



December 30, 2009

Phone 216.368.0596

Fax 216.368.0144

University Center for Innovation in Teaching and Education
Allen 101
Case Western Reserve University

www.time.case.edu

Dear Nord Grant Committee:

Over the last academic year, representatives from The Institute for Management and Engineering (TiME) and the Department of Biomedical Engineering at CWRU, along with the Cleveland Clinic and University Hospitals, have discussed the foundation of a new course entitled "BioDesign: Methods for Innovation in Biomedical Design" with the following strategic objectives:

1. Provide interdisciplinary experiences for CWRU students,
2. Improve student critical thinking skills,
3. Prepare students for leadership roles in the bioengineering and biomedicine.

To accomplish these objectives, we have formulated the pilot course offering with 7 specific tactical objectives:

1. Learn how to validate medical needs
2. Understand market assessment and the competitive evaluation of existing technologies
3. Hone techniques for analyzing and valuing intellectual property
4. Gain an appreciation of the process for taking a medical device from invention to market
5. Refine individual oral and written presentation skills especially as applied to a business pitch.
6. Learn the essentials of writing a business plan.
7. Work as a team in a simulated "start up" environment

Medical device innovation is an area of necessity for the patient but of equal importance to healthcare business leaders, educators, clinicians, and policy-makers. It is a driver of regional economic development and wealth creation in organizational units ranging in size from the start-up to the Fortune 500 companies. CWRU is well-positioned to be a thought leader in this exciting new area.

The material in this course is not about the stereotype of "inventive genius" as an individual effort, but as a systematic, structured approach to bringing new medical technologies to market and impacting patient care. We examine medical technology innovations in the context of addressing unmet clinical needs, the *process* of inventing new medical devices and instruments, and subsequent implementation of these advances in patient care. The course format will include expert guest lecturers and interactive practical discussions with faculty, with student performance centered on a keystone project that addresses a validated medical need.

Indeed, this course is recognition that the life sciences are – as much as chemistry, physics, and electronics have been in the past – a foundation for "the new economy engineer" (see <http://www.mem.case.edu>). Such courses of study require partnerships between disciplines, and indeed our effort to prototype this class is the result of a multi-institutional, multi-disciplinary team effort.

We are not bashful about the fact that much of the course parallels the highly successful Stanford BioDesign program (<http://biodesign.stanford.edu>). To be sure, several CWRU faculty recently met with Dr. Paul Yock, (faculty coordinator at Stanford and one of the authors of Stanford's new book on BioDesign, which we will use in our pilot course) to explore our idea further and discuss the adaptations CWRU was considering implementing. Dr. Yock was very encouraging and suggested our low-cost approach to the pilot would be appropriate for our effort. Unlike the Stanford offering, we are developing a program format that would draw on existing, tuition-paying students, not recruited "fellows" (from outside the University) for the class. In other words, the Stanford program is very successful, but it requires that the university raise on the order of \$750K each year to pay the fellows and manage a competitive application process for program participants -- lots of overhead we do not want to have or create. We believe that there is more than enough talent *internal* to the university to attract the right students and faculty. Based on responses to a one-page flyer for the course from students in medicine, law, biomedical engineering, and TiME, we think we are correct in having the right pool of students, with the interest and talent to make this "go." We expect 12-15 students to enroll in the pilot course this coming spring, offered as IIME 470 (TiME special projects).

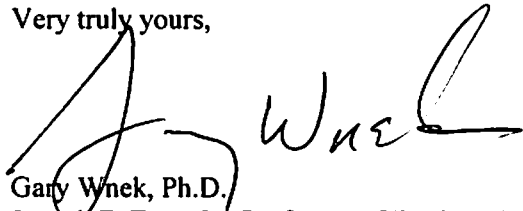
Our request for funding is \$5,000 from UCITE/Nord is to facilitate accomplishing three major aims:

1. Support to each of three design teams for the hardware prototyping phase of their medical innovation, as well as for provisional patent filings and related expenses (\$8K).
2. Support for guest lecturers from other BioDesign programs (\$3K).
3. Documentation (external educational consultant) of the entire pilot program to report to the CSE and faculty for their assessment of this course as a permanent offering (\$3K).
4. Present the results of this effort at a national engineering educational conference (\$1K).

The total estimated budget is \$15,000. Thus, UCITE/Nord support at \$5K will be leveraged 2:1 with existing funds from the Case-Coulter Translational Research Partnership.

Thank you for considering this request.

Very truly yours,



Gary Wnek, Ph.D.
Joseph F. Toot, Jr., Professor of Engineering
Faculty Director, The Institute for Management and Engineering (TiME)



Colin K. Drummond, Ph.D., MBA
Director, Coulter-Case Translational Research Partnership
Department of Biomedical Engineering



Patrick E. Crago, Ph.D.
Associate Dean, Case School of Engineering
Professor of Biomedical Engineering