

Commercializing Academic Research Using NIH SBIR Funding

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Pinnacle Technology has developed successful university collaborations to bring new preclinical research systems to the marketplace. Primary funding for these collaborations has been through the NIH Small Business Innovation Research (SBIR) program. To date, Pinnacle has collaborations with three Universities; the University of Kansas, Northwestern University and the University of Pennsylvania. The products have been developed primarily for mice and rat neuroscience research but are being used in a wide range of applications.

Products on the market include biosensors for measuring glutamate and glucose in the brain (KU collaboration), an EEG/EMG system for sleep and seizure research (NWU collaboration), and a combination system to simultaneously measure EEG/EMG/Biosensor (KU, NWU collaboration). Products under development include a wireless fast scan system for dopamine measurements (KU collaboration), a lab-on-chip system (KU collaboration) and a sleep measurement and deprivation system for fruit flies (UPenn collaboration).

Product ideas and collaborations are developed in many different ways. A few examples of how Pinnacle has built collaborations follow.

The company sees an interesting SBIR topic and finds a leading academic researcher in that field for collaboration. This led to the collaboration between Pinnacle and Dr. Fred Turek at NWU to develop a new system for measuring EEG/EMG signals for sleep and seizure and the collaboration for the lab-on chip project with Dr. Susan Lunte, KU.

A researcher approaches Pinnacle to develop some custom electronics or software. As the collaboration proceeds, so does company involvement. Biosensors with Dr. George Wilson, KU, started in this fashion. Now, Pinnacle licenses the sensor technology from KU and sells turnkey

wireless and tethered biosensor systems. This is also how the sleep measurement and deprivation system team was developed with Dr. Alan Pack, UPenn.

A customer approaches Pinnacle to discuss a new tool they would like for their research. After determining the product's market value, discussions are held with NIH Program Managers to see if this fits their scope of interest. Then academic researcher partners are found to bring in expertise. This is how the wireless fast scan system for dopamine project was put together with Dr. Michael Johnson, KU. In addition, this was the origination of the EEG/EMG/Biosensor project with Dr. George Wilson, KU, Dr. Michael Johnson, KU and Dr. Fred Turek, NWU.

Using preliminary data from the company and the university partner, a grant is submitted to the NIH SBIR program. These grants are in two phases, feasibility and development. The average Phase I grant is about \$120,000 and the average Phase II grant is about \$850,000 (highly variable by Institute). In addition, the Kansas Bioscience Authority has a program to provide a 50% match for NIH SBIR's . At the completion of the award, Pinnacle's goal is to have at least one new product on the marketplace.

Using this development strategy, Pinnacle's products are now being sold world-wide and are being used by pharma, universities, research hospitals and government laboratories