

NEUROTECH PILOT PROGRAM

Background

Andrea and Craig held a teleconference with Chirs Xu, Professor of Applied and Engineering Physics. Our goal was to better understand Cornell's existing cross departmental activities in the neurotech area and discuss how the ECC Bioengineering task force could work with affiliated faculty to strengthen Cornell's approach to the field. Chris describe a broad range of activities currently underway in the field. Cornell's cross functional activities, spurred on by the Obama Brain initiative, began in 2013 as a grass roots effort by a few faculty, including Chris, who were inspired to look at broader, Cornell based activities in the field. This early activity spurred some cross departmental cooperation as well as attracted initial grant money. The effort was supercharged in 2015 with a \$25MM grant from Stephen Mong and his family foundation. Those funds enabled a broader effort, and today are used for a range of activities including team based funding for cross functional initiatives, academic / industry symposium, and industry outreach.

Cornell's activities have significantly expanded in neurotech in the past few years. Chris cited a broad range of areas such as:

- Imaging
- Micro electronic implantation
- Nano robots
- Optical engineering
- Brain / nerve functional analysis
- Molecular pathway research

In general, the seeds are planted and seem to be growing in the neurotech area, and the Mong grant seems to be working as a vehicle to spur cross departmental activities and develop areas that can begin to attract their own funding and industry sponsorship. Despite this impressive progress, Chris felt the Cornell had more work to do in the area to reach its full potential. He felt if we can be one of the few Universities with a large NIH center grant in the field it would mark a major milestone in Cornell's leadership in the field

Problem Statement

While the faculty working in the neurotech field are strong, there remain a few key gaps. One example is that there is not yet significant clinical involvement in the research areas. This is important for helping guide how the technologies and tools being developed can maximize their relevance in a clinical setting. There is also not a good understanding of how to work with the broad range of companies in the neurotech field. Most interactions today are driven by individual faculty and their relationships, without a systematic view toward potentially larger and more lucrative collaborations. This is complicated by the fact that many of the engineering efforts (such as microelectronics, nano-robots, and optics) have broad application outside of neurotech, and a focus just in this area may sub-optimize industry

collaborations and funding opportunities. Finally, there is a need to better understand the capabilities and investments required to ensure Cornell secures its place in the top tier of Universities in this field.

Proposed Pilot Project

It is proposed that a sub-team of the ECC bioengineering task force and a group of faculty form a working team to define a strategy to build on the considerable success of efforts in neurotech to date to help elevate and secure the emerging leadership position Cornell has. The pilot effort is envisioned to have two significant thrusts. The first is to help further define the gaps the faculty see with the effort today, with a focus on what will be needed to gain leadership recognition and attract funding such as center grants. The second is to develop a thoughtful industry collaboration strategy which optimizes the opportunities for Cornell developed technologies and approaches and provides the feedback loop needed to allow Cornell faculty to fine tune their research efforts to maximize relevancy in a highly fluid and competitive space. This work should culminate with a plan which can be presented to the College and University, as well as provide a framework for, and where possible introductions to, industry collaborations. Finally the team should put in place metrics and check-ins for tracking the implementation of their plan.