FAU
BOARD OF TRUSTEES
Florida Atlantic University

Item: AS: A-2

COMMITTEE ON ACADEMIC AND STUDENT AFFAIRS

Tuesday, November 13, 2018

SUBJECT: REQUEST FOR APPROVAL OF PROGRAM REVIEW – CHARLES E. SCHMIDT COLLEGE OF MEDICINE

PROPOSED COMMITTEE ACTION

Request approval of program review for the Biomedical Science program in the Charles E. Schmidt College of Medicine

BACKGROUND INFORMATION

Under Florida Board of Governors Regulation 6C-8.015 adopted March 29, 2007, all academic degree programs in State universities must be reviewed at least every seven years. Program reviews ensure that academic programs are administered and delivered effectively, efficiently, and consistent with FAU's mission and the Board of Governors' strategic priorities. The results of program reviews are expected to inform strategic planning, program development, and budgeting decisions at the university level, and, when appropriate, at the state level.

Academic Program Review at FAU includes a few additional steps:

- The self-study prepared by the program's department will be submitted to an independent review committee comprised of 2-5 individuals. The committee will include at least one external reviewer who will serve as a content expert in the discipline. Other members will include nominees of the head of the academic unit in consultation with the unit's faculty.
- The external reviewer will conduct a day and a half site-visit. A written report of the reviewer's findings will be submitted to the program's review committee.
- In addition to self-studies and external reviewer reports, action plans will be submitted to the Board of Trustees for approval.

Academic degree programs in the following departments were reviewed this year:
Charles E. Schmidt College of Medicine

a) MS Biomedical Science

IMPLEMENTATION PLAN/DATE

Academic Program Review summaries will be submitted to the BOG in November 2018 pending full Board approval.

FISCAL IMPLICATIONS

N/A

Supporting Documentation:2018 Academic Program Reviews

Presented by: Dr. Phillip Boiselle, Dean of the Charles E. Schmidt College of Medicine

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2018 Academic Program Review Summary

Charles E. Schmidt College of Medicine
Biomedical Science

Part 1: Overview

A. Degree Programs by Level

Graduate Programs:
Master's (MS): MS Biomedical Science (thesis)
MS Biomedical Science (non-thesis)

B. Mission and Purpose

The mission and challenge of the Charles E. Schmidt College of Medicine MS Biomedical Science Program is to provide the educational and hands-on training essential for student success in obtaining careers in the area of biomedical science. The program provides a vital contribution to the mission of the Charles E. Schmidt College of Medicine, Florida Atlantic University and the South Florida Community by providing innovative coursework and cutting-edge research opportunities for student success in a wide-range of emerging biomedical science fields ranging from medicine through industry. The program offers both thesis and non-thesis MS degrees in Biomedical Science. Students in the thesis-track work closely with a faculty member performing cutting-edge research in multiple areas including: Neuroscience, Cancer Biology, Cell Differentiation and Engineering, Genetics, Disease Mechanisms, Immunology, Human Epidemiology and other state of the art biomedical science fields. The Biomedical Science Program is a cornerstone of the overarching mission of the Charles E. Schmidt College of Medicine that is to educate the next generation of physicians, biomedical research scientists and biomedical educators to serve the needs of the South Florida Community and beyond.

C. Major changes since the last program review

1. Since the last program review, the program was completely innovated and improved through the development of an entirely new curriculum supported by four new core courses that serve as a common learning experience for all students in the program. These courses were designed to provide a foundation of knowledge and advanced skills in the biomedical science field. These core courses include: Biomedical Writing, Human Genetics, Biomedical Data & Informatics and Advanced Molecular and Cellular Biology. These courses provide the advanced level of training required for students to excel in the specialized elective courses offered by the program while simultaneously enhancing the core student -learning objectives (SLOs) of content knowledge, critical thinking skills and communication skills.
2. Since the last program review, a new Distinguished Lecturer Series was developed for students in the program that exposes them to in-depth lectures from distinguished biomedical scientists from across the

country and provides them with up-to-date knowledge and networking opportunities in the biomedical science field.

3. Since the last program review, a new Graduate Student Research Symposium was developed and implemented providing students with the opportunity to present their thesis or direct independent study research to the greater FAU and South Florida Communities providing social integration for the program and networking opportunities for all.
4. Since the last program review, a Fall student-faculty retreat was developed and implemented to further enhance the level of student community and provide personal interactions with the faculty.
5. These program changes resulted in considerable strides for the program since the last review. First-year retention rates were increased from 78.9% to 100%. Graduation rates were increased from 82.6% to 85.2%. Incoming student enrollment increased by 53%. Total enrollment increased by 44%. Tuition revenue increased by 36%. Minority enrollment increased by 47%. Finally, the number of program graduates accepted into medical and other professional programs increased by 26%.

Part 2: Findings

A. Reviewer Identified Strengths

1. The program is supported by a strong Biomedical Science Graduate Faculty that provides students with the tools required for their success. In addition to providing expert content knowledge for state-of-the-art program courses, faculty teaching in the Biomedical Science Program provide students hands on thesis and directed independent research opportunities that provides them with publications and advances their value in the job market. The faculty are well-recognized for their scientific talent and expertise with 12 faculty supported by NIH biomedical research funding and almost all faculty supported by federal and state research funding.

2. The Program has strong support from the Dean of the College of Medicine and other College leadership.

3. The program offers a wide-array of over 22 cutting-edge biomedical science program courses that provide flexible custom-tailored programs of study for students to achieve their individual learning goals and career objectives.

4. The program has been successful in placing students in a wide-range of post-graduation opportunities including, medical school, graduate school and teaching with over 20% of graduates entering medical school or dental school.

5. The Biomedical Science MS program is a value-based leader in the state of Florida compared to comparable graduate programs.

6. The MS Biomedical Science program is one of the most diverse at FAU and nation-wide with 47% of students reporting non-white backgrounds. This level of diversity has continually increased. For example, in 2013-2014 the Black or African American ethnicity percentage in the program was 13.2%

but has increased to 17% in the 2015-2016 academic year. In 2013-2014 the Hispanic or Latino ethnicity percentage in the program was 10.3% but has increased to 24.5% in the 2015-2016 academic year.

7. The program's retention rate (almost 100%) is higher than the university-wide retention rate (87.6%) and has increased significantly since the last program review where it was 78.9% in 2011.

8. The program's graduation rates are among the highest at FAU and have increased significantly since the last program review. For example, the graduation rate of students in the program has increased to 87% during the last five years and is now more than double the university-wide graduation rate of 42.7%.

9. The program has grown by approximately 50% in the last five years to about 55 full-time registered students making it one of the largest graduate programs at FAU.

B. Reviewer Identified Weaknesses

1. Growth of the program has been impeded by a lack of classroom and office space.

2. There needs to be increased recognition of the contribution that the program makes to the reputation of the College of Medicine and its U.S. News and World Report ranking.

3. There needs to be greater access of the program to resources such as student teaching assistantships, student research assistantships and other forms of student tuition and financial assistance to support the continued growth of the program.

C. Reviewer Recommendations and Responses

Recommendation 1: *To add student lounge for study areas and to socialize in the Biomedical Science Program.*

The Dean's office has kindly provided designated space for a new Graduate Student Lounge.

Recommendation 2*: To continue to emphasize a core curriculum to provide fundamentals of Biomedical Sciences.*

The Dean's office supports the continued offering of the Core Biomedical Science Courses.

Recommendation 3*: To organize Biomedical Sciences electives for opportunities in new career paths in healthcare (genomic assistants, bioinformatics, communication, biopharma, etc.).*

The Dean's office encourages a review of the program's current elective course offerings to identify how current electives can be up-dated and improved and how new courses can be developed to further advance the impact and success of the program. Indeed, we are developing a new state-of-the-art new

Biomedical Science Core Laboratory Course that will provide hands-on training for students in key biomedical science research technologies and will provide students with marketable career skills. We are also developing an innovative new Pharmacology course that will provide students with critical knowledge in modern drug design and up-to-date applications in the emerging pharmaceutical field. We are developing a new course in Biomedical Concepts and Translational Applications that will expose students to the diversity and spectrum of opportunities in the biomedical science field. Finally, we are developing a new course in Genomics and Precision Medicine that will prepare students for new opportunities in this emerging and critical biomedical science career path.

Recommendation 4*: To evaluate innovative delivery of outcomes: certification; online learning; tracks in health care and Biomedical Sciences; introductory laboratory for Biomedical Sciences Program, possibly open to other students.*

The Dean's office encourages the development of new certificate opportunities for the program. Indeed, we are developing a new certificate program in Genetics and Genomics that will foster new learning opportunities and provide new career paths for our students.

Recommendation 5*: To encourage and incentivize faculty to participate in the novel structure of the program including centers of scientific excellence, use of teaching lab for fundamental of laboratory research, and strategic initiatives for innovative faculty generated subprograms.*

The Dean's office supports identifying these opportunities and the new teaching lab and new certificate programs addressing these points are listed in #3 above.

Recommendation 6*: To improve marketing/brand program and expand on website, brochure, include basic as well as clinical science.*

The Dean's office supports the improvement for marketing and branding of the program and resources have now been allocated for expanding and improving the program's website, program brochures and the integration of basic and clinical science research opportunities.

Recommendation 7*: To Set recruitment goals and capacity of Biomedical Sciences Program.*

The Dean's Office has encouraged the continued growth of the program with a long-term goal of increasing enrollment based on the identification of additional resources for the program.

Recommendation 8: *To promote the program strength of a biomedical career based on fundamental science required for degrees in health care related research: MD, PhD, MS, DDS, PA, MBA, certificates, other.*

The Dean's Office supports the ongoing recognition of the strength of the program for facilitating multiple careers health care, biomedical research and biomedical education by increasing the program's

visibility through advanced marketing, advising, participation in recruiting workshops and community outreach activities.

Recommendation 9*: To involve community through an advisory board, local chapters of Alzheimer's Assoc. or Diabetes Assoc. internships in local institutes (Scripps and Max Plank) or industry: patients often want to know what the students are learning about therapeutics that can affect them (as patients).*

The Dean's Office encourages the program and the students to further engage the community. The College of Medicine Advisory Board can help with this effort and efforts are underway to identify and engage community associations and groups to advance student opportunities and increase the visibility and impact of the program.

Recommendation 10*: To Involve students in outreach to the local health organizations and community. Students want to be prepared for the challenges and opportunities of scientific and professional careers in Biomedical Sciences.*

Please see Dean's office response above.

Recommendation 11*: To evaluate the present business model with the goal of identifying (non-federal?) alternatives to increase the returns/funds needed to expand resources and grow education and research in the Biomedical Sciences Program in the School of Medicine (Market Rate initiatives).*

The Dean's Office encourages the exploration of identifying ways to recoup tuition generated by the program for use in improving the program and for providing stipends and tuition reimbursement to Biomedical Science MS students.

Recommendation 12*: To invest in innovations in course work, equipment, student and administrative that support with growth of Biomedical Science Program. Assist students with protection of the I.P. (intellectual property) resulting from their research.*

The Dean's Office supports the ongoing identification of funding sources for the program ranging from tuition reimbursement to the application for educational grants and philanthropic contributions.

Recommendation 13*: To improve marketing material (brochure and web page) to more accurately reflect the nature and strengths of the Biomedical Science Program including high graduation rate, student yield, diversity, degree completion, emphasis on scientific areas (eg. Human genetics, bioinformatics, biomedical writing, cell and molecular biology, other). Include strengths that are described in the Self Study. Consult with students who used the webpage in their decision to apply.*

See Dean's office response for Recommendation 6.

Recommendation 14*: To increase visibility of scientific research of Biomedical Scientists utilizing the walls inside the building and online promotions of faculty research and achievement.*

The Dean's Office supports the Biomedical Science Program to incorporate new digital signage in the College of Medicine and the launch of the COM Graduate Biomed Student Facebook Page that will be used to advertise student research.

Recommendation 15*: Enhance academic community among students: including the social hour prior to the Distinguished Seminar Series; lunch with speakers; other. Include involvement with local community, institutes (Scripps and Max Plank) and organizations that advocate for patients. (Patients can be a source of knowledge about biomedical problems as well as funding).*

The Dean's Office supports the Biomedical Science to continue inviting not only the COM community but also multiple members of the outside community to the COM Biomedical Science Program events and to identify additional community-building events in partnership with community organizations and other key stakeholders.

Recommendation 16*: To explore opportunities with the Financial Development Office to support Biomedical Sciences with philanthropic opportunities through the local community, the alumni network and organizations advocating novel therapeutics locally.*

The Dean's Office encourages the Biomedical Science program to explore opportunities with the COM Financial Development Office to support philanthropic opportunities through the local community, the alumni network and organizations advocating novel therapeutics locally.