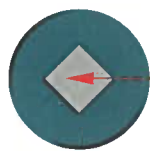


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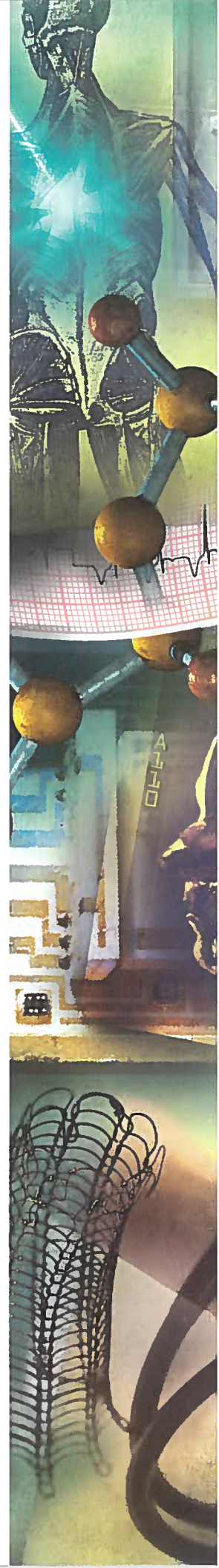
Mission

*To integrate clinical and technological
excellence in order to generate, develop and
rapidly reduce-to-practice innovative and
high-impact concepts in minimally invasive
therapy that improve the quality and lower
the cost of health care delivery.*



CIMIT

CENTER FOR INNOVATIVE MINIMALLY INVASIVE THERAPY



RESEARCH ENDEAVORS

TOM BRADY, M.D.



Innovative, collaborative research projects funded in 1998 are far-reaching in both their concept and potential impact on patient care. The CIMIT environment provides a setting for critical discussions to

improve research design, test new ideas, and monitor the progress of funded projects. Weekly interactive meetings with representation from numerous clinical specialties and technology disciplines are a critical component of the innovation process for CIMIT.

Utilizing funding from the DoD to support research projects, CIMIT is making advances on all fronts:

- Reducing disabilities following a brain attack or stroke
- Early detection and removal of tumors without an incision
- Using novel micro-sensors to assess clinical status
- Replacing damaged vital organs with "tissue engineered" substitutes
- Treating heart attacks with "smart" catheters
- Developing life-like simulators for training and device prototyping
- Assessing trauma with novel non-invasive techniques

Acute brain attack:

Reducing disabilities using novel diagnostic and therapeutic strategies

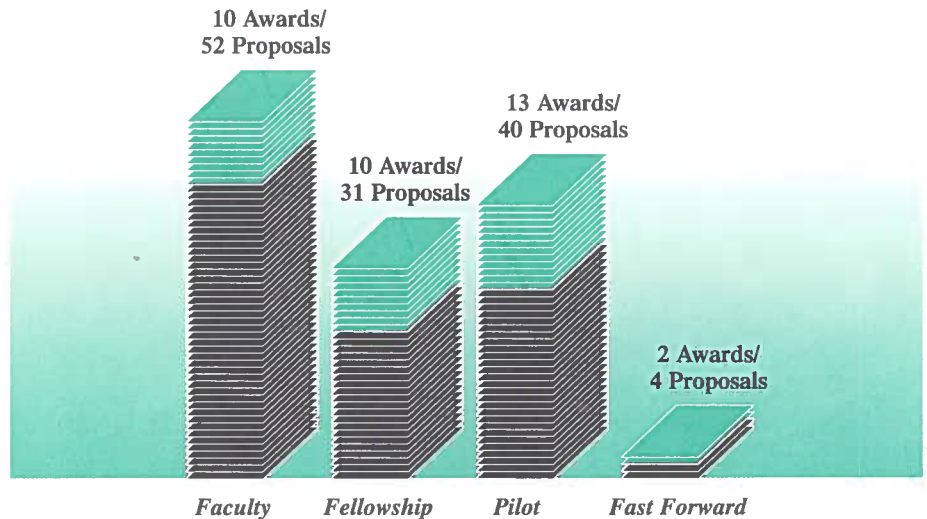
Successful treatment of patients with acute stroke requires accurate diagnostic information coupled with aggressive treatment strategies. CIMIT investigators have developed novel imaging techniques (Magnetic Resonance Imaging - MRI and optical imaging) that provide a clear picture of the brain, including pinpoint detection of blood clots, bleeding and brain tissue at risk. Using this information, novel techniques including clot busting with lasers and regional brain cooling can minimize damage during a stroke and improve the care of patients.

The non-surgical removal of tumors:

New option for treating breast cancer

Local delivery of energy sources can kill cancer cells while sparing normal tissue. Ultrasound, radio frequency and microwave are some of the energy sources currently under study by CIMIT investigators. Image-guided, focused ultrasound provides a non-surgical approach for treating women with breast tumors. The ultrasound beam can be aimed accurately into the tumor through the breast tissue, causing local temperature elevation that kills tumor tissue while sparing nearby normal tissue. MRI temperature mapping is essential for monitoring this therapy. Success of these novel approaches will decrease the pain, disfigurement and cost associated with traditional surgical approaches.

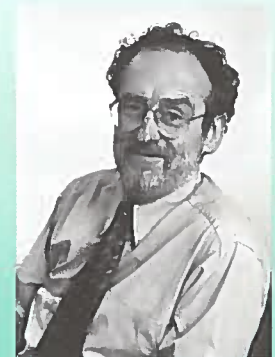
CIMIT RESEARCH AWARD TRACK RECORD 1997-1999



For more information on CIMIT-supported research projects, visit the CIMIT website (www.cimit.org).

"Innovation is a requirement for the health care of tomorrow — CIMIT is the vehicle for innovation."

JOHN A. PARRISH, M.D.
Director, CIMIT



CLINICAL I

DAVID RATTNER, M.D.



CIMIT is working with all specialties on the technologies and facilities needed to make less invasive and less traumatic surgical options a reality. In conjunction with industry, government and other collaborative centers, CIMIT is defining the requirements for the *Operating Room of the Future*. Funded clinical research includes:

- Creating new skeletal bone for patients with facial deformities, without external incisions and pins
- Developing new, less invasive procedures:
 - To help emphysema sufferers breathe easier
 - To repair aortic aneurysms with endovascular stents
 - That can be enhanced in an image-guided operating environment



Neurosurgery in the BWH Interventional MRI (Magnetic Resonance Imaging)

EDUCATION AND OU

STEVE DAWSON, M.D.



The scope of the CIMIT educational program includes informing our community of CIMIT activities, attracting and educating academic and military investigators in the field of minimally invasive therapy research and practice and interacting with world leaders.

Educational programs include:

Clinical Focus Sessions bring forward clinical problems to the interdisciplinary participants of CIMIT to fast track technology development. In 1998, sessions were held with Orthopedics and Pediatrics, resulting in a project to develop microsensors for Orthopedics.

Visiting Speakers' Forum brings internationally recognized scientists and clinicians to share information and progress on innovations and to augment the Fast Forward Program. In 1998, Jonathan Sackier, M.D., a minimally invasive surgeon from George Washington University, and Erik Fosse, M.D. and Frode Laerum, M.D. from Rikshospitalet Oslo, visited and teleconferenced with CIMIT.

The CIMIT Symposia at MIT introduces clinical problem sessions in a seminar series for the Harvard/MIT Division of Health Sciences and Technology.

THE CONSORTIUM GAINS MOMENTUM

Partners HealthCare System, Inc. (MGH and BWH) has worked to integrate CIMIT's strategy for innovation into its strategic plan for future health care delivery. CIMIT is now well positioned to take the lead role in reaching out to centers of excellence nationwide and establishing a National Center in Minimally Invasive Health Technologies.

MIT and the Harvard-MIT Division of Health Sciences and Technology (MIT/HST) look to CIMIT as a key bridge for educational and research opportunities for graduate students and post-doctoral fellows.

Draper Laboratory has connected several of its technology development programs to specific CIMIT clinical goals.

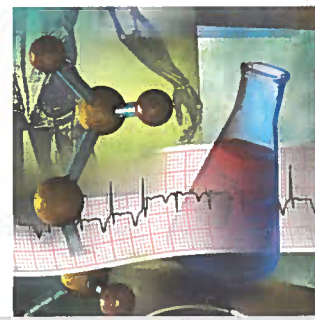
The breadth and depth of interactions between clinicians, clinical researchers and technical scientists is a unique strength of CIMIT. During the past year CIMIT has built a solid management team with expertise in operations, business development and program management to provide support for the developing research, clinical and educational programs.

THE COLLABORATIONS HAVE BEGUN

The combined resources of the Government-Industry-Academia-Hospital collaborations provide a strong network of technological and intellectual capability. During 1998, CIMIT initiated collaborative research programs with the Department of Defense (DoD) to assess the extent of trauma, hemorrhage and organ failure in the acute setting, and with Harvey Mudd College in California as a first step in establishing a National CIMIT program.

CIMIT leadership understands that the most effective collaborations with industry should begin early in the life of a project. With input from leaders of relevant industries, CIMIT has designed a unique three-level Industry Collaboration Program to facilitate and promote this philosophy. Management attention is devoted to tracking intellectual property brought to the collaboration, and that developed within the conduct of CIMIT projects. Industry interactions are increasing steadily. A CIMIT Industry Symposium in March 1998 had more than 50 attendees from the medical device and venture capital industries. Meetings were held throughout the year with more than 40 companies to discuss their participation and collaboration with CIMIT.

On the international front, CIMIT has established contact with The Interventional Center at Rikshospitalet in Oslo, Norway to discuss current research and concepts for the operating room of the future.



Gaining Momentum

TECHNOLOGY ASSESSMENT AND OUTCOMES PROGRAM

SCOTT GAZELLE, M.D.



This program provides the infrastructure and expertise to properly evaluate minimally invasive diagnostic and therapeutic procedures at all stages of development — particularly during the early

stages from discovery to preliminary clinical testing, when extensive data regarding clinical effectiveness may not yet be available. Computer models will be utilized to simulate expected cost and outcomes, and in so doing help guide decisions regarding the development, expansion, or reduction of specific programs.

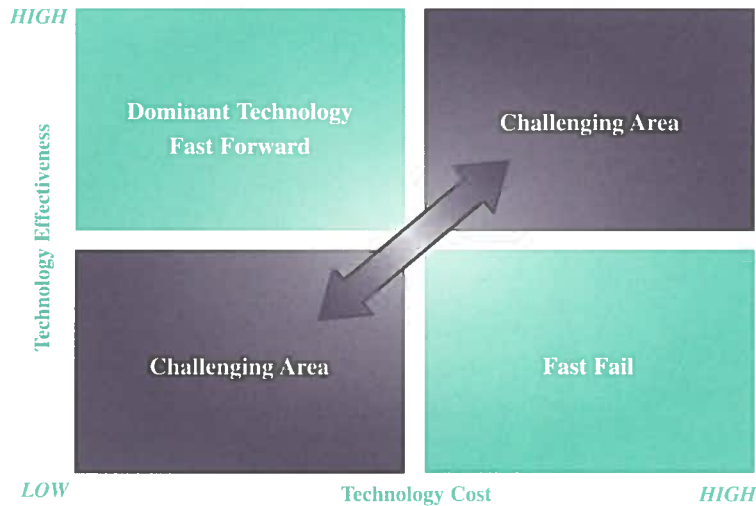
The program also provides the expertise to evaluate new procedures as they move into clinical practice, by building robust condition-specific databases that will facilitate comprehensive analysis of clinical effectiveness.

Given the medical and economic realities of the health care delivery system, considerable attention has been directed toward the potential for minimally invasive diagnostic and therapeutic procedures to

improve patient outcomes, while at the same time decreasing morbidity and stabilizing or possibly decreasing costs. CIMIT is uniquely positioned to facilitate the identification, development and implementation of minimally invasive technologies and to efficiently allocate research funds to competing technologies on the basis of their

potential future impact. The technology assessment challenge is to address those areas requiring a tradeoff, where new technology is more effective but more costly; or conversely less costly but less effective than present technology.

ASSESSMENT OF NEW TECHNOLOGY



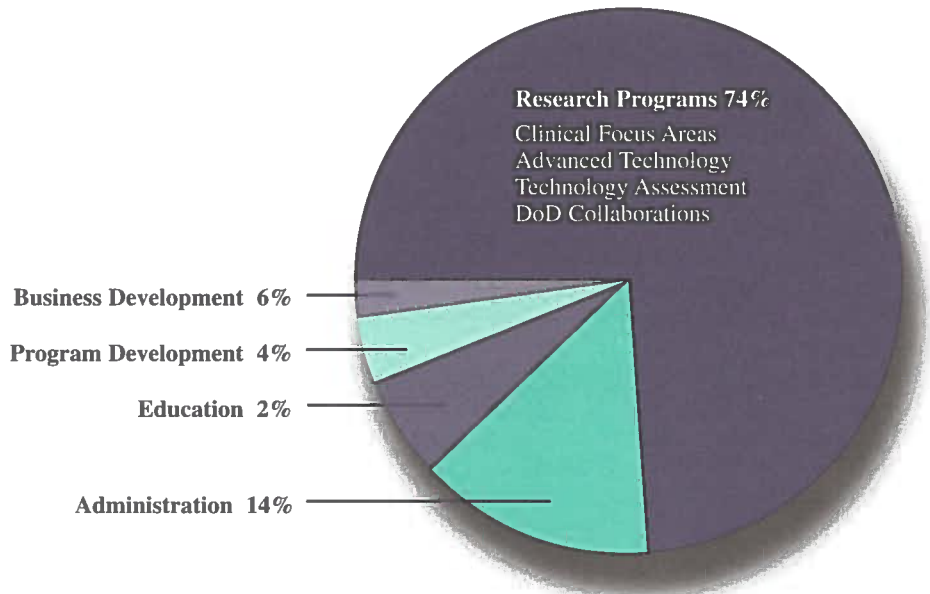
FINANCIAL HIGHLIGHTS

FUNDING

Started in 1993 with seed funding from philanthropy, the Department of Energy, MGH, and in-kind support from the consortium founders, CIMIT won major federal funding (\$11.3 million) from the Department of Defense (DoD) in 1998. Receipt of DoD funding has enabled CIMIT to transition from an institutionally supported entity to a National Center for Minimally Invasive Health Technologies.

To build on its remarkable interdisciplinary foundation, CIMIT is seeking additional support from philanthropic donors, foundations, and from other federal agencies. Additionally, in-kind resources, shared talent and funding are being sought from industry. CIMIT also anticipates deriving support from licensed rights to intellectual property and inventions developed through the CIMIT process.

ALLOCATION



CIMIT

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