

Chemistry and Biochemistry - Strategic Goals and Action Plans

Goal 1: Enhance leadership. Dr. Gregg Fields joined the Department as Chair in late December 2014. He brings three large NIH grants and extensive research experience and leadership pedigree to the Department. Since assuming the position of Chair he has met personally with all junior faculty and other faculty who require his input and attention. Recently, he also secured one-year tenure application extensions for two of the assistant professors in the Department to give them more time to fully develop their research programs. Additionally, he successfully resolved some complex laboratory infrastructure issues for another assistant professor. He has offered timely and continuing mentorship and advice to junior faculty on all aspects of grant proposal writing and submission, including help in identifying appropriate funding mechanisms.

Dr. Fields' research group is located on the FAU Jupiter campus. He visits the Boca Raton campus at least twice per month. Faculty meetings are held on the Boca Raton campus monthly. Currently, all our faculty computers are being upgraded for video conferencing and video chat. Faculty are actively encouraged to seek appointments with Dr. Fields using such technology for issues that require immediate and ongoing attention.

Dr. Fields is also reorganizing Departmental service and teaching assignments with the aim of enabling the associate professors to increase and enhance their research activities. This should facilitate their progression to full professor status and further promote a culture of sustained research and scholarly activity within the Department. In addition, teaching relief for assistant professors will enable them to sustain and increase their research activities, thereby enhancing their potential for obtaining external research funding.

Goal 2: Increase faculty numbers to meet our mission goals. Our Department is in critical need of several new faculty to enable us to meet our research and teaching goals. As part of his start-up package as Chair, Dr. Fields obtained a commitment from the FAU administration for hiring three new faculty in our Department. These faculty, to be added over three consecutive years, will help to fulfill critical needs in our research and teaching missions. During the last few years the gaps in our teaching needs have been met by visiting instructors, adjunct professors, and some of our faculty agreeing to teach extra courses as an overload. We hope that our dependence on such temporary fixes can be reduced by hiring these new tenure-track faculty.

To further help us fulfill our teaching mission with well qualified instructors, Dr. Fields is currently negotiating with representatives from The Scripps Research Institute (TSRI) Florida (Scripps Florida), located on our Jupiter campus, to enable Scripps' chemistry and biochemistry faculty to teach courses in key areas of need in our Department, such as special topics graduate courses. The advances in communications technology already or soon to be available in classrooms at the Jupiter and Boca Raton campuses will enable Scripps faculty to easily teach such courses simultaneously to students at both campuses. Note that in Spring 2015, faculty and staff in our Department obtained an FAU Competitive Technology Fee grant to upgrade the Department's large seminar room (PS 226) with state-of-the-art inter-campus video-conferencing communication capabilities. Such capabilities have recently been

added on the FAU Jupiter campus, room 148 of building MC17 (where Dr. Fields' laboratory is located, and proximal to Scripps Florida).

Goal 3: Integrate Chemistry and Biochemistry at the Boca Raton and Jupiter campuses. The Chemistry and Biochemistry faculty at both Boca Raton and Jupiter campuses should be fully integrated into one Department of Chemistry and Biochemistry at FAU. The technological advances discussed in Goals 1 and 2 will make faculty communications easy to conduct without the need for inter campus travel. The communication technology upgrades of classrooms in Jupiter and Boca Raton will enable faculty to teach courses at the senior undergraduate and graduate levels to a student audience at both the Boca Raton and Jupiter campuses. Frequent inter campus travel by either students or faculty will not be required.

To date, Dr. Fields has met with Chemistry faculty teaching at the Honors College on the Jupiter campus to discuss the possibility of integrating these faculty into our Department. Our recommendation is that all Chemistry and Biochemistry faculty at both campuses be fully integrated into one Department of Chemistry and Biochemistry at FAU.

In December 2014 our Department faculty and staff met with the President of FAU, Dr. John Kelly. At that meeting, the President outlined his plans to implement a regular inter campus shuttle service between the Jupiter and Boca Raton campuses. The shuttle would have comfortable seating with workspace and Wi-Fi capabilities. This new transportation system will further help to facilitate the integration of all Chemistry and Biochemistry faculty into one Department at FAU.

Goal 4: Increase support for grant submission/development of research programs. The Department has critical needs for an additional support staff position to help with the increased volume of our external grant proposal submissions. We will request permanent funding for a salary line to recruit a Grant Facilitator with a strong chemistry and biochemistry background and excellent scientific writing skills. This person will assist faculty with all aspects of grant proposal submissions. Such positions have been established elsewhere in the University, such as in the College of Nursing, with very successful results.

University-wide infrastructure and student funding mechanisms help to promote a scholarly culture and sustain research activity in our Department. Undergraduate students participate in Directed Independent Study (DIS) research at a very high rate in our Department, consistent with both our program goals and FAU's Quality Enhancement Program (QEP). Most of our research-active faculty mentor 2-6 undergraduate student researchers in their laboratories per semester. Many of these students obtain funding (\$500 per student per year) for their projects through the Office of Undergraduate Research and Inquiry (OURI). Undergraduate and graduate student researchers may also obtain funds from the FAU Student Union and the FAU Chemistry Club to support their travel to regional and national research conferences. Recently the FAU's Graduate College instituted a University-wide call for the inaugural Graduate Research & Inquiry Program (GRIP) Grant proposals from graduate students (\$1,500 per student and \$4,000 for team projects per year).

Goal 5: Increase mentoring for new faculty. Since his recent appointment as Chair, Dr. Fields has engaged in active and ongoing mentoring of all assistant professors in the Department. In addition the research-active professors and associate professors have also informally mentored our junior faculty.

A more formal mentoring mechanism also exists at the University level and has resulted in the recent official pairing of Dr. Gregg Fields (Chair and Professor) as mentor to Dr. Mare Cudic (Assistant Professor) and Dr. Salvatore Lepore (Professor) as mentor to Dr. Stephane Roche (Assistant Professor) in our Department. In each case the mentor-mentee team will receive internal funding and maintain an ongoing official mentoring relationship with the aim of securing external research funding in the future. Previously in our Department two other mentor-mentee teams were formed. Specifically, the mentor-mentee team of Dr. Jerome Haky (Associate Chair and Associate Professor) and Dr. Evonne Rezler (Assistant Scientist) led to a \$200,000 external grant from the National Science Foundation (NSF) and Dr. Rezler's promotion to Associate Scientist.

Goal 6: Defining the Department's research focus. Chemical Biology best describes the Department's research focus, and is a critical component of the Drug Discovery/Healthy Aging "Pillar" described in the University's 2015-2025 Strategic Plan. Most of our research-active faculty apply chemistry principles, techniques, and analyses to solve biological problems, or study and manipulate biological systems. Looking forward we will continue to develop our Chemical Biology program. As part of this goal, we seek to formally integrate Scripps Florida faculty with our Department to: 1) help facilitate collaborations between FAU faculty and Scripps Florida PIs, 2) offer our undergraduate students more Directed Independent Study (DIS) research opportunities, and 3) enable graduate students to carry out research in Scripps laboratories as part of collaborative projects between FAU and Scripps faculty. To facilitate the last two points the University recently established a liability insurance agreement between FAU and Scripps that enables FAU students to legally work in Scripps laboratories. As a result, one of our FAU graduate students in Chemistry has already begun doing her thesis research in a Scripps laboratory. We expect more students to join her in the near future.

Goal 7: Review of the undergraduate program in Chemistry and Biochemistry. As described in Goals 2 and 3 above, we are in the process of expanding numbers of faculty available to help us meet the needs of our undergraduate teaching mission. An expanded departmental undergraduate programs committee will review our undergraduate curriculum. The committee will establish where the sequence of required courses can be simplified and where there is a need to change the number and frequency of courses offered during each academic year. The committee will also evaluate the chemistry software that is currently available to our students and the need for additional purchases. The committee will seek student input through surveys and interviews.

Goal 8: Review of the graduate program in Chemistry and Biochemistry. The issues of greatest urgency and concern in our graduate program are the very low stipends and lack of health insurance for our graduate students. In December 2014, we requested that the FAU President and Provost prioritize

significantly increasing graduate student stipends to a nationally competitive level and offering health insurance to all our graduate students.

We intend on revising and restructuring our graduate course offerings. We will particularly investigate the rigor at the graduate-level of our dual listed courses. Including Scripps Florida faculty in our graduate teaching mission (outlined in Goal 2 above) will greatly enhance the variety of our specialist course offerings.

We are working to ensure that all graduate students have access to instrumentation and equipment they require to complete their research projects. We will request funding for service contracts on our research instrumentation from FAU's Division of Research. The Department has two NMR spectrometers and two mass spectrometers that are in need of ongoing repair and maintenance. We have already allocated significant departmental resources for this but we need much more assistance to meet the shortfalls in required funding. The Department also has a staff person dedicated to instrumentation maintenance and repair but some issues with our instrumentation are beyond the scope of his responsibilities.

In December 2014, FAU was designated an Underrepresented Minority (Hispanic) Serving Institution. As a result, we are actively searching for new funding mechanisms that we may be eligible for now to help enhance our instrumentation and research infrastructure, such as the NIH Research Centers in Minority Institutions (RCMI) Program.

Goal 9: Continuing Chemical Education innovations. Since 2007, the Department of Chemistry and Biochemistry at FAU has obtained over \$2.85 million in chemical education funding from NSF to improve our curriculum and conduct chemical education research. We have also had great success obtaining internal funding (well over \$500,000 since 2007) to innovate our curriculum with cutting-edge technologies, and evaluate resulting student success. We will continue to pursue NSF and other funding to innovate and improve our curriculum, and collect evidence on best practices that improve student learning.