



# KU Technology Transfer

## Promoting Innovation to Benefit Society

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## KU's Biomedical Product Development Course and E'Ship TLC to be Presented at Conference

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This bi-monthly electronic newsletter is distributed to interested KU faculty and staff, economic development organizations and others interested in learning about KU innovations.

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Dr. Lisa Friis, Assistant Professor of Mechanical Engineering, has been invited to the National Collegiate Inventors and Innovators Alliance (NCIIA) annual conference to present information on her Spring 2005 Biomedical Product Design course and Entrepreneurship Thematic Learning Community (E'Ship TLC).

The multidisciplinary course on Biomedical Product Development was offered as a graduate-level course in mechanical engineering, but was open to seniors/graduate students from any discipline. The course had five main topics: 1) R&D required to develop an invention into a marketable product, 2) regulatory issues associated with product development, 3) quality system controls in manufacturing, 4) product feasibility and commercialization processes, and 5) business aspects of starting and sustaining a company.

Thirty-four students from engineering, industrial design and business enrolled. Nine student

teams explored development of actual faculty and industry biomedical product inventions. Team deliverables were a preliminary Design History File, including business plan, and a mock NIH Fast-Track SBIR proposal, complete with commercialization plan. Dr. Friis taught the course in collaboration with the KU Director of Technology Transfer; a GTA from the KU School of Business assisted students with business issues.

In addition to class, students were required to attend the KU E'ship TLC weekly lecture series. The series of guest lecturers provided supplementary business topics salient to product development and addressed the practical issues of moving an idea into a product or service. Topics included regulatory affairs, seed funding, intellectual property protection, business planning, marketing, and venture capital.

The E'ship TLC, a free, multi-disciplinary program for individuals

interested in innovation, business and technology development, is a joint effort of the KU School of Engineering and the KU Office of Technology Transfer & Intellectual Property. The E'ship TLC goal is to provide real-world experience in entrepreneurship to participants. KU students, faculty, and staff of all academic levels and disciplines, as well as regional community members with interest or expertise in entrepreneurship, are encouraged to take part.

NCIIA fosters invention, innovation, and entrepreneurship in higher education as a way of creating innovative, commercially viable, and socially beneficial businesses and employment opportunities in the United States. The NCIIA works 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 and the tools and intention to make the world a better place.

## OTTIP Welcomes Second Law Extern



Stefanie Waldren, OTTIP Law Extern

We are pleased to welcome **Stefanie Waldren**, the second participant in our newly established Law Extern Program. Stefanie holds a BS in Biology from South Dakota State University and is currently a second year law student at UMKC.

Stefanie is working with KU OTTIP staff to review invention disclosures, maintain database records related to technologies and patent filings, conduct prior art searches of patent and technical literature, work with patent prosecution correspondence, review draft legal documents, and communicate patent prosecution progress to faculty inventors.

# New Invention Disclosures from across the Disciplines

## Colloidal Clusters For Drug Delivery

Cory Berkland, Assistant Professor, Chemical and Petroleum Engineering (CPE), Lianjun "David" Shi, Postdoctoral Research Associate, CPE

Berkland and Shi have developed a drug delivery system for carrying nanoparticles to a desired site of action by sticking them together into larger clusters. Using this technique, a particular administration can be improved by creating micron-sized clusters of a defined diameter. Once delivered, the clusters can be re-dispersed in body fluids or in response to cues, like changes in pH or temperature, depending on the materials used to hold the clusters together. The dispersed nanoparticles then arrive at the appropriate site of action and transport the drug at the cellular level according to the properties of the nanoparticles.

## Shallow Feature Selection

Xue-wen Chen, Assistant Professor, Electrical Engineering and Computer Science (EECS); Jiangsheng Yu

Shallow Feature Selection is a new computational algorithm for feature selection and classification. It can be applied to microarray data to extract genes that are related to some specific biological mechanism, such as biomarkers for cancers. The technology has two main advantages. First, it will provide a probability of importance for each gene, which is not available in the existing filter methods. This probability combined with some biological knowledge will provide biologists with a better picture about these genes. Second, it can identify these genes that are missed in the existing methods: genes that are statistically different but mean difference is not that different.

## ATMATCH.COM

Sara Sack, Lifespan Institute; Sheila Simmons, ATK; Chuck Spellman, Lifespan Institute; Ed Zamarripa, Bureau of Child Research

ATMATCH.com is an auction site that serves as a comprehensive entry point for assistive technology (AT) equipment and services. Users can find specific AT devices at reasonable prices, post equipment for sale, and locate state AT resources such as their Statewide Assistive Technology Program or Alternative Finance Program. Durable medical equipment providers may choose to advertise equipment at the AT store link. Consumers can create a customized page of equipment they wish to track. Linking persons with disabilities to their state's AT program and financial loan program, within the context of an equipment acquisition site, is a unique service.

## Split Bit

John M. Healey, Field Hydrogeologist, Kansas Geological Survey

Numerous small diameter monitoring wells are installed by engineers and groundwater consultants every year. These wells provide a means of observing groundwater hydraulic head conditions and fluctuation due to applied stresses, and provide access to sample groundwater and for hydraulic testing. Accurate estimates of hydraulic properties enable hydrogeologists to predict a contaminant's migration direction and rate, and thus facilitates remediation.

Installation of monitoring wells in unconsolidated water-saturated formations is accomplished by primarily by two methods, traditional drilling with a hollow stem and, more recently and gaining in popularity, is the direct-push method. In the latter method, the drill pipe or rods are advanced by pushing and hammering the rods directly into the substrate. These methods may leave an expendable steel point or steel plate near the well intake. The steel is a potential source of metals in the wellbore and may contribute non-indigenous chemical components that can alter original water characteristics. Also the expendable point becomes an obstruction for coring beyond the drill string.

Healey's technology is an adaptation of these common drilling methods and their equipment. It is a means of plugging drill strings during their advancement into earth's substrate. The split bit is a wedging device that replaces steel plates, expendable points, and solid pilot bits. It is removable and thereby leaves no foreign objects in the formation.

## The Director's Corner

*Jim Baxendale, MS, MBA*



**We continue to receive** new invention disclosures from a number of disciplines across the KU campus. There are currently just over 200 open KU technology files, sixty of which are being actively marketed. The invention disclosures above are but a small sample of those we

have received over the last few months. They show KU's diverse interests and demonstrate its commitment to innovation.

The Berkland/Shi technology is an excellent example. Nanomedicine is a rapidly developing field that addresses drug delivery and performance at a sub-cellular level. Advances in this field include improvements in the efficacy of chemotherapeutics for cancer treatment and enhancements in the delivery of proteins and DNA, the powerful therapeutics of the future. Due to their small size

nanoparticles can be designed to be efficient in entering cells or crossing into the blood stream.

The initial application of the Chen and Yu invention, Shallow Feature Selection, is for gene discovery and cancer classification and diagnosis. The algorithm it is based on, however, is wide-ranging, with potential applications in many different areas where feature selection is needed. An example is the ability to detect a human face for surveillance purposes, where it is necessary to pick a few pixels from images or video for classification.

The ATMATCH.com website developed by Sacks, Zamarripa, Simmons and Spellman will serve as an electronic auction house, where none exists, to connect clients with both public agencies and private providers of specialized services and products to meet their needs.

The Healey invention, Split Bit, is an improvement to drilling technology for small diameter monitoring wells used by hydrogeologists to observe groundwater conditions and predict contamination rates.