



January 29, 2020

Michael L. Good
Senior Vice President for Health Sciences
5th Floor, Clinical Neuroscience Center
Campus

APPROVED:

ML Good, MD 1/31/20

Michael L. Good
SVP for Health Sciences

Date

RE: Graduate Council Review
Department of Oncological Sciences

R Watkins 2-3-20

Ruth V. Watkins
President

Date

Dear Vice President Good:

Enclosed is the Graduate Council's review of the Department of Oncological Sciences. Included in this review packet are the report prepared by the Graduate Council, the Department Profile, and the Memorandum of Understanding resulting from the review wrap-up meeting.

After your approval, please forward this packet to President Ruth Watkins for her review. It will then be sent to the Academic Senate to be placed on the information calendar for the next Senate meeting.

Sincerely,

David B. Kieda
Dean, The Graduate School

Encl.

XC: Bradley Cairns, Chair, Department of Oncological Sciences
Wayne M. Samuelson, Vice Dean for Education, School of Medicine

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Department of Oncological Sciences

The Department was commended along many fronts, including success of its faculty in obtaining both individual and collaborative extramural funding, a chair valued for his effective leadership, and a strong sense of community among faculty, students, and staff. With strategic plan refresh currently underway at the University, Health Sciences, and Huntsman Cancer Center, it is an opportune time for the Department to update their own strategic plan in concert, in order to have their vision integrated and to map out their plans (including some expansion) in alignment with this larger context. Additional recommendations centered upon continuing ongoing progress in faculty/student success and diversity through various initiatives.

The Graduate School - The University of Utah

**GRADUATE COUNCIL REPORT TO THE SENIOR VICE PRESIDENT
FOR HEALTH SCIENCES AND THE ACADEMIC SENATE**

January 28, 2019

The Graduate Council has completed its review of the **Department of Oncological Sciences**. The External Review Committee included:

Channing J. Der, PhD
Sarah Graham Kenan Distinguished Professor
Department of Pharmacology
University of North Carolina, Chapel Hill

Kay Macleod, PhD
Associate Professor
The Ben May Department for Cancer Research
University of Chicago

Jerry L. Workman, PhD
Investigator
Stowers Institute for Medical Research

The Internal Review Committee of the University of Utah included:

Frederick R. Adler, PhD
Professor
Department of Mathematics

Jakob D. Jensen, PhD
Professor
Department of Communication

Thunder Jalili
Professor
Department of Nutrition and Integrative Physiology

This report of the Graduate Council is based on the self-study submitted by the Department of Oncological Sciences, the reports of the external and internal review committees, and responses to the external and internal reports from the Chair of the Oncological Sciences Department and Vice Dean for Education in the School of Medicine.

DEPARTMENT PROFILE

Program Overview

The Department of Oncological Sciences (referred to as OncSci) was established in 1994 with the mission to conduct innovative transdisciplinary research aimed at understanding cancer from its beginnings, to improve cancer prevention, diagnostics and therapeutics – and to provide rigorous cancer education and laboratory training opportunities to graduate students, medical students, and postdoctoral and clinical fellows. As a cancer-oriented basic science department that supports the mission and vision of Huntsman Cancer Institute (HCI) and University of Utah Health, OncSci trains biomedical scientists to apply integrated approaches needed to understand the genetic, cellular and biochemical basis of disease through didactic instruction, seminar courses and laboratory research supervision. Departmental goals and priorities are directed to achieving scientific and training excellence and impact, through both individual and collaborative science, aimed at the cancer problem.

OncSci is one of the six basic science departments within the School of Medicine (SOM) and serves as the academic home for new and existing basic science faculty in HCI. The founding chair, Dr. Raymond White, implemented a policy whereby all tenure-line faculty with their primary appointments in OncSci would have their offices and laboratories within HCI, an arrangement that continues today. The Department serves as a unique hub in the SOM and the Health Sciences campus for catalyzing cancer research and campus-wide collaborations. It provides the basic science foundation for the formation of integrated bench-to-bedside cancer disease programs with clinical impact within the SOM and HCI.

Training is central to the Department's mission. Hence, OncSci coordinates all graduate student and postdoctoral training in HCI, and is responsible for cancer-focused curriculum, mentoring and training. Graduate students are initially recruited into the Department through one of two interdepartmental "umbrella" Bioscience Graduate Programs: The Biological Chemistry Program (BCP) and the Molecular Biology Program (MBP).

The last review of the Department was completed in March 2011. In responding to recommendations from this review, OncSci has recruited several outstanding faculty, diversified its student body through the Bioscience Programs, revised the PhD curriculum, and enriched graduate and postdoctoral training and career development. Departmental leadership is strong and effective. With unprecedented opportunities for growth and expansion, OncSci wishes to realign its budget model so as to expand and sustain a robust infrastructure for graduate training and faculty research excellence. The expansion of student and faculty recruitment efforts must also include strategies for diversification.

Faculty

At the time of the self-study, the faculty body consists of 14 tenure-line, 5 career-line (research), and 24 adjunct faculty. Since the last review in 2010, 7 tenure-line faculty have been hired along with 3 career-line (research), and 11 adjunct faculty appointments. In addition, a total of 4 faculty have retired and 12 have left the institution voluntarily since 2010. The multi- and interdisciplinary research interests of the faculty have led to the funding of a number of collaborative program projects and U01 awards.

The OncSci faculty are not racially or ethnically heterogenous as only one tenure track faculty is an URM. The lack of role models is likely to impact the enrollment of US-born URM trainees as stated in the external reviewer's report.

Faculty research is organized within three broad areas: Basic Cancer Mechanisms, Population Sciences and Translational Research. These encompass five main thematic groups: Gene Expression/Epigenetics, Cancer Model Systems/Developmental Biology, Cancer Cell Biology, Population Sciences, and Early Translational Research. As noted in the self-study, each thematic area is well balanced with senior, mid-career and junior faculty who represent tenure, research and adjunct lines.

Overall, OncSci faculty have performed well in all areas assessed. Grant revenues reached \$8.7 million in FY17 and, notably, several new collaborative U01, U24 and U54 applications have been funded. This attests to the high level of collaboration and collegiality that exists within the department and HCI. Publications in top-tier journals and service roles are commendable and have helped enhance the national reputation of the OncSci Department.

Faculty describe research infrastructure and facilities as being world-class. The need for more administrative personnel is addressed later in this report. Departmental leadership is viewed as strongly supportive and easily accessible. Funding support through incentives provided by pilot grants and returns on federal grants have led to a high morale and spirit of community among faculty. The teaching portfolio is highly diverse and interdisciplinary, involving undergraduate, graduate and medical students. The majority of faculty contribute to course work and several have assumed administrative/leadership responsibilities for graduate instructional programs. As stated in the external review and self-study documents, career advancement through promotions has been positive and attributed to the environment within OncSci that appears highly meritorious.

The general consensus among faculty and administrators points to the need for a new budget model that will support the growth, development and impact of the Department through the hiring of new faculty.

Another major concern addressed by faculty relates to the inadequate number of graduate students to fuel research activities. Currently, graduate trainee applicants are drawn to senior faculty while early career investigators must rely on undergraduate students and technicians. The current pool appears to be limited and new recruitment strategies need to be deployed to both widen and deepen the pipeline of applicants.

Changes in promotion and tenure expectations have shifted policies that are driven by the SOM. However, the OncSci Department has a written policy that describes criteria for tenure based on overall scholarly activity and impact of research. The recent denial of tenure to one OncSci faculty member has stoked this uncertainty about the criteria for career advancement and is attributed to a divergent set of values between the SOM and the OncSci Department.

The number of adjunct faculty who are primarily appointed in non-degree-granting clinical departments in the SOM has grown. In general, although their contributions in collaborative research are recognized by primary OncSci faculty, this group of adjunct faculty could contribute more in terms of service on graduate thesis committee participation and prelim/qualifying examinations. It was suggested that service duties across all faculty be assessed to ensure equitability.

Other concerns relate to the need for more transparency in the hiring of faculty clinicians with cancer research expertise and the concern that these searches and appointments should involve consultation with basic science faculty who could best assess fit with OncSci's thematic research areas. Faculty view start-up packages for junior faculty as not competitive on the national level. They also recommended that social activities within the Department be increased.

Students

The OncSci Department offers research training and development to a broad array of undergraduate, graduate and medical students, postdoctoral fellows, and clinical fellows. Trainees access state-of-the-art resources in modern facilities and a well-integrated faculty spanning diverse basic, translational, and clinical disciplines. The academic medical center environment enables trainees to make important contributions to biomedical research during their formal training and beyond.

The Department has matriculated 276 students since its inception in 1994 and, since the last review, 59 PhD degrees (that include 7 MD/PhDs) and 17 Master of Science degrees have been awarded. There are currently 48 students enrolled in PhD training and the average time to earn a PhD degree is reported to be 6.4 years. MD/PhD students fulfill their PhD requirements in 4.3 years, which includes didactic core courses completed in the first two years of the MD component of the dual degree program.

The program recruits its trainees from the Molecular Biology and Biological Chemistry Programs as well as from the MD/PhD program. In addition, a limited number of students enter the program as transfers from other programs outside the University when their faculty mentors transfer to the University of Utah. Since 2010, an average of 27 students enter from the Molecular Biology program and 11 students enter from the Biological Chemistry program each year. Faculty in these two programs are drawn from the founding departments of Biochemistry, Biology, Human Genetics, Neurobiology and Anatomy, Oncological Sciences, Pathology, Chemistry, and College of Pharmacy departments. The two programs also coordinate recruitment and training efforts. Postdoctoral fellows are typically attracted to individual research programs and faculty mentors and no formal recruitment programs appear to be in place.

The external reviewers commended the high levels of enthusiasm, motivation and morale shown by students and postdoctoral trainees affiliated with OncSci. Their optimism about pursuing academic research careers stand out in contrast to the more pessimistic views shared by peer groups nationwide. Both groups voiced appreciation for the atmosphere of collegiality, the strong mentorship and guidance provided by faculty mentors, and the availability of modern equipment and resources they could access throughout their training. The Huntsman Alliance of Postdocs (HAP) is strong and active in seeking guidance for job interviews, and fellows are included in chalk talk interviews of faculty candidates.

A central concern expressed by internal and external reviewers and that is addressed by the Chair relates to the timeline for graduation. National goals of 5 years are now set for PhD programs so as to shorten the time taken to achieve independent funding. Since ~10% of OncSci students are 8 to 10 years in the PhD

program and the average time for completion has increased since 2010, now averaging 6.4 years, changes are recommended. The Chair presents definitive plans to address this problem as plans are underway to evaluate whether the 'advanced student review' should occur in the 4th year. In addition, faculty and student bodies will be surveyed in order to assess the impact of publication requirements, course work and dissertation projects.

Despite the Department's recent efforts to expose PhD trainees to various career options including non-academic tracks, OncSci students provided mid-range scores on survey questions related to career preparation. Twenty-five percent of student respondents were uncertain about their plans following graduation. A priority of the Department over the next year is to better understand career-related concerns of trainees and to modify career-development approaches to address those concerns.

Issues related to student recruitment efforts were raised in all reviews and is a key driver for the future success of the OncSci program. The number of trainees has remained constant and has not kept pace with the 24% increase in program faculty. While lowering acceptance standards is not considered an option, the Chair agrees that a more visible and aggressive recruitment program should be undertaken nationwide along with a targeted social media presence. In addition, exceptional undergraduates will be invited to the annual symposia coordinated with the Bioscience Graduate Programs.

The idea for a more formalized Professional Career Development Series that provides additional guidance and resources for PhD trainees and postdoctoral fellows is supported by the Chair and will enhance the long-term success of graduate researchers in the program. Increasing social activities to enhance the sense of community and camaraderie is also recommended, as this will add a lighter dimension for students and postdoctoral fellows alike.

In contrast to data provided on faculty, student diversity, in particular that of underrepresented minorities (URM), has increased significantly over the past 2 years. This is largely attributed to recently modified URM recruitment strategies. In 2017-18, 25-30% of the Molecular Biology program trainees identify as URM. This positive trend is predicted to be sustainable over the next several years due to the efforts of the Bioscience Programs.

Curriculum

The PhD program is the flagship program of the OncSci Department. Master of Science degree options are offered to graduate trainees who fail the comprehensive examination after two attempts as well as to students who opt to leave the PhD program. In Year 1, PhD trainees in the Bioscience Programs complete core courses in either the Molecular Biology or Biological Chemistry tracks. Trainees are expected to select 3 laboratories to gain introductory research experiences that will help in their selection of dissertation topics and mentors. A new requirement is for trainees to attend a grant-writing workshop that provides instruction on how to prepare their preliminary proposal focused on their research topic and prepared in NRSA format. OncSci courses are offered in Year 2, at which time trainees must prepare for preliminary or qualifying examinations. Years 3 to 6/7 are typically centered on dissertation research. There is conflicting information on whether 3 or 4 tutorial experiences are required to be completed in Year 1 and whether the expected time for completion of the PhD program is 6 or 7 years. Furthermore, the number of peer-reviewed manuscripts to be co-authored by trainees ranges from 1 to 3.

As detailed in the self-study, the Bioscience curriculum has been extensively revised and now includes an innovative new Cancer Training 360 class. Current efforts are focused on better engaging students in their projects; increasing funding and training opportunities (no specifics provided); and decreasing time to graduation and exposing students to better job opportunities after graduation. Enrichment activities include journal clubs, seminars, and Research in Progress (RIP) sessions that are offered throughout the academic year. In addition, PhD trainees can opt to participate in outreach education of junior high and high school students at the Salt Lake Center for Science Education. "Bioscience Career Day," which exposes trainees to various career options, including non-academic paths, is now offered annually.

Faculty and students are engaged in the evaluation of curricular and programmatic outcomes, which has led to significant improvements in the program. The overall flexibility of the curriculum that allows for tailoring to individual needs is considered an asset. Recent changes have improved the format of the qualifying exam, which is now more aligned with the format for NRSA F31 grant applications. This is perceived to offer more meaningful training in grant-writing that is expected to lead to an increase in F31 awards to OncSci trainees.

Students have expressed a need for formal instruction in the area of computational biology. Plans are underway for a new elective course on this topic, as it will encourage students toward labs that involve hands-on training in computational/bioinformatics in their research programs. As is now customary for NIH NRSA applications, an individual development plan (IDP) is expected to be developed for each trainee, with help from mentor/s. This will be reviewed at annual thesis committee meetings and serve as a roadmap for career development guidance and training.

The external reviewers conclude that the time of PhD training is overly long and that efforts to streamline the program will improve student recruitment efforts. A concern was also expressed about the need to improve the retention of trainees in the program. The report suggests that more regular thesis committee meetings be held earlier in the program so as to identify students who are experiencing academic difficulties and/or who have not advanced their dissertation projects. This concern was also tied to the need to improve the pipeline of PhD trainee applicants into the OncSci program.

Program Effectiveness and Outcomes Assessment

The self-study details several methods for assessing and evaluating the OncSci graduate programs that include course evaluations, anonymous surveys, as well as detailed assessments that evaluate progress of mid-term and senior trainees. Students are most attracted to individual research programs/faculty mentors in OncSci and the state-of-the-art facilities and equipment available in HCI. Table 5.1 in the self-study describes the recruitment and retention/attrition of master's and doctoral level trainees. The number of trainees enrolled in graduate training has varied from year to year, as has the graduation rate.

Several of the recommendations offered by the external reviewers have been addressed in other sections of this report. The Department Chair highlighted the two unique concerns raised by students. The first relates to the need to expand the pool of faculty mentors such that all students can be matched with their first choice of mentor/ lab/research program. The relevance of the Capstone exam that is given to all students enrolled in the Bioscience Programs has also been brought into question and is being evaluated currently.

Facilities and Resources

All OncSci tenure-line faculty are housed in HCI Research North or South Buildings. Faculty offices and well-designed open/modular laboratories, along with an adequate number of student desks, facilitate collegial interactions within the Department. Thirty-three percent of all existing laboratory space at HCI is currently assigned to OncSci investigators. The self-study and internal and external reviews describe the overall physical facilities as outstanding and state-of-the-art.

Two auditoriums and 4 small conference/seminar rooms appear adequate for small and large audiences that engage in departmental meetings, RIP sessions, journal clubs and a series of invited/distinguished lectures. In addition, students and faculty can access classrooms and seminar rooms within HSEB. Following the recommendation from the 2010 review, HCI personnel now have electronic access to the AACR-6 package of top-tier scientific journals through the Eccles Library.

Research Core facilities are administered by HCI faculty and staff and include: Cores for Cancer Biostatistics, Genetic Counseling, the Utah Population Database, and the High Throughput Genomic and Bioinformatics Analysis facility (newly created). Computer technology and IT expertise are available within HCI. Taken together, physical facilities and shared resources are outstanding and conducive to the continued success of the OncSci research and education programs.

The main financial resources are derived from Utah State Education Funds that are administered through the SOM and its formula-driven MBM system that assesses “earnings” based on both research and education activities. Tenure-line faculty are expected to derive 40-50% of their salary from extramural funds, while research-track faculty/investigators are supported through independent funding or through grants to faculty sponsors and/or HCI funds. While faculty incentives are derived from HCI funds for cancer-focused projects, it is unclear how indirect cost recovery to HCI is funneled to the OncSci Department. For FY2017, a total of \$8.7 million in extramural funding is reported. The Department reports consistent annual budget deficits in the range of \$100 to \$250k that are resolved by the Office of the SVPHS as ‘allowed variances’. As reflected in the self-study and other reviews, these deficits are chronic and structural in nature and do not reflect a lack of financial stewardship or overstated and unrealistic departmental missions and goals. Rather, the lack of a balanced budget is projected as limiting departmental self-reliance and autonomy while preventing the accumulation of a funding reserve.

In the area of human resources, the faculty head count is currently at 43. This represents a net gain of two faculty and the result of concerted efforts to recruit outstanding faculty. The self-study and reviewer panels considered this a positive growth trajectory that bodes well for the future success of HCI and University Health Sciences. As reported in all documents, support is available for only 1.5 FTE staff – a full-time department manager and an administrative assistant with 50% effort. In addition, 2.95 FTE is divided among 9 administrative assistants, but information on how support is derived for these staff is not provided.

COMMENDATIONS

1. The Department has an outstanding reputation that draws from its focus on cancer related research and the successes of highly productive faculty who contribute impactful publications and obtain significant individual and collaborative extramural funding.
2. Departmental leadership is strong, stabilizing and effective. Faculty express high levels of confidence and trust in the Chair, whose efforts engage faculty and student governance in addressing challenges and opportunities that arise. These skills have positioned the Department well for future growth.
3. The Department values its student body and is able to effectively leverage the recruitment of talented pre-doctoral trainees through the Molecular Biology and Biological Chemistry Programs.
4. The Department should be commended for fostering humanistic values in its graduate training and career development programs and for cultivating a strong sense of community and loyalty among faculty, students and staff.
5. The physical facilities, core resource facilities and equipment are state-of-the art and provide an infrastructure that promotes productivity and collaboration.

RECOMMENDATIONS

1. In light of the fact that the Department faces the prospect of a significant expansion of its faculty, it will be beneficial for OncSci to engage its key stakeholders and constituents in a formal strategic planning process. In forecasting growth trends, such a plan will formulate creative strategies for the recruitment and diversification of outstanding faculty and students, laboratory space allocation, succession planning, faculty development and staff expansion. Such strategic thinking and planning will provide the framework for a new budget model that will enable the execution of mission-centered initiatives.
2. It is critical for Departmental leadership, with support from the Dean of the SOM, to negotiate a new budget model with the SVPHSC that is well aligned with the clinical funds flow system recently implemented in the SOM. Such a mission-driven budget must be meritorious with a clear set of performance metrics and provide a stable resource for growth and development of OncSci's strategic objectives. Staffing needs must be addressed in the short term and projected for a longer term. Cross training is recommended for staff with administrative responsibilities.
3. Despite the challenges that persist, the Department must strive towards achieving higher levels of diversity within its faculty and student bodies as well as senior leadership roles. Outreach programs that connect students from institutions with significant enrollment of URM students is one of several mechanisms that could be pursued. The need for faculty who can serve as role models for diversity and inclusion will naturally benefit student recruitment.

4. Examine support for early career faculty investigators (FTE, protected time, start-up, graduate student access and supervision) to ensure early tenure-line faculty have needed support and pathway to meet criteria for tenure. Annual evaluation of faculty productivity should also include recognition and incentive mechanisms for individuals at later career stages who direct training programs.
5. Continuous quality improvement measures for the PhD training program should take into account the need to streamline the PhD program such that trainees can complete in 5 years without compromising the quality of their dissertation work. OncSci would benefit from increasing F award applications and awards, as well as in preparing senior PhD trainees (close to graduation) for K awards. Trainees would also benefit from opportunities to develop skills required for industry and other non-academic career paths.
6. Program effectiveness and outcomes assessment must include data from exit interviews of faculty who voluntarily leave OncSci and students who choose to opt out of their training program or who fail to meet academic and research expectations.

Submitted by the Ad Hoc Committee of the Graduate Council:

Rena D'Souza (Chair)
Professor, School of Dentistry

Douglas Christensen
Professor, Department of Electrical and Computer Engineering

Kristin G. Cloyes
Associate Professor, College of Nursing

College Name
School of Medicine

Department Name
Oncological Sciences

Program
All

Faculty Headcount

		2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
With Doctoral Degrees Including MFA and Other Terminal Degrees	Full-Time Tenured Faculty	3	4	5	5	5	7	8	8
	Full-Time Tenure Track	7	5	3	4	7	7	5	7
	Full-Time Career Line/Adjunct Faculty	6	7	8	5	4	6	4	4
	Part-Time Tenure/Tenure Track	2	3	4	2	1	1	1	1
	Part-Time Career Line/Adjunct Faculty	2	1	2	1	1	0	0	1
	Total	20	20	22	17	18	21	18	21
With Masters Degrees	Full-Time Tenured Faculty								
	Full-Time Tenure Track								
	Full-Time Career Line/Adjunct Faculty								
	Part-Time Tenure/Tenure Track								
	Part-Time Career Line/Adjunct Faculty								
	Total								
With Bachelor Degrees	Full-Time Tenured Faculty								
	Full-Time Tenure Track								
	Full-Time Career Line/Adjunct Faculty								
	Part-Time Tenure/Tenure Track								
	Part-Time Career Line/Adjunct Faculty								
	Total								
Total Headcount Faculty	Full-Time Tenured Faculty	3	4	5	5	5	7	8	8
	Full-Time Tenure Track	7	5	3	4	7	7	5	7
	Full-Time Career Line/Adjunct Faculty	6	7	8	5	4	6	4	4
	Part-Time Tenure/Tenure Track	2	3	4	2	1	1	1	1
	Part-Time Career Line/Adjunct Faculty	2	1	2	1	1	0	0	1
	Total	20	20	22	17	18	21	18	21

Cost Study

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Direct Instructional Expenditures								
Cost Per Student FTE								

FTE from Cost Study

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Full-Time	18	20	19	18	11	12	11	10
Part-Time	0	0	1	0	0	0	0	2
Teaching Assistants								

Funding

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Total Grants								
State Appropriated Funds					1,308,352	1,351,662	1,450,445	1,480,654
Teaching Grants								
Special Legislative Appropriation								
Differential Tuition								

Student Credit Hours and FTE

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
SCH	Lower Division							
	Upper Division	4.0	18.0	0.0	0.0	0.0	0.0	0.0
	Basic Graduate	173.8	147.0	189.8	111.9	87.5	91.9	75.1



Memorandum of Understanding Department of Oncological Sciences Graduate Council Review 2017-18

This memorandum of understanding is a summary of decisions reached at a wrap-up meeting on August 13, 2019, and concludes the Graduate Council Review of the Department of Oncological Sciences. Michael Good, Senior Vice President for Health Sciences; Wayne M. Samuelson, Vice Dean of the School of Medicine; Bradley Cairns, Chair of the Department of Oncological Sciences; and David B. Kieda, Dean of the Graduate School, were present.

The discussion centered on but was not limited to the recommendations contained in the review summary report presented to the Graduate Council on January 28, 2019. The working group agreed to endorse the following actions:

Recommendation 1: In light of the fact that the Department faces the prospect of a significant expansion of its faculty, it will be beneficial for OncSci to engage its key stakeholders and constituents in a formal strategic planning process. In forecasting growth trends, such a plan will formulate creative strategies for the recruitment and diversification of outstanding faculty and students, laboratory space allocation, succession planning, faculty development and staff expansion. Such strategic thinking and planning will provide the framework for a new budget model that will enable the execution of mission-centered initiatives.

During Fall 2019, the School of Medicine (SoM) is undertaking a revision of its strategic plan. This effort includes 16 different working groups, and is synchronized with reaccreditation and a broader Health Science strategic plan revision. It is expected that the strategic plan will be completed in Fall semester 2019. Strategic allocation of resources for faculty positions, laboratory space, staff support, etc., will be embedded in this larger Health Science strategic plan. Support for the 'OncSci Vision' document should be integrated to Health Science strategic budgeting and planning process, and developed into an updated Oncological Sciences strategic plan. Given that one of OncSci's main stakeholders, HCI, is also conducting a strategic refresh process in Spring of 2020, it seems opportune to revise the OncSci strategic plan to consider and align with the objectives of both the SOM and HCI strategic plans. The Department Chair proposed a plan to draft a revised strategic document during the Summer of 2020, and to provide the document as part of the next interim progress report.

Recommendation 2: It is critical for Departmental leadership, with support from the Dean of the SOM, to negotiate a new budget model with the SVPHSC that is well aligned with the clinical funds flow system recently implemented in the SOM. Such a mission-driven budget must be meritorious with a clear set of performance metrics and provide a stable resource for growth and development of OncSci's strategic objectives. Staffing needs must be addressed in the short term and projected for a longer term. Cross training is recommended for staff with administrative responsibilities.

It was noted that the current basic science budget model, which is metric- and mission-driven, has been demonstrated to provide insufficient funds to run the OncSci Department. The current model contains substantial budget uncertainty from year to year, creating yearly deficits and making it difficult to develop a long-term strategic plan. For example, the central office contains only 1.5 FTE staff, which is lean for the size of this department. The Department is working towards hiring an additional FTE staff by the end of 2019, but only if a stable, predictable budget environment can be created. It is expected that a new budget model, linked to the 'OncSci Vision' document, will arise from the Fall 2019 SoM strategic plan, and this budget model will combine metric-driven elements with strategic increments to provide a more stable yearly budget for OncSci. In Fall 2019, the Chair, the SVPHS, and the HCI CEO arrived at a Department support agreement that consists of three components: support of part of the Department's yearly operations through the evolving basic science budget model (overseen by the SVPHS), a fixed yearly supplement from the SVPHS calibrated to ensure proper yearly operations, and a growth plan for additional faculty – supported by both the SVPHS and HCI. There are still uncertainties about the basic science budget model, and the new model for F&A distribution – both of which will affect Department finances. Here, the Chair and the SVPHS (and delegates) are in communication about how this model evolves, and its impact on the Department. Under this new budget model, it is expected that the Department will be able to engage in strategic hiring to address demonstrated staffing needs. The hiring plan will include cross-training of both current and existing staff. Progress on this issue, as well as Department staffing and training, will be included in the interim progress reports.

Recommendation 3: Despite the challenges that persist, the Department must strive towards achieving higher levels of diversity within its faculty and student bodies as well as senior leadership roles. Outreach programs that connect students from institutions with significant enrollment of URM students is one of several mechanisms that could be pursued. The need for faculty who can serve as role models for diversity and inclusion will naturally benefit student recruitment.

As indicated by the Department Chair, the OncSci Department has achieved gender balance in the faculty ranks, although the faculty profile is underrepresented in broader diversity measures (ethnic, racial, etc.). The discussion focused on the importance of addressing these issues and possible new approaches that may be helpful. One broader initiative discussed for increasing faculty diversity involved increased support for postdoctoral students and mentoring, which can directly affect the population of potential faculty members. The participants in the meeting discussed the need for increased mentoring of postdoctoral students, including the use of IDPs integrated into postdoctoral mentoring contracts. A strong affiliation of departmental postdocs with the Huntsman Alliance for Postdocs is encouraged. The new Associate Dean

for Postdoctoral Affairs in the Graduate School, Prof. Amy Barrios, is a key resource in assisting the Department to build a strong postdoctoral training program. This support should extend to development of written departmental expectations for postdoctoral researchers and supervisors, access to training in broader skills, and facilitation of research/social activities that can build a departmental support community for postdoctoral researchers and the success of their faculty mentors.

The increasing diversity of the Biosciences graduate programs has helped to diversify the student population of OncSci in the past few years. The appointment of a Department faculty member as the Senior Director of Cancer Training and Career Enhancement in HCI provides additional opportunities for increasing diversity in the student population, and increasing student success in general. These programs have just begun, and the Department Chair agrees to report on the impact of these initiatives on student diversity and success at the time of the first interim progress report.

Recommendation 4: Examine support for early career faculty investigators (FTE, protected time, start-up, graduate student access and supervision) to ensure early tenure-line faculty have needed support and pathway to meet criteria for tenure. Annual evaluation of faculty productivity should also include recognition and incentive mechanisms for individuals at later career stages who direct training programs.

The discussion reviewed a recent RPT decision of a tenure-track faculty member in OncSci who was not awarded tenure, and the expectations for securing an R01 grant as a sine qua non for the awarding of tenure, despite strong faculty support. The root of this issue was a tension between SOM RPT criteria and departmental criteria, with some of the conflict arising from different expectations from different research cultures. This situation (and follow-up reviews of this case) has led to more explicit guidelines regarding the expectations for tenure, and an emphasis on broadening the scope of research accomplishments that are reviewed during RPT.

The Department has also increased training support of junior faculty, with an increased emphasis on providing mentorship by senior faculty early and often. The Department has added a luncheon seminar for critiquing draft grant applications. This appears to have substantially increased the number of submitted R01 applications that are rated above NIH paylines.

The support for faculty productivity/recognition has been requested through the 'OncSci Vision' program, and the availability of these funds is tied to the comprehensive SoM strategic plan and budgeting process. The status of this support should be reviewed after the end of Fall Semester 2019, after the completion of the integrated SOM strategic budgeting plan. The Chair agreed with these goals and efforts, and will provide progress within the first interim report.

Recommendation 5: Continuous quality improvement measures for the PhD training program should take into account the need to streamline the PhD program such that trainees can complete in 5 years without compromising the quality of their dissertation work. OncSci would benefit from increasing F award applications and awards, as well as in preparing senior PhD trainees (close to graduation) for K awards. Trainees would also benefit from opportunities to develop skills required for industry and other non-academic career paths.

The Department Chair indicated the importance of maintaining the bar on student learning expectations and research quality as the program works to decrease time to degree. The Chair noted that it is a substantial exercise for a student to write an F grant application. As the average time to degree for a student is currently 6.2 years, the addition of the requirement to write an F grant would likely increase the time to degree. This works against the broader goal of decreasing the time to degree. One of the possibilities mentioned would be to use an on-thesis topic qualifying exam, instead of the current process which uses an off-thesis topic proposal. The goal of having broader skills training was discussed, and the Department Chair was supportive of exploring various options linked to the goal of reducing time to degree. Dean Kieda advocated the practice of increasing the cadence of supervisory committee meetings as the student nears the five-year mark, in order to identify potential graduation delays. In addition, the supervisory committee should work with the student and research supervisor to develop individualized strategies for reducing time to graduation. The Department Chair indicated (Fall 2019) that the Department already increases the cadence of supervisory committee meetings to two per year at the fifth year, and has moved to having an on-topic thesis qualifying exam. The Chair agrees to track the success of these efforts and provide an update with the first interim report.

Recommendation 6: Program effectiveness and outcomes assessment must include data from exit interviews of faculty who voluntarily leave OncSci and students who choose to opt out of their training program or who fail to meet academic and research expectations.

The Department Chair agreed with this recommendation, and is planning the implementation of exit surveys by the end of 2020. OncSci is in the middle of the Cancer Center Support Grant (CCSG) review, and this effort has delayed the design and implementation of the updated exit survey. There was also a discussion of the importance of second year MB students in the assessment survey. The Chair agreed with these goals and efforts, and will provide progress within the first interim report.

**Memorandum of Understanding
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This memorandum of understanding is to be followed by regular letters of progress, upon request of the Graduate School, from the Chair of the Department of Oncological Sciences. Letters will be submitted until all of the actions described in the preceding paragraphs have been completed. In addition, a three-year follow-up meeting may be scheduled during AY 2021-22 to discuss progress made in addressing the review recommendations.

Michael Good
Wayne Samuelson
Bradley S. Cairns
David B. Kieda



David B. Kieda
Dean, The Graduate School