

## CIMIT & Wellcome Trust Host Innovation Summit

President John F. Kennedy once entered a room full of key thinkers and said, "I think this is the most extraordinary collection of talent, of human knowledge, that has ever been gathered here . . . with the possible exception of when Thomas Jefferson dined here alone."

CIMIT and Wellcome Trust co-hosted a two-day meeting on "Models of Collaborative Medical Innovation."

Attending the conference were leaders in healthcare, academia, industry and government. US participants included MGH, Cleveland Clinic, University of Pittsburgh Medical Center, MIT, Harvard University, Johns Hopkins University,

**More than 80 representatives of some of the most influential institutions in America and the United Kingdom participated in the two-day event**

University of California (San Francisco), Boston University, Johnson & Johnson, Procter & Gamble/Gillette, Boston Scientific, Robert Wood Johnson Foundation, Kauffman Foundation, National Institute of Biomedical Imaging and Bioengineering and Telemedicine (NIBIB) and Telemedicine and Advanced Technologies Research Center (TATRC).

The United Kingdom was equally represented: Academy of Medical Sciences, Medical Research Council, Cambridge University, Association of British Healthcare Industries, Oxford University, Greater Manchester Research Alliance, Royal Academy of Engineering, King's College, Tissue Science Laboratories, Two BC Ltd, University College and more.



"Mark Walport (director of Wellcome Trust) and I convened this diverse group to explore successful models for innovation," said John Parrish, MD, director of CIMIT. "We felt we could learn from each other, and together we could explore key elements of transformational change."

### HBS professors lead discussions

Driving discussions were several members of the Harvard Business School faculty, including Clayton Christiansen, Kent Bowen and Daniel Snow. Each guided exploratory discussion of the future of healthcare, discovery-driven planning and identification of new trends that will impact innovation. Presenters looked at several real-life models, including the laboratory of MIT Professor Robert Langer, and Triton Pharmaceuticals.

Goals included identifying metrics to judge success and comparing the value of interdisciplinary research. All participants sought to develop new insights into innovation and explore methods of encouraging innovation.

"This was an exciting and useful conference," said Dr. Parrish. "We shared our model, got terrific feedback and learned how other institutions are collaborating for success. We will build on this for the future."

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Photos courtesy of ASGE and SAGES

FEATURE :

## Drs. Rattner, Thompson Taking NOTES

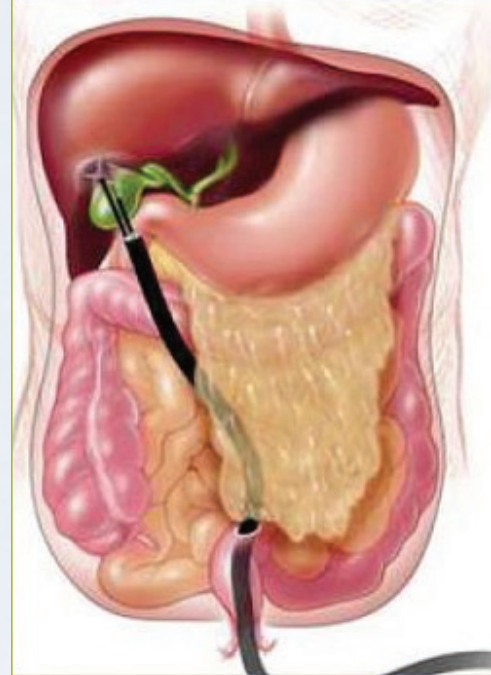
At a mid-summer conference of gastrointestinal surgeons in Boston, David Rattner, MD, looked out over the standing-room-only general session and observed, "This conference and the technology we are talking about has truly exceeded all expectations from when we gathered just one year ago."

Over 400 attended this 2nd International Conference on NOTES, a two-day meeting that included presentations, demonstrations and the announcement of a \$500,000 research grant by Covidien.

By all accounts, there is a future in this new form of minimally invasive surgery called NOTES (Natural Orifice Transluminal Endoscopic Surgery) and it grows brighter each day.

groundbreaking is how these Boston-based doctors are also collaborating with their counterparts at many of the top medical centers from across the country.

NOTES is a bold new technology that is so unique, it is only now becoming fair discourse for water-cooler conversation. "Removing a cyst on the abdomen by entering the tools through the mouth? Well, I've heard that it's possible. . ."



**"The way they are convening so many world-class specialists is a fine example of the collaboration that CIMIT encourages."**

A key element of the NOTES initiative is the multi-city and multi-institutional collaborations that have emerged through the support of SAGES (Society of Gastrointestinal and Endoscopic Surgeons) and ASGE (American Society of Gastrointestinal Endoscopists). In Boston, Dr. Rattner of Massachusetts General Hospital and Christopher Thompson, MD of Brigham and Women's Hospital are working together on a number of projects.

They are not the sole pioneers of this novel technique, nor would they want you to think they are the only team exploring this innovative approach. What makes this national initiative so

By considering the mouth, vagina and anus as surgical entry points for procedures that will take place in the peritoneal cavity, these visionary physicians are pursuing new concepts in the field of minimally invasive surgery. Their work has the potential to significantly reduce pain, infection, scarring and length of hospital stay.

Dr. Rattner is chief of the division of general and gastrointestinal surgery at MGH, and Dr. Thompson is director of developmental and bariatric endoscopy at BWH. Such cross-institutional collaboration is a goal of CIMIT, and it is a hallmark of the Minimally Invasive Surgery program.

Through science awards and working group grants, CIMIT helped support several projects in this exploratory new approach to surgery. Now the technology, which has been tested in pig models, will soon take the next step on road to improving the standard of care for patients.

"This is a cutting-edge idea," said CIMIT Director John Parrish, MD. "The way they are convening so many world-class specialists is a fine example of the collaboration that CIMIT encourages."

Dr. Thompson noted, "Minimally invasive surgery, which is relatively new, has been a major success. I think what we're launching now in terms of a transgastric and endolumenal program is going to be very exciting, too, because of how the research teams collaborate and share information." ■

- Beth Israel Deaconess Medical Center, Steven Schachter, MD
- Boston Medical Center, George O'Connor, MD
- Boston University, Mark Grinstaff, PhD
- Brigham and Women's Hospital, Fred Schoen, MD, PhD and Joseph Bonventre, MD, PhD
- Children's Hospital Boston, Don Ingber, MD, PhD and Frank Pigula, MD
- Draper Laboratory, Jeffrey Borenstein, PhD
- Massachusetts General Hospital, Jay Schnitzer, MD, PhD
- Massachusetts Institute of Technology, John Guttag, PhD
- Newton Wellesley Hospital, Keith Isaacson, MD

### IN FOCUS:

## Site Miners Help Identify the Most Creative Clinicians

Boston's teaching hospitals are a mecca for creative, passionate doctors and clinical researchers. So how does CIMIT find and fund those clinicians with the most promising ideas? Through its network of Site Miners.

A Site Miner is a scout, mentor, project manager, dealmaker, visionary and reality tester. Site Miners are well-established professionals on the staff or faculty of a CIMIT Consortium Institution. All are quiet leaders within their CIMIT site (institution), who network with each other to connect clinicians and engineers who might not otherwise meet. Through their efforts, multi-institutional collaborations are formed.

"Doctors have a lot of great ideas. They become researchers because they are interested in finding new ways to save lives. These visionaries are especially interested in finding new sources of funding to support those ideas," said Jay Schnitzer, MD, PhD and CIMIT Site Miner (liaison) for Massachusetts General Hospital. As a practicing clinician, his training in chemical engineering and pediatric surgery enhance Jay's experience as Site Miner.

Across town at Boston University, Mark Grinstaff, PhD and George O'Connor, MD wear many hats. George is a practicing clinician and an authority on chronic respiratory diseases. Mark is a research scientist and a leading expert in polymers and biomaterials. Both are Site Miners.

"Even in my first year as a CIMIT Site Miner, I am finding the Boston University Medical Campus and Boston Medical Center community to be a great source for ideas," observed Dr. O'Connor, who is professor of medicine at Boston University and co-chair of the FY08 CIMIT science grant review.

**"Doctors have a lot of great ideas. They become researchers because they are interested in finding new ways to save lives."**

"The Boston University engineering community is a rich source of potential collaborators for doctors throughout the CIMIT network," Grinstaff noted.

Site Miners know the community well. They continually seek out creative clinicians and engineers whose new ideas may lead to tomorrow's healthcare solutions.

Hospital-based Site Miners find other passionate practitioners, connect them with other scientists and then guide the team toward funding opportunities that can help their dreams become reality. Engineering-based Site Miners seek out potential collaborators who are working on developing new technologies that might be applied to a clinical problem.



*CIMIT Site Miners: Don Ingber, George O'Connor, Keith Isaacson, Steve Schachter, John Guttag, Jeff Borenstein, Jay Schnitzer*

"It is all about doing great science and advancing healthcare," added Grinstaff.

Knowing the best and brightest scientists and technologists who have a passion for healthcare, or finding those up and coming engineers whose novel technologies could match the needs of a clinical researcher, is how these technically-oriented Site Miners help CIMIT form and fund multi-disciplinary collaborations.

"The work of Site Miners is essential for the success of CIMIT," said John Parrish, MD, director of CIMIT. "They are in contact with doctors and researchers on a regular basis, and they can identify those who are pushing the leading edge of advanced technology." ■

## GUEST COLUMN :

# Technology Can Improve Mother-Infant Care Throughout World

By Kris Olson, MD

Having worked overseas I am pleased to report that CIMIT and Massachusetts General Hospital are taking steps to improve health in emerging countries. We have organized the CIMIT Global Health Initiative (GHI) and plan to select partnering populations where we can implement some of our ideas for the greatest impact. As a father of triplets, I feel passionately that relatively simple interventions in low-resource settings may dramatically improve the safety of mothers and newborns. Our contributions of knowledge, medicine, and targeted technologies, can help improve conditions in villages where I have worked from Asia to Africa.

**CIMIT has been a major force in stimulating action on these projects.**

Many families in these austere regions need help, and it doesn't always come down to dollars and cents. Basic improvements can make a big difference in the effectiveness of health care providers. GHI can help these communities adopt effective solutions.

GHI is dedicated to designing medical devices and technologies that will improve the quality of care for underserved patient populations in America and around the world. Funded through targeted and unrestricted gifts, our first priority is improving the health of mothers and newborns. An area of significant morbidity, I know that we can make a powerful difference and ultimately save many lives.

### Saving mothers and newborns

One project currently under way involves incubators—and car parts. Throughout the villages we are targeting, hospitals are littered



Photos courtesy of Kris Olson

with incubators—abandoned for want of spare parts or craftsmen to fix them. In a world where more than 4 million newborns die each

year, this is a circumstance worth addressing.

Our goal is to design an Isolette; newborn incubators that can remain in service because of locally available parts—and the mechanics to keep them operational.

We are exploring design alternatives and have approached a large auto-parts company to investigate their interest in joining our efforts. Once manufactured, we envision a program to cross-train auto-repair professionals on how to repair these Isolettes that have been made in part from standard car parts and other locally adapted resources.

Another promising initiative is an educational program for midwives. by training motivated midwives in techniques ranging from sterility assurance to managing newborn asphyxia, we will create a culture that fosters learning and catalyzes continuous improvement.

CIMIT has been a major force in stimulating action on these projects. We are optimistic that with the help of CIMIT, MGH, private foundations and the earnest residents we work with, we will be able to improve health and save precious lives. ■

## COMPANY STORY :

# CIMIT Bridges the Gap for Non-healthcare Companies

By Tamara Nazzal

Increasingly, CIMIT is attracting non-traditional healthcare companies. Technology companies primarily focused in other industries are recognizing enormous potential in the healthcare sector, but also significant barriers to entry. CIMIT offers clinical expertise and the connections necessary to enter the healthcare arena.

Initially, companies joining CIMIT's Industry Liaison Program (ILP), were exclusively medical device companies. Over time, the program has diversified to include

companies from the telecommunications, IT, consumer goods and electronics industries. "Over the years, we have demonstrated our ability to successfully translate technologies from other industries into healthcare," says Janice Crosby, CIMIT's Director of Business Development.

LiveData, a Cambridge IT company, developed a real-time data integration technology for use in the power, utilities and manufacturing industries. Through CIMIT-enabled collaborations, the company was able to develop new applications for use in hospitals.

Recently, four well-established consumer goods and electronics companies have joined the ILP. Three are Fortune Global 500 companies: Sharp, Canon and Sony. A fourth is a fast-growing Massachusetts company familiar to many consumers—iRobot. As more patients proactively engage in personal healthcare and clinicians seek new communications solutions, these and other non-healthcare companies will find opportunities to enter this growing market.

Soon, new tools will emerge from the CIMIT supported collaborations formed between companies having technology expertise and the CIMIT investigators who have the clinical expertise. These tools will empower patients to take control of their own care and enhance communication

## IN BRIEF :

### New Program and Program Leader

Gary Tearney, MD, PhD, MGH has been named Optical Diagnostics Program Leader.

### Grants Awarded

**VHA Health Foundation** has announced a \$250,000 award to support RIPS R3: Real-time Incident Preparedness Simulation.

This grant will allow continuing research into advanced mapping technologies and interaction between physical mannequin simulators and virtual command and control systems. Congratulations to Jay Schnitzer, MD, and Ryan Bardsley (MGH) who will lead this project.

**TATRC** has awarded a \$2 million Grant to CIMIT SIM Group for the next phase of COMETS, a full-body trauma training simulator. Congratulations to Steve Dawson, MD and his team.

### Successful Plug n' Play Workshop

The 4th Annual HCMDSS/MDPnP workshop convened two highly synergistic communities and drew 143 participants. Robert Kolodner, National Coordinator for Health IT was keynote.

### Regulatory Affairs

Plan to attend the regulatory affairs pre-conference workshop on November 13. Watch for weekly updates at [cimit.org](http://cimit.org)

both in the hospital and at home. By providing reliable, continuous assistance for managing chronic disease, these new technologies can help extend care into the home, reduce trips to the doctor and improve cost savings.

"The Personal Healthcare Technologies project at Sharp Labs is exploring a variety of consumer-centric health and wellness management devices and applications," said Deepak Ayyagari, PhD, principal scientist at Sharp Laboratories of America. "In CIMIT, Sharp Labs has found a vital partner that is helping bridge the critical gap between the clinical and consumer worlds." ■

## INSIGHTS :

### By John Parrish

In July, CIMIT co-hosted an innovation summit with the Wellcome Trust on the topic of "Models of Collaborative Medical Innovation." This was an exciting opportunity for our community because it brought together many of the top thinkers in medicine and healthcare to talk about ways to foster innovation.

Our goal was to see if we could catalyze cross-institutional collaborations by convening a network of healthcare innovators. The idea was clearly appealing, we attracted nearly 80 of the top academics, executives, public policy and medical professionals from the UK and US.

The Harvard Business School case study method was the technique used to engage participants. Clay Christiansen, HBS professor, facilitated the two-day workshop that evaluated four different models, including the CIMIT model. Professor Kent Bowen, who is currently researching a case study on CIMIT, led a very lively discussion about healthcare. It was interesting for me to listen and learn.

After reviewing the elements of the CIMIT case, Dr. Bowen challenged the assembly to explore our strengths and weaknesses.

CIMIT's ability to break down inter- and intra-institutional silos generated particular interest, as it could be a formula for national or international collaborations.

Seed funding of early-stage ideas was universally viewed as strength, mostly because CIMIT grants frequently enable 2nd and 3rd round funding. On average, CIMIT supported research teams secure an additional \$2 of "enabled" money (NIH/NSF) for every dollar awarded by CIMIT. To me, that means we have the potential to leverage the \$5 million we are currently pledging in the FY2008 Awards cycle into an additional \$10 million in research dollars for our consortium institutions.

Yet most of the discussion examined potential areas for improvement. We gained incredible feedback. Sustainability has long been on my mind, and it was high on this list of concerns expressed during the case analysis. Replicating the model elsewhere in the US or UK was also a hot topic.

### CIMIT model was affirmed

The symposium gave me a lot of think about as we pursue our 5-year strategic plan. Clearly, we must continue to bring together clinicians and engineers who would not otherwise meet. CIMIT has a very powerful business model, which can be enhanced through diversified funding. With more resources, CIMIT can support more early stage research that generates a healthy ROI for our member institutions. And, we must maintain our focus on devices and systems, so we can deliver the greatest value for patients of the future.

My faith in our model was affirmed. After hearing many views about innovation in healthcare, I emerged fully confident that CIMIT is nurturing the right formula for capturing emerging technology as we strive to improve patient care. Our challenge will be to engage others to join our cause and support our mission.

FEATURE :

## CIMIT Announces Career-Development winners, \$5M in Science Awards

CIMIT recently named recipients of six Career Development Awards, an announcement that comes following the earlier designation of \$5 million in science awards to investigators at many of the area's top medical centers.

The awards of \$40,000 were given to doctors who have shown evidence of creative research while following a dynamic path of clinical activity. One goal of the CDA grant is to encourage clinicians to expand beyond their current discipline and explore a field that is complementary.

Recipients of career-development awards are Rajiv Gupta, MD, PhD and Ronald Dixon, MD, both of Massachusetts General Hospital; Virna Sales, MD, Children's Hospital Boston; Satish Singh, MD, Beth Israel Deaconess Medical Center; and Amanda Gruber, MD, McLean's Hospital, Chong Wing Yung, Boston Medical Center.

As part of her CDA designation, Dr. Sales was named winner of the Shore Fellowship. Endowed by Miles and Eleanor Shore, its purpose is "to enhance the quality and diversity of the Harvard Medical School at all ranks."

The 2008 Science awards were announced in early summer, and of the 37 proposals that were chosen, 22 potentially have military applications.

"Our goal, and we believe in it passionately, is to bring life-changing technology to patients as quickly as possible," said John Parrish, MD, founder and director of CIMIT. "We are especially aware of the needs of soldiers wounded on the battlefield, and a number of grants will go to researchers who are responding to this need."

Dr. Parrish was a battlefield surgeon in Vietnam, and started CIMIT in part to accelerate the development of medical devices for patient care on both the battlefield and at home.

### Providing as many awards as possible

The awards, aimed at innovation in health care, range from \$40,000 to \$100,000. CIMIT officials are offering as many awards as possible to promising researchers with the expectation that the data gathered in this early-stage research will strengthen the investigators future application for support from government or industry sources.

CIMIT's application process is unique in that it requires multidisciplinary teams that are often inter-institutional as well.

Thus surgeons from Massachusetts General Hospital could be encouraged to link with engineers at MIT to produce a device that required the knowledge of experts from both institutions.

Founded in 1998, CIMIT has supported more than 400 investigators. Accomplishments include 200 invention disclosures, 80 patent applications, 30 licenses issues and 11 companies formed. Generally \$2 in research funds are generated from federal or private sources for each \$1 CIMIT extends as part of its annual science awards.

CIMIT does not own the intellectual property developed in the research it supports. It helps launch ideas, and lets the investigative teams and the teaching hospitals reap the benefits.

Among the proposals approved for the 2008 year include the following: a project to demonstrate a new materials approach to closing wounds; the testing of an innovative approach to augmenting the function of a damaged spinal cord; and a demonstration to identify an accurate method for measuring muscle function to guide treatment and rehabilitation.

A full list of successful proposals and lead investigators can be found at [www.cimit.org](http://www.cimit.org). ■

CIMIT CALENDAR :

**Cardiac Health VC Summit (invitation only)**  
November 13, 2007

**CIMIT Innovation Congress 2007**  
November 13-14, 2007

**Regulatory Affairs Pre-Conference Workshop**  
November 13, 2007

*For more information on these and other events visit [cimit.org](http://cimit.org)*

FUNDING OPPORTUNITIES :

<b>Strategic Project</b>	<b>Oct. 5, 2007</b>
<b>Science Awards</b>	<b>March 2008</b>
<b>New Concept</b>	<b>Anytime</b>

*For more information on these and other funding opportunities visit [cimit.org](http://cimit.org)*

CIMIT CONSORTIUM :

- Beth Israel Deaconess Medical Center
- Boston Medical Center
- Boston University
- Brigham and Women's Hospital\*
- Charles Stark Draper Laboratory\*
- Children's Hospital Boston
- Harvard Medical School
- Massachusetts General Hospital\*
- Massachusetts Institute of Technology\*
- Newton-Wellesley Hospital
- Partners HealthCare System

*\*Founding members*

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