

Center for Complex Systems and Brain Sciences (CCSBS) - Strategic Goals and Action Plans

The CCSBS Director and faculty are grateful to the external reviewers, Drs. Olaf Sporns (Indiana University), John Lisman (Brandeis University), and Heather Coltman (Florida Atlantic University), for their thoughtful and incisive evaluation: *“CCSBS is one of FAU’s most distinguished, nationally and internationally visible and recognized Centers. Building on a strong history of academic excellence, scientific productivity and field-changing advances, especially in the theoretical and computational neuroscience, the Center has reached a pivotal time. CCSBS will either move forward to a new stage in its development or it is in danger of becoming extinct. The committee agrees with the self-report’s assessment that immediate and strong investment in personnel and infrastructure are needed to move the Center forward.”*

As a result of the external reviewers’ recommendations we envision the Center’s future directions as follows: a) to rejuvenate the CCSBS and reaffirm its national and international status; b) to increase our success of attracting external funding; c) to strengthen our graduate program in terms of high-caliber applications and high-quality training.

Goal 1: Leadership transition. The Center received the approval of the Dean of the College of Science to recruit a new Director to replace Dr. Blanks who is stepping down. The Provost has notified us that the recruitment will be deferred until a new Dean of the College of Science has been recruited. Dr. Steve Bressler will assume the position of “interim Director” in Summer 2015.

Goal 2: Defining the Department’s research focus. The Center will strive to strengthen its research and graduate teaching focus on complex systems in the brain sciences. The Center’s emphasis on human neuroscience is consistent with U.S. President Obama’s B.R.A.I.N. initiative, and FAU President Kelly’s neuroscience pillar. Our goal is to offer a comprehensive research and graduate training program that provides the student with a solid grounding in complex systems and brain sciences. The Center will continue to focus on quantitative analysis in human neuroscience, thereby emphasizing computational neuroscience. Additionally, FAU’s new Magnetic Resonance Imaging (MRI) 3T MRI scanner (obtained in collaboration with University MRI, see Goal 5 for details) will play an integral part in the Center’s neuroimaging research and graduate instruction by providing neuroimaging data for quantitative analysis. Overall emphasis in the Center will be placed on computational methods in neuroscience, with students being instructed in computational modeling and analytical methods related to MRI neuroimaging.

Goal 3: Increase faculty numbers to meet our mission goals. (How many, in what areas and strategic implications.) Our Department is in critical need of several new faculty to enable us to meet our research and teaching goals. As part of the start-up package for the recruitment of a new Director of the Center, we hope to obtain a commitment from the FAU administration to hire six new faculty in the next 5 years, including collaborative hires with other departments/Colleges. Two of these lines will be in computational neuroscience. These faculty will help to fulfill critical needs in our research and teaching missions. During the past four years the gaps in our teaching needs have, for the most part, gone un-

met. One year we were able to hire an adjunct professor to teach our graduate course in “Methods in Complex Systems” but we were unable to continue this practice due to the lack of funding. We hope that our dependence on such a temporary fix can be reduced by hiring new tenure-track faculty.

The advances in communications technology available in classrooms at the Jupiter and Boca Raton campuses will enable Center faculty to teach courses to students at both campuses. The Center intends to submit a grant application to obtain an FAU Competitive Technology Fee grant to upgrade the Center’s large seminar room (BS 303) 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 FAU Neuroscientists are located).

Goal 4: Increase support for Graduate Assistantships. The Dean of the College of Science, the Provost and the President are acutely aware of the dire need to increase graduate student assistantships and provide health insurance to all our students. We are hopeful that necessary steps will be taken to rectify this unfortunate situation. This is a major issue that has contributed to the decline in graduate student enrollment in the Center and the college.

Goal 5: Increase interaction among Neuroscientists from FAU’s Jupiter campus and Max Planck Neuroscience Institute, as well as the newly formed Marcus Neuroscience Institute at Boca Raton Regional Hospital (BRRH). The communication technology upgrades of classrooms in Jupiter and Boca Raton (per Goal 3) will enable faculty to teach courses at the graduate level to students at both the Boca Raton and Jupiter campuses. Frequent inter campus travel by either students or faculty will not be required. It should be noted that President John Kelly has outlined 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 Neuroscience at the Boca and Jupiter campuses of FAU.

Looking forward we will continue to develop our graduate program. As part of this goal, we seek to formally integrate Max Planck Florida Institute (MPFI) faculty and Marcus Neuroscience Institute (MNI) physicians with the Center. This will facilitate: 1) collaborations with the Center, and 2) offer our graduate and undergraduate students more research opportunities.

The Director of MNI, Dr. Robert Levy is an affiliate professor in Complex Systems. Dr. Levy has frequently interacted with Center faculty, and is currently helping in the recruitment process of a prospective key hire. The partnership with MNI is important to the Center due to the possibility of future collaboration by Center faculty with MNI physicians. Such a bridge could provide our faculty and students access to unique state-of-the-art equipment available at MNI.

Additionally, FAU President John Kelly recently committed \$300K per year, over 5 years, to help finance access to a new MRI 3T MR scanner conveniently located at University MRI in the FAU Research Park. Our faculty will use this MRI at no cost to obtain pilot data for future NIH grant applications.

Goal 6: Increase collaborations with other colleges within FAU. Presently, the following members of the Center collaborate with the designated faculty outside the College of Science:

College of Engineering (COE): (Dr. Barenholtz: Oge Marques, Bill Roads, Hai Kalva (also Dr. Hock); Kevin Yunqing Kang (Dr. Prentice); Shihong Huang (Drs. Tognoli & Kelso); Nurgun Erdol (Drs. Tognoli and Kelso); College of Arts and Letters: Clarence Brooks, Desmond Gallant, Michael Horswell and Heather Coltman (Drs. Fuch and Kelso); College of Medicine (COM): Kate Guthrie (Dr. Stackman), Howard Prentice (Dr. Blanks)

The decline in the collaborations outside of the COS is due, in part, to the exodus of key faculty members in the Center to positions at other universities (Dr. Betty Tuller to NSF, Dr. Viktor Jirsa to European Brain Imaging Center, Dr. Larry Liebovitch to become Dean of College of Science at New York State University in Brooklyn and, more recently, Dr. Ed Large to the University of Connecticut). These former faculty had extensive contacts and collaborations with the Colleges of Education, Engineering, and/or Arts and Letters. In order to “kickstart” more collaboration between Center faculty and the broader FAU community, we will request \$5,000/year for the next 3 years to provide starter awards to Center faculty that identify a collaborative project with faculty outside the Center. In addition, the Center is currently recruiting a cognitive neuroscientist whose research focus is neuroimaging. This person will certainly attract collaborators from the COM and COE.

Goal 7: Undergraduate initiative in Complex Systems. 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 teaching mission. We will investigate the feasibility and potential demand for an undergraduate degree in Complex Systems. We will form a committee tasked with the feasibility study and planning for the implementation of this degree. The committee will seek student input through surveys and interviews. The committee will also investigate the possibility of giving a “Certificate in Complex Systems”. As part of these efforts we will immediately petition to change the designation of our graduate course offerings to also include undergraduate students.

Goal 8: Rebuilding infrastructure and support staff. At this stage the Center has one part-time Program Assistant position that we would like to convert back to a full time position as the Center faculty numbers grow (per Goal 3). The Center’s research mission critically needs one full time support staff to help maintain and service computers and instrumentation in the imaging core facility and individual PIs laboratories.