Disparities research highlights new collaboration with COPH

A new strategic collaboration has been formed between the College of Public Health’s Center for Collaboration on Research Design and Analysis and the College of Medicine’s Center for Advanced Surgical Technology. The partnership will focus on comparative effectiveness and health disparities research.

The costs of surgical devices are often exorbitant, resulting in disparities among priority populations who may not have access to treatment with any of these devices. This represents a significant failure of the health care system to deliver equitable care.

Initial work will support the collection and dissemination of device-related safety, risk, and general use information, which is important to improving the quality of care and maintaining consistent clinical practice standards.

Spotlight on CAST investigator

Joseph Siu, P.T., Ph.D., is one of several collaborators and a project leader at CAST. With a courtesy appointment in the Department of Surgery, Siu is also an Assistant Professor in the UNMC Department of Environmental, Agricultural and Occupational Health and in the UNO School of Health, Physical Education and Recreation.

While at UNMC Siu mostly teaches courses related to occupational health, at UNO he lectures on the subject of motor control and motor learning. These general topics, related to performance and learning, are the main themes of his research at CAST. Siu and his five-member research team, are highly focused on skill acquisition and learning perspectives. Their main project is related to robotic surgical training.

With a Bachelor’s degree in Physical Therapy, a Master’s and a Ph.D. in Physiology and post-doc training in Biomechanics, Siu has a diverse background from academic and clinical points of view.

“As a researcher, CAST provides a very unique environment for collaboration,” said Siu. “You will see from the members list that [the investigators] have a wide range of expertise.”

Siu is currently working on a project with Dr. Carl Nelson of UNL’s Department of Engineering. They are both interested in how people use interfaces to control robots, studying human-computer interactions. They, like other members of the CAST team, strive to combine medicine with innovative technologies.

Siu says he is grateful to be a part of the Center for Advanced Surgical Technology, as he learns a lot from the other members, and “the support from the director, Dr. Oleynikov, is tremendous.”
Meet the 2011/2012 CAST Fellows!

Avishai Meyer, MD
Clinical Fellow

Pradeep Pallati, MD
Clinical Fellow

Abhi Shaligram, MBBS
Research Fellow

Anton Simorov, MD
Research Fellow

University of Nebraska-Lincoln engineering students, working with CAST investigator Dr. Shane Farritor, participated in benchtop experiments at the UNMC CAST lab. The tests demonstrate the functionality of one of their newest robotic prototypes. The robot has been gradually refined through the efforts of the students and investigators.

Hawks awarded NASA grant

Dr. Jeff Hawks, Research Assistant Professor at the University of Nebraska-Lincoln, has been awarded a Research Mini-Grant with NASA EPSCoR. The NASA grant funds preliminary work in barotrauma diagnosis, treatment, and management during long-term space flight. It will allow Hawks to develop a robotic pleural catheter insertion mechanism for pneumothorax management.

“More recently my research interest has focused on miniature surgical robotics,” Hawks said. “That led to an interest in diagnostic and therapeutic robotic systems, from small, portable platforms, to be used in remote environments.”

Robotic chest tube insertion will help astronauts manage spontaneous pneumothoraces that occur during Lunar Outpost, International Space Station, and Outpost Contingency missions. This research is intended to serve as a preliminary study of the feasibility of autonomous chest tube delivery.

Data gathered through these experiments are expected to lead to publications, further NASA collaboration, and funding for related projects.

Kothari joins CAST team

Dr. Vishal Kothari, a general surgeon trained in Minimally Invasive Surgery (MIS), is the newest member of the Center for Advanced Surgical Technology team. Working in the UNMC Department of Surgery, Section of General Surgery, Kothari first became involved with CAST research during a clinical fellowship last year.

“The purpose of CAST is to integrate technology into medicine. We look at new, innovative ways to connect the surgical field with robotics.”

During the fellowship, Kothari gained a full range of MIS experience that he will now bring to his new position, doing a spectrum of cases from MIS general surgery to bariatrics.

“I hope to bring robotic bariatric and gastric bypass to the forefront in the department.”
Summer medical students participate in CAST research

Jared Houck and Rachel Hansen, both second year medical students at the University of Nebraska Medical Center (UNMC), participated in a summer research program offered through the College of Medicine, in conjunction with the Center for Advanced Surgical Technology.

While working on their respective projects, the students participated in weekly research meetings and were given the opportunity to see both the clinical and research aspects of academic medicine.

From cadaver measurement experiments to skills testing with the da Vinci® Surgical System, the students experienced the day-to-day workings of the Minimally Invasive Surgery Center and an active research center.

The hands on nature of the CAST research program helps to shed light on the growing field of minimally invasive surgery and the integration of technology into the medical field.

“CAST deals with a progression of surgical technology—the whole goal is to become less invasive, less painful, with quicker recovery time. Whatever that encompasses is going on here.”
- Jared Houck

Student Fellowship Recipients

Nebraska students, working with CAST investigators and pursuing degrees in fields such as Mechanical, Electrical or Computer Engineering, Physics, Biology, Mathematics, Atmospheric Sciences and Occupational Health, received grants or fellowships through NASA and the National Science Foundation to work on their respective projects.

Congrats to the 2011 recipients.

**NASA Nebraska Space Grant:**
Isaac Anderson— UNL
Jacob Anderson— UNL
Ben Beller— UNO
Marina Bradaric— UNL
Tom Frederick— UNL
Eric Fritz— UNL
Alan Goyzueta— UNL
Ryan McCormick— UNL

Jack Mondry— UNL
Nate Otten— UNL
Nguyen Thao Nguyen— UNL
Irene Suh— UNMC
Alexandra Toftul— UNL
Tyler Wortman— UNL

**National Science Foundation (NSF)**
**Graduate Research Fellowship:**
Tom Frederick— UNL
Tyler Wortman— UNL

Find out about opportunities for students at the UNMC Center for Advanced Surgical Technology

Share your news!
CAST@unmc.edu

Newsletter edited by Courtni Kopietz
The Center for Advanced Surgical Technology has been around for some time now. We’ve gotten so big that we feel the only way to keep all of our members, friends, colleagues, and collaborators informed is to send a letter with the latest news, accomplishments and developments. We have a lot to be proud of.

Many of our investigators continue to be very successful, in publication of important scientific articles, in being recognized for their achievement with multiple awards, and in their pursuit for funding and future research collaborations.

I’m happy to report that the Center continues to grow, and our most recent addition is our important collaboration with the College of Public Health. This allows us to look beyond the surgical technology that we have known and have become experts in and towards the future of seeing how outcomes in clinical care are impacted by the use of new and novel technologies.

As we do every year, we say goodbye to some of our graduating master’s students, post-doctoral students, and fellows and welcome new ones. Finally, we hope this letter spurs interest in some of our ongoing projects and can serve as a reminder that we maintain a presence on our web page, our Facebook page, as well as on our Twitter account. We hope that this becomes part of a two-way communication between you and CAST. I look forward to catching up with all of you in the future. Expect to hear from us soon.

Sincerely,

Dmitry Oleynikov, M.D., F.A.C.S.
Professor of Surgery
Director, Center for Advanced Surgical Technology

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Blast from the Past: Dr. Elizabeth Schmidt

Dr. Elizabeth (Betsy) Schmidt was a fellow at the Center for Advanced Surgical Technology during the 2010-2011 year. As a clinical fellow at CAST, Schmidt worked on minimally invasive surgical techniques and participated in testing of the surgical robots in various labs.

“I thought the training at the University of Nebraska could expose me not only to minimally invasive surgery but also to emerging technologies,” Schmidt said.

Schmidt also participated in a database study of the department’s gastroesophageal reflux disease (GERD) patients, and designed the computer-based databases to track the department’s GERD and hernia patients.

Currently, Schmidt is working as a general surgeon in Terre Haute, Indiana.

“Betsy is a tremendously caring surgeon with vast surgical skill,” said Dmitry Oleynikov, CAST Director.

CAST fellows are given a diverse experience in the field of minimally invasive surgery and get to be a part of the innovative technologies emerging in the surgical field.

“My fellowship provided me not only with this set of advanced laparoscopic skills, but also with the background in order to critically evaluate emerging research as it relates to patient care.”