# AAAS Neuroscience Review

UNE UNIVERSITY OF NEW ENGLAND
Center for Excellence in the Neurosciences

Maine Medical Center
Neuroscience Institute

Spectrum MEDICAL GROUP
*Caring for Patients & Our Communities*

Maine Biotech
*Discover It Here.*

**November 1st-3rd, 2010**

**Biddeford and Portland, Maine**

**Overview**

The University of New England (UNE) and the state of Maine have both previously engaged the services of the American Association for the Advancement of Science (AAAS) and its Research Competitiveness Program (RCP). The feedback and recommendations received have been invaluable in helping build the biomedical and marine science research capacity. The genesis for creating a Center for Excellence in the Neurosciences (CEN) at UNE was a direct result of the 2002 and 2006 AAAS visits and reports. The mission and vision for the CEN and recent progress is highlighted on the center website: www.une.edu/research/cen.

In 2006, the Maine Medical Center (MMC) also initiated an effort in the neurosciences, creating a Neuroscience Institute: www.mainehealth.org/neuro_homepage.cfm?id=4242. Under the leadership of Dr. Raj Desai, the institute brings together clinicians and researchers from multiple disciplines to advance a scientific understanding of, and delivery of care for, a range of neurological diseases through multidisciplinary collaborations. In addition, the institute goals include expanding the range of neuroscience services and level of access for patients across the state and region.

Spectrum Medical Group www.spectrummedicalgroup.com is a physician-owned multi-specialty practice with over 130 board certified physicians. They offer excellent patient care, provided by experienced and respected anesthesiologists, radiologists, radiation oncologists, and pathologists in Maine. Each year Spectrum anesthesiologists provide anesthetic care to over 50,000 patients at a number of Maine's busiest hospitals and health care facilities. The group has developed special expertise in a number of areas including obstetrical, pediatric, cardiac, neurosurgical, general surgery/trauma, orthopedic, and outpatient anesthesia as well as critical care. Spectrum Anesthesiology also provides supervision of an ACGME residency program at MMC.

Initial discussions were held between members of the three groups in 2007 centered on how they could complement each other's strengths in neuroscience-related research, education and clinical care. These efforts became more formalized in 2008/2009 as several initiatives were launched including an advisory panel for clinical research, offering of neuroscience-related seed grant funding, and a successful spine symposium focused on prevention and treatment of back pain.

UNE and MMC have both undergone transformative strategic planning processes and growth over the past ten years, with biomedical research being prominently featured. This past summer, the three partners committed to funding a neuroscience-focused visit by the AAAS. The goals of the visit include having AAAS make specific recommendations on how each group can effectively build on existing strengths and collaborations to create a high-quality neuroscience cluster in Maine. The partners recognize that through collaboration they can complement and synergize efforts and resources to achieve something unique that is recognized for excellence at the national level. The AAAS panel will provide feedback on how to maximize synergy and achieve true excellence in translational research and development.

**Overarching Goals:**

- Generate a SWOT[1] style analysis for each of the primary programs (UNE Center for Excellence in the Neurosciences, MMC Neuroscience Institute and Spectrum Anesthesiology)
- Provide sets of recommendations related to the institution-specific goals and objectives
- Identify opportunities for immediate and longer term collaboration that could result in a truly world-class translational neuroscience cluster in Maine
- Assess the current status of private biotechnology companies in Maine and suggest innovative ways in which non-profit and for-profit organizations can work together to promote neuroscience research and development in Maine

[1] SWOT-Strengths, Weaknesses, Opportunities and Threats

**UNE Center for Excellence in the Neurosciences Goals:**

- Complete a critical evaluation of the following UNE resources, programs and initiatives:

  - Physical resources (e.g., laboratory space, core facilities, etc.)
  - Additional research infrastructure (e.g., support services, mentoring programs, etc.)
  - Undergraduate and professional student involvement in research
  - Competitiveness for receiving larger NIH and NSF grants (COBRE, program projects, major instrumentation, etc.)
  - Undergraduate neuroscience major (curriculum, recruitment, competitiveness)
  - Opportunities for graduate programs at the M.S. and/or Ph.D. levels
  - Capacity to conduct translational research within the university and through external collaborations

- Recommend next steps that should be taken to advance or expand the aforementioned neuroscience initiatives

- Identify any additional unique opportunities that the CEN and its faculty should consider as it makes progress in meeting its mission and goals

**MMC Neuroscience Institute Goals:**

- Evaluate current resources and strengths associated with the MMC Neuroscience Institute including clinical departments, patient populations, nascent clinical research programs, etc.

- Determine what key pieces are still needed (infrastructure, senior scientists who can mentor junior faculty in research, core services, etc.) in order for the faculty and institute to grow clinical research

- Suggest models or plans for better integrating the clinical (and basic science) departments together to support a research/scholarship environment in the neurosciences

- Discuss innovative ways to get around traditional barriers to clinical research (time available for doing research, shifting a culture towards a more research/academic oriented environment, efficient ways to mentor promising junior faculty to make them competitive for NIH awards)

- Provide expert advice on how MMC can initiate larger clinical trials, integrate research/scholarship into residency training, and/or successfully develop a drug or medical device

- Recommend steps that can be taken to more fully exploit the excellence in stem cell biology and vascular biology at MMCRI into the MMC Neuroscience Institute in order for each of them to fully achieve their strategic plans/long-term visions

**Spectrum Anesthesiology Goals:**

- Evaluate the anesthesiology residency program in the context of ACGME research requirements

- Provide recommendations for building research capacity (clinical and basic science) for Spectrum Anesthesiology and the MMC anesthesiology residency program

## AAAS Neuroscience Panel Member Biographies

**Daniel B. Carr, M.D.** has most recently served as Chief Medical Officer and President of Javelin Pharmaceuticals. He is also the Saltonstall Professor of Pain Research in the Departments of Anesthesia and Medicine at Tufts Medical Center. Dr. Carr is the founding director of the MS Program in Pain Research, Education & Policy at Tufts University School of Medicine. He is known internationally for his contributions to pain research, evidence-based pain medicine, and to the social and political aspects of pain relief. He co-chaired and drafted major portions of the Agency for Health Care Policy and Research Clinical Practice Guidelines on Acute and Cancer Pain Management. In addition, he has edited and authored over 300 articles and books spanning clinical practice, literature syntheses, and systematic reviews in peer-reviewed publications. Dr. Carr is the recipient of many awards and honors from leading professional organizations and healthcare institutions worldwide. Dr. Carr received an M.D. with Honors (Alpha Omega Alpha) as well as M.S. and B.S. (Honors) degrees in Physics from Columbia University.

**C. Edward Dixon, Ph.D.** is Professor and Vice-Chair for Research in the Department of Neurosurgery at the University of Pittsburgh and has secondary appointments in Critical Care Medicine, PM&R, and Neurobiology departments. He serves as Director of the University of Pittsburgh Brain Trauma Research Center and Co-Director of the Safar Center for Resuscitation Research. He has been the recipient of several NIH and CDC-funded R01 and PPG grants. Dr. Dixon has over 30 years experience in the study of traumatic brain injury and has contributed significantly to the evolution of animal models of traumatic brain injury. He has published on neurochemical mechanisms of posttraumatic cognitive deficits. Dr. Dixon is a charter member and Past-President (2002-2003 term) of the National Neurotrauma Society. He is on the editorial board of the Journal of Neurotrauma, Neurosurgery (Neuroscience Section), and Metabolic Brain Disease. He founded and directs the website for the National Neurotrauma Society (www.neurotrauma.org). Dr. Dixon is a regular member on the NIH Brain Injury and Neurovascular Pathologies study section, as well as a routine grant reviewer for other private, state, and federal agencies. He received his Ph.D. degree in Physiological Psychology from the Virginia Commonwealth University.

**Marcie Glicksman, Ph.D.** is the Co-Director of the Laboratory for Drug Discovery in Neurodegeneration (LDDN), Harvard NeuroDiscovery Center. The group is focused on accelerating the identification of new therapeutics for neurodegenerative diseases. Dr. Glicksman has extensive experience in assay development, high throughput screening, as well as animal pharmacology and preclinical development. She has been in the field of drug discovery for close to 20 years, the most recent six years in academics at LDDN and thirteen years in the pharmaceutical/biotech industry. Before joining LDDN, she was at the start-up company Descartes Therapeutics focused on developing pain therapeutics using imaging techniques. Before this, she was at Cubist leading a group in the development of antibiotics with a structure-based drug design approach. Prior to these positions, she was at DuPont-Merck and at Cephalon, Inc. She has led many biochemical and cell-based assay development and screening programs including a program for Alzheimer's and Parkinson's disease that resulted in co-inventorship of CEP1347, a drug candidate directed at a novel kinase in Phase III clinical trials. She was elected (2005-2009) to the Board of Directors of the non-profit drug discovery organization, the Society for Biomolecular Sciences and served as its Chairman for two years. Dr. Glicksman received a bachelor's degree from Brown University and a Ph.D. from Washington University.

**Albert H. Teich, Ph.D.** is the Director of Science & Policy Programs at AAAS, a position he has held since 1990. He is responsible for the Association's activities in science and technology policy and serves as a key spokesman on science policy issues. Dr. Teich also serves as director of the AAAS Archives. Dr. Teich received a B.S. degree in physics and a Ph.D. in Political Science, both from M.I.T. Prior to joining the AAAS staff in 1980, he held positions at George Washington University, the State University of New York, and Syracuse University. He is the author of numerous articles and editor of several books, including Technology and the Future, a widely used textbook on technology and society, the eleventh edition of which was published by Wadsworth Cengage Learning in 2008.

# Center for Excellence in the Neurosciences (CEN)

Neurological injuries and diseases present enormous health, economic and social challenges. Development and delivery of more effective prevention strategies and treatment regimens requires multidisciplinary approaches for the conduction of research and the training of future healthcare professionals, scientists and policy leaders.

## Mission

To foster creativity and collaboration among people who have a passion for understanding the complexities of the nervous system and in applying this knowledge to improve human health, productivity and quality of life.

## Vision

The CEN will have a nationally prominent program in the neurosciences that includes:

- Undergraduate and graduate programs recognized for their quality and innovation
- Teams of scientists and health care professionals who are engaged in translational research and are recognized leaders in their professions
- Dynamic collaborations with external partners including hospitals and health care providers, biotechnology and pharmaceutical companies, and non-profit institutions
- Active outreach programs that promote K-12 and community neuroscience education
- Unique partnerships that advance economic development efforts in the state of Maine

## Strategic Goals

- Strengthen faculty and student recruitment and mentoring programs to achieve academic excellence at the University of New England
- Create interdisciplinary teams of faculty and student scholars who share an interest and passion for the neurosciences
- Develop a better understanding of the nervous system in health and disease through basic science and clinical research
- Collaborate with hospitals and health care systems, biotechnology and pharmaceutical companies, and non-profit institutions who share similar missions and visions with the CEN
- Make innovative breakthrough discoveries in the neurosciences that lead to improvements in human health and well-being

**For more information visit our website www.une.edu/research/cen or contact the CEN Director:**

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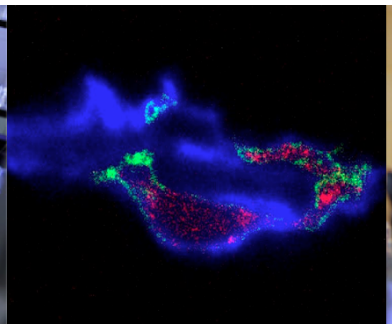


# Maine Medical Center Neuroscience Institute (MMCNI)

Complex neurological conditions such as traumatic brain or spinal injury, epilepsy, brain tumors and stroke, require an extraordinary depth and breadth of clinical expertise from multiple specialists. To deliver this care, the MMCNI is built on a partnership between MMC and community-based physicians. Sophisticated resources for the diagnosis and treatment of neurological disorders have been available at MMC for decades -- earning the hospital, its physicians, and other providers national recognition for expert care in stroke, neurocritical care, neurosurgery, and neuropediatrics.

With the establishment of the Neuroscience Institute, MMC took the necessary steps to ensure these services continue to grow and exist in Maine's healthcare community. Patients and providers alike can take comfort in knowing we have the infrastructure and physicians in place to provide a comprehensive and coordinated system for delivering neurological care using evidence-based clinical guidelines and integrating medical education and research.

## Mission

Built on an exemplary partnership between hospital-and community-based physicians, the Neuroscience Institute brings together clinicians and researchers from multiple disciplines to achieve its mission:

- To advance a scientific understanding of and delivery of care for a range of neurological diseases through multidisciplinary collaboration among neuro clinicians, researchers, payers, healthcare organizations and - most importantly - our patients
- To maintain and expand the range of services and level of access for neuroscience patients from across the region

## Areas of Focus

**Clinical Care.** The Institute comprises the range of specialties involved in the diagnosis and treatment of patients with neurological disorders. This ensures a comprehensive continuum of care, further strengthened by the multidisciplinary collaboration on which the Institute is built. Care is coordinated and standardized to evidence-based, best-practice guidelines to ensure optimal outcomes.

The specialty areas that make up the Neuroscience Institute include:

- Cerebrovascular disease
- Epilepsy and functional disorders
- Memory disorders
- Mental health
- Movement disorders
- Multiple sclerosis
- Neurocritical care
- Neurological disorders
- Neuromuscular disease
- Neurooncology
- Neuroradiology
- Neuroanesthesia
- Neuropathology
- Neurosurgery and spine services
- Neurotrauma
- Pediatric neurology
- Rehabilitation

**Medical Education.** MMC is a teaching hospital, so the Institute participates in undergraduate and post-graduate medical education to integrate the neurosciences in the next generation of health care providers, including specialists such as neurosurgeons. In addition, the Institute offers ongoing conferences for physicians, nurses and other clinicians to continually expand and hone their clinical skills and knowledge in the neurosciences, and programs for community/patient education to raise awareness about the options for preventing and managing neurological disease.

**Research.** Remarkable advances in the diagnosis and treatment of neurological disorders have been made in just the last decade and MMC remains at the leading edge of therapy by participating in multicenter clinical trials for a range of conditions. As a result, discoveries move from the bench to the bedside faster than ever, patients have access to new treatments unavailable at most other hospitals, and our clinicians stay current by participating directly in the scientific efforts that move medicine ahead. The Neuroscience Institute provides funding for clinician-initiated research projects and the development of research databases in such areas as stroke, neurocritical care, and oncology. Our clinical investigators have a strong track record of cutting edge research and publication in major neuroscience journals. Many serve on expert national or international panels, and serve as educational resources for the community and the state.

**For more information visit our website** www.mainehealth.org/neuro_homepage.cfm?id=4242 **or contact the institute at:**

Neuroscience Institute, Maine Medical Center, 22 Bramhall St., Portland, ME 04102 Phone: (207) 662-1509

# Spectrum Medical Group/Spectrum Anesthesiology

Spectrum Medical Group is a Maine-based, physician-led organization that combines strong physician leadership with expertise from a multidisciplinary management team. Spectrum is comprised of over 130 Board Certified physicians; serving patients and communities throughout Maine and northern New England. The care and treatment of our patients is of primary importance to us. We are dedicated to excellence in the diagnosis, prevention and treatment of illness, lifelong learning, and service to our communities.

At Spectrum Medical Group, our commitment to quality care is much more than just meeting accreditation guidelines - it is truly part of our organization's culture. Our quality programs are driven by the leadership - our physician board of directors - and are integrated into our everyday operations.

## Spectrum Anesthesiology

Spectrum Medical Group's Anesthesiology service is comprised of 58 Board Certified Anesthesiologists who work with surgical teams to develop systems of healthcare delivery to improve patient care; often as it relates to patient experiences during and following surgery. Spectrum Anesthesiologists have developed an Anesthesia Quality Database, which has been recognized nationally for excellence. The database allows our Anesthesiologists to quickly obtain salient data and analyze trends. As a result, they are able to make informed decisions about modifying practices and procedures to improve patient safety and reduce costs.

## Expertise

Spectrum Anesthesiology has areas of expertise that encompass the following sub-specialty services:

- Acute Pain Management, including regional blocks
- Chronic Pain Management
- Cardiac Care, supporting Intensive Care Units and emergency care teams
- Neurosurgical, supporting brain and spine procedures
- Obstetric, in both hospital and Ambulatory Surgery Center (ASC) settings
- Pediatric including pediatric cardiac care
- Vascular and thoracic procedures

## Success

Spectrum Anesthesiology has a strong track record of improving patient experiences and outcomes, including normothermia and reduction in postoperative pain. A specific example of the accomplishments can be seen with the use of regional blocks. Regional blocks are often used during surgery of the extremities through injection of nerve-blocking agents after the patient has been sedated; often reducing pain for up to 12 hours. The success in this area is achieved through the clinical expertise as well as the ability to work collaboratively and communicate effectively with surgeons and patients. Spectrum's anesthesiologists constantly strive to not only deliver high quality care, but also go the extra mile to help ensure the best patient experience possible. Through proactive education and post-surgical compliance, patients can experience far less pain and discomfort immediately after surgery.

Developing and advancing quality improvement programs is a hallmark of the Spectrum Anesthesiology Division, and has been recognized both locally and nationally for their work in this field. Craig Curry, M.D., who has been a leader in the implementation of quality initiatives (QI) at Spectrum over the past decade, has also provided significant guidance to a national coalition of Anesthesiologists, the Anesthesia Business Group (ABG). In addition, Spectrum Medical Group spearheaded the development of the nation's first Anesthesiology clinical registry. The goal of this registry is to define, measure, and benchmark processes and outcomes. Since its inception in 1998, the registry has accumulated over 431,000 records and now has a national market.

In addition to this database, Spectrum supports five outside customers/practices who use this QI program. As an offshoot of the Anesthesia QI database, Spectrum Medical Group shares, compiles, stores, and reports data for over 1.4 million records with nine other members of the ABG.

**For more information visit our website** www.spectrummedicalgroup.com/anesthesiology.html **or contact us at:**

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