University of Washington Engineered Biomaterials (UWEB):

Excitement, Innovation, Exasperation, Investment, Opportunities (EIEIO)

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In 1992 I attended a scientific symposium and heard a talk that suggested to me a path that could have game-changing implications for implanted medical devices (a $400B industry worldwide). To translate the ideas that I envisioned from that talk to technologies that might have impact on medical devices and patients would require years of systematic research, substantial collaborative effort and the resources to make it all happen. So, when Professor Lee Huntsman, then my Department chair and later the President of the University of Washington, showed me an NSF call for proposals for new ERCs, I was charged. The ERC program had all the elements that were needed to transform contemporary thinking about biocompatibility and healing in medical devices to new technologies. The ERC program addressed research, development, industry interaction, education and diversity, and melded all these components into a cohesive package with strong potential for impact. In 1995, I led a University of Washington team submitting an application for an ERC. Through various levels of competition, the proposal was well thought of and we were invited to present before the blue ribbon panel in Alexandria, VA. Again, that interview session reinforced that we had a “big idea” and the organizational skills to bring it to fruition. Our ERC was one of four funded in that cycle after a competition with 117 proposal submissions. Interestingly, just after the blue ribbon panel interview, I looked down and noted I had two different shoes on. We were still funded!

The University of Washington Engineered Biomaterials (UWEB) ERC was launched in 1996. We needed new, contiguous space for the ERC. Our upper administration had little experience with research programs of this magnitude and a number of frantic meetings ensued about where the space and funding might come from. Most of the fourth floor of Bagley Hall was unused – it was designed for chemistry research in the 1920’s, was probably a toxic chemical disaster and did not have the infrastructure support for modern research. A major remodel to bring it up to safety standards and to provide the types of labs UWEB needed was proposed and the university came up with $400,000 for that remodel. If I recall correctly, eventually the UW spent well over $1,000,000 on that remodel, but now we had excellent space and a place for our core investigators to collaborate and interact.

After UWEB was launched, I and the PIs of other newly minted ERCs were called back to NSF to be educated in the ways of the ERC program. We learned of the need to construct a three-tier diagram illustrating our path from basic research to technology development to commercial translation and product. Those UWEB three-tier diagrams went through many iterations before they were deemed satisfactory. (In fact, internally we called it the “three-tear” diagram.) But, ultimately, it was an excellent tool for graphically outlining the research-development path needed to reach our goal. Other adventures involved enticing a reluctant (stingy?) industry to participate in the program, achieving diversity goals in a state with rather low ethnic diversity, educating students to think about the “big picture” of technology development in addition to their sharp focus on their own thesis research, and bring undergraduate students into research. Each adventure was a trial, a learning experience… and ultimately an enlightenment.

UWEB thrived with 11 years of ERC funding (maybe even 12 years if you count a cooperative industry grant funded by the NSF after year 11). We had about 20 professors as UWEB investigators, between 100 and 200 students closely associated with UWEB research, 60 industry partners, hundreds of high school and middle school students impacted by our outreach programs, some $30M of additional funding to supplement the ERC funding and a number of spin-out companies. One of the programs I was most proud of was SET-UP (Scholarships in Engineering Training in the UWEB Program), an outreach program with the Seattle African-American Academy (a middle school) where we had about eight students spend each Friday during an academic quarter doing science experiments related to biology and medical devices under the supervision of UWEB investigators and staff. Ultimately, hundreds of students received this enrichment. We kept SET-UP going well past the last year of ERC funding for UWEB. SET-UP ended when the City of Seattle decided to close down the Seattle African-American Academy.

This is a brief glimpse into my personal journey through the UWEB ERC years (Excitement, Innovation, Exasperation, Investment, Opportunities). UWEB gave my team the opportunities to transform thinking on the biocompatibility of medical devices, evolve new ideas in STEM education, develop new modes of interacting with industry and explore new routes to commercialization. Not a bad ride! (EIEIO).