the anticipated hiring freeze and contraction in the number of biomedical faculty members in the next few years, I believe that merging departments, graduate and undergraduate programs could have several advantages. 1) Merging teaching programs [e.g. undergraduate programs in biomedical sciences (with specializations) or cell biology, physiology and pharmacology (with specialization) or similar, just to give you an idea] would reduce pressure on teaching

while allowing for the creation of more comprehensive and overall better program/s for the students. I understand any change in this direction would require an initial investment of time and resources, as well as Government approval, but I strongly believe it would be worth it in the long term. 2) Merging departments (into one or a few) could revitalize the biomedical community, potentially promoting new initiatives and collaborations. Many biomedical sciences department have shrunk and aged to an extent that impact departmental life and the ideation/implementation of new initiatives, and no longer justifies their existence as standalone units. 3) Merging graduate programs (which might happen whether departments are also merged or not) would have a hugely beneficial impact on our student population. Current departmental programs are too small and students risk feeling isolated, among other negative impacts. I strongly believe that maintaining the status quo will damage our research community.

- Fair employment of candidates based on merit not skin color, gender or race. If you want to be the best , aim for the best not the ones who meet DEI requirements. It's very simple. I see definitely a big quality drop in younger generation.
- Expansion of FoMD funding opportunities for graduate students in the biomedical sciences (even partial funding goes a long way). Expansion of bridge funding opportunities to help biomedical scientists maintain their research program while applying for CIHR, etc.
- Better support for teaching (!) AND research, not just ATS's which are not a long term solution
- Cores are underfunded, mouse facilities are becoming too expensive (per diem), ACE core closes too early for critical experiments, Institutes lack critical resources, Philanthropy between institutes/FOMD/UHF creates competition and does not foster instututional collaboration, not enough new faculty hires
- Increased support of Core Facilities and ensuring they remain modernized.
- Do NOT proceed with merging FoMD departments
- More clinical primary care and outcomes focused research
- Decreasing faculty numbers (new hires not keeping pace with retirement) is the number one threat to our faculty and university ranking. With the acknowledgement of the tight fiscal situation we are in due to provincial government cuts, the faculty, university AND institutes should have FUNDRAISING for biomedical sciences as their number one priority. I would like to see administration champion the importance of biomedical research more publicly and 'loudly'. More support for research amongst MDs and MD/PHDs. While I think the integration between clinical and biomedical faculty pretty good, the limiting factor is MD clinical duties and not having enough time to engage in research collaborations.
- For biomedical faculty members (no MD), a better equalization of teaching load is needed across the faculty.
- More collaboration. Direct research support for clinicians who could have a immediate impact on healthcare delivery. In-house methodology experts who can help with study design. Statistics access that is clear. Less dependence on grants alone for research support.

- We must have more PhD trained faculty members recruited to our faculty because student enrollment is predicted to substantially increase in the next 5 years.
- Funding /Salary support for basic and translational research
- Faculty retention and recruitment of new ECRs required to refresh research productivity and impact
- Better sharing of resources/equipment/space also need to keep the skilled support staff that can ensure safety is maintained, students are supported and institutional knowledge is maintained so all research/work/studying can be done safely/smoothly/without disruptions
- Stronger relationship with clinical partners to develop meaningful research questions and sustainable research protocols including project design, participant recruitment, feedback of findings
- Change the way FoMD is administrated. What is the college doing anyways? At this point we have so many administrators that we have to have an administrator route emails to the correct person. We have research administrators (research facilitators???) asking us what their jobs are. They seem to most just sit in an office, don't talk to anyone and once in a while go to meetings.
- There is a gap between clinicians and basic scientists. Although clinicians are making an effort, they often lack a deep understanding of the science, which can make their input less relevant or focused from the perspective of basic researchers.
- More collaborative supports and access to data for researchers. For example, the Sick Kids model has centralized supports that promote the success of clinical researchers and their ability to share clinical expertise and patient access with primary researchers, while primary researchers are supported to share their methodologic and analytic skills in teh clinical domain.
- Easier access to AHS data.
- Additional resources need to be provided to biomedical science departments in terms of ability to renew faculty.
- Since most extramural university science research funding in Canada emanates from the federal government, we need Canada to substantially increase its investment in scientific research as a percentage of one of the top ten highest GDP's in the world.
- Too bureaucratic
- 1. A Faculty where research is administered on an anatomical basis (literally according to different bits of the body) will be less successful than one where PIs are clustered thematically. Grouping by: neuroscience, molecular medicine etc would generate valuable synergies that are lost with the existing 18 silos. 2. Funds are not allocated equitably - this applies to endowments, endowed chairs and even funding from clinical practice plans. Competitive grant competitions serve to direct limited funding to the most exciting and novel ideas, with less successful ones going unsupported. Too many parts of FoMD do the opposite. This results in small unproductive enterprises dependent on their private funding source. This is not a recipe for success - it would be better to ensure that all funding is allocated in a competitive manner - this would lay the foundations for future success. 3. Being

Chair of a clinical Department is immensely challenging, some don't have PhDs, and with the odd honorable exception, most have not recently written a grant. Are such time-challenged individuals best placed to direct fundamental science, or well-positioned to appropriately influence local funding decisions. Many institutions switched to having Institute directors fulfill this role, with good effect.

- Insitututes need to be more engaged in driving reserach by brining in funds to support research. -Institutes should not be running education programs. This is better done by the Departments. -to say Institutes are drivers of research this means that they fund raise to bring in money which can support grant competitions, bridge funding, core facilities. -Needs to be a clear agreement with Faculty of Science to ensure can received revenue from courses taught in FoMD for Science. -Essential to RETAIN and GROW Core facilities and SUPPORT the excellent people runnign facilties who are highly trained and should be recognized for their expertise (FSO, etc). -Core facilites only run well when engaged and highly trained personel are present. -Start new cores in upcoming (not 10 years ago) reserach areas like Stem Cells/ Orgganoids/Regenerative Medicine. This would also draw in a lot of interest from outside the University (donations)
- Change the culture so that bullying and harassment are not tolerated, and that those who engage in this behaviour are no longer protected and promoted. Restorative justice should be available.
- 1) less administration related to some smaller grants -e.g. the need for RES for PDF fellowships and studentships. 2) ensure areas of excellence continue to be supported with fundamental infrastructure 3) ensure research areas of excellence are maintained through recruitment
- I feel the overall research community is somewhat fractured. There are groups (institutes, departments, researchers/teaching) that are doing well individually. But I feel that these separate groups are competing with each other. It's almost as if each group wants to be seen as better than the other. There are clear rewards for metrics of excellence for individual groups, but no clear incentives for groups to work together and synergize expertise. An overarching objective/goal seems to be missing that can unite biomedical scientists.
- ECRs have been disproportionately successful in funding applications so more ECR recruitment is essential - we need more sustainable support for graduate student funding (9-12 months is not long enough) - administrative support for non-biomedical science research support will allow researchers to apply to the next grant, instead of reconciling credit cards - if institutes are to be drivers/engines of research they need to be resourced appropriately
- The following are very general suggestions , since I don't know which specific aspects might be changing. When there are specific areas, we can give specific suggestions as well. 1. My key suggestion is to create a structure that returns accountability to researchers. In other words - they should be available for directly assist researchers, to guarantee accountability in terms of response and timing, etc - to researchers. The challenge is that if their accountability is to something else, there is a loss of efficiency and increase to researcher wasted time. 2. Admin - there needs

to be a system to remove added administrative burden, so that forms, videos, etc don't continue to compound and grow. As an example, a way to indicate that a process is too cumbersome and have it then improve. Improving accountability of ADMs and other admin to researchers, chairs and "most-directly" to researchers that need the assistance (which was disrupted by the changes during "set"). 3. If student enrollment increases then we need a strategy to fulfil this need that does not add more teaching to researchers that would decrease research and grant capture success, since one cannot ask for both to increase at the same time given time limitations. Here is Chatgpt analysis of possibilities: 1. Hire More Teaching-Only Faculty (e.g., Lecturers or Instructors) Cost per instructor: ~$90,000/year (incl. benefits) Students per instructor/year: ~200 (5 courses of 40 students) Instructors needed: 100 Total cost: ~$9M/year Benefit: Covers all 20,000 students' course needs (if each takes 5–6 courses/year). Research faculty remain focused on grants. Preserves teaching quality and academic integrity. Net revenue retained: $140M - $9M = $131M Trade-offs: Less prestige than research-active faculty. Potential faculty divide. 2. Increase Class Sizes with Tech + TA Support Additional TAs required: ~1 TA per 100 students per course. Cost per TA (stipend + tuition offset): ~$20,000/year TAs needed for 20,000 students: ~400 Cost: ~$8M/year Technology (LMS, AI chatbots, grading tools): ~$2M/year Total cost: ~$10M/year Benefit: Scales easily across disciplines. Keeps research faculty in front of students with less marking/support burden. Net revenue retained: $140M - $10M = $130M Trade-offs: Student engagement may decline. Increased workload for coordination. 3. Online/Hybrid Course Expansion Development cost per course: ~$25,000 (design, recording, testing) Courses needed: 200–250 high-enrollment courses Initial cost: ~$6M (one-time) Annual maintenance + IT support: ~$1.5M Year 1 cost: ~$7.5M Following years: ~$1.5–2M Benefit: High scalability, especially for 1st- and 2nd-year students. Can serve more students without proportional increases in faculty. Net revenue retained (Year 1): $132.5M Future years: $138.5M Trade-offs: Not suitable for lab-based or highly interactive courses. Varying learning outcomes. 4. Tiered Mentorship Model (TAs, Peer Tutors, Learning Assistants) Peer tutor stipend: ~$5,000/year Graduate TA cost: ~$20,000/year Estimated coverage: 1 grad TA per 100, 1 peer tutor per 50 Total support staff needed: ~500 (mix) Total cost: ~$6–7M/year Benefit: Keeps class sizes manageable without more faculty. Improves student success and retention. Net revenue retained: ~$133–134M Trade-offs: Requires strong training and oversight. Variable quality. 5. Stackable Credentials & Microlearning Programs Startup cost: ~$2M for design and marketing Ongoing annual cost: ~$1.5M (admin, support) Revenue from non-degree learners: ~$4–6M/year initially Net revenue: Adds $2–4M beyond the $140M (Not directly serving the 20k but brings in adjacent funds) Benefit: Taps new market. Flexible and future-proof. Trade-offs: Doesn't substitute core teaching. Risk if uptake is low. 6. Curriculum Redesign for Efficiency Cost: ~$1M (one-time faculty retreat, consulting, admin) Annual savings: ~$2–3M (fewer low-enrollment electives, merged courses) Net benefit: ~$1–2M/year Benefit: Better resource use. May improve degree completion times. Trade-offs: Requires faculty buy-in. Loss of course variety. 7.

Program Expansion in High-Demand Fields Setup cost (lab space, faculty, etc.): ~$15M Ongoing cost: ~$8M/year (faculty, admin, TA support) Revenue from full seats: ~$35–40M/year Net revenue: ~$25–30M/year (if targeted right) Benefit: Strong ROI. Aligns with labor market needs. Trade-offs: Imbalanced academic offerings. May lead to oversaturation in some fields. 8. External Teaching Revenue (e.g., corporate, PD courses) Startup investment: ~$2M (platform, staffing, marketing) Annual return: ~$5–10M (depends on partnerships) Net benefit: ~$3–8M/year Benefit: Diversifies income. Engages broader community. Trade-offs: Competitive landscape. Long ramp-up time. 4. A "body" that outreaches to researchers - similar to how you are now - on a continuous basis to collect examples of challenges and suggestions for improvement. Knowing such a body exists, researchers can "collect" their ideas over time, with examples of cumbersome and useful processes - to help motivate continuous improvement. 5. If we want to increase team grant capture and more research - more supports are needed at both development and implementation stage. For example, even if researchers do succeed in these large grants - it is really hard to set sail due to limited supports administratively and the immense length of time that it takes to hire and establish. Incentivizing achieving these awards by providing guaranteed immediate help upon award achievement would remove the current disincentives. 6. Ensure that roles of "power" are filled by "movers and shakers" rather than "status quo" . We need innovation and creative solutions at this time more than ever. We need leaders that can truly capture the needs of the "whole" beyond individual ambitions. This is by no means a comment on specific current leaders; many of which are great. Just I think we need to be especially focused on ensuring the next batch are ideal to steer the changing ship.

- Graduate students are the key drivers of research output. Many researchers can no longer afford to pay graduate students a living wage. $25k (the GPS minimum for a Ph.D. student) is not a living wage. We need more funding from the university / FoMD to support internal scholarship opportunities and other graduate student funding initiatives. We are being told to increase the numbers of overseas graduate students, but the funding Departments used to have access to that could be used to cover most or all of the tuition differential has disappeared, and the size of the differential has become obscene in many cases. Our own undergraduate programs used to provide the most capable candidates to undertake graduate studies. As such, supporting undergraduate programs has a direct, positive impact on research output. However, more and more undergraduate teaching is passed off to untenured academic staff, and/or to faculty who have no expertise in the area in which they are assigned to teach, and is often viewed as an unwelcome burden that detracts from research time. Specialist Departments have become increasingly populated by faculty who are not qualified in that speciality (e.g. there are very few pharmacologists in pharmacology), simply because their research "fits" and it is assumed that they can just "pick up" the expertise required to teach, presumably by osmosis. More often than not, this does not happen, the quality of teaching has been allowed to drop, and undergraduate courses have been made less challenging to

keep students happy and make the lives of instructors easier. Ten years ago my first port of call when looking for a new graduate student would have been my Department's undergraduate program. Now, I would struggle to find an internal undergraduate candidate with the expertise and depth of knowledge that my research area requires. The failure to support undergraduate teaching programs over many years has been shortsighted, and a major failing of FoMD with respect to support of our research success.

- Cost of using core facilites is a limitation Maintaining equipment is a challenge Faculty supporting critical software to conduct research Future academic staff is limited.
- Identifying the strongest cores and ensuring the success of these cores; more money for visiting speakers
- More access to technology that improves efficiency e.g ai tools
- na
- Ethics and contract efficiency; UACT needs to be formed
- Focus in a few key areas with depth in these
- Support for building the infrastructure around successful research groups/centres etc. It is often difficult to get answers to questions, resources etc.
- Better distribution of resources.
- Renewal of basic science faculty
- Additional Funding, better employee wages and support, new avenues of advanced research pursued to make U of A competitive in the international market
- Need better grant development support.
- Better support for getting grant support
- More funding
- A culture change. The culture of the FOMD is to only celebrate success in clinical/translational research, fundamental/basic research is viewed as not worth celebrating. This sends the wrong message to the public and to funders, and makes local funding decisions biased. The long lasting contributions to society with the widest impact mostly come from fundamental science discoveries (that is why most Nobel prizes in physiology and medicine are of this type). Based on what the FOMD chooses to celebrate, one would think the opposite must be true.
- Studenst are not showing up in teh lab, most of the staff is unproductive. Research labs are constantkly empty. It is a joke how UofA operates compared to European Universities.
- A transformative change in how we view research (and training/service) is required to capture emerging trends in societal thinking and government and private support. We are currently organized by the historical development of disciplines that started around 1850-1880 (Early Modern Period) or around body parts (heart, brain, pancreas, etc.), and the emphasis is upon diseases of people in their middle years and older that cause immediate morbidity or mortality. This organizational administration of health sciences emphasizes in depth, focused approaches with increasingly narrower perspectives that discourages integrative, interdisciplinary

thinking, and collaboration. In contrast the emerging trends are those that emphasize life course health (including personalized medicine over the life course), public preventative health, gender/sex based health (e.g. comprehensive women's health), and integration/collaboration between disciplines and organs. If the FoMD wishes to continue to be a leading faculty with international recognition and solid government and private support, it needs to develop a bold, transformative vision incorporating the current trends and to think ahead of the wave to lead with tomorrow's fresh ideas. It has to inform AHS, not follow AHS.

- Graduate student financial support
- Support for infrastructure, internal financial supports. Faculty must be hired to counter the increasing pressures of teaching. Also, a departure from the model of "one size fits all" approaches that would see all departments/units be changed (e.g. the graduate programs), and instead focus on the standards that need to be (or aren't being) met, so that the needed changes could be focused on the areas that need changing, rather than pushing even successful programs to change out of a strange sense of "fairness". A review of guidelines that impose 3 years of secured funding to recruit PhD students, which limits recruitment when grants are often awarded for 5 years (someone in their 4th year of a grant will not be able to recruit for at least two years).
- Better support from FoMD for BME graduate students please
- More teaching staff hired to relieve the research faculty
- Better connections/collaborations between clinical scientists and research scientist Better support for technical staff (more funding for research technicians, research associates) more security in the research positions - research technicians don't stay because there is no job security (and pay is very poor) more administrative support for the researchers
- Under utilized equipments and core facilities should be consolidated; sharing of high end equipments should be a priority Support for seed and bridge research funding Support for graduate stipend
- Some small levels (10,000-15,000/year) of base funding (generally available on -competitive basis) for maintaining research operation while basic science faculty are applying for competitive funding.
- Better administrative supports for various programs, which have been lost during some of the recent consolidation efforts. These efforts to consolidate programs and departments were advertised as helping to increase the amount of admin support/personnel available but in reality just led to having less personnel responsible for even more people/programs than before the changes.
- Renewal of faculty in the basic science departments - this is critical to the overall success of science within FOMD for a variety of resaons includingf concentration of researchers and the overalp between scientific research and science education. Better communication/interaction between departmental structures/faculty within the basic sciences and faculty in primarily clinical environments.
- Increase university budgeted faculty to teach in particular on the current, Medical Physics Graduate Program running through Oncology Department.

- More and better hiring of junior faculty and attracting higher-ranked international researchers again for a sustainable future
- The overall culture in the basic biomedical sciences is quite toxic. Not sure what can be done to improve it, but the stories span different investigators, departments, and disciplines. My home Department is excellent, but it is a Clinical one, with a few biomedical researchers.
- More support for infrastructure and personnel.
- More clinical and basic science interaction. There is very little interest in translational science, and the faculty suffers from it.
- Experiential learning for Honours Undergraduate students doing a thesis project - this needs to expand to include more clinical research opportunities (especially as many students are saying they cannot find basic research supervisors, but as well this limits opportunities for them).
- Improve shared resources (e.g. service cores, access to equipment)
- Cores need continued and increased funding over time to maintain excellence. Mechanisms to retain staff must be put in place, such as changes to the rather restrictive HR grid structure that may leave critical staff without a raise for 5+ years if they have reached the end of their grid level. To maintain institutional knowledge and retain expertise, the current system needs to be revised.
- More funding, succession planning, recruitment of diverse ECR faculty while encouraging senior faculty to transition to post-retirement appointments (ie to free up positions for new faculty). focus on recruiting faculty who are strong reserachers and teachers rather than relying on short-term contracts to fill teaching needs. supporting/strenghtening grad programs to attract the country's and the world's top students
- Clinical researchers are not willing to share reagents or collaborate with basic scientists. Access to samples must become mandatory or be put under control of FoMD.
- More collaborations with dentistry! We can’t be considered the black duck with medicine having much more resources than we do
- From what I understand with my limited understand of the subject, I believe that it is ideal to adjust and implement changes depending on circumstances and societal needs.
- core facility support
- Fund only studies using models with a known proven track record of translation
- Better funding opportunities for translation of preclinical to clinical research
- Better integration of scientific disciplines rather than the current Departmental silo structure.
- Interdisciplinary research that actively involves two or more labs in individual projects
- There are not enough core services with several cores being shut down or understaffed. Supporting these initiatives is important.
- We need more faculty in the basic sciences. Incorporating basic research into medical schools provides a synergistic environment for undergraduate and medical

education that is essential to preparing competent, innovative, and adaptable researchers and physicians. The University of Alberta FoMD is known worldwide for organ transplantation and diabetes research, among other areas. The foundation of this FoMD fame is "basic" research.

- The balance between research and clinical work is always challenging. The University cares more about research and little about clinical care while the health authority (AHS) cares more about clinical care and costs. This balance is always difficult.
- Operating and trainee funding
- Statistical services for free to researches, when there is no grant available.
- Recruitment of graduate students seems to be an issue. Funding for basic science labs
- Allocating more grant funding for personnel to the cores to support the instruments that are sent there is critical to keep a high level of technical support for researchers on next generation technology. Efforts are now underway to streamline grant applications and avoid duplications, but perhaps some sort of living document on incoming proposed infrastructure would be useful to know which instruments and technologies are already being planned for would be useful for researchers to have while thinking of designing their research programs.
- 1. More internal support for studentships, bridge funding and funds to cover use of core facilities 2. More support for visiting speaker fund 3. Additional support for grant writing
- Increased turn around for research ethics reviews
- Recruitment of new faculty members to replace the many, many retirees
- more support for administrative duties less downloading of work on researchers
- We need to bring them together to develop stronger HUBs of researchers that are focused on ROI based on Foresight and not on complaints and expectations.
- Augment securing funding; promote translation into clinical and commercial applications.
- Graduate student funding - funding avenues towards research staff (i.e. laboratory technicians; lab managers; animal facility staff; core facility managers)
-

What current aspects of biomedical sciences undergraduate, graduate and postdoctoral education/training are working well and important for future success?

- No opinion
- As someone who is staff but was also an undergrad and graduate student at U of A, there is lacking of aspects to ensure future success of students. Many students are ghosted by their PI's after their defense, and struggle to find work.
- The variety of research available on campus is a huge draw for international talent and retaining talent from undergraduates

- Departmental structures are outdated. UG student education can be done by faculty across multiple departments (expertise focus rather than departmental affiliation), same with GS - some programs are too small and department-focused rather research area-focused, not promoting collaborations and growth.
- Undergraduate medical education
- Unsure
- not within my perview
- Undergrad and grad are good
- The presence of clear administrative figures that help PIs and students navigating administrative issues
- Not sure
- I think all these programs are relatively strong with solid enrollment - having dedicated teaching staff helps relieve teaching effort from research intensive faculty
- Strong programs by discipline (ie students can choose physiology, biochemistry, etc)
- Strong graduate programs, good oversight by graduate advisors
- The undergraduate programs are being maintained well at current enrollment levels. This needs to be maintained for ongoing success.
- Do not merge cell biology education/training programs with other departments
- The process of graduate recruitment is fairly seamless. Institutes provide great resources for students (if they are lucky enough to be affiliated with an institute). The harmonization across programs that was recently instated greatly improved clarity around program expectations.
- The biochemistry program, cell biology program, and MMI, train highly qualified students.
- Focus on culture of training
- Awards are available for the best students, research environment is welcoming and engaging for students. We have globally recognized leaders in research on our campus and are able to foster their research efforts.
- DOM Grad Studies is working great. Improved focus on what trainees are being trained for post-graduation.
- Introduction of BSc will help bring in students which are critical to fill MSc / PhD programs Introduction of new certificate and course-based MSc has helped bringing in srudebtd
- A wide range of classes are provided, standards continue to be high ensuring student's degree's are seen as being valuable not just purchased
- Great support of summer students and several opportunities for students at different levels to present work
- grad student programs are working well, I don't really understand undergrad programs as well in terms of their rationale and mandate
- Grouping into core fields of research which is supported by the CURRENT department structure.
- U of A has a strong research history and culture that promotes trainee success
- Collaborations with Amii and Computing Science.

- Our department has a strong committment to undergradutae teaching (Cell Biology)
- Smaller programs with more flexibility, access to resources, and one on one support
- Outstanding research training opportunities for graduate students in the basic science departments is a hallmark of FoMD. Our graduates also are sought after by world class institutions.
- Excellent leadership
- Undergraduate teaching is done very well and numbers are exploding. Graduate trainig in Biomedical Departments is done well and produces highly successful students. -Graduate training in non-biomedical Departments has many issues and is not done well overall (with some exceptions of excellent students).OAW office for Biomedical is a good addition and is finally being treated equally and is essential to the overall well being of the grad students and PDFs.
- Strong training environment exists for both didactic and lab based courses in biomedical sciences
- The current initiative to take a hard and honest look at graduate student education is a very important initiative. I think this process will create a graduate student program that is more equitable and clears the space of cobwebs that have built up over the years. Identifying successful practices and removing negative procedures is most likely going to be difficult. I imagine this process will be full of difficult conversations but in the long run will help the students.
- The graduate student environment in my department is excellent
- Oh sorry I integrated education/teaching into my last answer
- Very few.
- FOMD lunch hour for summer students and research days are positives. Supprot for summer students is important. Graduate student adminstration is working well.
- Excellent quality of undergraduate and graduate students
- na
- Grad programs in DoM are exemplar
- I think there are multiple areas of failure and don’t think we have many successes currently.
- Emphasize on education and the recognition of your contribution to education.
- The basic scientists within our department play an essential role in the teaching of learners within our department.
- Within department: generally supportive and collegial working environment where nobody feels marginalized
- Grad programs are generally doing well. Undergrad programs are useful to recruit grad students, but teaching for FoS does nothing for us
- Hands on lab work
- Graduate programs are generally strong, and core facilities are very helpful in training in the newest technologies
- Unsure
- At the undergraduate level we are very successful at attracting the best and brightest into our laboratories for summer studentships and year-long research courses in the

honours programs. We will probably continue to attract these individuals for several more years as long as honours programs are considered to be key success indicators for entry to professional health care programs.

- Apprenticeship model for research training, extensive opportunities for faculty-student interactions
- The undergraduate and graduate programs are working well because there is a high bar for excellence and resistance to capitulating to the lowest common denominator. For this reason, we continue to train world class scientists.
- Interdisciplinary scope and approach
- Early access to research opportunities at the undergraduate level is excellent and highly specialized laboratory courses (like BIOCH 401) are important -The requirement for presentations and academic writing at the graduate level is important to keep -Advisors who are available to students in-person (undergraduate and undergraduate) by being embedded in the departments and in the spaces where the students are (no tickets required, just go see and advisor or send them an email) -Career Development opportunities specific to the Biomedical field
- The FoMD summer student research program is well run with lunch & learn and research day. Limited opportunities for undergraduate students to work in lab
- Undergraduate and graduate training
- Focus and specialization of graduate programs. Connections to research departments foster an additional level of identity and belonging, and incentivize the use of some departmental funds to support graduate students, programs, and student associations.
- Strong undergraduate programs (ie B.Sc.) directly relate to success of the graduate program. There is always room for improvement in education at the undergraduate and graduate levels and we are in the process of initiating just such reviews.
- The scientific quality of the faculty
- Interdisciplinarity and small student cohorts in the graduate programs work well
- The scholarship and funding opportunities are working well. More is always better, but overall this is fine. More bluesky or open calls, versus targeted initiatives would be great.
- Most of the current support comes from core facilities or knowledgeable individuals.
- Opportunities for student research are part of the success, but also part of the challenges as previously mentioned (esp undergraduate research).
- Training in the cores is rigorous, which is critical for correct execution of experiments and interpretation of results.
- The undergrad and grad programs appear to be effective, rigorous and produce strong, well-trained knowledgeable students.
- Our graduate program is well organized and should be a template for other programs.
- I believe that as long as opportunities are provided for undergraduate, graduate and postdoctoral students to apply their education/training in actual environments would

be ideally good for progressive growth in knowledge and techniques of biomedical sciences.
- Teaching of biochemistry courses
- Clinical research with humans
- Education and Training are well established and are working well
- Interdisciplinary and multi-faculty programs
- Mostly the researchers are good at research in their won lab that thet are conducting regularly.
- I think the program structure itself is good
- Basic research labs provide undergraduate, graduate and postdoctoral trainees with a foundation in biomedical knowledge and investigation. They help identify potential problems and develop strategies for mitigating them and the knowledge gained through basic research serves as the basis for developing new technologies, techniques, and interventions in applied research. There needs to be further investment in basic research labs because they are essential for future success.
- Support for grad students and post docs is important.
- Undergraduate research projects, FoMD scholarship funding, graduate educational program
- Openness for students to participate
- Maintaining high standards for the quality of research
- I think practical training in project management and other work related skills would be useful for any trainee beside the fundamental knowledge that is taught.
- 1. Graduate student supervision and administration are working well in the Dept. of Oncology
- We have an abundance of access to staff physicians to learn from and the breadth of cases that are offered in Edmonton are diverse.
- Diversity of courses and training opportunities
- Flexibility within programs large choice of courses, particularly in senior years smaller classrooms in senior years
- Students are gaining training as early as third year undergraduate to train them for careers both inside and out core biomedical sciences. They have the opportunity to branch away from the core at any time to pursue directions that will increase their own personal ROI as well as that of the institutions that employ them.
- Recruitment of quality of student base; ongoing evaluation and improvement of training programs.

What critical changes are needed to support the future success of biomedical sciences undergraduate, graduate and postdoctoral education/training?

- Expanding opportunity for future graduate student employment beyond academia

- Invest in the students we produce. There is a rampant amount of nepotism and favours given at the university for jobs, leaving people without the right connections without assistance.
- Biomedical postgraduate student (MSc, PhD) trainees need a path to future employment. We are seeing highly educated, but underqualified, biomedical MSc and PhD graduates applying for administrative and general research assistant positions. If employment opportunities in the biomedical sciences are scarce, then refocus the education to meet societal needs. - More course work on research design and disease epidemiology is warranted, even for biomedical science students, so that they understand the population health/disease context.
- Better consistency in graduating masters/phd students out of certain biomedical science disciplines. Having students trapped in a degree for 6,7,8,9 10!!! years is absolutely ridiculous and exploitative.
- De-departmentalize UG and G programs, engage core facilities in the formal education/training programs
- AI and data science training
- Unsure
- Not within my perview
- Postdoc support is awful. It's no surprise we get so few
- As discussed in the previous section, I believe we need to merge programs to make them stronger and more comprehensive.
- Fair competition, merit based recruitment
- As mentioned for research, more graduate student funding would help. Expanding capacity and introduce new classes to accommodate growing undergraduate population
- Maintain academic advisors for graduate students within each department. Having advisors easily available makes students feel supported and aids them through their program
- Better support of the basic science disciplines
- Harmonization into fewer programs is a good idea. Having more support for postdocs would be helpful.
- With declining Faculty numbers there is a need for more equity on teaching for PhD Faculty in the Faculty of medicine. The majority of undergraduate teaching is carried by Faculty in the Basic Science Departments, with reductions in the number of faculty moving forward these programs are potentially at risk.
- More funding across the board from policy makers and government
- Grad programs are shrinking (due to shrinking faculty). Programs should be reorganized to provide a critical mass of students within each program (this is in progress and I am supportive of this initiative) The university needs to sort out the funding around faculty of science undergraduate teaching performed by faculty of medicine. Biomedical undergraduate programs are growing exponentially. These are taught predominantly by FOMD professors, which are diminishing. From my perspective, I have seen little support from the university to manage these growing

class sizes. I would like to hear a unified vision from all faculties on how they plan to manage and reward the growing enrolment of our undergraduate student body.

- Increase in students enrolment, decrease in the number of faculty members in some departments, creates increase in teaching load that are unsustainable and simply uneven in the faculty.
- Managing the high demands of the current healthcare system on learners.
- We need more support for core facilities by hiring more HQP to train and assist research trainees.
- Emphasis on skill building to prepare for the world
- More research faculty to teach basic science courses Review and update of curriculums are needed
- Ensure classes continue to share both basic fundamental knowledge but also include current/cutting edge advances. need to find a path to continue suppling those classes while faculty numbers drop - maybe need to hire more staff dedicated to teach undergrad classes?
- Provide more opportunities for collaboration with clinical partners
- Provide more direct funding.
- Class size, use of unskilled instructors and limited to minimal recognition of teaching time, expectation of nonstop clinical teaching with recognition for much less, it takes a lot of time to teach, especially junior students. Increasing medical school class size needs to be balanced by increasing the time recognition for involuntary preceptors being assigned these trainees or they will not be able to be provided with reasonable learning opportunities.
- Improved channels for data access from AHS
- We need to better support/expand teaching in the individual biomedical disiplines (e.g. Cell Biology) to increase revenue derived from UG student tuition that can be used to support existing/new faculty.
- Standardisation of candidacy exams between departments
- Opportunities for postdoctoral training have diminished systemically in FoMD over the past thirty years
- Female students are still objectified and not given the same opportunities as male students.
- 1. Intake should be at an Institute or equivalent level. This would move away from the inefficiencies of small graduate programs, some with very curious standards, and ensure uniform (and high) standards. When a grad student is part of a class of fifty, and most are excelling, it encourages them to also apply themselves. It also limits the opportunity of the odd awkward student sucking vast amounts of Faculty member's time, to try and push them through a Masters or PhD.
- Need to have more Biomedical Faculty in order to teach. -Should have all Biomedical Faculty whether in Basic or Clinical to teach. Biomedical should be moved out of clincial or contracted to teach in Basic Departments. -Need better supports for PDFs - they are largely isolated withing whatever lab they are working in. - Majority of issues with graduate students/PDFs arise from non-PhDs training students. -Need to

have clear guideling over expectations and roles for trainees and supervisors at all levels.

- We need to ensure teaching staff numbers are maintained to allow for growth of student numbers
- Postdoctoral education is not well-supported. Ways to stimulate and engage this community would be important.
- We need to be able to provide more experiential learning for undergrads (research thesis courses) so they are prepared for graduate studies - postdoctoral researchers are few and far between in my department, this reflects on our ability to support them, but also the quality of applicant here - the depth of potential graduate student talent needs to be deeper = we need access to well-trained candidates
- Oh sorry I integrated education/teaching into my last answer
- We need to support undergraduate education by hiring people who (a) have the necessary knowledge background, and (b) are committed to education. Departments have been allowed to hire new faculty based on their demonstrated and potential research excellence, including their potential to bring in funds, and education has been an afterthought. I have seen people hired as 40-40-20 faculty with a major teaching component in their job description, and no sooner are they here than they apply for some kind of a research scholarship that allows them to reduce their teaching commitment to 20% or lower. With very few exceptions, all the biggest earners, those promoted most rapidly and those receiving multiple merit increments on an annual basis, are people who prioritised their research. It is extremely unlikely that you can enjoy that level of financial reward by making teaching a personal priority, so why would people do that? People have been saying this since I joined FoMD many years ago and nothing has changed, aside from an increased number of "kudos" statements and sheets of paper with "Teaching Award" printed at the top. So I have no expectation that anything will change as a result of this survey. The harmonisation process ongoing in FoMD graduate programs, coupled with the Reimagining Graduate Education process spearheaded by Hanne Ostergaard, will bring some necessary improvement and standardisation to graduate education in FoMD. But it is laughable to think that graduate education can improve and expand when the number of faculty who can supervise graduate students is falling and funds available to support graduate students are also becoming more difficult to find. Our stipends are not competitive with comparator institutions, but beyond that, if we can not afford to pay our graduate students a living wage, then we can't afford to run a graduate program. So if faculty numbers continue to fall and funds to support students continue to fall, you may as well accept that in the future we're going to have a much smaller graduate program with fewer students. Distributing a survey that asks "How can we improve and grow the program with fewer supervisors and less money?" is not going to help. I have no comment on postDoctoral education.
- Undergraduate students need more practical lab experience in courses. More support for graduate students especially international. More postdoctural support for labs

- More funding for graduate students and post-doctoral fellows; ensuring that undergraduate students get exposed to laboratory-based research
- na
- CIP program needs to open up to non-surgical programs; on-boarding of students is clunky.
- Need to streamline and focus our graduate programs - should all be fixed length (plus or minus short period), more structured, and better resourced and supported - teams should have students. Undergraduate programs should revert to 3 years (from 4 years) as in UK and other countries (and in Canada in past)
- Provide time for the administrative duties associated with education, not just the sessions, but the time taken for preparation which is alot and not recognized.
- Further integration of basic and clinical sciences within the clinical department.
- Tougher education within the undergrad without the fear of failing students. Better preparation for future, including a focus on practical matters over tests which only require cramming data into their heads
- Need a stronger, more consistent graduate program. Every department seems different.
- Better capitation for teaching and service to FoS
- More opportunities for hands on work
- For graduate programs and post-docs, funding is a key issue. Stipends should be increasing to meet the cost of living and to entice the best students to stay in science.
- University should be more difficult with more difficult exams and a lot more assignments for students. this approach could teach good work ethics and prepare teh students for future jobs and being competitive on the job market.
- We are attracting very few truly outstanding graduate students from Canada who want advanced research degrees, and there are essentially no Canadian PDFs coming to our labs. The ones I see are from developing countries or China; none are from European countries, top Asian countries (e.g. Japan or Korea), Canada, or the USA. In large measure the top undergraduates are choosing other careers as they do not like the work-life balance of academics, the constant grant writing, the competitiveness of getting papers published, or, importantly, the dwindling job market for new professors and the lack of salary increases over 8 years.
- Better engagement of faculty to teach lower level biomedical courses.
- In the review of quitting graduate programs across the FoMD, I think there would be stronger sense of fairness if the FoMD departed from a "one size fits all" approach. We see that this approach doesn't work with a blanket 10% tariff in the US. Blanket solutions rarely work. Instead, the problems in programs should be identified, and those problems addressed. Programs that meet the necessary standards (whatever these standards may be) should be permitted to operate as they are. Disassembling functional programs that people have put so much effort into risks alienating those people who have worked hard and discourages people from putting a lot of effort into anything more - I for one will assume if I succeed in achieving a standard for the

university, the university can wreck it without offering an explanation, and this discourages me from working for the university.

- More support/awards for BME students please
- I am unclear (and somewhat concerned) about the impacts that changes in graduate education and training will have; increasing student enrollment/ larger class size will affect the quality of atudent experience, workload, instructor satisfaction at least initially
- We do not have the teaching capacity
- More spaces for the students to work. There are a limited number of faculty who have the resources to take on students. -Better connections for young students to meet potential supervisors, both for undergraduate projects and for incoming graduate students. At the moment, most of our grad students are coming from within the UofA because people from outside the UofA can't get through to the overworked PI's (PI's don't have time to answer all of their emails). We are missing out on some potentially excellent students. -Shorter degrees. Masters should be 2-2.5 years max. The average Doctoral degree should be 4.5 - 5.5 years, 6 years max. -Continuity of knowledge within a lab. Less and less labs have the resources to employ lab techs/lab managers/Research Associates. Every time someone leaves a lab their knowledge leaves with them. That means the students/staff left behind have to try to fill that gap. There is very little continuity and there is a large loss of institutional knowledge that is being overlooked. This then can lead to longer graduate degrees as the student has to make up for that lost knowledge and essentially relearn everything.
- More undergraduate lab courses
- Postdoctoral training need to become more cohesive and less isolated
- More admin staff that do not have their workload increased greatly by being merged with multiple graduate programs without actually getting the additional personnel to properly accommodate such a new scope. NOT to homogenize all of the existing programs into a single entity.
- Greater coordination of seminar series/programs would greatly enhance both graduate and postdoctoral education/training.
- University funded instructors. Currently there are no university budgeted faculty teaching the medical physics graduate program which provide about 15 courses per year. The notion of providing TA support is also critical for the FoMD. The use of TAs is the major support of programs in the Faculties of Science and Engineering and should be instituted in the FoMD.
- More hiring of high-quality junior faculty for sustainable future success in teaching and graduate programs; more financial support of the graduate programs
- My Departmental graduate program is large and the labs are in multiple buildings, so attaining critical mass or sense of community is nearly impossible. This is specific to my program, however.

- Some support for continuity within labs. Minimal funding to support a student or technician so that expertise isn't lost. A limit to teaching reponsibilities. Also, funding towards equipment maintenance.
- need to focus on some key new areas: omics, computer analysis of large data sets,
- See above
- Undergraduates need more opportunities to gain lab-based skills
- Grad students need to earn more so as not to require part-time jobs outside of their training to be able to get by.
- There is a need for greater diversity in leadership/governance of depts and programs including diverse faculty from different career stages, research areas, genders, ethnicities, ability levels, etc, and a willingness by senior faculty to "step back" to allow those who are the future of the university a greater say in its administration/recruitment, etc
- Funding is needed for undergraduate lab projects. Currently, this is paid from scarce research grants.
- Remove the minimum student stipend. This makes it impossibly difficult for less established researchers to start a program. If it stays then you have to provide guaranteed positions every year for your researchers
- Encourage and develop critical thinking in undergraduate, graduate and postdoctoral students by giving them real case studies (past and present) encouraging them to develop ways to face and work out challenges not just as a whole, but case by case.
- More students and support to teach them
- Abandon animal research, which has repeatedly been shown to not inform human health and disease outcomes
- More of the above and incorporation of experiences outside of the traditional academic training, i.e. industry, business.
- The researchers need to be involved in interdisciplinary research and training in regular basis. They need to share their expertise with other researchers and learn from them. This will expand the knowledge and capability of individual researchers.
- While the program structure is good, there is a lack of communication with the students and lack of enforcement of certain criteria. For example, recently some of the requirements for the PhD program appear to have changed but those changes were not well communicated.
- Investment in faculty recruitment.
- Integration of research and clinical care (especially for clinicians) will be critical.
- More trainee funding support
- more undergrad student support
- Graduate student recruitment appears to struggle. Post doctoral positions are still under funded with little change in salaries over the past 10-20 years.
- Increase in the biomedical industry in Canada. Right now there are not great prospects for the number of graduates vs the number of positions available in Canada in the biomedical industry/ academic positions.

- 1. Make more studentships available or reduce/cap tuition fees 2. increase the number of undergraduate courses, especially lab courses
- Recruitment of new faculty members that cover a wide range of research topics.
- Proper funding of teaching assistent support. in the age of AI, a focus can not be on online courses, if there is, these courses need to be changed every year. transition to more active learning, which requires proper funding, as development of active learning is time consuming better collaboration between departments in course offerings, more cross-listed courses, courses taught by teams from diffferent department no further erosion of the number of people involved in teaching, improve the poorly performing programs to the standard of the BEST programs. don't blend and dilute quality
- Get out of the mindset that the parchment has to be generalized. This is bad for ROI. While the administration can be singular and united, the parchment should reflect the uniqueness of the individual and their experience. This can be done easily and for little cost to the university. Moreover, adopting the concept of microcredentialing is an excellent approach to bring those who may not be fully committed to one branch of biomedical research. This can increase the capacity of an individual and bring vital resources to the university.
- Allocation of programs and resources for teaching faculty to upgrade performance skills; provision of time for teaching faculty to achieve goals.
- More avenues to support graduate student social events (without putting it onto the students themselves) to encourage discussion and collaboration among the trainees - more effective professional development sessions

What opportunities do you see for FoMD biomedical sciences enrollment growth (undergraduate, graduate, postdoctoral)?

- No opinion
- I don't see any opportunities. The last 10 years at the university has shown me that there isn't a future for scientists to both achieve success and have a quality of life here at U of A.
- A postgraduate program in health sciences research at the CHS level is warranted.
- If the undergraduate health sciences program becomes a thing, there could be huge growth in the FOMD.
- Course based Masters programs, opportunities for PDFs to gain teaching experience
- AI and data science training
- Unsure
- Not within my perview
- Cut international tuition differential to help boost numbers
- If I were a potential undergraduate students, I would be attracted by more comprehensive biomedical programs that still offers the opportunity to specialize in a discipline of choice while, at the same time, providing a broader education in the biomedical area. Bigger graduate programs could be better advertised, would

provide more opportunities for graduate students to interact with peers with aligned research interests, and could foster initiatives that are not viable in current, usually small, programs.

- Open up to good candidates that are now being disqualified because don't meet DEI criteria. You are dismissing a lot of great people.
- I think undergraduate enrollment is already predicted to increase. Graduate and PDF growth will be tied to supporting success with research funding
- Enrolment growth is already happening and will lead to a crisis if there is no investment in Faculty (full faculty members, not ATS's)
- While tuition will support the university, until these dollars come back to programs in FOMD teaching these courses I see on barriers and not opportunities (ex. not enough people to teach meet new enrollment growth
- For increased enrollment at the undergraduate level, instructor will be needing TA support as we have increasing lower numbers of Faculty whom do this teaching. Graduate Student and Postdoctoral support can really only be done by ensuring success by our researchers for operating grants.
- The demand for undergraduate biomedical programs is clearly there. It would be fairly easy to increase capacity there, but the investment in research and teaching faculty needs to come first. The balance between research and teaching faculty should be considered (you cannot have a U15 research institution made up of 80% teaching faculty/ATS). Investment in biomedical research faculty is critical to support graduate and postdoctoral training. There may be some opportunity for course based masters in specific programs, but generally speaking, a biomedical research institute trains students in ~research~. This should be a primary and central focus of our faculty. Graduate research training and research productivity go hand in hand. Investment in ~both~ is needed to maintain a high class research institute.
- Not without more recruitment in basic science departments.
- There is going to be a substantial increase in the number of trainees attending U Alberta within the next 5 years and we need to be prepared to take on this massive increase. It will not be possible for contractual/sessional lecturers to train or supervise graduate and postdoctoral fellows and this responsibility falls squarely on faculty members. Therefore if U Alberta wants to maintain its status as a globally ranked university, it must recruit more faculty members to train these HQP.
- Need more faculty who are bringing in more tricouncil funding to support grad student growth.
- If enrollment increase the need for more professors/teaching staff needs to increase, could be a great chance to hirer new talent
- I see interest increasing in the "pre-health sciences" degree given the difficulty in admissions in these programs
- If you build it...they will come
- The University website is difficult to navigate, especially when looking for open postdoctoral fellow positions.
- Growth needs to be supported by resources.

- Growth at all levels, in AI applications.
- There is considerable opportunity - we need all avaiable biomedical faculty to maximize the teaching component of their positions to increase revenue in UG. Graduate and postdoctoral growth will require addiional support in terms of successfully applying for operational grants.
- Not a course-based masters program - What would they be learning and how is that better than the actual research-based masters, who would be teaching (most of the professors in our department already teach and can be strapped for time), and what are their career options after because this appears to be setting the students up for failure in a lab environment at least since they won't have any lab/research skills.
- Significant opportunities, since student enrolment demand is high, if the University and Province wish to invest in training support programs
- The government has to value evidence and science
- The current fragmented recruitment system disadvantages PIs in small clinical departments where there is very limited departmental interest in research. I have operating funding to take on students, but my department does not attract suitable candidates.
- Primarily through undergraduate teaching (with proper $$ going to support Departments and hiring to do the teaching. -Growth in graduate and postdoctoral is limited by external funding as well and if decrease in Faculty levels this will be under pressure.
- Higher student enrolments will allow for growth and training in areas of research and innovation, and potentially foster collaboration among departments
- I understand that undergraduate enrollment will increase. It will be difficult to provide an excellent teaching experience with less faculty. Graduate student enrollment will likely drop as research funding and faculty numbers drop. However, I think we can still provide an excellent graduate student experience as long as the supervisors and research community are healthy and vibrant.
- I don't see how graduate and postdoctoral enrollment can grow if faculty numbers decline
- Sorry I don't understand the question. If you are asking "what strategies can be used to increase enrollment" then here are some ideas 1. graduate student and PDF studentships. The lack of notable provincial scholarships is a real challenge relative to other provinces - and thankfully some come from the institutes. 2. Without scholarships, the enrollment of GS and PDFs relies on grant capture. Incentivizing large group grants - and 3. For all three category - if support is provided to researchers - and strategies implemented to eliminate the countless admin from all UA units - and if hired lecturers for first and second year courses plus more TAs etc - then we could get together in sub-groups of researchers and brainstorm ways to increase collaborative research and teaching. For example, if supports for teaching are available, we could come up with such projects and apply for funds - and/or design courses. Just that I can't imagine expanding what is available on top of what we currently have to do without a reverse outcome. THe challenge is that our

department actually teaches a lot but for teh Faculty of Science IMIN program - so would be good to integrate cross-Faculty needs.

- A reputation for excellence will result in increased interest from the very best candidates at undergraduate and graduate levels, from across Canada and beyond. This university's strategy in this regard has been to pay lots of money to website/advertising/branding specialists so we can tell people how great we are through attractive websites and catchy slogans. The fact that you have sent me this questionnaire to complete suggests that this strategy has not been as successful as the university had hoped. I guess the question should be whether you want enrollment growth of high quality candidates, or whether all that matters are numbers. For high quality candidates, you need to identify the programs for which there will be continuing high demand over the next 20+ years, put in place rigorous, high quality undergraduate programs taught by motivated experts in those fields, and reward quality teaching with the same opportunities for advancement and merit increments as are available to those focussed on research. I've dealt with an Associate Dean (Education) in FoMD in the past who had no knowledge whatsoever of what undergraduate programs were taught by FoMD Departments - it wasn't even on his radar. Because high quality undergraduate programs will attract the best and brightest, those students who wish to follow the pathway into graduate research will then be far more competitive for Federal graduate scholarships. As well as signalling our quality to the outside world, this increased external funding also allows the graduate program to grow by increasing the capacity for funded students. This must be accompanied by a substantially-increased minimum stipend requirement that also takes into account the tuition costs to students. In my Department, a recent survey of graduate students showed that 50% of the students had concerns over finances on an ongoing basis. Developing a reputation for excellence is not a quick fix. We would be unlikely to begin to see the fruits of the investment for at least a decade. If, instead, all we care about is getting numbers up, arrange some course-based Masters programs, offload much of the teaching onto contract staff, and charge hefty tuition.
- Graduate student support to conduct research not just stipends. More opportunities for post-docs in the faculty
- Increased commitment to fund graduate students
- na
- We need to attract students and make it streamlined; funding still the major barrier
- Lots of potential, but funding is not there
- Having well-defined processes and appropriate support for researchers-in-training both financial and mentorship
- Support for clinical services so we have time to teach.
- Our graduate student numbers will continue to grow.
- Growth? Not sure. I'd focus on cementing better core skills, critical thinking, and personal discipline with more practical education.

- Limited with the current funding situation. FOMD should look to find graduate research assistantship oppurtunities.
- Cautious expansion, programs independent of FoS. Better recruitment offers for grad students and PDFs. transition programs for PDFs into junior faculty
- Expanding rehab related opportunities
- Not sure
- More Canadian shall be enrolled to strengthen Canadian knowledge. More internbational students come less Canadian young adults can get enrolled. We should focus on Canada first and on our own young generation education first not giving dil;pma to foreigners.
- The undergraduate enrolment (for those wanting summer studentships or research credit courses) will stay strong if basic science departments keep their honours programs, but will fall if the honours programs change and do not require a research experience or if medical schools do not require a research experience for admission. The number of top PhD and PDF candidates will continue to fall if the career path is not improved and as the European Union begins to mobilize and create more funding opportunities as it is now doing >100 days after Trump's inauguration (see statement this week by Macron).
- Removal of barriers. The 3 year funding guarantee for PhD students and the gutting and rebranding of nationally/internationally successful programs create barriers to success. Out of a misplaced feeling of "fairness", the FoMD is punishing success as well as failure with the same policies, and this risks damaging past successes.
- Unclear
- Expand enrollment opportunities for domestic student. More emphasis on out-of-province enrollment needs to be looked into.
- Growth but only if the teaching situation is resolved
- Changing the hierarchical model of researchers. Look at the European model that has one PI, then several university supported Research Associates (some countries call them junior professors) who are also capable of holding grants and supervising their own students. The RA's have the benefit of name recognition from their prestigious PI, and some job security knowing that they can stay on as long term employees, but won't be as expensive to the institution because they can be in a different academic bracket (not "faculty" per se) and it won't be as necessary for the RA's to secure grants if they don't want to supervise students. This can lead to excellent collaboration and job-sharing opportunities. The RA's can help take the load off of teaching by aiding in the teaching of the undergraduate classes so the PI's can concentrate on grad classes and joining expert panels and conferences. The PI's will benefit from having highly skilled RA's contributing to their work/publications and share some of the burden of teaching and training. Post Docs can work alongside these RA's and have them as mentors and collaborators so that Post Docs can really focus on producing excellent work to launch their careers.
- Professional stream development for undergrad and grad students

- Funding availability for research operations to the PI are tightly associated with opportunities for growth. If only few labs/supervisors are available to support research operations, even if grad student/postdocs are supported by salary supports, the research operation cannot proceed except in few highly successful labs. Thus reducing diversity of biomedical projects and training.
- More focus on supporting and promoting the current graduate programs structure. The connection to departments allows more recruitment efforts by faculty from those departments, who have a vested interest in bringing new students to their department.
- Undergraduate: very significant given UofA enrollment growth targets; graduate and post-doctoral are completely dependent on external funding (CIHR); the decrease in provincial funding through the demise of AFMR was a major blow and there should be continued lobbying to restore increase funding of training positions (basic science graduate and post-doctoral).
- There needs to be growth is disciplines that have significant job opportunities for the student. For example, there is a significant need for medical physicists in Canada and worldwide. Currently over 90 positions remain opened in Canda, alone while Canada produces less than 15 medical physicists per year. Many of these also look to the USA for positions.
- Enrollment growth will be a huge problem; for that there would be a need of more teaching faculty but also research possibilities regarding graduate and postdoctoral training; they would need more resources (lab resources and infrastructure) but also more research groups for the placement; more research faculty would need more financial support as well; so, with the current resources and the current hiring practices there is no sustainable approach in sight; there is also a spatial and personnel limit on increasing undergraduate numbers; for a sustainable growth every resource aspect needs to grow to (buildings, teaching and lab spaces, number of faculty and teaching personnel); and all of this needs more financial support; one needs to invest first before the university and Faculty of Medicine can grow in a healthy way
- More funding and more positive environment.
- None without more funding and teaching support.
- Needs more md phd's to help guide translational research
- See above
- More funding is required to grow enrolment beyond current levels.
- There is now opportunity to draw well-trained students, postdocs and faculty (incl ECRs) from the US whose funding/oportunities have dried up south of the border - this will require considerable investment but will reap rewwards for the university and canadian research infrastructure for years to come
- This all depends on funding. More funding = more students. It is especially true at the undergraduate level.
- The opportunities being made available for future applicants in the program.
- Internships with local companies

- Improve education about non-animal models for research, including not just human clinical research, but also novel cellular models incliding microfluidics, organs on chips, organoids, and assembloids, and in-silico modeling.
- Training the next generation of scientists in Radiotheranostics, building on the unique infrastructure available at the UofA, CCI, ERC and MICF
- See above.
- One key opportunity is a better webpage where PI's looking for students can post listings and students can directly apply. We do have a website, but it is a bit obscure.
- Without further investment in faculty recruitment, the educational demand for current enrollment is not sustainable. There is no room for enrollment growth.
- The admission to all programs is becoming too competitive. This needs to be more inclusive rather than competitive.
- We lack access and support for competitive postdoctoral fellows
- If there is more financial support to students
- Recruitment for research remains a challenge given FoMD undergraduate training focuses on dentistry and medical students. We need to find ways of getting undergraduates involved in the FoMD and, in turn, be able to recruit high quality graduate students. Post doctoral positions need to be better funded (this applies across Canada).
- 1. Outreach to high schools 2. increase the number of undergraduate courses, especially lab courses 3. Invitations to potential postdoctoral fellows to visit the U of A
- I think there is increased opportunity for growth at the APM level for PGME level.
- Graduate programs are shrinking everywhere. Additional funds are needed to reinvigorate the graduate programs.
- In the current model none, as there is not sufficient TA support, classrooms are already full, and there is a hiring freeze. faculty in clinical departments choose a department they want to teach in.
- Widening options for training Widening options for skills training Microcredentialling Personalized parchment. All of these have the ability to increase individual ROI and provide resources to the university in a manner that is easily adoptable as well as accepted in the community.
- Limited due to funding constraints.

What current aspects of the institutional environment are working well and important for future success of education, research and service?

- No opinion
- Wehave some world-class programs and instructors, especially in the professional programs and nursing program
- Core facilities
- Well connected, experienced and dedicated researchers are currently working under very stressful conditions to advance research at the U of A.

- Most colleagues are engaged and supportive. Cores are great
- Core facilities with expert, dedicated personnel are crucial to research. These should be maintained and expanded at any cost. Seminar series and funding for invited speakers are important.
- Nothing I can see
- I think the biomedical sciences hold their own well with strong undergraduate and graduate programs, complemented by excellent research programs. Good administrative support at Departmental level
- I think the lack of resources make it hard to say much is working well, except for the excellent faculty how take on too much for the betterment of the university
- I believe we have a strong culture of collaboration.
- Cell biology administration is empowered to do what they can with resources they have
- Good academic faculty support and research base in the university.
- I feel fortunate to be surrounded by successful, generous, and collegiate colleagues. I find the inter-professional environment welcoming and supportive. I think the institutes are a fantastic resources to generate nuclei of activity and research productivity. Current cores are useful and well managed.
- I think the current format (departments and institutes) works very well. I am part of most institutes, I collaborate with colleagues in over a dozen departments, no major changes are needed; just more funds.
- We have ample lab space and some good resources for the future success of education, research and service. We can easily accommodate twice as many students in our area. However we face a shortage of faculty members to supervise trainees.
- Core facility growth is helping ensure modern equipment are available
- The access to more information in central hubs like campus solutions or bear tracks
- Great core facilities.
- Training for supervisors
- The interdisciplinary interactions are only sustained by committed researchers.
- FoMD core facilities, biomedical UG programs and the environment in my department are working well.
- The smaller department allows for increased collaboration among students and faculty, as we all know each other and feel relatively comfortable asking for help/resources.
- Departmental esprit de corps remains high even in the face of largely unnecessary higher level administrative and bureaucratic changes
- Excellent leadership within the University
- Office of Research support for core facitlities and graduate admin support is good. -Internal FoMD awards for undergrad and grad is good. -Support for PDF writing funding applications is good.
- 1) research support is strong, that includes announcement for funding opportunities 2) Admin support (in our Dept) is strong

- The leadership in FoMD is working well. I imagine it is difficult to lead very different communities of biomedical and clinical research. The initiatives asking for input from the biomedical community is much appreciated by me.
- The core facilities have been useful for our research programs. We pick and choose and use what we need as the project requires
- 1. There are some folks at some unites that seem very responsive to researchers and realize that by supporting research, they are supporting everyone's growth. This sort of attitude is very welcomed and encouraging. 2. We currently have a good chair of my department and having their support, and seeing the department at least function well, is a huge contribution to infrastructure, culture and collaboration.
- Very few.
- Online administrative tools are good such as grant balances and approvals. Graduate student administration works well. Animal ethics and human ethics works well.
- Strong support for grant funding applications; highly qualified personnel
- na
- NACTRC
- Research promotion
- None
- We need stability without further organizational changes within the institution.
- Within our department there is a good feeling of comradery and supportiveness which helps cross-disciplinary work
- Having a few people remain that understand how the system actually works and know "where the bodies are buried"
- There are many opportunities for research
- strong administration of departments aimed at helping support research
- Very inclusive and not hierarchical. True equality, open conversations drive the research forward.
- Sadly, none. There's no faculty recruitment; the administrative burden on professors has increased; there is less departmental administrative support; there is more paperwork and far more required on-line courses than before; there is inadequate institutional support for competitive graduate student and PDF salaries; the infrastructure is falling apart (labs need repair, the wifi and clocks don't work); and there is no institutional money to replace or repair equipment.
- The FoMD biomedical research department structure is working well. Having groups that have common areas of research is an essential basis to build interdisciplinary research off of. After all, if someone wants to research drug targets (proteins) in neurons, one needs an excellent pharmacologist, neurobiologist and biochemist. Having disciplinary excellence is critical for interdisciplinary excellence.
- Services like the Biochemistry Stores are really valuable The core labs are amazing. Keep these supported and well supplied! A concentration of technical equipment that is well maintained by highly skilled operators is golden.

- Graduate student administration embedded locally (departmental level) is working well
- The interest in promoting basic science is highly encouraging and establishing long term salary support for trainees is excellent
- Infrastructure is reasonable but a function of external opportunities; Collaborative environment is strong.
- AS stated twice before, the quality of the Faculty
- Scientific collaboration on the faculty level is working well
- Honestly any success is due to the the Departmental environment. The Institution has been quite disappointing.
- Some strong core facilities.
- Some good gear
- See above. Department / Education leads in Biochem, Neurosciences, Physiology need to consider all 4 CIHR pillars in decision making for courses, and thesis projects.
- From my perspective, this is an amazing workplace with many supports and training opportunities in place.
- There are opportunities for feedback and the university has a good infrastructure to support research. there is a willingness by faculty leadership to listen and consider feedback from early and mid-career researchers
- The graduate programs are overall well managed and I welcome the efforts to streamline the requirements.
- Considering options in how to expand learning and research opportunities.
- committed staff
- Clinical medical research
- Grant management
- Current structural environment is not conducive to development of collaboration, shared infrastructure.
- Excellent collaborators, ImmuNet
- The infrastructure in FoMD is either new or old and poorly maintained. There should be more balance. The institutional culture does not appear to be supportive of biomedical science, and collaborations are not often possible in an institution that is under duress with culture and infrastructure.
- Again, the competing goals of clinical and research programs need supporting.
- Collaborative and supportive faculty culture
- Interactions with students through faculty advertisements
- Collaborative environment between departments is a strength and should continue. Core facilities need to be supported with communication of those services to researchers/staff.
- 1. CRINA is working well to promote collaboration across the University 2. Core facilities
- Good overall leadership and communication from our department.
- Institutional administrators working to enable the work of the faculty members.

- the collarboration between departments and institutes
- The majority of ROI-based successes are coming from groundswells of collaboration. Their individual successes together lead to significant jumps for them and those who are around them. This is great but could be better.
- Animal facilities

What critical changes are needed to the institutional environment to support future success of biomedical sciences education, research and service?

- Increase in knowledge exchange activity and partnerships with professional organizations to highlight gaps in sector that the institution can go into to generate more success
- No opinion
- Consistency between departments
- well-supported core facilities, institutional, Faculty, Institutes
- AI in health care
- Rapid, quality support services, financial support - as fees goe up there is less financial support for the actual research jeopardizing the ability to complete.
- Leadership is awful and there are far too many forms and paperwork
- Health Sciences needs to work more closely with Basic Sciences. Health Science research can do very little without collaborating with graduates from Statistics, Computer Science, Engineering, and Biochemistry. There needs to be recognition that Health Science graduates are not experts in the hard sciences.
- Merge biomedical departments and programs.
- Again merit based recruitment!
- Merit for full professors needs to be limited in some way - the current "sky's the limit" approach doesn't serve us well.
- More money in the system, improved administrative support at university level ("central"; ticket system is frustrating; red tape reduction), more teaching supports at undergraduate level especially in face of assumed increase in UG enrollment
- There needs to be more money. Every problem is monetary in its route.
- I believe we can improve communication between researchers and the Faculty about research resources and research expertise we have in the Faculty/
- Further allow departments the authority they need to run as effectively as possible; do not reduce their autonomy
- Shift to peripheral clinics and institutions for broader more collaborative research approach
- We need more money to support core facilities, and more recruitment to solidify teaching and research.
- We need much more support for faculty members to be competitive with world leaders in education, research and service. We have almost no administrative

support and no technical support (in the form of lab managers or technicians) to help us run our lab space. This is not a sustainable environment in the long term.

- Better support with people - accessible in person or on phone to free up time for researchers to do more research and less administration
- Space assignment for research needs refresh; consider looking at what Engineering is doing
- have to stop cutting all support staff, students should not be expected to send off emails to faceless entities for every question/problem. Becomes very frustrating to always be waiting for an email, never being able to talk to an actual person.
- Get ride of the College and use the money to support the biomedical sciences.
- The services provided by the research core are not clearly presented or easy to locate.
- Better support for undergraduate education and clinical teaching. Only allow class sizes to increase to the level in which they can be functionally supported.
- Easier access to interdisciplinary funding.
- A stronger committment in terms of financial, adminstrative and faculty number, preserving the existing biomedical departments and expanding in to new areas, AI, Neuroscience, Regenerative Medicine/Stem Cells.
- Improved recognition that strong individual Departments provide the best spiritual "home" for flourishing academic endeavours
- The government my respect science and scientific evidence
- Despite quite extensive reorganization, sadly few 'administrators' are doing much. For sure they send out blizzards of emails, but little to no meaningful help with research. Unfortunately, FoMD seems unreceptive to feedback on this point.
- Biomedical researchers need more assistance in daily administration and health and safety tasks as more and more things have been downloaded onto the indvidual PIs -Understanding of importance of value of biomedical research needs to be better understood by instutionation environment -Streamline processes for space and maintenance and safety concerns in the buildings
- As the provincial health authority deviates further from evidence-based practice and standard of care, the university needs to stand firm in medical trainees not being placed in inappropriate learning environments where such clinical care is being provided.
- 1) endowments would be instrumental in building capacity for cutting edge research 2) stronger connections between basic and clinical researchers is needed.
- Although I think the FoMD leadership is working well, I feel there should be stronger support for ethical behaviour. Community members that break the rules with no consequences are in essence punishing the people who continue to "do the right thing". This leads to a lack of perceived justice that fuels "competitive" feelings between community members. Feelings of inequity are extremely demotivating. I think that if the institution honestly acknowledges problems of unethical and unprofessional behaviour and addresses them heads-on, will generate a healthy community that wants to succeed together.

- Research needs to be a priority, the same emphasis that went into med school expansion needs to be applied to research - biomedical researchers should have a neutral or optimistic view on BMS, but pessimism is going to cut buy-in, especially if more is asked of the people who are already doing the heavy lifting - the faculty NEEDS to front-load CFI provincial match, once an application succeeds nationally the FoMD should allow the investigator to purchase the equipment since provincial match is >90% guaranteed.
- 1. There are unfortunately too many examples of individuals in UA units that do not seem to understand the value of researchers and the contribution of research to the financial success. Such individuals disempower researchers and trainees, keep throwing out needless hurdles and negativity, are/or show limited accountability to researchers. 2. There is no one to talk to for needs. For example, there are limited supports for large team grants and then at the same time, no one to talk to about getting more supports. The many layers and levels between researchers and the VPRI (or whomever can help make positive change) is too grand to get anything useful, efficient or directly-impactful changed. 3. The various units, such as HSE, IST, etc - should ideally always talk to researchers about how to improve things. Ideally everything gets piloted first on a few before everyone has to do a bunch more work. Piloted changes can then be streamlined based on feedback. There should be ways to also change existing demands - I have been talking to each unit separately trying to promote positive changes ... let's see... but if this approach become part of our culture then it could yield positive change imo.
- I feel like I have already answered this several times over, but if faculty can achieve faster promotion, increased merit increment awards, higher standing in the faculty and higher job satisfaction by focussing on their research, then nothing will change. I have prioritised my role as an educator in FoMD and have won internal and international teaching awards. Yet I absolutely feel like a second-class citizen in FoMD.
- CFI applciation needs to be steamlined. Patent and start-up company support needs to be increased.
- Ensure that PIs have sufficient time to carry research
- na
- UACT needs to happen; streamline contracts / ethics/admin
- Current status quo is not sustainable and radical changes are needed.
- Please see my answer earlier about more support for start-up research groups/centres to set-up the infrastructure. An advisor or something who can be the go-to person to provide guidance and point in the right direction. It is especially difficult and time-consuming when operating in the U of A and AHS environments.
- More faculty, more time to do the expanding demands of work.
- Institutional organizational changes will just further destabilize the situation and inhibit the good work currently being performed.
- Better communications between groups and more collaborative works to make better and more efficient use of space and equipment. Especially across buildings

- Less pissing about with positions and titles, more quality individuals that have some authority and more importantly more interest in the instituiton than in their career advancement at all levels
- More support is needed to promote funding for research
- An effort to learn how to communicate important discoveries from fundamental/basic science to the public and to our own faculty. While it is more challenging to do than communicate about a treatment of a patient, it can be done in an engaging understandable way if some effort is put in. This is needed to convey the importance of much of the work done in the FOMD.
- HR should help to retain people. For example if research grant finishes HR should be helping the already trained employee to find something within UofA. If they hire and start searching for new employees, it will take way more time for the searching and also for the training. Recent/past UofA employees already know the UofA policies, procedures, completed their certificates. Retaining emplyees would improve efficiency of the operations and would give a piece of mind to the employees as well. If uofa would retain betetr their employees it will give the message to us UofA is not an unstable workplace even many jobs are research grant funded. May be HR could keep a pool of the recent or past employees who are available to work at the UofA immediately. I noticed that beetween I submitted a job application, took HR 2 months to set up an interview and they are going to take even more time to make a decision. This is very long procedure in my opinion and definitely reducing efficiency and productivity to take 3 months to find and employee for a job.
- All of the above.
- Better explicit support from the Dean's office regarding education from undergraduate on up. Compared to other faculties, FoMD is way behind on this since the focus tends to be on professional programs
- The faculty at the U of A are very strong researchers. Recognizing the current funding problems, the only changes that are needed is an expansion of faculty, and a commitment to infrastructure.
- Coherent structure - no clear relationships between depts and institutes, imbalanced dept sizes, basic scientists sprinkled in clinical departments, basic depts divorced from clinical perspectives. Stop rewarding individuals. Evaluate the opportunity cost of FEC. Stop rewarding / tolerating bad behaviour
- Investment
- The dental and medical institutions seem to be very out of touch. Apart from faculty meetings, students experience no collaboration or comradery. We also have no dental specific meeting rooms or lunch rooms on campus which needs to be improved, especially in ECHA.
- Let research professors do research and grad student supervision. This could be done by increasing teaching positions _ not sessional instructors, only permanent
- Support Staff! You need more support staff. Technical and administrative. The PI's have to do too much administrative work. They were not hired to submit their receipts and maintain their chemical inventory, they were hired to do the science, teach and

publish. Graduate students should not be tasked with taking the place of a lab technician/manager. You are quickly losing valuable institutional knowledge. Technical staff don't want to stay because they are not valued. They are underpaid with no job security. This puts the burden of record keeping, health and safety, training, inventory, supply management on the PI who is already overburdened by teaching, applying for grants and extra un-necessary administrative requirements. The university can save money by employing more support staff so that faculty can be more productive. Faculty are expensive, don't waste their time.

- Graduate administrator support should be available to student locally
- Perhaps developing novel approaches to pair clinical and basic scientist to find mutually beneficial ways to develop projects and funding approaches that benefits them both. For instance, share graduate student on a projects of mutual interests, where operation funds and potential access to clinical samples can be provided by clinical venues, and training and supervision in performing basic science aspects of the project (and securing salary support for the student through grants/scholarship/etc) will be provided by basic scientists.
- Continued and enhanced investment in biomedical research faculty - grounded in departmental and discipline needs to be a priority. UofA will prosper best with a focus on discovery science. We don't have the economy of scale or resources to prioritize outcome driven science.
- Provide funding to programs that produce experts in fields where good jobs are essentially guaranteed immediately after termination of studies. Again, Medical Physics is a perfect example.
- Research service support and bureaucracy is a general problem and needs to be improved, same with administrative layers and organizations; there are cost saving possibilities on the administrative side; use of overhead ??? strategies to improve success in grant applications; the latter is also based on a better hiring practice for young but also higher-ranked mid carrier faculty; re-implementation of financial support programs for that; better start-up funds (could be financed from the overhead) .... overhead should not finance the administration as it is hard earned grant and industry research money
- The emphasis on AI is ridiculous and does not resonate with most researchers. The overall sense is that the Institution is so focused on branding, appearance, and pandering to the governments's idea of what a University should be, i.e. in service of entrepreneurship, that it has lost track of the actual point. The shift from "What so ever things are true" to "Leading with purpose" isn't simply vacuous, the Institution seems to be taking it as a true mission statement. Knowledge and truth are now secondary to leading. somewhere?
- Stop downloading all responsibility on PIs. Stop changing all of our systems and then expecting us to constantly be adapting to new admin tasks. Preserve our time for teaching and research.
- Needs more access to many different types of modern tech
- See above
- Accessing core services is complex and not always convenient

- This may be an off-target answer, but harmonization amongst all the various online platforms and the website - university wide - would be extremely helpful. Most systems are clunky and outdated, not to mention somewhat redundant. A streamlined one-stop shop for all the bureaucracy (e.g. training, HSE, waste disposal) would be a time saver for everyone, minimizing confusion and enabling more compliance and productivity.
- Need to ensure financial stability of the university to enable U of A to continue to be a top 100 institution and top 4-5 in canada (and strive for top 50/ top 3). unfortunately this won't come from prov gov't whose priorities are elsewhere - need for new/alternate revenue streams that recognize the value of investment in U of A for the province and country. now, more than ever, strong support for reserach esp biomedical reserach is really critical.
- The achievements of graduate students remain undervalued in the FoMD. This gives the impression to students that they have a lesser degree once they graduate. Communication of basic science results to the public is very limited. Seminar announcements could be centralized more to increase attendance. There are too many subgroups, which all require separate subscription to newsletters.
- Opportunities for students/researchers to put to practice and expand with the knowledge gained in their education.
- Root out those responsible for bullying and abuse
- Educate on non-animal models of human disease. We cannot improve the human condition with sentient animal research, which in principle cannot and has not translated to human medicine.
- Better Grant Application support
- Not sure but something needs to change- there is no visibility, change and enhance forums to disseminate research and discuss collaborations
- Better core services
- A more supportive environment promoting growth and success.
- Undergraduate students need earlier exposure to some aspects of research (summer student research projects for example).
- 1st: Funding. Everything else: Less administrative bureaucracy, in particular: onerous animal use protocol process
- Better Support with editorial and stats without cost.
- Without proper funding we cannot offer quality programs to undergraduates and, in turn, be able to recruit future graduate students. These graduate students, in turn, need a properly funded lab to be able to generate high quality research.
- More support for front line technical experts, and not just high level researchers. These are the people who are executing the day to day work and without experienced hands on experiments, the data and there fore the overall quality of the science at UofA will suffer.
- 1. Additional support for core facilities 2. Guaranteed support for students to complete MSc and PhD projects 3. Provide free software to staff (e.g. Biorender, Prism)

- Limit personnel turnover as we lost a lot of knowledge during recent reorganizations.
- Less overhead and special projects, more focus on properly funding/ supporting teaching and research
- Communities within the larger community who work together to achieve a greater ROI for all levels including students, HQP, junior researchers. This does not mean, however, that the topic of interest needs to be the same. In other words, a senior clinician cannot expect biomedical researchers to perform tasks they would want done. That's not ROI. However, numerous researchers working with stem cells as a hub would be an approach that could lead to significant ROI and revenue generation through services, student enrollment, licensing, and overhead from larger grant proposal awards.
- No longer possible for a faculty member to excel in all three parameters; need for specialization in a specific role per ability and adequate time provided to prosper in this role.
- Transcriptomics core facilities

What can the FoMD biomedical sciences community do to increase its societal impact and society's recognition of that impact?

- Link better with clinicians
- More emphasis on education and research in areas under the social determinants of health, and an increased focus on the social accountability of health research
- It is well documented that every dollar invested in fundamental (basic) research returns ~$5 in economic activity. This needs to be championed through outreach, public lectures (possibly via institutes)
- Translation to clinical impact
- Have a leadership that reflects the composition of our society. It’s hard to like an organization that’s whiter than a loaf of wonder bread.
- Public townhalls. To be relevant to the community that supports us with taxes, we need to give back with information, combatting misinformation but also making us relevant to the tax base.
- We need to organize more outreach activities and connect better with media of all types to disseminate scientific progress in a way that is understandable and engaging.
- Do not marginalize, dismiss or exclude white, white males, Christians from your community. You have become very reversely racist, there is passive aggression against Christians and this is well known in students circles at UAH. Some feel that it is very depressing and detrimental environment, some take advantage of it. Start being inclusive, fair, do not be racist against white race, do not dismiss Christian students, allow for freedom of speech, differences in opinion and ethical approaches. Giva all students fair chances.
- The key part is the recognition - great work is being done here, but perhaps this is not always appreciated by the public. I am not sure how to achieve this, but more

should be done to highlight past major achievements and show where are are currently leading

- Need to engage the public with things like evening lectures to show how science answers the questions of society
- I am of the opinion our Faculty could do much to improve outreach activities.
- More primary care and focused research for health outcomes
- Faculty members (<10 years) feel burnt out right now. So asking extra service is unlikely.
- We must increase our community outreach and volunteer to present to elementary, junior high, and high schools at every opportunity. We must also increase our visibility to the provincial government at every chance we can get. We should enlist our expertise on how to market ourselves effectively to the Government of Alberta.
- Improved communication
- Broader engagement with industry and community organizations is critical; get outside the university and see what end users need
- Share research highlights in language the general public can relate to and in places the general public will access. Need to share stories on how the research benefits society, even if it takes decades for those benefits to be seen. Community engagement like connections with high schools could also help engage and show younger generations the benefits of research
- Improve knowledge translation activities, share findings in ways that feedback to the participants and also to the clinical staff that support research activities
- I do think comms and PR are needed to emphasize the great work and its impact on public health, patient care etc. Eg vaccine related work (though tricky politically), hepatitis work, transplant work etc
- Plan more outreach, engagement and communication opportunities. We need to get on the news more often. Last time that happened the investigator was chastised for blowing their own horn.
- Better communication. Knowledge translation is key. Teach scientists and clinicians how to speak interestingly and understandably to community. Forge links with regulators. Use good quality, relevant, attractive visual and sound bites. Teach the public critical thinking.
- More AI related projects driven by high priority clinical areas, where data is accessible.
- Internationally recognize biomedical research that (sooner or later) supports improved clinical practice.
- Make sure that the sons and daughters of Albertans receive the best possible post secondary education to position them for wide ranging successful careers (exhibit A= Prime Minister Mark Carney; exhibit B= Sir John Bell FRS, Regius Professor of Medicine at Oxford University); exhibit C= Lewis Kay FRS, University of Toronto)
- Convince the public to get vaccinated
- If as a Faculty, we don't recognize and appreciate scientists who make significant breakthroughs, why should society?

- Opportunities for outreach increased at all levels.Some institutes include this for students awards -More activities for the general public to engage with science -Clear process of oversight to ensure well done science is highlighted and celebrated so the public is informed apporpriately without bombastic egos and over promising cures
- The FoMD biomedical sciences community can return to supporting safe, evidence-based clinical care and associated research, even if in conflict with the current provincial political agenda and leadership of the provincial health authority.
- Public lectures would help build trust and connections with the community
- I think the scientific community should take an honest look at how society is changing and what its needs are. In my opinion, we tend to present ourselves to the media in too much of a positive light. I think that "overpromising but underdelivering" provides immediate positives, but it is extremely detrimental (and dishonest) in the long run. This erodes trust and that's where I think we are. I believe if the biomedical science community was able to reflect and if that brought more humbleness--that would be a great thing. "Getting over yourself" is probably a much better way to meet society and understand needs.
- I think empowering sub-groups of researchers to innovate ways of outreach would be great. Right now, much positive outreach and change is thwarted by the fear of administrative burden, having to have all sorts involved in legal or admin aspects of things that used to be "simple". So for example, having a venue through which researchers can suggest ways of social impact and outreach - but then having someone support and empower the activities and mitigate obstacles and obstructions. Researchers and trainees have so much ambition to contribute to good. Just as an example, a few of us considered collaborating with Edmonton (e.g. Fort Edmonton Park) to talk about the history of disease and medicine ... but OMG something so "kind" ended up becoming such a "hurdles-riddled" endeavor that it was impossible (.e.g need this UA body and that UA body to sign that or this and so on). Outreach and direct interaction with society, imo, has the best outcomes. The WWW, webpages, and indirect approaches are becoming less effective imo in a world of massive information and misinformation overload.
- Countering medical disinformation would have a significant, positive impact on society. Unfortunately, this has been left to a very few individuals, as most people are not willing to stick their head above the parapet and find themselves in the crosshairs of the government, and by extension the Board of Governors, and by extension university leadership, and by extension FoMD. Speaking out has to start at the top, and we have seen no evidence of this university fighting back against years of horrific budget cuts, and activities that are designed to determine what type of research might be carried out, on the part of the government. Dr. Hinshaw tried and paid the price. Dr. Joffe was largely prevented from trying at all. Drs. Parks, Vipond, Markland and a few others have shown the leadership that university administration has not been willing to show. Extraordinary times call for extraordinary measures.
- Engage Alumi more Strategic public relations Engagement of community in research projects. Publize successes
- Need a strong alumni association and a strong community presence

- na
- Have better visibility in community by having researchers be more public
- This isn’t a key function of FoMD
- We are doing a lot of practice-changing work; how to translate that into clinical practice to the benefit of every Albertan
- More patient advocacy initiatives or recognition of these initiatives.
- We need to form better connections with the communities that we serve.
- Better press, emphasis on communications with the public using actual clear aims. Medical scientists are often seen as being awful at communication, so public-facing symposia or conferences where current data is presented in lay terms would be useful.
- Better knowledge translation.
- Get funding to keep making key discoveries and publicizing the well. Less stupid surveys.
- Communicate to the public the benefits of research and innovation.
- Please see the answer to the last question
- I love reading about project which are directly improving patient care or people/ environment well being. There are many research which seems a bit useless for me and I dont see much impact on community or environment.
- Embrace the emerging trends I wrote about on page 1 and integrate them into research, teaching, and service. Inform AHS and government, don't follow AHS and government.
- Continue interacting with the public in a positive and interesting way. Take for example the recent "Connections" events offered by the NMHI
- Continue along its trajectory of excellence and hold to account those who do not meet the standard. An additional approach could include public lectures, visits to high schools for career days, etc - community engagement. However, this needs to be recognized not only as service/education, but needs to be recognized for the time it will consume from the faculty.
- I don't think it is helpful to ask this question - this is a role for whole FOMD - don't fragment us
- The dental SHINE clinic experiences significant success and community outreach. It is one of the only free dental clinics in Alberta and has achieved provincial recognition. However, the clinic funds, which are raised by students, are managed by the school/FoMD and not the students (which run this clinic). I think it would be beneficial to create a financial account specifically for the Shine clinic to ensure future success of this clinic and to properly manage the funds (ensuring they are only used for Shine activities).
- Offer education events to the general public. Have a discussion about relevant topics (precision health, rare-genetic diseases, cancer therapies, etc) in the public setting like a library or a bookstore. Seek feedback from the community. Ask them what we should be studying.

- More engagement with community and with alumni; publications/research successes should be communicated; does FoMD keep track of their alumni?
- Combined public presentations by pairs of basic scientists and clinicians on collaborative projects.
- More community interaction with other levels of education eg secondary participation with Gairdner. More events like Science in Cinema at the Garneau.
- Same answer given many times: Produce scientists that are needed to fill current open positions. e.g. Medical physicists
- More public announcements and visibility of success (this did not happen with the Nobel prize win a couple years ago); more engagement in the relation between political and public views on scientific successes and training of the next generation
- The process for communicating discoveries to the public is cumbersome and ineffective. The requirement that a Folio article be the first step, rather than a press statement means that by the time anything comes out, the news cycle and attention has moved on. I have essentially abandoned working with the Faculty or University and simply work my Department's Communication team to out out a blurb on the webpage. I have had several high impact papers in the past few years go out via collaborator's institutions because our press office was so slow.
- Provide an environment that gives a chance for innovation, not one where we feel like we're constantly dealing with admin or trying to keep our heads above water.
- Needs to connect more with people
- See above notes on escalating opportunities for undergraduate students (experiential learning through clinical / translational research projects).
- Science days open to the public highlighting research within the FoMD
- I suppose social media activity could help, and contact with news agencies (CBC, Globe & Mail etc) to encourage them to highlight our achievements.
- Better community of the value and ROI of biomedical science - partnering with hospital foundations/WCHRI to promote BM reserach - this is where the next big medical breakthroughs come from
- The communication of basic science research to the public is poor. Society will only recognize the value of something it knows about.
- Advertising the opportunities with careers and advancements in biomedical sciences (for example: what careers are available with biomedical sciences? How can biomedical sciences expand and improve our society and our future?).
- Public engagement, promotion of research and commercializations leaders at all levels
- Commit to non-sentient-animal models of human disease to improve translation rates to human outcomes
- Better social media engagement
- Increase Public engagement through bi-directional conversations. Dissemination of knowledge and promoting value of research and education in enhancing clinical care of Albertans.

- Arrange lab visits for interested people and students from different social groups. Identifying the key needs of local people where specific biomedical research in the university can be helpful, and encouraging the university researchers to acquire funding and working on those.
- More open communication, tiktok channels, more fun science posts about current research thats going on
- Research funding is essential for innovation and ultimately societal impact, and outreach is necessary for society to recognize that impact. FoMD communication and outreach needs to be integrated into the biomedical science and research endeavor.
- Those slightly "dumbed down" public lectures are useful. I took my kids to a public lecture on "black holes" by the astrophysics department years ago. This was useful.
- Fundraising, Public outreach, Knowledge translation
- Better Selection of studies that to be supported, pushing for relevant population studies.
- Outreach to the media, high schools, etc to engage with success stories and research progress. If the general public values the programs and success stories from the FoMD biomedical community there will be more support in the public for funding of the university as a whole
- 1. More engagement with alumni 2. More engagement with high schools 3. More engagement with patients 4. Publicize successes (but avoid hype)
- I feel that we are future physicians are meeting directly its commitment to societal impact.
- Inform the public about the recruitment crisis and the ongoing retirement wave.
- Profiling itself better in the news, with breakthroughs, personal stories
- Better outreach yes, but start caring about in-reach. If you appreciate and acknowledge the people doing the work across the spectrum from the student to the emeritus professor, you will develop the community you need. Focusing too much on established and sunsetting researchers will lead to a loss of morale and a sense of finiteness.
- Availability for consultation to interact with various community, commercial, and social agencies, including media.
- Higher social media engagement - Public-facing initiatives for science communication

What are potential strategies to diversify revenue streams (beyond Government of Alberta grants), encourage entrepreneurial activities and support cost-efficient operations?

- Increased partnerships with professional organizations to bring additional funding and research opportunities. Increase in knowledge exchange activity to generate additional income to support operations.
- Name the FoMD after a large donor like the U of C has done; that was also matched 1:1 by the province.

- Focus on supporting promising startups, increased collaborative projects with out-of-province collaborators
- Course-based Masters, state-of-the-art core facilities (industry contracts)
- Invest in AI in health care to attract funding from high tech
- Not within my perview
- I am not sure about this, other than increasing philanthropic efforts supported by strong and systematic outreach efforts and media campaigns. Merging programs might have cost benefits.
- Reduce beaurocracy, review effectiveness of your workers, fire those who abuse system and take tons of days off, disrupting stream of their workflow. Reward for not taking sick days, off days, change their contracts to fee for service or achievement based salary. Stop using money for DEI projects rather focus on acquiring people who have high standards of work and increase their salaries.
- I fully acknowledge that consolidating administration of the basic science departments has worked well for our department, and if there are cost savings associated with that, then this could be further explored. Beyond GoA grants, need to continue supporting grant applications. Entrepreneurship is tricky - not every research program has an output that can be commercialized
- The University of Alberta is in dire need of having more organized and centralized information regarding strategies and mechanisms to commercialize and translate research.
- Encourage interpovincial and international collaborations
- Involve pharmaceutical, health coaching networks, "buy-in" platform health improvement watches, and lifestyle medicine approaches to membership based research
- We should place a mandatory tax on every employee of U Alberta (not exceeding 2% of the university salary) to support the campus for entrepreneurial activities and support cost-efficient operations. We should engage local businesses to contribute if they have succeeded due to graduates from U Alberta supporting their corporations and companies.
- Better processes for donors to provide funding
- Enhance opportunities to engage with industry, expand / support investigator and industry initiated clinical trials, develop more certificate programs and course -based MSc that serve the needs of industry / health economy
- Engage technical and support staff more in discussions about streamlining operations.
- Continue to develop strong relationships with hospital foundations
- Intellectual property (IP) is a key foundation for entrepreneurship and the establishment of spin-off companies. However, obtaining and maintaining IP is challenging, as it is often not financially supported by the university.
- An easily navigated opportunity for researchers and clinicians to link with one another and wtih potential funding partners/equipment or services opportunities, etc.

with a strong, potentially AI supported, ability to develop multidisciplinary team approaches.

- Large multi-inter-trans-disciplinary grants like NFRF.
- Increased UG teaching.
- Securing equitable distribution of research training resources from within the University of Alberta, based on student demand.
- If I knew, I would be rich.
- There are no easy answers to this, at a time when the economy may be heading towards recession, AHS is reducing funding etc. However, the UofA actually has compared to other Western Institutions, quite lavish funding levels - funding though is misapplied and suboptimally focused. Some major Universities (Oxford) dissuade research that does not provide institutional overhead. This dramatically reduces low impact work and enhances focus on more meaningful questions. A similar approach here would reduce research volume, but by contributing to research quality, would in time enthuse donors and lead to more external support.
- Develop course based MSC, microcredientials and certificates for grad levels - increased teaching of undergrads with revenue to Departments for hiring at 40/40/20 positions -start professional based MSc programs (genetic counselling)
- Annual biotechnology lectures and possible session of how to consider marketing or commercialize products
- Supporting cost-efficient operations would be a great way for our community to start sharing resources. Identifying individual areas of excess/surplus even from the lab benches and finding a way to distribute that would support our community and possibly even build a culture of togetherness.
- Cost efficiency is probably best met when researchers have the support to write grants instead of doing administrative tasks, e.g. printing exam materials, scheduling meetings, etc. - we need to do outreach to the growing biotech sector and have a experiential learning and support/sponsorship for things like teaching labs, or start ups when aligned properly
- There are many strategies - key would be to incentivize these strategies and eliminate the administrative and "hurdle-focused" deterrents with respect to researcher time and value. IN other words, generate more funds for aspects that have return on time investment. 1. Remove the layers of bureaucracy and redundancy throughout the university - which only adds to unnecessary work - and redirect those $$s directly to activities that yield increased grant funds. I will give some examples.. a. My colleague's graduate student received funding from an Ontario source for a summer student ($9000). This simple things turned into administrators, contract specialists and then many needless questions such as IP and other aspects that are not needed for a summer student simple scholarship. The sum of the time for the bureaucracy versus the 9000 is not well balanced. b. For our team BRIF/CFI - we have Brian Obrien, Jon Ohara (could be removed), Gonzolo, 4-6 individuals from F&O working on 3 designs from inception that were "Fake" - before now finally at the "real stage" with hired architects to help build the plan (but still with all above and more at UA being involved). seems a lot of people resources that are

not directly essential and often actually add to challenges. c. For post CFI - UA requests quarterly financial forecasting (other universities do not) .. and such forecasting is often not even "real" or useful. That forecasting requires the time from researchers, a hired CFI helper, and then the UA administrators to look at it presumably. Can it be decreased to three times a year or even twice? This is just an example but many times it does not seem that the extra time is really needed versus cost/benefit analysis. There should be an option for researchers to discuss what is/is not worth doing, rather than being told always just to do what they are told. e. We received a very generous donation to set up scholarships in our department from the family of a deceased graduate student. It used to be so easy to "lead" this and administer yearly awards. Then the donation money became FGSR administered. Now, every year there needs to be at least 10 emails back and forth to figure out how much $$ we can allocate on that given year - and they refuse to just allow us to have a stable amount we can work with year-to-year (despite an endowment). How many people are needed to simply give out awards? Oh and now everything must pass also through the ADM for approval at each move, and some steps needed via shared services. I have since stepped down from this role as it has gone from something quite simple to something unnecessarily administrative. 2. If made "easier", then researchers can be incentivized to apply for team grants, for partnerships with industry and other universities. TBH, it is the disincentives right now that preclude many from considering additional options. I think once the culture is re-built and empowers researchers - we will capture more opportunities. 3. Facilitate research group's visions: Offer researchers a go-to if they have a vision for how to build innovative and sustainable large projects. For example, an individual that can help with establishing collaborations with pharmaceutical, biotech, and medical device companies for sponsored research and clinical trials, launch targeted fundraising campaigns, endowed chairs, and development programs for alumni and community donors, and create incubator or accelerator programs specifically for faculty and students to develop startups. All activities are now through the UA's various units and I can see the benefit of that in terms of integration - but it also has since disempowered any sub-group from bothering to try and help build beyond their specific individual research program. An example of how to implement this: The FoMD can run an internal "competition" for groups that have visions to consider. Such groups could give suggestions on how they envision their vision could be sustainable and yield greater finances. Subgroups that come up with good strategies get the support they need to take the vision off the ground. The FoMD could facilitate the difficult task of reducing significantly the buraucratic hurdles - and either be the ones to bridge between all of the UA units (e.g. HSE, IST, Office of Development and Alumni Relations, Research Services and Compliance Office, Office of the Vice-President (Research), Office of Industry Collaboration / Innovation and Industry Partnerships, University Legal Services , Communications and Marketing Department, Financial Services / Office of Sponsored Programs and Accounts, and so on).

- Correct me if I'm wrong, but the University of Alberta spends a greater portion of its total budget on administration and administrators than does almost any other major university in Canada. To support cost-efficient operations, get rid of the majority of administrators, and spend the savings to hire AASUA and NASA staff who *actually* make the university run, on reducing tuition costs, and on scholarship funding for graduate students.
- Donations to the faculty to support reseach efforts. Supprot to foster interactions between faculties basic and clinical. Industry supprot
- Patents, alumni, reduce administrative costs by reducing duplication of services
- Access to and education about AI research tools, more networking events to increase collaborations between departments
- ?
- UofA not very efficient, and runs like a university not an efficient business. Needs to really make it less old school academic but double down on team science and less politicing!
- Attitudinal change. Every graduate student should be doing course in entrepreneurial activity. Faculty should reward these in annual review (but doesn't). Very negative about achieving the cultural shift necessary for this
- Industry, and set up an easy way for direct donations. Better operations management processes; project tracking and reporting on activities for research staff on progress, costs, timelines etc.
- Fundraising events, make funds more easily accessible for initiatives.
- Further cooperation with industry.
- More emphasis on patent sources of data, industry partnerships, and more public advertising of what is going on and what that money is used for. People like giving money to causes they see as makes them feel good, and things like Cancer or Diabetes are things that people can understand and get behind. Maybe more things like a "Run for X"?
- Work with the community to develop endowed chairs and research support like done at UofC
- Get private backers lined up, maybe vencap types that can afford to spend money to make money. Surely there is more interest in biomedicine and health than in oil/gas stuff now that the conditions are no longer as favorable for that.
- We're supposed to be acting in the public interest. We should be publicly funded, Private for profit interests are narrow and revenue focused. We can explore mutually beneficial arrangements with industry, but not when it is contrary to public interests.
- Could have someone with biomedical ip/entrepreneurial expertise spend time meeting one one one with faculty to see if they are missing opportunities to patent.
- Facility Rentals & Fee-for-Service Offerings manay many lab, lecture rooms are constantky empty a lot of manoey could be made on rentals. keep up with the newest research trends such as AI and make partnership with private companies on thise fields. I also would hire the best lawyers and accountants to maximize tax credits, find big companies (e.g Telus) who can give a huge amount of money to,

because they can write off from their tax the R&D spendings. I would explore opportunityes where a lot of money involved. Convincink middle class people to donate their few dollars are not cost efficient approach to get income in my opinion.

- One example is to create within FoMD a Department of Women's Health (DWH) and to create within the College of Health Science Faculties specialized programs in Women's Health. The DWH would incorporate all the faculty's clinicians and scholars who focus on women's health. This would include the nephrologists, cardiologists, mental health, endocrinologies, and everyone who treat only women in their subspecialties. [The FoMD could reduce its number of departments to six: Women's Health, Pediatrics, Medicine & Surgery, General Practice, Dentistry, and Basic Sciences - with considerable cost savings.] There are too many details of a comprehensive program to write about here. The financial strategy though is to ask GoA to fund new training programs at all levels whose graduates will ultimately take up clinical and research posts in as DWH, women's health clinics, and women's health hospitals (there will be societal needs for these graduates). For instance, at the undergraduate level one program in FoMD could be a intercalated Bachelor of Science degree (iBSc) in which students enrol in any basic or biological science for the first three years (all their tuition goes to the Faculty of Science, correct?) but in the fourth year they could enrol in the iBSc where they would specialize in women's health courses and undertake a major research project (and all their tuition goes to the FoMD). They would be prepared for and fast-tracked into professional training programs (e.g. Medicine, Dentistry, Rehab Medicine, sports medicine, public health, many others). The FoMD could also offer a third year of residency training to general practitioners where they specialize in women's health throughout the life course. The FoMD could also offer subspecialty training at the resident or fellowship level for MDs to specialize in the women's health aspects of their disciplines. The Faculty of Nursing could train specialized RNs at the BScN level who would become Patient Navigators in women's health clinics and hospitals to guide women's health care needs through the life course. At the Master's level, the FoN could train Nurse Practitioners who specialize in women's health. Upon graduation they could work in specialized women's health clinics and hospitals serving in a capacity to reduce the time burden on GPs or who could refer women to necessary specialities or subspecialties. Each faculty in the CHS could train researchers at the MSc and PhD level who specialize in multiple aspects of women's health. The GoA would fund all of these programs because it would be convinced it needs to create specialized care, clinics, hospitals, and research programs for women. Within the CHS more interdisciplinary and collaborative projects focusing of the breadth and span of women's health would attract more funding from every source thereby generating more ICRs. And there would be more commercialization producing more royalties for the faculties and college. Finally, the UofA would be recognized internationally as the leading Women's Health University and would attract the best and brightest trainees globally.
- When a government does not support education, it is very difficult to thrive. Engaging in donations, selling naming rights, and turning to the federal government are the

only options. Unfortunately, universities are not a money-making organization - they are a spending organization because they are supposed to be for the people. When a government treats all institutions as corporations, it is difficult to keep one's head above water.

- Contracts and grants - but needs legal to be timely.
- The school dental clinic needs to encourage UofA students to utilize their fantastic clinical services. Almost no students in Science, Engineering, Arts or other non-FoMD areas know about our reduced fees and close clinical facility. We should be advertising/encouraging student use of this clinic.
- Partner with companies on research and development and testing. Seek corporate sponsors of programs.
- Engaging alumni in fund raising; companies located at the FoMD should contribute
- I have no idea
- While there could be some rationalization of operations, there have already been such massive cuts that there is little room for further efficiencies.
- Student tuition should be used to support TAs as done in Faculties across Canada and USA. These other faculties are much more attractive to students who apply to grad school. My program loses most of its student applicants, actually, ALL of the top applicants to Faculties that have TAs to help guarantee annual support of graduate students.
- There are already a lot of diversified revenue streams in place. entrepreneurial activities are just possible with great research results and success (to get industries and companies and financial supporters interested); to increase that the entire University and the Faculty of Medicine need to focus on a better hiring practice again to attract nationally and internationally recognized mid-carrier faculty who want to engage here and make an impact. This will be only possible with an attractive financial support from the university itself to make it attractive for these people to come here. The university and the FoMD should work with the political decision makers again on the reinstallation of the Heritage Fund for Medical Research or a similar program as it was a successful program (show and present the successes from the past in the public and advertise the potential for the future and the next generation)
- No comment.
- Stop saddling us with admin work. Better support for attending conferences and developing collaborations. Access to necessary infrastructure to allow us to compete and provide services to wider community.
- Uncertain
- See above - escalate undergraduate research opportunities with thesis based projects not largely limited to basic research. The PFT labs for instance has so many opportunities for students to explore.
- More interaction/collaborations with industry to support core facilities and training to thereby diversify revenue streams and encourage entrepreneurial activities. At least some cost-efficiency might be achieved by hiring skilled technical people who are

adept at repairing and maintaining older equipment, and setting up a database of such equipment to mitigate build-up of unused equipment in disrepair and save investigators time and money (and lab space) in enabling them to find what they need onsite instead of purchasing new. Refurbished equipment that is not needed could be sold or donated to developing countries. This would result in good PR for the university as well.

- Hospital foundations, philanthropic organizations, tech transfer/patent/spin-offs, and better support for international grants/contracts - eg Horizon Europe, not-for-profits
- Potentially, patient donations for specific disease streams could be solicited, ideally with communication about research results.
- SR&ED. The hesitation from FOMD to pursue this is frankly worrying. Many of us have PCs which can help fund our research. But the school wants 30% of it for indirect costs despite the fact that it is the researchers themselves who will benefit from it.
- Offer companies that use biomedical sciences opportunities for their staff and researchers to expand their knowledge and training in recent skills that are introduced and implemented (for a training or upgrading fee). This is so that not only will the companies will improve in their technological updates, but also allow the university to expand in their flexibility of actually applying and expanding the knowledge gained within the institution (UofA) thus making advancement in society.
- Philanthropic and innovation fund support from alumni and donors
- Have expertise on review panels for non-sentient-animal models, including in-silico modeling, and in particular, organoids, assembloids, organs-on-chips technology expertise.
- Professional Grant Writing services with proven expertise in NIH and DOD funding applications
- A hard look at and analysis of cost savings through streamlining administration and current Departmental structures. Promote entrepreneurship and philanthropy
- Encourage and support seeding fund to key discoveries and innovations within the university. A considerations for funding may be how an entity is planning to use key technologies and research platforms within the university to achieve their short-term and long-term goals. The university research groups and facilities should be encouraged to provide such help at a reasonable cost and/or through mutual knowledge transfer agreements. The university may need to promote their key research platform to the outside world for companies and universities.
- Department competitions funded by industry to solve particular problems that industries face. Monotized social media platforms.
- Government of Alberta support is essential. It seems hard to build a future for FoMD on most other revenue streams. As for cost-efficient operations, FoMD already seems to be operating at unsustainably low cost savings.
- Some of the university lands (unused) need to be liquidated, at current market rates to develop endowments for research in the future. Eg. University Farms.
- Facilitate institute and research units to fundraise

- Both.
- Unfortunately, it seems philanthropy is being relied on more and more to fund programs and projects. This leads back to the general public's opinion as well as government value on the university as a whole as well as the biomedical programs. If lottery based programs are allowed to generate funding for the Stollery and other such institutions, I am not sure why it cannot be applied to the biomedical programs as well.
- Give core facilities the ability to maintain their budgets and grow as a business. It is very difficult to operate as a small business when we cannot reinvest our revenue. It also makes it very difficult to pivot and increase service levels and support by having to try to request additional operational funds for new staff members. Investment in cores is a very democratic and cost efficient way to increase the general accessibility of expert knowledge and new technology to UofA researchers in general instead of concentrating it in certain labs. Bringing more philanthropy to cores and focusing on them as a pillar that supports researchers in a very broad and impactful way.
- 1. More support for U of A spin-off companies, especially patenting and clinical trials
- This is complicated in a health care system, I do not think there is room for diversifying revenue streams.
- Increase enrolment and tuition.
- Fundraising, philantropy
- HUBS, cores, microcredentialing, graduate studies that cater to the student and not the system and being the focus of outsourcing for governments both local and international.

What bold ideas or changes would you propose to support the future success of biomedical sciences in the FoMD?

- Introduction of a specific knowledge exchange team, with a business development manager employed within this team to pursue and create relationships with additional sectors, businesses and institutions to increase awareness of activities within the department and bring funding opportunities to it
- No opinion
- Strategic recruitment - recruit into existing strength, Institute-directed recruitment of new faculty, one or two biomedical departments (not more), placing of similar themed faculty in a contiguous space to promote collaborations and generation of big team ideas (there would be cost associated with this restructuring), core facilities supporting every aspect of biomedical research (need investment into people, not just infrastructure), establish technical core facility ("tech for short-term hire" to establish a technique or train a student in specific technologies) - better reproducible science.
- AI in health care. Last year 2 Nobel Prizes were awarded for AI, even though AI is not an eligible discipline. The Nobel committee called the prizes 'Chemistry' and 'Physics' but make no mistake - they were both for AI. UAlberta also has a Turing Award winner (Nobel prize for computer science) for Reinforcement Learning. And, it

is home to one of only 3 national AI institutes - Amii. This brings tremendous resources. AI and Health are 2 of the 3 strategic priorities for UAlberta. CIHR has dropped the ball here - AI is a 5th pillar that applies to each of the existing 4 pillars of health research. Together these factors bring a rare opportunity for UAlberta to take the lead and establish itself internationally in this area.

- Not within my perview
- To be serious about interdisciplinary collaboration. To be more selective in who can perform research. Medicine does not do a good job of curating who applies for grants and who doesn't.
- Merge all biomedical departments into one. Merge graduate programs into one or only a few, with options for specialization in subdisciplines. Merge undergraduate programs, with options for specialization into specific areas. Increase outreach initiatives and media presence.
- I think I was already bold in my previous opinions. I hope this is really confidential poll. In order to be successful you have to get rid of unnecessary beaurocracy and employ based on merit and good work ethics.
- ?????
- Break up the advancement group and have those people work embedded within institutes. Advancement is too centralized and too distant from the work they should be doing. As the majority of problems at the university are monitary, and advancement not working for researcher needs, there needs to be fundamental restructuring of this unit.
- I would love to see some integration of our education programs to have some cross pollination with the Faculty of Business to better foster entrepreneurship in all our trainees.
- Embark on more projects to integrate and involve health improvement measures in all facets of medicine and biomedical sciences. Involve students early with industry and business to integrate a business mindset to health and health research, including clinics, hospitals, and pharmacies or other community resources.
- Re-assign all non-clinical faculty member to one of the fundamental biomedical science department (they can keep their current affiliation as adjunct). This would increase collaborative work, cost $0, and in part solve the increase in teaching load in FoMD and make FEC evaluation more comparable.
- Develop consortiums with Canadian and European researchers. These consortiums are already in place in Europe and have been shown to be highly successful in informing policies and changing healthcare practices.
- Academically restructure the faculty to reduce administrative overhead and enhance interdisciplinary research and teaching.
- Science school and myth busting sessions for general public, summer camps for school aged kids really help with getting word out to community (engineering is very successful with this, they have a parent show and tell session at end of summer camp week where you come see what you kid did/made but they also take the

opportunity to showcase some of the great work they are doing in the faculty for the parents who are public members)

- Encourage multidisciplinary work and support teams to grow transdisciplinary expertise. With the emergence of ML, AI and powerful data generating tools, the opportunity to develop biobanks and databases we need to look at Europe and other consortia and step beyond their work to really share across the disciplines.
- Solve the AHS data access puzzle.
- Rather than control all resoureces centrally, provide direct incentives (money) to departments, groups and individuals proportanate to their grant capture, expansion of tuition revenues, etc.
- Given increasing student demand in the biomedical sciences, FoMD urgently needs its OWN undergraduate BSc program in biomedical sciences to better identify, nurture and train future health scientists. Window dressing of existing programs in FoS will not be sufficient.
- Cut down on red tape and bureaucracy
- Conduct a trial - evaluate the effect of merging some current groupings into a new Institute of Molecular Medicine (or equivalent name). ONLY do this if the Faculty is deeply committed to raising substantial donor funds to support this (minimum 20 million), be highly selective regarding who gets admitted, and then see if it is beneficial. If it is, you can repeat the process in other parts of the research enterprise.
- Take all Biomedical PhDs out of clinical and put in Basic Biomedical Departments so can continue to grow in size (if not supported by AMHSPs) - Find synergies in programs that may work together to do more with less (orgnaize into groups similar to potential reimagined graduate education themes) WITHOUT losing culture of excellence in science and teaching. -Hire into 40-40-20 and for first 3 years have higher research protected time. If successful (papers, continued grants) then stay at that level, otherwise return to 40/40/20. -Make a culture of teaching and research where teaching is not seen as a chore but is valued and celebrated as much as research is. This makes a vibrant institution overall. - value and engage people who think outside the box who work for the good of the whole (not just themselves) and are not YES people.
- The FoMD could track money coming in via collaborations and from industry contracts, and possible report numbers to let others know exciting things are happening here!
- Asking everyone to reflect on what they want for their careers. Build a community, or build your CV or anything in between. Asking everyone to look at their career stage and ask what they need, want now, can give, etc.
- Faculty sponsored networking opportunities - mandatory mentorship meetings - grant writers for large funding applications
- My bold idea is actually to enable bold ideas. Groups of researchers (say 5-20) could present to the FoMD their visions (including vision for what they will generate, vision for how they will get finances, vision for how it can be sustainable, and how it can

generate $$). Then say 5 such visions are chosen to endorse - not with $$ - but with administrative support to wield the bureaucratic aspects, the business aspects, etc. We set smaller milestones of achievement to begin with, such as having 1/5 of these generate new income. But such ideas/visions should come bottom up, rather than only top down - since to succeed it needs to be fueled by the ambitions and excitement of the researchers. Imbedded with a process to trim and cut hurdles that currently disempower growth seeking, and rewards that empower growth seeking. As an example, the FAR system needs to change and reward PIs for team work, for training undergraduates in labs, etc - or there is simply a reward to continue individual lab focus.

- Decorporatise the university and put the money, and the ability to make decisions, back in the hands of the Departments. Universities should be run by academics, not managers.
- No cost core faclities Guaranteed studentships for every lab Patient advisors engaged in research Provide free software (biorender, Prism etc).
- Foster interactions and collegiality between basic scientists and clinician researchers/scientists; promote a culture of collaboration
- ?
- UACT- all trials via UACT. AI in health is critical. Either make institutes big, or collapse them
- Reward all entrepreneurial activity at every level, by undergraduate students, graduate students, and staff. Train, support, and recognize this. Use Stanford as model
- Have a centralized advisor(s) to help consult research groups on how to set up operations and report on successes (not very bold). There is so much opportunity but the admin often seems to slow down the progress. Is there a way to streamline those pieces to make us an appealing partner for industry/other research groups outside of U of A and Canada. Perhaps a session to map the current processes from research project initiation to completion (as-is) and then the ideal state to identify quick wins and plan for long-term process simplification? And the same for research group/centre operations?
- Social media, advertising, catchy posts, fund raising events with clear plans for the use of funds, concerts, events.
- We need greater independence from the University in order to be in a position to advocate for our Faculty.
- Focus on more end-market products, such as clinical trials and either pioneering of new technologies or new uses for existing technologies in new areas. For example, novel uses of Ultrasound beyond basic medical imaging for more efficient use of resources.
- Fewer committees, more money!
- We need to focus on creating the best patient healing strategies. Putting people first, rather than profit or cost-cutting measures, should be the focus.

- Create a culture where fundamental/basic science is treated as (at a minimum) equally important to translational/clinical science in the generation of better health for society. This needs to be clear at all levels of leadership in the FOMD, Departments, and associated institutes. This will facilitate the needed collaboration between fundamental science researchers and clinician scientists.
- Create a Translational Research & Commercialization Accelerator, Launch a Global Biomedical Research Exchange & Leadership Program. European union spends way more funding for research European collaborations would move science faster forward and would help international collaboration and knowledge exchange.
- See page 6
- I suggest the Sickkids model. At sickkids, they have biomedical research division that are identical to our departments (but called divisions). There, if a clinician wants to conduct biomedical research (Pillar 1), they identify the division that aligns with their ambitions, and join this group. This anchors biomedical research into the soul of the institution and sets the momentum in the correct direction: clinicians aspiring to be biomedical researchers move in the direction of the research being conducted, rather than the biomedical researchers taking hit after hit when there are budgetary concerns. This is also important in recognition of priorities: clinicians must prioritize clinical care, which makes research by definition secondary. Researchers on the other hand prioritize research. It therefore makes sense that if clinicians are made to adapt to the biomedical departments that already exist when conducting research, that all sides would benefit. This is indeed underscored by our success in CIHR Pillar I panels, where there is minimal overlap between fundamental science researchers and clinicians. This blurs the lines between scientists and clinicians, but this may be to our benefit.
- Convert basic departments into divisions (if they need to persist as clusters) within one or two departments. Clarify the role of institutes (some which need to be retired) relative to departments. Split clinical aspects of DOM / Ped / Surgery to remain with AHS and ring fence the academic faculty within a school of clinical medical sciences which could include ectopic basic scientists
- Student clinical rebates. I would encourage the faculty to look into the feasibility of providing a tuition-cash-back insensitive program from 3rd and 4th year dental students operating in clinic. This would be a small 1-5% additional fee for our dental services that would directly be used to subsidize an individual's tuition based on clinical performance. Not only would this encourage students to be efficient and effective, but it would teach clinical productivity and financial productivity/time management.
- Change the hierarchical structure so that you have more people doing the research, but at a lower pay. Employ more research associates and lab technicians. Include these technical staff in the discussion about the direction of the faculty. They are too often forgotten and overlooked. Supporting your support/technical staff will work more like a business. More lower paid workers doing the hands-on work, maintain the same amount of PI's to be the "brains" of the operations. But those workers really need to be supported and feel like they are valued. They need to be paid a fair wage

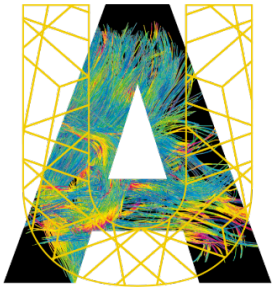
for their expertise but that will be much cheaper than hiring a PI. Right now they are transient and have very low engagement because they don't feel valued.

- Need to incentivize collaborative behavior; find opportunities for patient engagement; bring in patients as advisors
- Provide a small amount of base yearly operation support for basic scientist Establish conditions for clinical and basic scientists joint collaborative research
- Do not homogenize the graduate programs into a single massive program. Maintain the separation and specialization.
- There should be a move, over time, for all basic science to have a primary affiliation with basic biomedical science departments.. This would strengthen those departments form a research perspective, make better use of limited resources in terms of overall research infrastructure and teaching/education mandates/opportunities.
- Simple" Make graduate studies is FoMD follow the TA policies of Sciene and Engineering, in fact, even increase the TA support. Industry will not help graduate because Industry is only interested in helping out financially if they receive a direct benefit.
- The university and the FoMD should work with the political decision makers again on the reinstallation of the Heritage Fund for Medical Research or a similar program as it was a successful program (show and present the successes from the past in the public and advertise the potential for the future and the next generation)...it was so attractive for foreign scientists to come here as the place to be here with the Alberta advantage !!! Work together with politics and the public to increase the positive view on biomedical research !!! Make success stories public !!! Drastically reduce administration levels also in the FoMD and get rid of the university college structure again. ....the university should really reduce their number of faculties by merging of some of the faculties as originally planned Do not enroll more students if there are no more resources for that. Tell the political decision makers that they need to invest first if they want more postsecondary students to be enrolled;
- Bring back enough administrative staff that researchers can work on research instead of trying to remember how to use websites for bureaucracy and admin. Lets scientists be scientists.
- Base funding for all labs.
- More intereaction of science and clinical in key areas like Cancer, which for example seems to be focused on basic science without the flexibility needed for clinicians to meet. Area is not organized with a medical lead and science lead, thus is very biased to science side. Where is the patient voice in all of these?
- Leadership - including educational leads - within the basic science departments that reside within FOMD (esp Neurosciences, Biochemistry, Physiology) need to review opportunities for expanding clinical / translational and health services research opportunities. As well MD-PhD program.

- Break down the silos - establish a collaborative graduate program that is - by design - multidisciplinary in nature, whereby grad students pursue projects that span at least two disciplines.
- Disease-specific working groups could be set up, where participants must open up their freezers with samples (clinicians) and basic researchers provide expertise with investigation of specific questions.
- Providing graduates opportunities to take their training and immediately put to practice (whether as a career or in research) what they have learned to start working in an actual work environments (being temporary workers in areas such as, police forensics, pharmacy, pharmaceutical research, non-profit organization in health and medicine, etc.).
- More student-centric programming
- Stop the morally unjustifiable use of sentient animal "models" of human disease.
- Build a dedicated and first-in-Canada theranostic and precision medicine center for patient access and first-in-human trials, harboring newest state-of-the art PET/MRI , SPECT/CT and total-body PET/CT equipment (current PET/MR and further equipment is aged at technological level 12 years ago)
- Amalgamation of Departments as has been done at other institutions with success and resource and empower institutes.
- Monthly meetings between all the FoMD graduate students to promote collaboration
- Perhaps we should better engage with the Government of Alberta as partners in the future of biomedical sciences in Alberta.
- This would take some thought. Maybe exposing students to the opportunities available at an earlier stage in their academic development.
- There are extraordinary individual investigators at the FoMD, centralizing thematically aligned investigators will greatly facilitate resource sharing and collaboration. The 'bold' idea would be to build a real biomedical research centre, a less bold idea would be to reorganize investigators in existing spaces, that may not align with traditional academic units
- More interactions between departments with different groups helping each other with open regular meetings for research presentations and sharing of activities - not working in silos.
- I really think it starts with undergraduate engagement and developing excitement for a career in biomedical science. If we do not have sufficient students to select as future graduate students and future scientists our programs will continue to struggle. This requires engagement as well as creating the environment that a career as a scientist is worth the effort. With current funding challenges we are not able to offer incentives or well paying salaries to future young scientists. Many young people would not be excited about a post doctoral salary after all the years of hard work in undergraduate and graduate school. The challenge is to create opportunities within the universities as well as related companies for future scientists.
- Consolidate cores into a contiguous facility with a business lead that would allow synergy, collaboration and optimal cohesiveness in the services we offer. This would

also allow us to move funds around as needed. Uncouple the business operations of cores from academic committees who are incentivized to keep experiment costs as low as possible, which often prevent growth and sustainability of core services and equipment replacement.

- 1. Weneed a strong bioinformatics core 2. Develop a strong partnership with AHS to pursue clinical trials based on U of A research
- No bold ideas at this time.
- Try to motivate major companies to engage with the University and support the biomedical sciences.
- Keep the departments as they are, but create a more collaborative environment, particularly for teaching
- A division of biomedical sciences. A division of clinical sciences. A division of services that includes cores. Within each division can be hubs that focus more specifically on certain research areas. Interdisciplinary work is supported through the administrative umbrella.
- In the medical clinical departments the need to augment, develop, and support the clinical faculty to assume a greater role in teaching and service, with appropriate compensation; the academic faculty cannot do it all in an increasingly competitive scholarly environment.
- Social media engagement targeted to the public



Biomedical Sciences Review Report

Appendix I.

Focus Group Summary

FACULTY OF MEDICINE AND DENTISTRY FOCUS GROUP SUMMARY REPORT

Wendy Wilton M.Ed, PCC
WILTON CONSULTING INC.

Contents

Executive Summary

The Faculty of Medicine and Dentistry focus groups were held to gather concrete actionable, ideas that are realistic within the current context that will help the faculty thrive far into the future. Four separate focus group sessions were held, using the world café format to achieve this outcome. An additional world café was conducted during the FoMD Leadership retreat.

The focus groups sessions and the world café activity with the Leadership team were 120 minutes in length. Each session began with a "team alliance" which set the stage for the brainstorming. Most of the team alliances focused on commitments to:

- Participate
- Demonstrate respect for others
- Share all ideas, even creative/wild ones
- Have fun
- Hear all the voices in the room
- Etc.

There were six areas of interest and subsequent questions participants were asked to consider. They were as follows:

1. Collaborative Culture & Interdisciplinary Integration

Question: What can we do to build stronger interdisciplinary and interdepartmental ties to enhance research impact and educational innovation?

2. Strategic Educational Transformation

Question: How do we prepare for future demands in education to best prepare students for careers in health sciences?

3. Administrative & Operational Effectiveness

Question: How can departmental structures be optimized to better support productivity and morale of a biomedical sciences community with fewer biomedical faculty members?

4. Sustainable and Diversified Funding Models

Question: What can we do to reduce reliance on traditional funding sources by diversifying revenue and incentivizing departments to grow income and reduce expenditures?

5. Infrastructure Optimization

Question: What solutions can be implemented to enable cost-effective, accessible, and efficient core facilities, research infrastructure, and learning spaces?

6. Research and Education Excellence

Question: What can we do to promote a culture of high research and education performance?

Overall Themes & Action Items

Taking into consideration all the raw data including the Leadership Retreat, the following themes and action items were most represented.

1. Interdisciplinary Collaboration & Culture Building

Themes:

- Breaking down silos between departments, disciplines, and clinical/basic scientists.
- Fostering a culture of shared research and community.
- Supporting structured, meaningful interaction.

Action Items:

- Merge departments or create umbrella structures to enable collaboration.
- Introduce campus-wide **research matchmaking platforms** ("Research Tinder").
- Launch **Faculty Research Day**, "Collab Club", joint seminars, and thematic half-day sessions.
- Offer **seed grants** and recognize collaborative efforts in FEC/merit processes.
- Embed **cross-appointments** between clinical and biomedical departments.
- Implement **interdisciplinary course/training requirements** for students and thesis committees.
- Develop **communities of practice** around themes or diseases.

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2. Faculty Recognition, Retention & Support

Themes:

- Equitable recognition of teaching, research, and service.
- Mentorship and support across all career stages.
- Merit systems that reflect quality, not just quantity.

Action Items:

- Redesign FEC and promotion criteria to reward **team science**, **teaching excellence**, and **mentorship**.
- Introduce **protected time** for collaboration and development (especially for clinical faculty).
- Launch a **faculty onboarding and mentoring program** beyond compliance.
- Support **faculty storytelling training** to communicate research value to donors and partners.
- Provide **technical and grant writing support**, especially pre-award.

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3. Education Innovation & Curriculum Reform

Themes:

- Future-proofing education for biomedical and health sciences.
- Expanding student exposure to industry, AI, and diverse careers.

Action Items:

- Embed **AI literacy**, **data analysis**, and **entrepreneurial thinking** into curricula.
- Expand **Bachelor of Health Sciences** and multi-disciplinary programs.
- Create **co-op, practicum, and internship** opportunities with industry and government.
- Regularly review and reform curricula (every 3 years).
- Launch **micro-credentials**, shorter programs, and online learning pathways.

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4. Core Facilities, Infrastructure & Shared Resources

Themes:

- Optimize core service access and visibility.
- Centralize equipment and reduce duplication.

Action Items:

- Host **Core Day**, **lab tours**, and publish a searchable **equipment/core service database**.
- Implement **transparent cost-recovery models** and subsidize access.
- Hire **shared technical staff** and staff scientists to support multiple labs.
- Build **smart, modular learning/research spaces** and refresh outdated ones.
- Use AI to optimize **space scheduling** and reduce underutilization.

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5. Strategic Partnerships, Industry Engagement & Funding

Themes:

- Leverage existing strengths and identity (e.g., #4 in Canada for endowments).
- Connect more deeply with patients, alumni, startups, and funders.

Action Items:

- Create a **public-facing advancement strategy** including storytelling, success tracking, and follow-ups.
- Promote **IP, commercialization**, and **spin-off development**.
- Host **vendor showcases** and invite industry into shared research space.
- Improve **transparency on endowment use** and promote naming opportunities.
- Support international training and **sponsored research programs**.

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6. Governance, Structure & Process Efficiency

Themes:

- Reorganizing for efficiency, transparency, and collaboration.
- Aligning admin support with faculty needs.

Action Items:

- Reduce number of departments; build **shared administrative support systems**.
- Improve internal communications (e.g., role clarity, reporting lines).
- Develop a **faculty concierge service** and **"one-stop" portals** for resources, IT, and services.
- Conduct **audits** of space, equipment, and faculty expertise.
- Clarify institutional expectations and redefine productivity metrics (across teaching/research/admin).

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7. Student Experience, Career Development & Inclusion

Themes:

- Ensure biomedical education leads to viable, adaptable careers.
- Improve supports for diverse student populations.

Action Items:

- Provide **career guidance** from early undergrad to postgrad.
- Support international students with **mentorship, community events, and navigation tools**.
- Launch **field practicums**, **company tours**, and **alumni speaker series**.
- Track graduate outcomes and adjust programs accordingly.
- Design education space and policies to support belonging and safety.

Focus Group Methodology

Two days were chosen for the focus groups with a morning session and an afternoon session on Friday, May 23, 2025 and Tuesday, May 27, 2025 with the Leadership Retreat world café activity taking place Friday, May 30, 2025.

As previously mentioned, the sessions were 2 hours in length. In the four focus groups, Dr. Tom Stelfox's introductory video stressed the fact that status quo is not an option. Below is a summary of key points from the video:

- We need to be proactive!
- Decrease in funding in post secondary (loss of Alberta Heritage fund - $20-$30 Million/year = less money for faculty salaries.)
- Constraints in Provincial post secondary education - ongoing decrease in base budget to fund faculty members - anticipating 20%-40% more faculty retirements than we have funds to recruit.
- Changing needs of students - what they need to learn, how they learn it and how we deliver it to support successful careers
- Change in how research is being conducted (e.g. how machine learning has completely revolutionized research)
- Your voice matters - **concrete**, **feasible within our context** and **actionable** recommendations to be communicated to the Dean

Upon registration in the world café sessions, participants were sent the questions and themes that would be examined.

Attendance for the Focus Groups were as follows:

Fri May 23
9 - 11 a.m.: 12 attended / 16 registered

1 - 3 p.m.: 14 attended / 24 registered

Tues May 27
9 - 11 a.m. 13 attended / 19 registered

1 - 3 p.m.: 13 attended / 18 registered

Total: 52 attended / 77 registered = 68% attendance rate

Participants were from the FoMD and included researchers, professors, administrative professionals.

After establishment of the team alliance, participants were assigned a group of people with whom they moved around the themes and questions.

In three of the focus groups, 3 "table hosts" captured ideas and kept participants on track ensuring that the brainstorming rounds were solution focused, not storytelling and/or complaining.

One of the focus group sessions only had two table hosts.

Table hosts included:

Janis Galloway, Joanne Simala-Grant and Wendy Wilton with Debbie Doudiet timing the world café segments.

Friday May 30 FoMD Leadership Retreat

Approximately 50 participants were in attendance for the leadership retreat. The same world café process was followed as with the other four focus groups. The FoMD Leadership retreat world café had 6 table hosts, one for each question. Table hosts included: Asha Rao, Brenda Hemmelgarn, Elaine Yacyshyn, Richard Lehner, Tom Stelfox, Wendy Wilton.

The activity was very well received by all in attendance. Several flipcharts were filled and ideas were generated.

Commentary and Observations from Focus Groups

Many of the participants were unsure of the rationale behind the focus groups. Dr. Stelfox's video helped to clarify the need for realistic, innovative ideas but many participants indicated they were unaware of the gravity of FoMD's situation with financial constraints and loss of faculty.

Comments around lack of communication was a common theme although data would suggest that FoMD has done a tremendous amount of communication around the current state with Town Hall information meetings, surveys and other communications.

There were a few focus groups where participants expressed worry over not having their voices heard and/or their ideas not considered in Dean Hemmelgarn's decisions.

For the most part, upon completion of the world café activity, most participants expressed positivity towards the experience.

Two participants submitted written suggestions for the questions provided. (see appendix 1)

Themes and Action Recommendations by Question

The following represents the questions posed and the summary of data collected during the focus groups. Raw data is found in appendix 2.

1. Collaborative Culture & Interdisciplinary Integration

Question: What can we do to build stronger interdisciplinary and interdepartmental ties to enhance research impact and educational innovation?

I. Structural Reform to Enable Collaboration

Theme: Align administrative and academic structures to support interdisciplinary research and education.

Actionable Items:

- Merge or reduce departments to promote shared research agendas and administrative efficiency.
- Establish umbrella/hub models around key interdisciplinary themes.
- Standardize teaching loads and department-level processes.
- Eliminate duplicative infrastructure (e.g., multiple clinical trial units).
- Improve transparency in leadership roles, reporting, and decision-making processes.

II. Strengthening Interdisciplinary Culture and Recognition

Theme: Normalize collaboration and make it core to academic identity and success.

Actionable Items:

- Organize regular joint seminars, “work-on-a-problem” sessions, and interdisciplinary symposia.
- Launch small seed funding programs for interdisciplinary teams.
- Create initiatives like a “Collab Club” or regular research mixers.
- Establish co-appointments between clinical and biomedical departments.
- Integrate collaborative achievements into evaluation, merit, and promotion systems.
- Reward team science and community-building efforts.

III. Infrastructure to Support Connection and Collaboration

Theme: Lower barriers to finding collaborators and working across boundaries.

Actionable Items:

- Develop a searchable expertise directory with research keywords.
- Build digital platforms for collaboration matchmaking ("Research Tinder" concept).
- Implement a "faculty concierge" service to help connect people and guide collaboration efforts.
- Create shared staff scientist and technical support positions across labs.
- Develop cross-disciplinary mentorship programs.
- Provide training on collaboration essentials (e.g., co-writing grants, managing team dynamics).

IV. Communication and Community Building

Theme: Foster a transparent, inclusive, and celebratory academic environment.

Actionable Items:

- Enhance faculty-wide communications via newsletters and leadership updates.
- Host regular events: show-and-tell sessions, open forums, informal gatherings.
- Celebrate interdisciplinary research and community leadership at Faculty and Undergraduate Research Days.
- Publicly recognize both research success and efforts in building collaborative culture.

V. Interdisciplinary Education and Training

Theme: Equip students and educators to thrive in an interdisciplinary academic ecosystem.

Actionable Items:

- Merge under-enrolled graduate courses across departments.
- Create cross-departmental teaching pools for resource optimization.
- Hire ATS (Academic Teaching Staff) for continuity and innovation in teaching.
- Train faculty in new educational strategies (e.g., flipped classrooms).
- Require interdisciplinary thesis committees and promote cross-listed course options.
- Engage students in collaborative seminars and team-based research projects.

VI. Space and Resource Optimization

Theme: Design physical and technological environments that promote cross-disciplinary work.

Actionable Items:

- Build modular, flexible research and teaching spaces.
- Create education hubs with smart, connected technology.
- Centralize core research facilities and ensure equitable access across departments.
- Implement transparent and fair cost-recovery models for shared infrastructure.

2. Strategic Educational Transformation

Question: How do we prepare for future demands in education to best prepare students for careers in health sciences?

I. Career Preparedness & Broader Student Training

Theme: Equip students for diverse and evolving career paths within and beyond academia.

Actionable Ideas:

- Integrate multi-disciplinary and modular program structures with specialization options.
- Provide mentorship and career planning early, including exposure to non-academic pathways.
- Introduce micro-credentials, certifications, and co-op/internship programs.
- Conduct career mapping with alumni data to inform curriculum design.
- Host industry tours, panels, and mentorships with external professionals.
- Expand undergraduate research opportunities and practicum placements.

II. AI & Technology Integration

Theme: Prepare students and faculty to understand, use, and teach AI and emerging technologies.

Actionable Ideas:

- Develop AI-focused courses, simulations, and digital literacy modules.
- Provide training and support for faculty on AI integration in pedagogy.
- Build curriculum around data science, computational thinking, and digital health.
- Ensure time and institutional support for faculty to adopt tech-enhanced teaching methods.
- Promote hands-on tech experience through labs, kits, and real-world problem-solving.

III. Curriculum Renewal & Educational Innovation

Theme: Ensure relevance, flexibility, and responsiveness in program offerings.

Actionable Ideas:

- Commit to curriculum review every 3 years with incentives and workload support.
- Collaborate with the Faculty of Education for evidence-based pedagogy training.

- Emphasize core competencies: critical thinking, collaboration, communication, ethical reasoning.
- Introduce value-added training in regulatory affairs, business acumen, and entrepreneurship.
- Offer student-focused sessions on “how to think” rather than content-heavy lectures.

IV. Student Support & Inclusion

Theme: Foster a welcoming, adaptable, and supportive academic environment.

Actionable Ideas:

- Increase support for international students: mentorship, social integration, and cross-discipline engagement.
- Promote flexibility in academic paths to allow career pivots and interdisciplinary exploration.
- Address educator burnout through support, planning certainty, and reduced administrative burden.
- Enhance access to teaching and assessment support (e.g., more TAs).

V. Institutional & Community Integration

Theme: Break down silos and enhance institutional coordination and culture.

Actionable Ideas:

- Merge smaller programs under larger interdisciplinary umbrellas while maintaining specialization.
- Use joint seminar series, Faculty Research Days, and TGIF-like events to encourage collaboration.
- Promote open communication via bulletin boards, databases, and open events.
- Celebrate collaborative success stories and recognize community-building efforts.
- Bring back faculty, administrators, and students into shared physical and intellectual spaces.

VI. Experiential & Problem-Based Learning

Theme: Enable learning by doing to develop applicable skills.

Actionable Ideas:

- Expand experiential learning in health sciences (e.g., simulation, field work).

- Embed problem-based learning formats that are interdisciplinary and real-world focused.
- Operationalize internships and field placements in health, biotech, and start-up sectors.
- Encourage students to participate in hackathons and innovation challenges.

VII. Faculty Development & Adaptability

Theme: Support faculty to evolve with changing educational and scientific demands.

Actionable Ideas:

- Train faculty on AI, digital tools, and interdisciplinary teaching methods.
- Provide protected time and structural support for curriculum reform and collaboration.
- Recognize and reward faculty for educational innovation and mentorship.
- Promote team teaching and diverse thesis committees to encourage interdisciplinarity.

VIII. Strategic Partnerships & External Engagement

Theme: Align education with industry, health systems, and societal needs.

Actionable Ideas:

- Partner with biotech, APL, start-up's, and health providers to shape curriculum and research.
- Develop co-branded programming with external experts and employers.
- Use philanthropy and public engagement to bring visibility and funding to educational initiatives.
- Leverage international contacts and global best practices for program improvement.

3. Administrative & Operational Effectiveness

Question: How can departmental structures be optimized to better support productivity and morale of a biomedical sciences community with fewer biomedical faculty members?

I. Structural Optimization & Department Mergers

Themes:

- Reduce the number of departments to foster collaboration and efficiency.
- Transition to an "umbrella" model or cluster-based structure based on shared research themes.
- Avoid silos; promote interdisciplinarity and shared services.

Actions:

- Merge smaller departments with overlapping research and teaching areas (e.g., 600-level courses, clinical trial units).
- Define minimum and optimal department size (e.g., 7–10 vs. 20 faculty).
- Rationalize the number of students per faculty to optimize teaching and supervision loads.
- Standardize core processes across departments (admin, teaching, grants, onboarding).

II. Teaching Model Reform & Faculty Roles

Themes:

- Streamline teaching processes and reward teaching appropriately.
- Adapt to modern teaching models (e.g., online, cross-departmental).
- Clarify expectations across clinical and biomedical tracks.

Actions:

- Hire ATS (Academic Teaching Staff) for core instructional needs.
- Pool teaching faculty across departments to optimize course delivery.
- Incentivize teaching (merit points, FTE return, lab funds for effort).
- Merge under-attended senior graduate courses.
- Allow more teaching flexibility for faculty (choose content, schedule).
- Increase year-round teaching opportunities to maximize utilization.

III. Administrative Efficiency & Transparency

Themes:

- Reduce administrative burdens and clarify reporting lines.
- Increase transparency in funding, processes, and communication.

Actions:

- Streamline admin workflows through centralized shared services (e.g., IT, RSO, finance).
- Implement consistent communication practices (clear emails, heads-up on changes, accountability).
- Publish clear org charts and responsibilities (e.g., "Anne, what to report?" confusion).

- Track and recognize all faculty contributions (teaching, service, research).
- Promote use of automation tools (AI-based scheduling, QR codes for resources).
- Provide clear directory and annual survey of research activities.

IV. Cross-Department Collaboration & Shared Culture

Themes:

- Build a stronger, more unified biomedical community.
- Cultivate a sense of belonging and shared mission.

Actions:

- Host cross-department social and professional events (potlucks, retreats, seminars).
- Use onboarding and mentorship programs to foster community.
- Establish shared spaces (lounges, teaching labs, lunchrooms) to reduce physical and social barriers.
- Create formal affiliations between basic and clinical departments.
- Share administrative and research learning across departments.
- Define and model expected professional behaviors and norms.

V. Centralized Supports and Tools

Themes:

- Better support for faculty through centralized resources.
- Increase visibility into services and specializations.

Actions:

- Develop a “Faculty Concierge” or navigator model to connect people to the right resource (IT, grants, HR, teaching support).
- Create a centralized, user-friendly website that maps people, labs, core equipment, specializations, and available supports.
- Host regular seminars and bootcamps (research, admin, tech).
- Provide clear pathways for requesting and sharing research staff/scientists.
- Use technology for internal discovery (e.g., AI mapping of research clusters).

VI. Culture, Recognition, and Leadership Development

Themes:

- Shift perceptions of biomedical science as “essential,” not optional.
- Recognize and support all contributions.
- Build leadership skills and engagement.

Actions:

- Train department and institutional leaders on change management and inclusive leadership.
- Celebrate success in all domains (not just clinical/PI-heavy roles).
- Establish metrics and norms around productivity in teaching, research, service, and admin.
- Regular check-ins and recognition from leadership to reinforce belonging and morale.

4. Sustainable and Diversified Funding Models

Question: What can we do to reduce reliance on traditional funding sources by diversifying revenue and incentivizing departments to grow income and reduce expenditures?

I. Industry and External Partnerships

Themes:

- Collaborate with industry for mutual benefit.
- Promote co-use of teaching, research, and infrastructure resources.
- Support patents and commercialization efforts.

Actions:

- Establish formal industry partnership offices/facilitators.
- Run vendor and pitch showcase events.
- Develop clearer pathways and reduce admin time for industry engagement.
- Create flexible partnership models (e.g., with COI departments).
- Market core facilities and equipment capabilities to industry.

II. Enhancing Visibility, Identity & Storytelling

Themes:

- Promote the value of basic science.
- Increase public and internal awareness of FoMD's strengths and impacts.
- Strengthen branding around U of A's national standing (#4 in endowments).

Actions:

- Launch targeted marketing campaigns (e.g., public lectures, alumni/patient success stories).
- Host annual reports and showcase events.
- Develop training programs to help faculty tell their research story effectively.
- Emphasize success stories from interdisciplinary research and core use.

III. Funding, Endowments, and Revenue Generation

Themes:

- Increase and diversify funding sources.
- Improve transparency in development and endowment use.
- Use shared resources more strategically.

Actions:

- Create mechanisms for mini-grants and bridge funding.
- Increase donor follow-up and visibility into impact.
- Include strategic funding partners (beyond classic government) like patients and alumni.
- Advance revenue sharing models, naming opportunities, and international sponsorships.
- Advocate more visibly for government investment in biomedical research.

IV. Infrastructure, Equipment & Core Services

Themes:

- Optimize and centralize research infrastructure.
- Increase shared access and reduce duplication.
- Improve transparency and cost recovery.

Actions:

- Centralize shared core facilities with equitable cost-recovery models.
- Conduct space and equipment audits to reduce redundancy.
- Develop a searchable online inventory of equipment, software, and available spaces.
- Fund and hire staff scientists to support core services (“boots on the ground”).
- Offer seminar series on equipment capabilities.
- Implement a “core concierge” service and an annual “Core Day”.

V. Education, Microcredentials & Teaching Optimization

Themes:

- Broaden teaching offerings and revenue models.
- Optimize use of space and technology in education.
- Support instructors through service and tech infrastructure.

Actions:

- Launch online programs and microcredentials.
- Offer computer bootcamps and asynchronous learning options (e.g., MOOCs).
- Invest in modular, smart classrooms and multi-use spaces.
- Reallocate teaching loads (TAS reform, FTE recovery).
- Use automated systems to optimize scheduling and room use.

VI. Internationalization & Strategic Expansion

Themes:

- Position U of A as a global biomedical research and training leader.
- Build international alliances and visibility.

Actions:

- Expand international training programs and fellowships.
- Build on international campus successes.
- Participate actively in global research and education conversations.
- Attract and support foreign-sponsored trainees.

VII. Transparency, Communication & Culture

Themes:

- Foster trust through transparency in funding, overhead, and space usage.
- Strengthen internal communication and collaboration.

Actions:

- Provide clear input channels for faculty on space, equipment, and indirect costs.
- Use dashboards to show how funds and spaces are allocated.

5. Infrastructure Optimization

Question: What solutions can be implemented to enable cost-effective, accessible, and efficient core facilities, research infrastructure, and learning spaces?

I. Organizational Structure & Culture

Themes:

- Departmental restructuring
- Interdisciplinary collaboration
- Community, culture, and leadership alignment

Actionable Items:

- Explore merging departments to reduce silos and optimize resources.
- Create umbrella structures around core missions (e.g., biomedical research, teaching, clinical care).
- Foster cross-affiliation models that allow faculty to teach or research across units.
- Develop and promote a faculty values framework (collaboration, transparency, respect).
- Formalize mentorship programs and onboarding supports.
- Initiate community of practice groups to encourage interdisciplinary synergy.

II. Teaching, Learning, and Faculty Support

Themes:

- Course efficiency and teaching load
- Incentives for teaching
- Educational innovation

Actionable Items:

- Merge under-enrolled courses, especially at senior levels.
- Establish shared teaching pools across departments with flexible loads.
- Offer incentives or stipends to labs/faculty for teaching contributions.
- Recognize teaching in merit and promotion processes (e.g., via FAR points).
- Increase year-round faculty appointments and reduce over-reliance on sessionals.
- Develop bootcamps, MOOCs, and microcredentials as revenue and learning tools.
- Promote cross-listing of courses to boost enrollment and collaboration.

III. Research Infrastructure & Core Facilities

Themes:

- Visibility, access, and use of cores

- Centralization and transparency
- Funding and sustainability

Actionable Items:

- Market core facilities to faculty, students, and industry (e.g., through Core Day, tours).
- Establish a centralized searchable database of equipment and space.
- Use a "concierge" model to guide users across departments to available core resources.
- Audit and publish surplus equipment (e.g., via Free Cycle events).
- Align large equipment purchases across departments.
- Offer grace periods or mini-grants for early core use during project planning.
- Adopt transparent, equitable cost-recovery models (e.g., NanoFAB).
- Include core support and service contracts in CFI and NSERC applications.
- Maintain subsidized usage rates for faculty.

IV. Space Utilization & Facilities Management

Themes:

- Space access and optimization
- Flexible, future-ready learning and research environments

Actionable Items:

- Conduct audits of available space, ownership, and usage.
- Use AI tools and scheduling software to optimize classroom and lab use.
- Enable OneCard access to more facilities campus-wide.
- Create modular, multipurpose spaces for research, teaching, and collaboration.
- Redesign underused areas (e.g., ECHA) for cross-faculty access and innovation zones.
- Refresh classrooms and labs with modern furnishings, lighting, and technology.
- Implement one-stop-shop systems for room bookings and classroom reallocations.

V. Advancement, Partnerships & External Engagement

Themes:

- Donor and industry engagement

- Public outreach and reputation
- Strategic funding diversification

Actionable Items:

- Promote U of A's #4 ranking in endowments as a point of pride and leverage.
- Train faculty to effectively communicate research value to donors and partners.
- Use public lectures, events, and campaigns (e.g., Kickstart) to build community and visibility.
- Engage industry and alumni in naming, sponsorships, and IP development.
- Increase transparency around endowment and overhead use.
- Develop international training programs and sponsored traineeships.
- Advocate for government and non-traditional funding sources.

VI. Communication, Navigation & Digital Tools

Themes:

- Internal navigation and transparency
- Data and IT systems
- Communication about expectations and support

Actionable Items:

- Create a centralized, easy-to-navigate website for core services, space, equipment, and supports.
- Improve integration of systems (e.g., Banner, OneCard, scheduling tools).
- Develop visual org charts and help maps to clarify who does what and where to go.
- Communicate faculty responsibilities and institutional expectations clearly.
- Collaborate with IST on data lifecycle management tools and secure cloud infrastructure.

VII. Strategic Planning & Evaluation

Themes:

- Evidence-based decision making
- Planning for growth and sustainability

Actionable Items:

- Conduct regular surveys of faculty/staff needs related to teaching, cores, and space.
- Create feedback loops to adjust strategy based on user experience.
- Track and report on grant efficiency, core usage, and space utilization.
- Include support costs in major grant applications.
- Use HQP and “big name” researchers to anchor grant applications.
- Develop clear plans with milestones and accountability metrics.

6. Research and Education Excellence

Question: What can we do to promote a culture of high research and education performance?

I. Faculty Development & Retention

Themes:

- Retain and attract early career researchers with energy and fresh ideas.
- Value contributions from educators and teams, not just individual researchers.
- Build mentorship pipelines across career stages.

Actionable Items:

- Provide mentorship and onboarding beyond compliance.
- Allocate protected time for research, teaching, and professional development.
- Establish sabbatical support and sabbatical planning.
- Launch exit interviews for graduate students and retiring faculty to capture institutional knowledge.

II. Recognition & Evaluation

Themes:

- Improve how research and teaching efforts are measured and rewarded.
- Shift culture away from predatory journals and towards quality outputs.

Actionable Items:

- Update faculty evaluation criteria (e.g., reduce emphasis on quantity, focus on quality).
- Recognize and report team efforts (not just PIs).
- Adopt performance-based evaluation with flexibility in research/teaching/admin ratios (e.g., 40/40/20).
- Define reputable publication venues via curated lists.

III. Research Culture & Collaboration

Themes:

- Foster collaboration across departments and disciplines.

- Strengthen ties between clinical (AHS) and academic (U of A) spaces.
- Move toward team-based, problem-oriented research models.

Actionable Items:

- Form research theme consortia (European model).
- Provide bridge funding to support researchers between grants.
- Build interdisciplinary research centres of excellence.
- Centralize information on other units and services to aid collaboration.

IV. Core Services & Institutional Support

Themes:

- Stable, long-term institutional infrastructure support is vital.
- Core staff continuity impacts research impact and efficiency.

Actionable Items:

- Ensure every lab has stable, skilled technical staff.
- Continue support for core services as shared research infrastructure.
- Provide administrative and pre-award/grant writing support.
- Create a "core concierge" or one-stop-shop for service navigation.

V. Leadership & Accountability

Themes:

- Strong leadership needed for fostering culture, trust, and innovation.
- Accountability without fear; supportive, transparent feedback mechanisms.

Actionable Items:

- Offer leadership development training and benchmarking.
- Implement feedback-rich annual reporting (from multiple stakeholders).
- Foster kind, clear, and purposeful communication across units.
- Develop Terms of Reference, checklists, and expectations documentation for leadership roles.

VI. Education Support & Teaching Excellence

Themes:

- Teaching deserves recognition equal to research.
- Improve instructional culture and pedagogy infrastructure.

Actionable Items:

- Fund teacher training and allocate time for education-focused development.
- Increase TA support for graduate student opportunities.
- Celebrate teaching success (awards, milestones, community recognition).
- Clarify institutional expectations for educators.

VII. Strategic Partnerships & Industry Engagement

Themes:

- Diversify funding through partnerships beyond government.
- Engage industry and alumni strategically for research and education.

Actionable Items:

- Promote spin-off company development.
- Leverage endowments and strategic philanthropy.
- Create opportunities for industry and external experts to engage in seminars, mentorship, and collaboration.

VIII. Culture & Community Building

Themes:

- Build a culture of trust, celebration, and inclusiveness.
- Recognize operational staff and create consistent, safe structures.

Actionable Items:

- Host regular success seminars and events that celebrate faculty and student milestones.
- Promote interdisciplinary social spaces and events.
- Improve consistency in policies and operations to reduce silos and increase efficiency.

Appendix 1

Individual Written Contributions

Individual Written Contribution 1:

1. What can we do to build stronger interdisciplinary and interdepartmental ties to enhance research impact and educational innovation?

To strengthen interdisciplinary and interdepartmental ties for greater research impact and educational innovation:

- **Fund joint initiatives** (research projects, courses, student programs).
- **Incentivize collaboration** through recognition, promotion policies, and awards.
- **Create shared spaces** (physical and digital) for regular interaction.
- **Support cross-disciplinary teaching** and flexible curricula.
- **Build a collaborative culture** through events, leadership support, and aligned goals.
- **Engage external partners** to tackle real-world challenges with diverse expertise.

The key is to combine **structure, incentives, and culture** to make collaboration natural and rewarding.

2. How do we prepare for future demands in education to best prepare students for careers in health sciences?

To prepare students for future careers in **health sciences**, education must:

- **Integrate technology** (AI, digital health, data literacy)
- **Emphasize interdisciplinary learning** across science, tech, and social fields
- **Focus on real-world, hands-on experiences**
- **Build soft skills** like communication, empathy, and ethical reasoning
- **Foster adaptability** and lifelong learning for a fast-changing field

In short: **blend science, tech, teamwork, and empathy** to shape future-ready health professionals.

3. How can departmental structures be optimized to better support productivity and morale of a biomedical sciences community that will have fewer biomedical faculty members?

To support a **smaller biomedical faculty**, departments should:

- **Streamline structures** around shared research themes
- **Centralize admin support** to reduce faculty burden
- **Foster collaboration** and community to avoid silos
- **Adapt teaching models** with team-teaching and tech
- **Recognize all contributions** to boost morale and retention

Lean, connected, and supportive is the key to sustaining productivity and morale.

4. What can we do to reduce reliance on traditional funding sources by diversifying revenue and incentivizing departments to grow income and reduce expenditures?

To reduce reliance on traditional funding, **diversify revenue** through industry partnerships, online programs, and innovation, while **incentivizing departments** to generate income and spend efficiently through revenue sharing, seed funding, and shared services.

Grow smart, spend wisely, and reward innovation.

5. What solutions can be implemented to enable cost-effective, accessible and efficient core facilities, research infrastructure and learning spaces?

To enable **cost-effective, accessible, and efficient** core facilities, research infrastructure, and learning spaces:

- **Centralize and share** core facilities across departments and institutions
- **Invest in multi-use, modular spaces** adaptable for teaching and research
- **Leverage scheduling software** and data to optimize usage and reduce downtime
- **Adopt cost-recovery models** with transparent, equitable pricing
- **Partner externally** (with industry or consortia) to co-fund or co-use resources
- **Design for flexibility and future-proofing**, not just current needs

Share more, design smart, and use data to drive efficiency.

6. What can we do to promote a culture of high research and education performance?

To promote a culture of **high research and education performance**:

- **Set clear expectations** aligned with excellence and impact
- **Recognize and reward** high performers in teaching, research, and service
- **Foster collaboration** and mentorship across career stages
- **Provide support and resources** for grant writing, pedagogy, and innovation
- **Build accountability** with transparent metrics and constructive feedback
- **Celebrate success publicly** to inspire and build momentum

Lead with clarity, support with intent, and celebrate what matters.

Individual Written Contribution 2:

1. What can we do to build stronger interdisciplinary and interdepartmental ties to enhance research impact and educational innovation?

Interdisciplinary around a theme are best done by institutes which by their nature bring people together. Need all institutes to promote this more extensively.

Need to establish a group like TGH for Biomedical seeking clinical colleagues to support research. Need to reduce clinical attempting to do it all when good expertise around them. Need to establish respectful and clear paths whereby people can come together.

This could be something along the lines of the Sick Kids model where there are biomedical divisions/programs that cover many of the basic areas current departments cover and then clinical colleagues who want to do pillar 1 work will select a division/program that aligns with their goals/work. This way there are natural synergies that are obtained between biomedical and clinical

2. How do we prepare for future demands in education to best prepare students for careers in health sciences

Need to provide high quality teaching in foundations of science in different disciplines which includes upcoming technologies and approaches.

Need to teach more critical analysis and writing skills at both undergrad and grad levels

Need to engage on a ongoing basis Pillar 1 in clinical departments to teach and offer experiential learning opportunities as this will be a way to increase numbers of students in classes and offer diverse approaches to teaching and research.

3. How can departmental structures be optimized to better support productivity and morale of a biomedical sciences community that will have fewer biomedical faculty members?

Include biomedical from clinical departments to teach in Biomedical department on an ongoing and consistent basis (contract) what is recognized by FEC

. Use AMHSP to recruit Pillar 1 researchers – while would be soft tenure – could est a path for tenure if chairs/ CRC etc.

Support and acknowledge groups that work well so that others will want to join in. Let transfer of people between groups occur where more natural and supportive fits exist.

Fundraise and engage institutes to hire endowed chairs or focus on emerging themes of strength looking forward and not backwards.

4. What can we do to reduce reliance on traditional funding sources by diversifying revenue and incentivizing departments to grow income and reduce expenditures?

Increase undergrad teaching outside of UME – Establish a clear and long term agreement with Science to grow programs and have appropriate share of the revenuer.

Grow BHS but this is a specific program that would not appeal to people interested in science.

Will still have to provide sufficient support in terms of TA dollars to support increased teaching loads. Reducing costs and maintaining high quality programs do not go together.

5. What solutions can be implemented to enable cost-effective, accessible and efficient core facilities, research infrastructure and learning spaces?

Big equipment buys are on a faculty wide level and go into the cores. Need to prioritize the cores and maintain the expertise already in place or this is a waste of funds

Provide bridge grants to maintain momentum to avoid loss of investment

Clear promotion of cores to ensure all in the FoMD know the strength and capabilities available.

Coordinat4ed list of equipment to avoid buying many of the same kind or allow ever greening of aging equipment such that we stay at the forefront of techniques and approaches.

Over all this will concentrate high cost equipment which will be better maintained (as have experts looking after it) which will reduce costs in the long run.

Promote organized calls for natural synergies of new infrastructure in areas of research strength and emerging areas.

Stop support of lone wolf and going it alone and circumventing the good of the faculty for selfish purposed. Require high calibre vetting of proposal going forward.

6. What can we do to promote a culture of high research and education performance?

Need to have Pillar 1 currently in clinical departments be engaged in teaching and research and experiential learning in biomedical departments to provide high standard of instruction. If a person is base funded there needs to be clear expectations that are also acknowledged at FEC of what it means to an academic professor.

Establish clear guidelines of what it means to be primarily research and what expectations are at each level of research allocation (40% 50-69% 70% and above. If these standards are not being maintained over a prescribed time period (3 yr. average) then need to adjust job description and roles – i.e. bring in sufficient revenue either by teaching or research overhead dollars to support their position.

Everyone is at 40 40 20 and move as career moves - research chairs high numbers of grants more protected time for teaching etc.

Grow and maintain cultures of excellence. Some departments have this already. Need to encourage and support and be respectful to all colleagues

Support and normalize both teaching and research as these are both key aspects of being a professor at a university.

Appendix 2

Raw Data

1. Collaborative Culture & Interdisciplinary Integration Raw Data

Question: What can we do to build stronger interdisciplinary and interdepartmental ties to enhance research impact and educational innovation?

Department chair, mentor junior faculty to bring people together.

Show and tell get together. Elevator pitch is 3 minutes. Research talks. Common place that people meet.

Faculty should support groups and centres - lunch hour interactions rather than TGIF.

Create subgroups example disciplines - Bringing individuals together - Forums for people to speak.

Faculty Research Day. Community of Practice faculty support.

Facilitation that connects people.

Bring groups together, activity oriented.

Bring larger groups together. Groups of diseases interdisciplinary. - Shorter term around the problem.

Build interdisciplinary work into evaluations and promotion. Example. Reward for collaboration in a clinical colleagues and vice versa.

Better evaluation of teamwork rather than individual recognition.

Create mini symposium to bring people together. Clinical/basic researcher. Specifically, to model the reality that we can more easily find collaborations at an international meeting than here at U of A.

Build/encourage relationships but don't expect anything for a while without expectations.

Implemented faculty level communication. Bulletin board looking for expertise - Researcher database. Small grants to interdisciplinary teams. Not published.

Institute serve as catalysts, focus on Davitte disease and theme. Opportunities to learn something new from a new interaction.

Encourage developing relationships.

When recruiting get training on how to do interdisciplinary work. Promote collaboration between clinicians and basic scientists.

Train individuals how to collaborate. Example rules of engagement.

Cooperation at department level in organized courses.

Sharing of educational resources and expertise. Example connector staff.

Try half day sessions. Thematic with different disciplines.

Joint Sessions.

Recognition for collaboration at FCC.

Research Tinder. Create campus wide database to find others to collaborate with. With research keywords an education. Host Faculty of medical medicine and dentistry events. Or a showcase of biomedical sciences so people can come together.

Time appointed and incentivized for research.

Highlight and celebrate the bio Medical Sciences work nonclinical as well.

All institutes play a larger role in bringing people together.

Breakdown silos., larger umbrellas/hubs where colleagues are more likely to be exposed to adjunct research.

Look to other institutions globally to identify successful structures.

Host more Faculty of Medicine and Dentistry, general biomedical science talks and seminars. less hyper specific talks.

Avoid funding models that hyper focus on a trend.

Over arcing research focus that resonates can belong to that. Are able to hire example Women's Health focused so many different people with expertise. In the area of example, Women's Health building on each other.

Bring biomedical faculty + clinical faculty together.
→ work of institution
→ not path of Dept./core facilities

Sessions re: How do we solve this problem (rather than 'this is what we did' seminar).
Bigger challenge: what we need

Barrier: closed door.

Bring people back to the University

Joint Seminar Series, workshop.
Seminar before work-in-progress.
TGIF – Earlier.
Open invitation to depts.
Interactions through Core Facilities.

Communications regarding joint activities.
→ Quarterly Event
→ Open invitation.

Database – what we have to share.
→ more from Depts (Surveys) to Faculty lead.
→ Even across Faculties.

Rewarding + Recognizing people who are building community.

Bring together administrators working on similar issues / share best practices.

Faculty Research Day / Undergraduate Research Day.
Celebrate Successes.
→ How do we get people to attend?
More tied to campus culture.

Message board.
→ looking for collaboration.
Collab Club

International Contacts through conferences.

Should our organizational structures be systems-based?

- e.g. Neuroscience:
  - neurology
  - neurosurgery
  - neuroscientists

Departments are organized by undergrad & grad teaching. Is this most logical?
→ Would there be alternative structures that make more sense? Likely yes.

Need education specialists to help us evolve (e.g., how do you do a flip classroom? *(most don't know how to do)*)

Change departmental structure to promote collaboration — current structure is historical and not future-oriented → create 1 broad department

Culture that requires clinicians to do academic + biomedical to interact with clinicians

Protected time for clinicing is critical to allow

Foster culture of collaborations including academic role & clinicians – e.g.,
AHS/other biomed review to involve academics

Quality vs. quantity – of interdisciplinary.

How do we think of different cultures of disciplines e.g., biomed vs. clinic
→ *crosswalking of cultures*

Need to evaluate

Select overarching topics amenable to interdisciplinary strategies

Add interdisciplinarity affinity to a faculty score criteria/process

Mentorship – foster interdisciplinary mentorship across disciplines

Protected time to collaborate

Some forcing function (e.g., mandatory attendance at rounds with diverse interests)

Grad students to have interdisciplinary course requirements

Thesis committees – force diversity of expertise – clinical + research / or other disciplines

Find daily issues that would/could be addressed best with collaborations

Have all PhD scientists appointed to clinical departments to foster collabs

Barriers between faculties (both research + education)

Right now academic + clinical staff operate in own worlds

Searches, FOMD, divisions of expertise

Hackathons

Seed funding – introduce across disciplines / randoms of units

Coordination – research events – days (could top projects come to a faculty-wide day?)

Map of interactions

Attribution – distributing credit beyond PI to broader team

Clarification of FoMD structures + how they interdigitate + roles

Collab club – networking in person (relaunch)

- TGIF
- Rounds / brainstorming – clinicians (various divisions)
- Community – residents / scientists / connections

Research hubs + institutes – key role

- Need key minimal coordinating support

Train with interdisciplinarity

Joint clinical / research seminars

Create spaces for people to collide

- Time
- Getting people out of computers → mixing → activity

Create time for our PIs by allocation to →

- offloading PIs to have time for collaboration

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education hubs for space

education innovation – realignment of education programs to align with realignment of depts. e.g., ImmuNet – seminars & intel

Facilitate communities of expertise to immerse individuals in the other community → cross

- both across clin/biomed appointments
- across biomed + across clin
  e.g., biomed to bedside initiative for students

All biomed scientists need cross-appointment in clinical depts

- Try half day programs that are thematic an include different disciplines
- Organize joint sessions that brings together different groups of faculty who have different allegiance
- Department Chair mentor junior faculty on how to work with others (bringing fundamental and clinician scientists together)
- Create shared spaces / common places that people meet
- Lunch hour interactions rather than TGIF which is at the end of the day.
- Activities organized by the Faculty rather than groups, departments etc..
- Researcher database
- Digital bulletin board where you can look for collaborators or expertise
- Small grants to interdisciplinary teams (that have not published together before)
- 5 min research talks, elevator pitches
- Mini symposia that bring together clinical and basic researchers.
- Seminars on a subject where one person speaking is fundamental and another person has a clinical focus
- Cooperation at the department level in the organization of courses
- Create Faculty supported community of practices groups
- Better evaluation of teamwork rather than individual contributions
- Encourage the development of relationships where there is no expectation of an immediate outcome.
- Faculty support of groups and centres
- Facilitator that connects people.
- Recognize interdisciplinary work at evaluation and promotion (e.g. reward for collaboration with clinical colleague or vice versa)
- When recruiting, have a training session on interdisciplinary collaboration – write out suggested rules of engagement

- **Fund joint initiatives** (research projects, courses, student programs).

- **Incentivize collaboration** through recognition, promotion policies, and awards.
- **Create shared spaces** (physical and digital) for regular interaction.
- **Support cross-disciplinary teaching** and flexible curricula.
- **Build a collaborative culture** through events, leadership support, and aligned goals.
- **Engage external partners** to tackle real-world challenges with diverse expertise.

2. Strategic Educational Transformation Raw Data

Question: How do we prepare for future demands in education to best prepare students for careers in health sciences?

Provide students with multi disciplinary skills knowledge training = less silos.

Merge programs under larger umbrellas with option to specialize within.

Recruit students with more diverse backgrounds and paths to Biosciences.

Provide students with a broader perspective on career options outside of university or even faculty. Teach students how to think and how to communicate, these skills will always be needed.

Nurture adaptability among faculty to respond to rapidly changing environments, needs and provide students with agency.

Train students in and give awareness about AI - Leveraging AI tools. To the impact of AI. (AI Literacy.)

Assess where students end up in industry and partner with those industries.

Encourage problem-based learning.

Support/ promote education of core facilities to students.

Establish stronger supports for international students, especially in the first year. Mentor ship, residency, events to connect across disciplines, welcoming community atmosphere.

Provide more career guidance and encouragement to graduate students. Outside of academia.

Provide students with more Exposure. To international experts, research, voices.

Focus teaching on high demand careers to serve society's needs.

Students need an education that results in viable employment.

More students and new students. Equals new programs BHS. Past limits for three years.

Review resource is, bio Med pillar one teaching in bio medical department for undergrad. Consistent support for faculty for TAS could pull more resources. More TAS for grading and support.

Critical thinking, working in groups, presentation.

Micro credentials. One parchment and a number of credentials.

Students want a bigger, broader education so they can change careers as needed.

Educator burnout question Support a career that can easily transition.

Students need to be taught properly. Proper exams, more support. for teaching.

Faculty of Medicine and Dentistry needs to have active role in budget planning years ahead and confirm sooner. Current. Documents not working for planning.

Bigger blocks Example Women's Health - single parchment.

Committee for curriculum renewal.

Starting high school. With research components. Outreach!

Reward for curriculum renewal. Curriculum reform. Once every three years. Reform courses. Period Time Teaching load reduced. Organized so people can reform curriculum. Budgets 2 years. Three years ahead of time.

Preparation on impact of AI.

Assessment in AI era.

Prepare faculty on future demands – big AI impact.

Education, communication, etc.

Partnerships w/ patients (drive careers)

UG – multi-disciplinary programs
GRAD – current focus (in review)

- here to educate
  (teach to think)
- love for learning
- *partner with the experts*
- properly trained how to educate

Experiential learning for health sciences *(need practical experience)*

Flexibility in learning.

Internship opportunities.

Focus on computational / AI – need to be leaders.*(e.g. simulation – clinical)*

Bring in expertise to advise

Leaders with upcoming challenges. *e.g. Climate change + health (operationalize internships)*

Value added training *e.g. regulatory understanding / practice.*

Career → what is needed
(career map)

Partnerships with industry + health providers *(e.g. APL → LMP)*

- Current + future needs in environment
- Create standards & bars *(benchmarks)*
  → *faculty workload*
  (Teaching | Research & Service)

provide undergraduate research exp)

rethinking

- computer based
- simulation
- reviews
- lab kits

Leverage the new **program** in the College – to enhance biomedical integration

critical thinking, metacognition

new tools – ChatGPT – teaching students how to use AI

Increasing awareness for students about the variety of career options – both academic & non-academic

Introduce mentorship & guidance on transition to being a grad student

Continue to expand & strengthen programs such as Bachelor of Health Sciences → provide more options for students' career paths

Provide more career guidance for students

Field practicums in industry → give students exposure to career opps.

Student opportunities to meet people who work in industry. Tours of companies, etc.

Tracing graduate data to understand where they end up

AI focused courses or certificates

Shortening the length of programs

Explore introducing co-op programs

Develop partnerships w/ industry and employers

Certifications → (could also be for graduate students)

Provide more awareness about diversity of career options earlier on

Promote career planning early in academic journey

Evaluate curriculums more often to identify potential gaps in a rapidly changing technology environment

Collab w/ Faculty of Education to integrate more training for biomed faculty to strengthen teaching

Build AI skills & literacy into curriculum

Integrate entrepreneurial thinking & mindset into training. Could explore partnership with school of Business

Integrate more courses that provide education to students & exposure to entrepreneurial pathways & clinical research

Data analysis integrated into training

Future Demands in Field could also be shared w/ students:
- Biotech
- Business acumen
- Soft skills
- Start-ups
- Job skills

→ This means faculty spot the main areas students need to work on from classroom learning & lecture limits

Eyes wide open: What are the opportunities?

Teaching space limitations → ensure students can participate in classes they want to take.

Bring biomedical faculty + clinical faculty together.
→ work of institution
→ not path of Dept./core facilities

Sessions re: How do we solve this problem (rather than 'this is what we did' seminar).
Bigger challenge: what we need

Barrier: closed doors - Bring people back to the University

Joint Seminar Series, workshop.
Seminar before work-in-progress.
TGIF – Earlier.
Open invitation to depts.
Interactions through Core Facilities.

•Communications regarding joint activities.
→ Quarterly Event
→ Open invitation.

Database – what we have to share.
→ more from Depts (Surveys) to Faculty lead.
→ Even across Faculties.

Rewarding + Recognizing people who are building community.

Bring together administrators working on similar issues / share best practices.

Faculty Research Day / Undergraduate Research Day.
Celebrate Successes.
→ How do we get people to attend?
More tied to campus culture.

Message board.
→ looking for collaboration.
Collab Club

International Contacts through conferences.

Outsource Core Facilities
→ Fee-for-service activities
(e.g. CMP & EM)

Showcase: U
→ merge w/ something like Tour of Edmonton

Common Specialized ordering system.
→ to get discounts
(Core Facility + Dept run a 'store')

Incentive for departments to $ or amalgamate.
→ Certifications / Courses.
Need to go back to Departments

Lobby Alberta Innovates.

Course based Masters bring in $

Promote Commercialization & $ come back to Dept.

Philanthropy
- ongoing mentorship
- communication w/ patients
- bring in public to share what we do → $/Profit

Explain how the U wants to dispel preconceived ideas.

Look at partnerships with start-ups.

Ability to transition people if they are not performing in one area.

• Why spend $ on buildings?
Reprioritize money we receive.
What are we not using?

• (University/Schools) Renting out space (e.g. companies) + charge market rates. external + internal

Green Note

Reduce expenditures: What do we stop doing?

Provide training / education to faculty on how to address, leverage, discuss AI.

Add time to do the training needs to be more integrated for AI and technology.

Provide real world, hands-on experiences for students.

Promote supports available for faculty to leverage example AI and technology.

Foster adaptability and lifelong learning.

Build on soft skills, communication, empathy, and ethical reasoning.

Stronger recruitment of MD PhD students.

Increase awareness of the option. All. Graduate programs.

Provide more education exposure to new and future technologies.

Education must integrate technology. Example AI, digital health, digital literacy.

- Integrate technology (AI, digital health, data literacy)
- Emphasize interdisciplinary learning across science, tech, and social fields
- Focus on real-world, hands-on experiences
- Build soft skills like communication, empathy, and ethical reasoning
- Foster adaptability and lifelong learning for a fast-changing field

In short: blend science, tech, teamwork, and empathy to shape future-ready health professionals.

Lean, connected, and supportive is the key to sustaining productivity and morale.

3. Administrative & Operational Effectiveness Raw Data

Question: How can departmental structures be optimized to better support productivity and morale of a biomedical sciences community with fewer biomedical faculty members?

Raw Data

Reduce number of departments with intended results of increased collaboration, increased efficiency, more efficient admins support, better utilization of research infrastructure.

Change structure more umbrella like.

Streamlined structures around shared research to avoid silos.

Adapting teaching models. Technical Support.

Streamline process - we need transparency.

Identify redundancies. An example is number of areas doing clinical trials.

Recognize all contributions.

AI based program? Landscape/environment of the university.

Clusters of interest. How do you classify researchers AI?

Named people for contact. Personalized. Something like a faculty concierge?

More transparent communication. Heads up. Change happening, No one knows. Random emails. Clarity on who is reporting to whom and, what to report?

Support example funding opportunities. Facilitating productivity.

Website housing specializations.

Shared expertise. Staff scientist amongst labs. Core and highly trained technicians.

Productivity constrained by cost and time. Set realistic expectations.

Morale and bio medical seem as nice to have. Period. Change that attitude!

Directory of what people are doing.

Have a go to person. Who can connect and can liaise between research areas? And specializations.

Need tool to know what everyone is doing. Survey yearly.

Using QR codes as a common vehicle example. Link to PDF of Toms video.

Increase teaching faculty year-round.

Merge departments. Like minded.

Transparency in grant allocation.

Keep or increase support staff.

Reduce barriers for people to move between departments.

More collaboration on teaching level. Teaching faculty across departments.

Senior graduate courses not well attended, merge 600 level courses to free up time.

Reward for researchers bringing in grants.

Standardized teaching hours to teach what they want.

Incentivized teaching make a big. Positive - allow us to do more.

How do we decrease admin tasks? Time equals productivity.

Incentivized with percentage of normal faculty salary. Give to laboratory to use as they wish. Faculty member and TAS used for educational purposes. Should go on FAR merit points for doing this.

Adjust amount of students. Less students allows for less work.

Rationalize student. Ratio and faculty numbers.

biomedical sciences community with fewer biomedical faculty members?

identity with the larger institution (UA)

Be part of something bigger

re-brand

Cross Dept / Disciplines → teaching

Pool of teaching

Importance of composition

ATS – teaching

Faculty – research + teaching

Importance of a critical mass

- Move carefully + thoughtfully

Standardization across Clinical + Biomedical

- i.e., teaching load (40%)

✶ Onboarding ✶

Mentorship
Culture to increase collaboration

Streamline processes ↓ admin burden & improve efficiency; proper supports (shared services, RSO;) accountability & metrics within Dept process

Hire ATS for teaching (core position)

Teaching across Dept

Clinical / BHS alignment

Cross dept alignment / collaboration & Institutes

✶ NB of implementation plan ✶

Formal relationships btw Basic + Clinical Depts / faculty

Where relevant, Basic Biomedical faculty have affiliations with Clinical Depts

"Community of practice", bring "like" & "unlike" people together, sense of belonging

Across Dept admin processes

Navigators for services

Sharing of learnings across Dept

Use of technology to enhance efficiencies

Remove clinical / biomedical differentiators, with adequate compensation

Admin work across Depts (specialization)

Identify mgmt problems & resolve across Depts (T.R. ships, shared ideas) → grass roots

More shared spaces for student-faculty interactions at U level.

Clear expectations on what community is and how we do things.

Define 'professionalism'.

Adjust work loads to enable community.
→ what we need to stop doing?

Communicate via text/email.
→ pick up the phone, don't rely on email.

Bring departments together as a community.
→ Get chairs on board + supporting.

Bigger seminars → cross pollinate → less organizing?

Share more: What is going well? What are the challenges? → different levels.

Combine seminars to promote interaction + enhance energy.

Define productivity for:
→ Research
→ Service
→ Teaching
→ Admin.

Organization of labs by research area vs. opposed to discipline.

Designated 'go-to' person/resource.
→ 'Who do I go to for...?'
→ Create big visual so all D's stick.

Get togethers across departments.
→ Potlucks, Games, Parties, Gatherings.

Break barriers between departments:
→ Common programs
→ Courses, Graduate programs.

Threshold for department size.
(e.g., 7-10 vs 20 faculty in one department) → Bigger!

• Everyone has to pull their weight.

Agreement with each other as a community.
→ Clarity on the alliance.
→ How do we do the work?

Stay out of the way of faculty/researchers.
→ Let people have freedom to do new stuff.

Institution-wide mandatory retirement.

Higher levels need to advocate for funding.

Keep scientists in the department they belong.

Criteria about what excellence looks like.

Decrease physical barriers:
→ Shared equipment
→ Common/lunch rooms

Merge courses.

Hire teaching faculty instead of researchers

Merge departments

Give faculty more freedom to balance research / teaching / other roles

More recognition of all directions of research (not just clinical research)

Don’t give up on advocacy!

Biomedical research retreat where you can showcase / discover / network

Ask our ‘neighbours’ what is working. What do we need to do?

Transparency around where funds are: how $$ is spent.

To provide options for spending — what makes sense

One stop shop e.g. IT — who can help me.
“Faculty Concierge”
(better organized, not by location)

Keep building opportunities for interaction.

Provide welcoming space for people to gather
(ideally — good food — good environment)

Leadership needs to check in — make people feel they belong

Organize administration to match physical space.

Leadership need training / development of leadership skills

If losing people, consolidate space to increase interaction

- **Streamline structures** around shared research themes
- **Centralize admin support** to reduce faculty burden
- **Foster collaboration** and community to avoid silos
- **Adapt teaching models** with team-teaching and tech
- **Recognize all contributions** to boost morale and retention

4. Sustainable and Diversified Funding Models Raw Data

Question: What can we do to reduce reliance on traditional funding sources by diversifying revenue and incentivizing departments to grow income and reduce expenditures?

Aligning and/or partnering with industry.

Education as to the value of basic science research.

Educate advancement about what the faculty would like funded in the bio medical space.

Broadcast that U of A is #4 in Canada. For size of our endowments.

Track to patient associations.

International training programs.

Find people and or industry to support. And fund. Patents.

Increase endowments. Increase transparency around endowments. Increased pledges.

Increase transparency with development. Increase donations. Leverage current funding.

Long term investment and convincing government. Public. And. Current and future donors in the value of biomedical science.

Participate in international conversations.

University support to keep intellectual property.

Educate faculty on how to tell their story to obtain funding.

Follow up on showing donors what we have done with the money.

On line programs. Kickstart campaign.

Get department to work together. Shared support. Look for ways to use dollars we already have for other things.

Market core facilities to industry.

Faculty recover funding. Reform Service. Teaching to use for TAS.

Decrease time during interaction with industry.

Support expertise for faculties. Bring to staff scientist to support. Requires communication and support. People can use equipment.

Secure cloud for data.

Transparency/communication an input into how indirect., overhead is used.

Leverage automated scheduling software and data to optimize space usage.

Short term pain for long term gain.

Marketing and outreach. Frequent vendor show for institutional resource is.

Centralizing shared core facilities across departments and institutions.

Adopt cost recovery models with transparent, equitable pricing.

Link - Specifically, what equipment does to elicit possibilities for use

Find an even better way to centralise. Infrastructure. Example large CFI. Applications to reduce redundancy.

Support faculty broad software.

Partner externally for the Co use of resource is. Teaching, learning, research.

Invest in multi use modular spaces for multi purpose. Teaching and research. Smart classrooms, web connections, etc.

Design for flexibility. Future poop proofing, not just for current need.

Hire experts to run equipment boots on the ground.

seminar series on equipment and what it does.

Computer Bootcamps

Teach more students

Revenue sharing (Incentivize) – All

Teaching & Utilization Optimization

Nurture & Enhance Strategic Funding Partners

Return FTE (or portion) for retirements +

More transparency around crisis (#$) → top 10%

Advancement Opportunities (Naming) – Strategic Targeted Investment + Alumni + Patients

IPP & Royalties & Pitch Competition

Fellowship (Non Royal College)

Foreign & sponsored Trainees

Revenue Centers (vs. Cost Centers)

Lobby / Advocate for Gov. Funding

Strategic Funding Partners (Not only classic-Gov.)

Public Lectures + Events → Value Community Engagement → Celebrated + Showcase

Public Identity

Access to Tools & Equipment Across all Depts.

Micro-Credentials & Workshops (Rev. Gen.) + Value

Increased Hosting Opportunities

Space Utilization

Reduce Expense → Are there things we can stop? (unpaid admin service)

International Campus (Build on Success)

Industry & COI Depts. (More Flexible)

Survey faculty and students regularly on needs and gaps.

Encourage interdepartmental collaboration and communication through shared support structures

Provide clear input channels for faculty on space, equipment, and indirect costs.

Use dashboards to show how funds and spaces are allocated.

Survey faculty and students regularly on needs and gaps.

Encourage interdepartmental collaboration and communication through shared support structures.

Align our interests with industry partners

Find individuals / industry to support $ for patents

Ask University to support $ for patents

Educate advancement about what the Faculty would like funded in the biomedical research space

Participate in international consortiums

Recover funding from service teaching to use for graduate student teaching assistantships

Get departments to work together to share support

Talk to patient associations

Increase endowments

Increase transparency around funds

Increase pledges

Train faculty on how to tell their story to obtain funding

Market core facilities to industry

Decrease time to complete paperwork to engage industry (losing $ because set up takes so long)

Online programs

Kick starter campaign for a large project

Long term investment in convincing the government, public and current and future donors in the value of biomedical science

Broadcast that the UofA is #4 for endowment funding (good place to invest, as others have invested here)

International training programs

To reduce reliance on traditional funding, diversify revenue through industry partnerships, online programs, and innovation, while incentivizing departments to generate income and spend efficiently through revenue sharing, seed funding, and shared services.

Grow smart, spend wisely, and reward innovation.

5. Infrastructure Optimization Raw Data

Question: What solutions can be implemented to enable cost-effective, accessible, and efficient core facilities, research infrastructure, and learning spaces?

All core services. Add to department meetings. Promote research that uses Core. Target P eyes and students.

Offer court tours for all students.

Make it easy to identify surplus equipment. Example free cycle events or a centralized process.

Annual Core Day?

Promote benefits of core. Saves money. Ann leverages expertise.

Utilized empty spaces to bring students, faculty together to collaborate and build connections.

Easier to find info about the core services on you of a website.

Commitment. To support of course.

Reduce risk by providing core mini grants and or grace periods. Free of charge while planning project.

Coordinate purchase of large equipment, 2 cores only.

Space ownership. Database what spaces are available? Who owns it? Can I access it?

More transparency around space usage.

Survey asking people what core services they need.

Space and equipment audit to identify overlaps or under utilization.

Move support from development to secure funding for infrastructure.

Learning spaces

- ECHA often empty
- No environment scan for potential day lab space

An easier way to book facilities

- Easier access to schedules

Why can't we allow access everywhere with a One Card?

- Decrease barriers to accessing existing structures
- Monday is tricky @5 especially

People engaging in education know about clinical education needs

- i.e. RAH to UAH shuffle
- Make it more accessible to us at sites/spaces
- Also: seamless access to facilities → goal of better student experience early on

Identity & Access

- Banner is laggy
- This costs re: logging
- Some spaces have to pay more than others (room costs)

Leverage Instructor Services

- e.g. CATP, relink management to more core products
- Communicate what services exist (another barrier to feedback + underutilization of great tools)
- e.g. good support group @ Manager Tools Project

Data Management Tools

- What do we keep
- Lifecycle on database required
- Collaboration with IST

What are "we" held accountable for — faculty, instructors

- Clear communication of expectations
- Who does our institution share expectations with / commit to?

Room utilization

- → teaching schedule impacts space availability
- e.g. space ownership

Repurpose spaces for work/learn

- → underused doors
- i.e. open/available labs (not booked)
- e.g. ECHA = cross faculty access
- How to get ECHA to let other UofA groups use it?

ICE → big picture with CCF (clinical core facilities?)

- how to allocate space
- how to support needs of spaces?
- e.g. sim space / teaching labs → is leadership space usage?
- → hard to centralize

Facilities

cost is too high

UofA owns core infrastructure

cost of renovation is high → budget restrictions

→ use what we have

→ design smart

space needs to be refreshed to deliver quality student experience

room quality → influences experience

→ we have the rooms but not quality

solutions:

- living walls
- lighting
- seating
- layout

leadership can do expertise

we hire educators to lead teaching → equip them to adapt

2% of every grant is committed to running facilities - (Part of application)

Incentive to share equipment (Service contracts) by renegotiating service contracts
(Sharing equipment also builds community)

Follow nanoFab model.
(To support equipment or not.)

Open up equipment (key pieces) to industry.

Use AI to leverage space.

Include support needs in grant application (Strategic in CFI integration – need institutional support)

Leverage “big names” w/ HQP to get quality of grants (Incentivize to maintain as a lead)

Communicate what we have – what equipment does (All core facilities)

Core facilities priority when applying to CFI – to ensure core facilities maintained properly

Maintain subsidized cost for faculty to use.

One stop shop (for classroom reallocation (person?))

Core facility use for supporting future O&M + NSERC + CFI

One stop website. (Include ongoing communication)
Communicate where core resource database is and what is included.
⊛ Ensure this is up-to-date

Core facilities are a success story → Faculty thus made a priority

Recruit people with expertise complementary to core.
⊛ Academic lead

Online ⊛ options to accommodate more students (Undergrad & under capacity courses)

More flexible learning space

More students → larger faculty → larger lecture space.

Core facilities concierge. (Campus wide)

Asynchronous courses? MOOC for revenue.

Consolidate research space to maximize use of space.

For other users: external / local industries

- Centralize and share core facilities across departments and institutions
- Invest in multi-use, modular spaces adaptable for teaching and research
- Leverage scheduling software and data to optimize usage and reduce downtime
- Adopt cost-recovery models with transparent, equitable pricing
- Partner externally (with industry or consortia) to co-fund or co-use resources
- Design for flexibility and future-proofing, not just current needs

6. Research and Education Excellence (Raw Data)

Question: What can we do to promote a culture of high research and education performance?

Attractive retraining early career faculty and researchers to infuse energy into university. Provide supports and mentor ship.

Recognition of teams effort independent of individual researchers. Example, no labs named after one person.

Identify gaps in research. Teams an incentivized recruiting people to fill these spots. Reduce competition.

Nurture more collaboration across departments and disciplines.

Incentivize team research efforts via recognition. Money etc. As opposed to individual researchers. Retaining faculty with expertise to mentor early career researchers.

Protected research time for clinical faculty.

Develop research theme consortia's (look to Europe example) that can advocate for funds together for a large problem.

Move. Connectivity between AHS/Clinical and University/Research.

Provide support and resources for grant writing.

Set clear expectations, align with excellence and impact.

Build accountability with transparent metrics and constructive feedback.

Foster collaboration and mentorship across careers stages.

Promote ourselves and our research.

Annual Report. Input From many. I'm what is important. Working together. Curriculum renewal.

Chair give truthful, critical evaluations. Better people.

Don't reward predatory journals. MDPI. Does not count.

Update faculty evaluation criteria. Quality of publication more important than quantity.

Mechanisms to adjust teaching. Research Admin Percentages.

Clear expectations. 404020. Rewarded an acknowledged appropriately.

Reward with merit.

Divisions. Bio medical clinical in terms of merit.

Terms of reference and checklists.

FEC every three years.

Merit departmentally.

Focus. You are an educator. Hold picture.

Support., evaluate, and give feedback on teaching. With. Criteria. And appropriate amount of time. Not just. 10 minute observation.

Reward. Recognize Anne report good work.

Acceptance of all successes, No minimizing.

Performance based. Constant adjustment and flexibility. In. Teaching Research. Edmond Split. Clear expectation. At various levels.

Pay for teacher's time

Bidirectional risk in choosing mentors

Celebrate successes

- Build trust
- Take risks

Where are we now?

Leadership Development Training

Benchmarking on outcomes metrics, awards, time

Protected Time

Research

- Recognize
- Celebrate

Incentivize

Acknowledge Educators' Dvpt.

- Define path
- i.e. sabbatical support

Mentorship

- Early + Coach
- Accountability

Protected time

Strengths-based approach

Plan support for pre-award + start-up

Create a community of team-based researchers

Capitalize on New Onboarding Program

FEC → Present early + regularly → retention tool

Support + technical services!

Celebrate success regularly

- student milestones
- Masters?

Recognition

Engagement!

Focus on Community

Guidelines/Expectations down

More innovation for research compared to what other universities do

Enhanced (grad., diversity) Recruitment

Remove Barriers

U.S. skills integration

Onboarding beyond compliance

Create a value system to nod!

Info easier to find + navigate

Onboarding — streamline + team-based transition

Students / Priority Areas

Encourage + support appropriate retiree / adjuncts

+ Full safety culture

Implement exit interviews for grad students (and old roles).

Ensure core staff are in place for every lab. Need continuity and institutional knowledge to support labs' efficiency & impact. Consistent staff, etc.

Encouraging & facilitating more collaboration across disciplines (shared spaces).

Increase awareness about other units & what is available. (e.g. one central process for new profs and postdocs)

Bring in high profile external experts to speak.

Mentor faculty on educating.

Developing research centres of excellence.

Mentorship program/supports for researchers.

Promote clear, purposeful, kind communication.

Students should not be responsible for HSE.

Ordering of supplies should be centralized in depts.

Explore a different hierarchy: stable roles to support teaching (ex. Junior professors).

Protected time to attend seminars, professional dept, admin, training of junior staff, etc.

More TA positions to support faculty: provide grad students with opportunities as well.

Celebrate the big successes: include seminars as part of awards.

Large Teaching Awards + Research Awards: acknowledge & celebrate to inspire people.

Demonstrate they value the work being done.

Operational team/staff should: better recognition of efforts = more success.

More interdisciplinary research and team research. More experts + experience = higher impact.

Tapping into industry more + promoting & supporting spin off company development.

Promote a culture that it's ok to make mistakes.

Work towards more consistency in policies, structure, processes to avoid siloing for staff, faculty & students & promote trust and efficiency and feeling of safety.

Educate faculty on FEC and evolution of merit-based evaluation.

Establishing more collaboration between PIs, chairs, and research teams to spark new

Faculty needs to value research & education equally through promotion and recognition + merit.

Update website with more info on awards, grants, successes of depts.
(More consistent promotion.)

Explore national + regional partnerships to leverage expertise & resources we may be losing.
(ex: U of C)

Continuing to invest/support core services as a key shared resource for researchers.

Portion of funding available to provide researchers with bridge funding in between securing awards (researchers who consistently submit but are waiting for success).

Education / Leadership / Awards → encourage people to want to serve in education.

Adopt WHCRI / WCHRI grant review support program.
→ More resources to streamline this support offering.

Demonstrate support for researchers:

mentorship

admin support

grant writing & editing support

Tapping into industry more + promoting + supporting spin off company development

Prioritize Endowment funds for research.

More public advocacy about importance & impact economically and socially of health sciences.

Factor education more heavily into FEC evaluations.

Meaningful engagement across the board with everyone. Grassroots.

Create a curated list of publications that FoMD would consider reputable and credible to help define high performance.

Set clear expectations aligned with excellence and impact

Recognize and reward high performers in teaching, research, and service

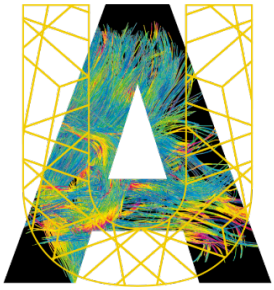
Foster collaboration and mentorship across career stages

Provide support and resources for grant writing, pedagogy, and innovation

Build accountability with transparent metrics and constructive feedback

Celebrate success publicly to inspire and build momentum

Lead with clarity, support with intent, and celebrate what matters.



Biomedical Sciences Review Report

Appendix J.

External Review Terms of Reference

Review of Biomedical Sciences
Faculty of Medicine and Dentistry
University of Alberta
September 15-16, 2025

Reviewers:

- Dr. Ted Allison, University of Alberta
- Dr. Lynne Postovit, Queen's University
- Dr. Marie Jose Hébert, Université de Montréal

Purpose:

The Faculty of Medicine and Dentistry (FoMD) is conducting a review of its biomedical sciences. We define biomedical sciences as education (undergraduate and graduate) and research focused on the underlying mechanisms of the biology, the cellular, molecular and physiological basis for health and disease (i.e., CIHR Pillar 1). The motivation for the review is that the FoMD wants to proactively evolve in response to three forces that are transforming our biomedical sciences community. The three forces are:

1. Budgetary: Decreases in postsecondary education funding means that we anticipate a 25-40% decrease in the number of university-base budget-funded faculty members in the coming years as our recruitment of new faculty members does not keep up with retirements of current faculty members.
2. Education: Increases in demand for training in undergraduate biomedical science programs and changes to what and how our students need/want to learn means that we need our training programs to evolve.
3. Research: Changes to how research is being conducted (e.g., interdisciplinary and cross pillar collaboration) means that we need our research approaches to be forward looking and rapidly adaptable.

The purpose of the external review is to help the FoMD understand how to best proactively position a smaller biomedical sciences community to be a great place to work and a great place to have societal impact through innovative education and research. Because our biomedical sciences community is distributed across 17 departments (biomedical and clinical), eight research institutes and multiple undergraduate and graduate training programs, we are looking for high-level strategic recommendations regarding structure and critical processes. Discussions with members of the Faculty have identified five specific questions for the external reviewers.

UNIVERSITY OF ALBERTA

Questions to be answered:

1. What can we do to build stronger collaboration to enhance research impact and educational innovation?
2. How do we ensure our undergraduate and graduate biomedical sciences training programs are best positioned to prepare students for future careers in health sciences?
3. What can we do to reduce reliance on government funding sources and diversify revenue?
4. What can we do to promote a culture of high research and education performance?
5. How can the FoMD's organizational structure be optimized to better support productivity and well-being of a biomedical sciences community with fewer biomedical faculty members?

Materials to be Provided: Biomedical Sciences Internal Review Report

Meetings: September 15-16, 2025 (virtual using Zoom)

- Faculty members, academic teaching staff, faculty service officers
- Laboratory technicians and research associates
- Academic department managers and administrative support staff
- Undergraduate and graduate students
- Postdoctoral scholars
- Department Chairs – biomedical & clinical
- Institute Directors
- Provost
- Vice-President and Associate Vice-Presidents Research and Innovation
- Vice Deans Research FoMD and Associate Dean Research, College of Health Sciences
- Dean
- Deputy Dean
- Vice Dean Education and undergraduate biomedical science program coordinators
- Vice Dean Faculty Affairs
- Vice Provost and Dean Faculty of Graduate & Postdoctoral Studies, FoMD Associate Dean Graduate Studies and FoMD graduate program coordinators
- Advancement and commercialization leadership
- Biomedical Sciences Review working group

Deliverables:

- Brief report (template to be provided) focused on key observations and recommendations designed to answer the five questions outlined above.