

NCIIA News

National Collegiate Inventors & Innovators Alliance ■ Fall 2005

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BMEidea Winners Announced

The inaugural BMEidea competition reached an exciting climax in June with the announcement of the winners during the Medical Device Excellence Awards (MDEA) ceremony at the MDM East trade show in New York, in the presence of some of the industry's top innovators. The competition featured innovative entries submitted from some of the top biomedical engineering departments in the nation. All three of the top winners are student biomedical innovation teams whose home institutions are NCIIA members. And, most importantly, the winning teams' inventions are likely to reach the market and make a difference in people's lives.

We would like to thank everyone who took part in putting the competition together, including Jay Goldberg, Paul King, and the sponsors: MD&DI (Medical Device & Diagnostic Industry), a publication of Canon Communications LLC; the National Science Foundation; the Industrial Designers Society of America (IDSA), the Biomedical Engineering Society (BMES), and the Council of Chairs of Bioengineering and Biomedical Engineering Programs. We received great participation in the first round of the BMEidea competition and believe the next run will be even better, further encouraging an entrepreneurial mindset in biomedical engineering departments across the US. We will begin receiving entries for the 2005-06 competition at the end of September. Sponsorship opportunities for next year's competition are available – inquiries should be directed to info@nciia.org.

Without further ado, let's move on to the winners!

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NCIIA News is the semi-annual newsletter of the National Collegiate Inventors and Innovators Alliance (NCIIA)
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www.nciia.org

From the Executive Director: 10 Years, New Opportunities

As we celebrate 10 years of innovative education in US colleges and universities, the NCIIA is delighted to highlight several new and growing initiatives.

We are pleased to share the results of two new national competitions: The Embolune team from Stanford University won the inaugural BMEidea competition for its work on a novel treatment for cerebral aneurysm. As winner of the inaugural Olympus Innovation Award, Steve Nichols of the University of Texas at Austin was recognized for his leadership as an educator and catalyst of innovative learning programs. It is my hope that these competitions will inspire NCIIA program participants to continue striving for excellence, and to acknowledge the work of those around them. Please consider participating in one or both of these competitions in the 2005-2006 academic year.

I'm also pleased to announce another new project of the NCIIA, created in collaboration with the Kern Family Foundation. The Kern Entrepreneurship Education Network (KEEN), offers institutions access to vital resources for building quality entrepreneurship education programs, including grants, fellowships, workshops, and materials development. The program will launch in fall 2005 and will focus initially on private Midwestern colleges and universities.

Entering its third year, Invention to Venture workshops have been presented in cities nationwide. The introductory I2V workshop teaches technology entrepreneurship basics, helps build networks, and provides a framework for moving ideas forward. This fall the NCIIA and host institutions will present approximately 11 basic workshops, as well as several specialized workshops. Visit invention2venture.org to learn more.

And lastly, don't miss the NCIIA 10th Annual Meeting, March 23-25 in Portland, OR. An exciting conference program is under development, and includes favorites such as outstanding workshop, panel, and paper sessions and March Madness for the Mind, as well as new opportunities for structured and informal networking, fun learning opportunities in the green city of Portland, and a 10th Anniversary gala celebration! More details available soon at www.nciia.org. See you there!

Sincerely,



Phil Weilerstein,
Executive Director

Olympus Innovation Award: Recognizing Innovative Educators

UT-Austin Professor Steve Nichols takes the inaugural award

The NCIIA's new Olympus Innovation Award rewards faculty for their efforts in furthering invention, innovation, and entrepreneurship in US higher education. The inaugural \$10,000 award, provided in partnership with Olympus America, Inc., was given to Steven Nichols, professor of mechanical engineering at the University of Texas at Austin. Nichols, 54, received the award from F. Mark Gumz, president and chief operating officer of Olympus America, on March 18 at the NCIIA's 9th Annual Meeting in San Diego.

Dr. Nichols was unanimously selected by a panel of judges from a large pool of highly qualified nominees submitted by NCIIA program participants. What gave Dr. Nichols the upper hand in such an impressive group of nominees? We caught up with him this summer to get a better understanding of why he believes he won, the effect winning the award has had, and his future plans for entrepreneurship education at UT Austin and abroad.

Selection criteria for the award included innovation, problem solving, quality of outcomes, impact, institutional change, individual influence, inspiration to innovate, and motivation to action and societal impact. Through the establishment of his integrated technology entrepreneurship program, described below, the judging committee felt Dr. Nichols met all the award criteria: he impacted thousands of students both at UT and abroad in real, concrete ways through the expansion of opportunities for student entrepreneurship; he measurably improved technology transfer at UT Austin, resulting in an increase in the number of start-up companies based on university-developed technology; and through personal determination and enthusiasm he effected widespread institutional change at UT Austin, creating a permanent culture of multidisciplinary cooperation, technology innovation, and creativity among faculty and students.

"My main priority over the years," said Nichols, "has always been education. My ultimate goal is to develop students who not only have strong technical skills but are better prepared to serve society."

Over the years Dr. Nichols has served in many positions and used a variety of means to achieve his goal. Among his achievements:


- Served as Director of the Design Projects Program for 14 years, supervising more than 1,000 project teams in creating new products designed to serve societal needs.
- Started the Technology Entrepreneurship Society (TES), a multidisciplinary student organization with the goal of

encouraging an entrepreneurial mindset among students, particularly those in science and engineering.

- Reinvented the university's commercialization activities in his current role as Associate Vice President for Research. Under his leadership Nichols reorganized the Office of Technology Commercialization (OTC), leading to a doubling of royalty income stream to the university.
- Initiated the Technology Forum series of briefings for entrepreneurs, which provide a glance at the market potential for university technology.
- Developed the popular Idea to Product (I2P) Competition in 2001. Over the four years since the first I2P competition, more than 200 multidisciplinary teams have entered the event.
- Worked with the business school to develop an International I2P program to educate students and encourage 17 universities from 8 countries on 3 continents to improve their technology commercialization capabilities.

How has winning the Olympus Innovation Award affected him? Said Nichols, "First, it was certainly humbling, especially considering my colleagues who made the finalist list. Second, it has encouraged me to continue reaching out to students at the University of Texas at Austin and beyond."

Nichols also said he believed that, going forward, the award would further encourage faculty to develop innovative ways to inspire students. "I like the fact that the NCIIA and Olympus have teamed up to give what seems to me to be the major award in the area of encouraging innovation in the teaching of entrepreneurship. Getting that kind of recognition can't help but have a positive effect."

What's next for entrepreneurship education at UT and beyond? "We want to continue creating and nurturing a culture of innovation at this university and others," said Nichols. "I've been very impressed with our colleagues across the world who have shared our vision of innovation. I recently gave a presentation in China. Twenty years ago an entrepreneur may very well have been arrested in China as a profiteer. And now they're encouraging their students to think innovatively. I think that sort of change bodes well for the future of international cooperation and collaboration." 

Olympus Innovation Award Finalists: John Ochs (Lehigh University), Kathleen Allen (University of Southern California), and David Barbe (University of Maryland)

NCIIA Grant Awards: May 2005

Advanced E-Team Grants

EcoTech Marine: VorTech Propeller Pump

Lehigh University, \$18,738

Todd Watkins

Percutaneous Large Arteriotomy Site

Stanford University, \$16,675

Christopher Zarins

Sustainable Shelter Design

California State Polytechnic University, \$18,400

Kyle Brown

Fire Extinguisher Training System

Rensselaer Polytechnic Institute, \$13,977

Burt Swersey

Secure E-Payment System

University of Maryland, \$14,337

Gang Qu

Biotechnology System to Monitor the Health of Wastewater Treatment Plants

University of Colorado at Boulder, \$15,650

Mark Hernandez

Low Cost Water Purification System for Underdeveloped Countries and Other Applications

Illinois Institute of Technology, \$16,000

Nasrin Khalili

AeroNautilus

Pennsylvania State University, \$18,000

Richard Auhl

Economic and Technical Feasibility Study for Planar Membraneless Micro-fluidic Fuel Cell

Cornell University, \$20,000

Hector Abruna

A Tray 4 All

University of Illinois at Chicago, \$12,000

David Schneewieis

Ocean Wave Energy Buoy

Oregon State University, \$11,000

Annette von Jouanne

Swimming Aid for the Blind and Visually Impaired

Rose-Hulman Institute of Technology, \$5,150

Tina Hudson

The Nuberwalker: Low Cost Body Weight Supported Treadmill Training System

Northwestern University, \$15,500

J. Edward Colgate

Commercialization of Low Cost Infrared Imaging for Medical Applications

University of Massachusetts Lowell, \$20,000

Michael Larson

Sightless Training Spoon

Rose-Hulman Institute of Technology, \$1,482

David Stienstra

Course and Program Grants

Lean Manufacturing Entrepreneurship Educational Program

Utah State University, \$37,880

Ning Fang

E-Team Preparation of SBIR Proposals for Biomedical Research and Commercialization

New Jersey Institute of Technology, \$17,400

Bruce Kirchhoff

Genesis, Inc.

University of Central Florida, \$21,000

Cameron Ford

Weatherford E-Team Workshop and Seed Fund

Oregon State University, \$32,000

Mark Green

Strategic Technology Planning Development Course Development

Marquette University, \$8,250

Mark Polczynski

Entrepreneur and Global Leaders in Environmental Sustainability

University of Portland, \$23,500

Robin D. Anderson

Capstone Projects in Innovation and Entrepreneurship: Appropriate Technology Solutions

Washington State University, \$23,000

Jerman Rose

From Discovery to Commercialization

Arizona State University, \$20,000

Terree Wasley

Supporting E-Team Formation in Solving the Economic and Environmental Issues of West Virginia: MIDAS - Turning Ideas into Gold

Marshall University, \$24,084

Patricia Logan

Sustainable Energy Venturing Curriculum Project

University of Colorado at Boulder, \$9,000

Thomas J. Dean

Entrepreneurial Field Studies

Oklahoma State University, \$13,300

Jim Wheeler

Restructuring Graduate Programs in Science Entrepreneurship

Case Western Reserve University, \$6,500

Cyrus Taylor

Case Western University Public Health

Case Western Reserve University, \$28,000

Scott Frank

UMass Commercialization Lab

University of Massachusetts Lowell, \$16,500

Valerie Kijewski

Advanced Sensor Networks: A Research and Entrepreneurship Course

Portland State University, \$6,000

Nirupama Bulusu

Technology Entrepreneurship and Commercialization Program

Ohio State University, \$12,500

Michael Camp

1st prize winner

**Novel Treatment for Cerebral Aneurysms
Stanford University**

The winning team developed Embolune, a microporous balloon device that helps reduce the risk of cerebral aneurysm treatment. There are limited therapies available for treating cerebral aneurysms, a condition that afflicts an estimated 10-15 million people in the US. Traditionally, the only treatment for cerebral aneurysms is a highly invasive surgical procedure involving physically locating the aneurysm within the brain tissue and clipping the malformation. This surgery is expensive and carries a high risk of additional neurological complications afterwards. In response to the need for safer cerebral aneurysm treatment, the team developed a device that consists of micropores placed on a semi-compliant balloon mounted on a catheter. The surgeon navigates the balloon catheter into the aneurysm, then fills the balloon with polymer until flush with the aneurysm wall. This results in an anchored plug that diverts blood flow away from the aneurysm.

The team received a \$10,000 cash prize in recognition of its work, as well as a chance to make contacts at the awards ceremony. Team member Amy Lee said that the competition “increased our chances of commercialization, because it put us in touch with industry representatives. It helped clarify what the market needs are and how important it is to be in touch with that. If you have a great idea but there’s no market, you’re sunk.”

2nd prize winner

**Measuring Bioimpedance in the Human Uterine Cervix:
Toward Early Detection of Preterm Labor
Johns Hopkins University**

The second-place winner developed a bioimpedance probe to detect preterm labor. Premature birth is the major determinant of long-term health problems in children, and occurs in 11% of approximately six million pregnancies in the US each year. The team’s device measures subtle changes in cervical hydration, enabling accurate prediction of preterm labor. “This competition was an example of the many wonderful opportunities that have come to our team,” said team member Ashkon Shaahinfar. “One opportunity seems to lead to the next. It was humbling to be recognized among so many members of the industry – our whole team is excited. We hope that with all we’ve been given we can bring this product to market.” The team received a \$2,500 prize for its effort.

3rd prize winner

**The Halo-Pack: A Low-profile Cervical Spine Orthosis
Washington University**

The third-place award went to Halo-Pack, a low-profile cervical spine orthosis. The traditional Halo device immobilizes a patient’s head, allowing the cervical spine to heal after a fracture or a surgery; however, the patient cannot wear normal clothing, may have difficulty sleeping, and the device may block access the patient’s chest or airways in case of emergency. This team developed a novel halo that reduces the device’s profile, allowing patients to wear normal clothing and enabling safer access to the chest and airways. “The competition helped us identify most important aspects of our design and plan,” said team member Elizabeth Tran. “The community as a whole accepted our design and felt it was commercially viable. We’ll continue refining our business plan with the goal of getting the product to market.” The team received a \$1,000 prize. ○

BME-IDEA Initiatives

The BMEidea competition is one part of a larger plan to foster entrepreneurship within biomedical engineering departments across the country. Two years ago a group of biomedical engineering educators and supporting foundations, including the NCIIA, formed the Biomedical Engineering Innovation Design and Entrepreneurship Alliance, or BME-IDEA, with the aim of making biomedical engineering departments and students more entrepreneurial. The group meets annually to review the experiences of different university programs involved in innovation, design, technology transfer, and entrepreneurship in BME; share resources; and discuss opportunities for further program development. One of the ideas to sprout from these discussions was a national BME design contest, presented for the first time this year by the NCIIA. The other major outcome of the network, still in development, is the BMEsource.org portal. BMEsource, developed by Christine Kurihara and others at Stanford University, is a vast online database of resources for BME students. The site is comprised of three domains: medicine, engineering, and business/law, and is designed to help inventors understand the fundamentals of medical device innovation from concept to product.

While these initiatives are the first steps toward helping the current generation of BME students bring new and innovative medical devices to market, BME-IDEA is always seeking new ways to improve. Expect to see more activity in the near future.



Invention to Venture

Workshops in technology entrepreneurship

A national program hosted by leading universities, the NCIIA's I2V workshop series is for business, science, and technology students and faculty with entrepreneurial ambitions.

I2V offers an introduction to technology entrepreneurship and a forum to connect entrepreneurs and investors with the university community.

To learn more about I2V and how to host or sponsor a workshop, visit

www.invention2venture.org



NCIIA 10th Annual Meeting

Strengthening the Fabric:

**Building capacity for innovation
and entrepreneurship**

March 23-25, 2006

Portland, OR

www.nciia.org

Celebrating 10 years of innovative education at US colleges and universities

For details and online registration, visit www.nciia.org.



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NCIIA NEWSLETTER

Next NCIIA grant deadline:

December 2, 2005

In 2005, the National Collegiate Inventors and Innovators Alliance (NCIIA) will award approximately \$1 million in Lemelson Foundation grants to colleges and universities to develop and support the creation of programs and projects in invention, innovation, and entrepreneurship education. We believe that invention, innovation, and entrepreneurship are essential components of the higher education curriculum and vital to the nation's economic future. We work with colleges and universities to build collaborative experiential learning programs that help nurture a new generation of innovators and entrepreneurs with strong technical and business skills.

The NCIIA is increasingly interested in and welcomes proposals for commercially viable projects that are technologically innovative and show promise to improve the environment and the human condition. Such projects should follow a sustainable entrepreneurial model. We are also particularly interested in supporting E-Teams whose demographic makeup reflects the balance and diversity of the teams' home institutions.

To obtain the full RFP and apply on-line, visit www.nciia.org or e-mail info@nciia.org.

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