



Opportunities for Translation Through Advances in Biomedical Technologies

Countless breakthroughs in biomedical research and medicine have been made possible through the development of innovative technologies, instruments, and tools that open new doors for researchers and physicians. This issue provides excellent examples of the results.

The center featured in the cover story is just one of 50 NCRR-supported Biomedical Technology Research Resources (BTRRs) — all of which have made accomplishments in fostering translational medicine. But BTRRs don't function in a vacuum. They provide invaluable training and educational resources and are built on collaborations among basic scientists, clinicians, and engineers who strive to identify and address pressing needs in both research labs and the clinic.

Researchers at a single BTRR routinely interact with investigators supported by a wide range of NIH institutes and centers, as well as those from other NCRR programs, including the Clinical and Translational Science Awards (CTSAs). CTSA awardees, for example, use the BTRRs' expertise and resources to create new diagnostic tests, adopt advanced research computing infrastructure, and explore molecular fingerprints of specific diseases.

BTRRs actively share the technologies they develop, often forging partnerships with industry to manufacture and commercialize instruments and tools — a critical element in bringing technological discoveries to the clinic. And many BTRRs receive additional support from other NIH institutes, leveraging resources to achieve their goals.

As you'll read in this issue, investigators at the BTRR in Boston, known as the National Center for Image-Guided Therapy, have developed an FDA-approved ultrasound instrument for eradicating uterine fibroids. This tool is now being adapted for other exciting applications, including tumor removal and neuroadministration of drugs. Other technologies conceived at the center are enabling neurosurgeons to minimize damage to normal brain tissue during operations and are providing physicians with more precise and effective methods for honing in on prostate cancer and other malignancies.

The research at the National Center for Image-Guided Therapy, like that at other BTRR centers, is helping to transform patient care by providing physicians with the tools to treat patients more efficiently and safely. Thanks to such advances, the "operating room of the future" is becoming a reality.

Barbara Alving, M.D.

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Director, NCRR

3 CTSAs in Focus

CRITICAL RESOURCES

4 The Operating Room of the Future

Advanced imaging technologies are transforming therapy.

SCIENCE ADVANCES

9 New Opportunity to Better Understand Huntington's Disease

New primate model may help scientists to develop more effective therapies for Huntington's disease and create similar primate models for other genetic disorders.

11 Mass Producing Antibodies

Supported by an IDEa grant, researchers find a way to rapidly generate human monoclonal antibodies to potentially treat the flu and other infectious diseases.

FUNDING MATTERS

13 HEI Grants Enable Cutting-Edge Research

15 News From NCRR

NCRR
Reporter



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On the Cover: Researchers at Brigham and Women's Hospital in Boston made critical technical advances that enabled the use of ultrasound energy in performing surgery without actually cutting into a patient. The research led to the FDA-approved instrument shown on the cover, called ExAblate 2000, developed in collaboration with the Israel-based company InSightec and GE Healthcare. As new advanced technologies and instruments developed by the National Center for Image-Guided Therapy and other NCRR-funded Biomedical Technology Research Resources make their way into hospitals, they will help clinicians perform much safer and more advanced procedures.

PHOTO BY BRENDAN STEWART