The academic scope of Anesthesiology is wider than ever, as more of our faculty and residents participated in scholarly activities. This past year members of the department gave over 30 poster or abstract presentations at national and regional conferences, published ten articles in peer-reviewed journals, submitted several book chapters, and served in leadership positions on national boards and committees. The number of faculty and residents who participated in clinical studies also reflects a burgeoning research enterprise in the department, with more than a dozen protocols actively recruiting subjects and gathering data.

An example is a recent publication in Anesthesia and Analgesia, one of the field’s leading journals, of “Cognitive outcome after spinal anesthesia and surgery during infancy,” by Robert Williams, M.D., Ian Black, M.D., David Adams, M.D., Donald Mathews, M.D., and these UVM colleagues. This paper is a major achievement that reflects years of work by our entire group. It is also just the beginning, with more investigations to come on the critically important issue of anesthetic exposure and neurotoxicity in infancy.

Another is a paper in press at the journal Anesthesiology by Patrick Bonder, M.D., and William Pagenell, M.D., Ph.D., on management of intraoperative ventilation. This paper will be featured in a Journal Symposium at the American Society of Anesthesiology national meeting and is the first major research project performed as a result of our participation in a coalition of leading academic anesthesiology departments in the U.S. and Europe.

In addition to our focus on faculty scholarly work, our department’s trainees have been increasingly involved in research activities. Nicole Collins, D.O., received an award for one of the best resident abstracts for her laboratory work on neural “gastrotransients” presented at the International Anesthesia Research Society annual meeting in Montreal, Canada. Amy Dibley, M.D., received an award for best poster from the Association of Anesthesiology Clinical Directors at their meeting in Nashville, Tennessee for her work on finding cost-savings in managing operating room waste disposal.

Finally, Veena Graff, M.D., is conducting a study on the benefits of using music to reduce anxiety in patients undergoing various procedures.
The Department of Biochemistry at the University of Vermont Health Network is dedicated to the advancement of biological knowledge through research and education. Our faculty, composed of biochemists and molecular biologists, are committed to exploring the fundamental mechanisms of health and disease. The Department is known for its innovative research, which has led to significant contributions to our understanding of disease processes and the development of new therapeutic strategies.

Education and Advocacy

The Department of Biochemistry is committed to educating the next generation of biochemists. We offer undergraduate and graduate programs in biochemistry, providing students with the opportunity to explore the latest research, learn from leading experts, and develop critical thinking skills. Our students are well-prepared for careers in academia, industry, and healthcare.

Community Engagement

The Department of Biochemistry is engaged in community outreach and advocacy. We partner with local organizations to promote health and wellness, and we participate in national and international conferences to share our research findings and foster collaborations.

Research

The Department of Biochemistry is home to a dynamic and diverse research community. Faculty members are actively involved in investigating the molecular mechanisms underlying disease, developing new diagnostic tools, and evaluating novel therapeutic approaches. Our research spans a wide range of disciplines, including cancer biology, neuroscience, and infectious diseases.

Clinical Implications

The knowledge gained through research in the Department of Biochemistry has significant clinical implications. Our findings have led to the development of new treatments and improved patient outcomes. We continue to explore the fundamental mechanisms of health and disease to further enhance our understanding and contribute to the advancement of medical care.
The Department of Medicine had another excellent year in 2014, with significant contributions in all areas of our mission: clinical care, education, research, and service. To support all of those missions we continue to grow. This year we welcomed new faculty in Dermatology, Cardiology, Geriatrics, Hematology Oncology, Primary Care Internal Medicine, Public Health, Pulmonary and Critical Care Medicine and Transplant Nephrology, new faculty in Internal Medicine and Dermatology, fellows in all of our subspecialty areas, and graduate students and post-doctoral trainees in our laboratories.

The department expanded its clinical practice, increased its focus on high-value, cost-conscious care, and participated in the creation of service lines that extend across our partner hospitals.

Education is a core mission for the department and this year the department leadership identified goals and objectives focused on the enhancement of medical student, resident and fellow education. Faculty are engaging in new ways of teaching including an innovative, multidisciplinary simulation-based education program for the ICU team lead by Laurie Leclair, M.D., and supported by a Frazier Scholarship award. This year we celebrated the first graduates of the Certificate in Public Health program and the launch of both the Masters in Public Health and the Certificate in Environmental Health programs under the leadership of Jan Carnes, M.D., MPH. The faculty continued to participate extensively in the Vermont Integrated Curriculum and again received a number of honors and awards for their contributions to education. William Hopkins, M.D., received the Foundations Course Director Award for the eighth consecutive year and the Dean Washburn Integration Award for 2014. The Cardiopulmonary, Respiratory & Renal Systems course, directed by Dr. Hopkins and taught by many of our faculty, won the award for Outstanding Foundations Course for the eighth time. In recognition of their contributions to resident education, Dr. Hopkins received the E.L. Amidon Chair in Respiratory Medicine Award for 2014. This year’s recipients of the Department of Medicine Mentor Awards were Ben Suratt, M.D., and Matthew Paynter, Ph.D.

The department continues to be a nationally/internationally recognized leader in research with contributions to new scientific knowledge spanning from the bench to the bedside to the community. In aggregate, members of the department published more than 300 manuscripts, reviews, chapters and books, and were asked to serve on NIH study sections and advisory councils, FDA review panels and editorial boards. They are invited from around the world to present at scientific meetings and to be visiting professors, and they are elected to leadership in national societies. The SPMKEVT program, which encourages the translation of novel ideas into therapies, diagnostics, and devices that will improve health, was expanded to include the departments of Neurological Sciences and Obstetrics, Gynecology, and Reproductive Sciences. Although research funding continues to be a challenge, the faculty continue to be successful in obtaining grants.

Highlights this year include a large federal subcontract from Johns Hopkins University awarded to Beth Kirkpatrick, M.D., Vaccine Trials Unit; the competitive renewal of a large multi-site study awarded to Mary Cushman, M.D., MSc; and the competitive renewal of the Pulmonary Division’s and Vermont Lung Center’s NHLBI T32 training grant awarded to Charles Irvin, Ph.D.

The department has three principal research foci: microbiology and microbial pathogen interactions, where faculty interact with adjunct MGG faculty from Infectious Diseases and Animal Sciences and work together in the Immunology and Infectious Disease CORE; Program; protein-nuclear acid transactions, where faculty interact with adjunct MGG faculty from Biochemistry and are nucleated by a National Cancer Institute-funded Program Project, and computational biology, which has a small but growing group of faculty whose research underpins, interfaces with, and supports the research of the bench scientists in the department and the College.

This year MGG faculty gave 37 presentations at national and international meetings and at universities all over the world. Aimee Shen, Ph.D., was a discussion leader at a Gordon Research Conference on Microbial Adhesion and Signal Transduction; David Pederson, Ph.D., was an invited speaker at the 13th International Workshop on Radiation Damage to DNA; Sylvie Doublié, Ph.D., was speaker and session chair at the PASEB Nuclear Acids Enzymes summer conference; Markus Thali, Ph.D., was co-organizer and speaker for the 7th Triennial Conference on Tetracyclines; and Susan Wallace, Ph.D., was an invited speaker and session chair at the Gordon Conference on DNA Damage, Mutagen, and Cancer. MGG faculty also serve as frequent ad-hoc reviewers on NIH and NSF panels and Dr. Thali is a permanent member of the AIDS Molecular and Cellular Biology Study Section, while Dr. Doublie is a permanent member of the Molecular Genetics A Study Section. Gary Ward, Ph.D., is chair of the Board of Directors of the Public Library of Science in Washington, and Neil Salkar, Ph.D., is a member of the Board of Directors of the American Medical Informatics Association. This year, Dr. Doublie was elected to the Vermont Academy of Science and Engineering and was a 2013–2014 University of Vermont Scholar.

SELECTED HIGHLIGHTS


- Several department faculty received public recognition for their work. Ramesh S. Srikanth, M.D., Ph.D., was awarded the Jo Shafter Award for Outstanding Science from the American Thoracic Society; Patricia King, M.D., Ph.D., received the John H. Dark Award; recognizing exemplary leadership, commitment and contributions in advancing the public good at the state medical board level; Mary Cushman, M.D., MSc., was awarded the American Heart Association’s Council Epidemiology and Prevention Distinguished Achievement Award; Ralph Budd, M.D., received the Senior Researcher of the Year award from the University of Vermont Medical Group, Phil Akes, M.D., received the Presidential Recognition Award from the American Association of Cardiovascular and Pulmonary Rehabilitationists; and Dr. Akes and Martin LeWinter, M.D., were named Distinguished Investigators by the Cardiopulmonary Research Institute of Vermont.

- The Department of Microbiology and Molecular Genetics (MGG) has been an integral player in the research and educational missions of the College and the University. The department has a vibrant graduate program with 15 doctoral students, teaches medical students in the Vermont Integrated Curriculum and offers two undergraduate degrees, one in microbiology and the other in molecular genetics, with a total of 102 majors.

- The department has three principal research foci: microbiology and microbial pathogen interactions, where faculty interact with adjunct MGG faculty from Infectious Diseases and Animal Sciences and work together in the Immunology and Infectious Disease CORE Program; protein-nuclear acid transactions, where faculty interact with adjunct MGG faculty from Biochemistry and are nucleated by a National Cancer Institute-funded Program Project, and computational biology, which has a small but growing group of faculty whose research underpins, interfaces with, and supports the research of the bench scientists in the department and the College.

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The Department of Molecular Physiology & Biophysics continues to garner international recognition and success in the areas of cardiovascular research, cell division, and protein structure and function. A common research focus is directed at understanding the molecular basis of cellular movement, whether associated with cell division or muscle contraction. By studying genetic alterations in cellular movement, special emphasis is directed at defining normal and diseased contractile function of the heart, blood vessels, and processes associated with cell division, e.g. chromosome segregation during mitosis. The department is considered the premier center of muscle and non-muscle cell motility research in the United States. An additional research focus is on protein molecular structure, with expertise in high-resolution three-dimensional electron microscopy.

The department faculty is involved with two highly prestigious National Institutes of Health (NIH) Program Project Grants to study genetic forms of heart failure and aortic dissection. These multi-investigator grants were invited speakers. Matthew Lord, Ph.D., was invited speaker at the Gordon Research Conference at Mt. Snow, Vermont, on Muscle and Molecular Motors, at which Drs. Stumpff and Warshaw were invited speakers. Matthew Lord, Ph.D., presented at the Gordon Research Conference on “Plant and Microbial Cytoskeletons” in Amherst, N.H. Dr. Warshaw was a keynote speaker at the “Myosin Binding Protein C. Past, Present and Future” meeting in Chicago. Dr. Christopher Berger, Ph.D., spoke at the World Congress of Biomechanics in Boston. Dr. Ruiz was the plenary speaker at the “Microscopy in Research Conference” in Lisbon, Portugal.

Faculty have been honored as organizers and invited speakers at prestigious international meetings such as Kathleen Trybus, Ph.D., who co-chaired the Gordon Research Conference at Mt. Snow, Vermont, on Muscle and Molecular Motors, at which Drs. Stumpff and Warshaw were invited speakers. Matthew Lord, Ph.D., presented at the Gordon Research Conference on “Plant and Microbial Cytoskeletons” in Amherst, N.H. Dr. Warshaw was a keynote speaker at the “Myosin Binding Protein C. Past, Present and Future” meeting in Chicago. Dr. Christopher Berger, Ph.D., spoke at the World Congress of Biomechanics in Boston. Dr. Ruiz was the plenary speaker at the “Microscopy in Research Conference” in Lisbon, Portugal.

Associate Professor Christopher Berger, Ph.D., serves as director of graduate education for the College of Medicine. Faculty contribute substantially to both medical and graduate programs and have been nominated for teaching awards in the medical school curriculum. Dr. Berger serves as Director of Graduate Education for the College of Medicine and was instrumental in the successful launch of the new umbrella program in Cell, Molecular, and Biomedical Sciences. Drs. Rademacher and Ruiz continue to offer a “Practical Course on Three-dimensional Drosophila Microscopy of Single Particles” that attracts over 20 international scientists.

SELECTED HIGHLIGHTS

- In 2014, Neurological Sciences faculty published 44 articles in a variety of scientific journals, including Pediatrics, Annals of Neurology, Journal of Neuroscience, Journal of Neurology, and Neurology.
- Faculty members served on 15 editorial boards and review committees.

Our basic science faculty continued to seek out grant funding with a strong record of success. There were several new grants awarded including a competitive renewal to Marilyn Cipolla, Ph.D. for her R01 entitled “The role of the blood-brain barrier in seizures during pregnancy and pre-eclampsia”. Rodney Parsons, Ph.D., was awarded an equipment grant for the purchase of a Yokogawa CSU-10 spinning disk confocal microscopy system. Charitable grants from the Migraine Research Foundation, the National Multiple Sclerosis Society were also obtained. These awards are allowing closer collaboration between the basic science and clinical faculty and are greatly increasing the translational impact of the department’s research. The faculty have also been productive having published approximately 50 manuscripts in high impact general and specialty journals.

Our clinical programs at the University of Vermont Medical Center continue to provide excellent neurological care. In addition, the clinical faculty continue to be active in clinical trials. There are currently 19 clinical trials relating to treatment of multiple sclerosis, episodic ataxia, myasthenia gravis and movement disorders. Of these, six trials began in the previous fiscal year.

In 2014, Neurological Sciences faculty published 44 articles in a variety of scientific journals and served on 19 editorial boards and review committees.

In summary, the past year has been a productive one for the Department of Neurological Sciences. As we continue to recruit outstanding clinicians, teachers and investigators, we are excited about the new heights the department will achieve.
T he Department of Orthopaedics and Rehabilitation has embarked on an evolutionary approach to the Graduate Medical Education Program. There has been significant concern nationally regarding the preparedness of residents to enter practice. In response, the Orthopaedic Surgery residency program at UVM has taken a unique approach. The postgraduate year one (PGY1) encompasses a focused orthopaedic education, including, but not limited to, basic science, radiology, critical thinking exercises, leadership, simulation, development of technical skills, and teaching in the Vermont Integrated Curriculum. The junior residents (PGY2 and 3) rotate through each subspecialty to prepare them for the increased responsibility in the PGY4 and 5 years. Program Director, S. Elizabeth Ames, M.D., developed this program in conjunction with the ACME requirements.

The Sports Medicine Research Team, under the direction of Bruce D. Begnozzi, Ph.D., McClure Endowed Professor, continues to push the frontiers of knowledge with their work on post-traumatic osteoarthritis after anterior cruciate ligament injuries and on risk factors leading to ACL injuries. Timothy W. Tourville, Ph.D., is working with Michael J. Toth, Ph.D., from the Department of Medicine investigating skeletal muscle dysfunction in the face of acute muscle disease.

Clinically, the faculty has broadened the scope of activities offered by the department. Concussions and post-concussion syndrome are areas of interest for Raul D. Barlow, M.D., from the section of Rehabilitation Medicine. A specialty clinic focusing on these potentially devastating traumatic brain injuries has been established. Nathaniel J. Neims, M.D., has developed a program in the Adult Reconstruction Section that offers the anterior approach to total hip arthroplasty. Data would support decreased length of stay, less post-operative pain, and higher patient satisfaction. Jennifer W. Lisle, M.D., a fellowship trained musculoskeletal oncologist, works as part of the UVM Cancer Center, to improve care of patients with musculoskeletal and soft tissue tumors. Craig S. Bartlett, M.D., enhanced his expertise in treating lower extremity deformity by working with experts in South Africa.

James R. Stauterbeek, M.D., presented work on ACL injury prevention at the International Olympic Committee World Conference in Monaco. Professor Emeritus David D. Aronsson, M.D., was appointed to the editorial board of the Journal of Bone and Joint Surgery (American). In addition to the retirement of Dr. Aronsson from the faculty, Thomas K. Kristiansen, M.D. retired from the full-time faculty, but continues to pursue clinical work.

SELECTED HIGHLIGHTS

- Faculty serve on nearly 60 national associations and study sections in the field of orthopaedics.
Debra G.B. Leonard, M.D., Ph.D., Chair
Pathology and Laboratory Medicine

The Department of Pathology and Laboratory Medicine has had a productive year with faculty conducting basic, clinical, and translational research, providing care to patients within the UVM Health Network and other regional hospitals and clinics, training at all levels from undergraduates to clinical fellows, and providing leadership locally, regionally and nationally. Faculty contributed 92 peer-reviewed articles, 49 regional and national presentations, 14 textbook chapters, and 19 lectures in formal courses. Faculty have been successful in receiving grant funding with twelve successful grant applications this past year.

The department offered degree-granting research opportunities to five graduate students, twelve-month clinical training fellowships for two UVM medical students, an annual exchange program with two different medical schools in Japan, and a continued affiliation with the University of Maastricht. A number of our department members received special honors, including: Jos van der Velden, Ph.D., who received the prestigious Parker B. Francis Foundation Fellowship in 2004, joining Nkasa Anathy, Ph.D., who received the fellowship in 2013, both under the mentorship of Yvonne Janssen-Heininger, Ph.D., Dr. Anathy, who was recognized by both the American Thoracic Society with an abstract scholarship, and the Asthma and Allergy Foundation of America with the Sheldon E. Siegel Award for his research in airway remodeling and histology division in anatomic pathology at The University of Vermont Medical Center, who received the National Society for Histotechnology/ventana Medical Systems Commitment to Patient Safety Award for their 2014 barcoding initiative.

The research of our faculty included environmental agents and cell signaling pathways that contribute to inflammation in lung, asthma, pulmonary fibrosis, mesothelioma, and breast cancer; the molecular and genetic epidemiology of thrombosis, cardiovascular disease, frailty and aging; and improving laboratory test utilization in different settings including HIV testing, lung cancer and transfusion medicine. Faculty members are actively involved in the Vermont Lung Center, the Cardiovascular Research Institute of Vermont, and the University of Vermont Cancer Center, and serve on a wide variety of college of medicine and University committees. Nationally, our faculty continue to serve on committees of the American college of Graduate Medical Education, American association of blood banks, American heart association, American society of Clinical Pathology, American Society of Cytopathology, College of American pathologists, the institute of Medicine, the National Heart, Lung and Blood Institute, and the National Institute of Environmental Health Sciences, and the National Institutes of Health.

Physicians and Scientists from the department, led by Nkasa Anathy, were invited to speak at the 2014 American Society of Nephrology Renal Week. The department has received 10 grants for $1,678,156 to fund the research of 20 investigators. The department received a grant to study the role of pulmonary fibrosis in cancer as a part of the Cancer Genome Atlas, and also received a grant to study the role of pulmonary fibrosis in collagen biology. The department continues to be a leader in peer-reviewed general medicine, pediatrics, and research.

SELECTED HIGHLIGHTS

• Faculty published in such journals as the American Journal of Reproductive Critical Care Medicine, American Journal of Pathology, Arthritis Research and Therapy, and Molecular Biology of the Cell, and the Journal of the National Cancer Institute.
• New extramural research grants were received from the Department of Veterans Affairs, Francis (Parker B.) Foundation, Duke University, and the National Heart, Lung, and Blood Institute.
• Rebecca Wiers received the University of Vermont Nierenberg-Maurice Excellence in Teaching Award, a University-wide award that has only been awarded once to clinical faculty in the past 25 years.

Professor of Pediatrics Ann Guliott, M.D., directed the pediatric residency program for the last 25 years. She now continues as director of the department’s nephrology division and serves as interim director of the Teaching Academy.

During the past year, the Department of Pediatrics continued to strengthen its academic mission of improving the health of children through clinical, research, educational, and service activities that make a difference for those living in our community and in turn can be shared with others throughout the country and the world.

Educationally, our department continued to teach actively in all four years of the Vermont Integrated Curriculum. We were fortunate to have our department honored for the second year in a row by the graduating class as Clinical Department of the Year, in addition to other teaching and national leadership honors received by our faculty during the past year. Of the six house staff across departments given Gold Humanism Awards as selected by the third-year class, four were from our residency program. In addition, the number of fourth-year students choosing pediatrics as a career was over 15 percent, now 20 years in a row, above the national average of 10 percent, and the number of applicants to our residency program increased another 25 percent over the prior year’s record-breaking increase. Our nationally ranked summer continuing medical education Vermont Pediatric Summer Seminar course sold out again and brought attendees from all over the country to Vermont to be updated on new developments in the field of pediatrics.

Nationally, our faculty continue to hold leadership roles in all the major pediatric educational organizations. In particular, Lewis First, M.D.’s local and national leadership in pediatrics was recognized with his winning the highest leadership award in academic pediatrics — the 2014 Joseph W. St. Geme, Jr. Leadership Award. We also continue to serve for the 40th year in a row as the editorial home of the Journal Pediatrics, the leader in peer-reviewed general pediatric journals nationally and internationally.

From a research perspective, we continue to be fortunate to receive significant federal, state, and foundation grant funding, especially in the area of health services research. The Vermont Osteo [Neurological] Research, ImproveCareNow [a national network for collaborative improvement research in inflammatory bowel diseases], the American Association of Pediatrics’ Pediatric Research in Office Settings, and the Vermont Child Health Improvement Program (VCHIP) expanded their projects and programs and published their results in multiple peer-reviewed journals. Translational research also flourished in areas such as metabolism, nutrition, cystic fibrosis, and oncology.

Advocacy efforts also flourished as faculty and house staff participated in numerous community service efforts involving projects to overcome food insecurity or improve health care access to immigrant populations living in Vermont. We also worked hard in all areas to increase our family-centered, child-friendly care efforts through some innovative changes in our rounding processes.

Inpatient and outpatient services demonstrated quality improvements in every clinical area. The initiation of 24/7 hospitalist coverage, as well as our pediatric “Transforming Primary Care” initiative, led to record high levels of patient satisfaction and improved outcomes in our quality metrics.

From a philanthropic standpoint, the department was also successful setting records in its fund-raising and friend-raising events, most notably the “Big Change Roundup for Kids” in which almost $270,000 in change was collected throughout Vermont and upstate New York during the five-day event.

As to personnel changes, the department welcomed new faculty, including Kelly Cowan, M.D., [Pulmonology], Abby Adler, M.D., Karin Gray, M.D., and Molly Moore, M.D. [Hospitology], with new faculty joining us in the upcoming year in gastroenterology, critical care, adolescent medicine, neonatology, and nephrology.

Finally, after a quarter century of overseeing our residency program, Ann Guliott, M.D., has stepped down from that role, and assistant program director Jerry Larabee, M.D., became our residency program director. Although Dr. Guliott will continue as an advisor of our nephrology division and interim director of the Teaching Academy, we thank her for the outstanding job she has done and in her honor have created the Guliott Resident Teaching Award to be given to the outstanding resident teacher at the end of the academic year.

SELECTED HIGHLIGHTS

• Faculty published in such journals as Academic Pediatrics, Pediatrics, and Pediatric Pulmonology.
• Maria Aoki, Ph.D., won the Edith D. Hendley Award for excellence in research, scholarship, and teaching with dedicated service to women and the community.
• Wendy Davis, M.D., received the J. Ward Stockbridge Recognition Award from Vermont State School Nurses Association.
The Department of Psychiatry, with its international reputation in neuroscience research, continues to play important roles in the research and educational missions of the College of Medicine and the University. Our faculty have been honored as keynote and invited speakers at prestigious international meetings and universities around the world. Research funded by Foundation Leducq and co-led by Mark Nelson, Ph.D., continues its efforts to uncover the mechanisms that cause small vessel disease (SVD) of the brain. Research includes CADASIL, a genetic model for SVD in non-hypertensive human adults. Dr. Nelson and network investigators presented their findings at the Second International Workshop on CADASIL, held in Paris, France.

This year the department hosted an International Symposium on Ion Channels at UVM with speakers from Sweden, Germany, Great Britain, Canada, and across the United States. Ninety attendees networked during a day-long symposium and a poster session. Assistant Professor Benedikt Erdos, M.D., Ph.D., joined the department during this year. His research focuses on understanding how stress, obesity, and aging affect neuroendocrine regulation of blood pressure with an aim to identify novel therapeutic targets for the treatment of hypertension and cardiovascular diseases.

Extramural support remains strong, with new grants and continued funding from the National Institutes of Health (NIH), National Institute on Alcohol Abuse and Alcoholism, National Institute on Drug Abuse, National Institute on Aging, and several others. We are committed to maintaining high-quality research and mentoring efforts to medical, graduate, and undergraduate students, and our many postdoctoral fellows. Faculty efforts include one-on-one research mentoring, didactic lectures in pharmacology courses including the Medical Summer Pharmacology program, and virtually all courses in the Foundations level of the Vermont Integrated Curriculum at the College of Medicine. The minor in Pharmacology for UVM undergraduates continues to grow in popularity. Twelve students graduated with a pharmacology minor in May of 2014. Currently there are 26 students enrolled, including 15 seniors. The department fosters communication and collaboration with faculty and postdoctoral fellows presenting current research in weekly journal clubs and monthly interactive research forums.

Pharmacology faculty serve on many grant review committees for the NN, American Thyroid Association, and the American Heart Association, peer review committees for the American Cancer Society, and the America Heart Association, Program Committee for the American Thyroid Association, and on numerous editorial boards including the Physiological Reviews, Journal of Central Blood Flow and Metabolism, American Journal of Physiology, and Molecular Pharmacology. Our faculty serve important roles on NIH committees including the Faculty Standards Committee, the CMB Graduate Recruitment Committee, and several committees for the University of Vermont Cancer Center.

The past academic year saw the establishment of the Vermont Center on Behavior and Health under the leadership of Stephen Higgins, Ph.D. Dr. Higgins was awarded an NIH CBDBR grant to establish this center, as well as a P50 award to establish one of fourteen FDA Tobacco Regulatory Centers for tobacco-related research. Hugh Garavan, Ph.D., Diann Gaetano, Ph.D., Sarah Heil, Ph.D., Stephen Higgins, Ph.D., [director of the center] John Hughes, M.D., and Stacey Sigmon, Ph.D., together form the leadership of these major initiatives. Their research and teaching focuses on advancing understanding of how personal behavior, especially tobacco and other substance abuse, increase risk for chronic disease and premature death, and development and testing of novel treatment interventions. Their faculty published 80 articles and books, which appeared in such peer-reviewed journals as JAMA (Dr. Hughes), JAMA Psychiatry (Dr. Sigmon twice), Nature (Dr. Garavan), Neurropsychology (Dr. Garavan), Nicotine & Tobacco Research (Dr. Higgins & Hughes), Preventive Medicine (Dr. Heil, Higgins), and Psychopharmacology (Dr. Higgins). A $132,000 training grant and the TCORS award support 18 predoctoral and postdoctoral fellows. The CBDBR supports five UVM R21-equivalent faculty research projects across the College of Medicine.

The Research Center for Children, Youth, and Families expanded international population sampling to enrich its profile of behaviors, normal and not, in both adults and children. Using international experts, it used DSM5 criteria to create assessment scales for the revised diagnostic criteria, publishing DSM: Oriented Guide for the American System of Empirically Based Assessment (ASEBA) and creating software for scoring the scales. The Clinical Neuroscience Research Unit (CNRU) has continued to focus on a variety of neuroscience topics from chronic pain to impulsivity to the aging brain. Magdalena Naylor, M.D., Ph.D., investigates the effects of cognitive behavioral therapy on chronic pain (including neuroimaging techniques). Alexandra Potter, Ph.D., examines the neurobiology underlying impulsivity in adolescents and young adults, and Julie Dumas, Ph.D., is examining the neurochemistry responsible for the cognitive change that happens to some women at menopause.

Isabelle Desjardins, M.D., leads a team of University of Vermont Medical Center psychiatrists for the opening of the Vermont Psychiatric Care Hospital in Berlin. The 25-bed hospital replaces the Vermont State Hospital, which closed after receiving major damage during Hurricane Irene. The Psychiatry Service launched its Medical Home Primary Psychiatry program, integrating psychiatry services into the primary care setting. A. Evan Eyler, M.D., leads the new program.

SELECTED HIGHLIGHTS
• Faculty published research in such journals as Nature, Preventive Medicine, JAMA Psychiatry, and Drug and Alcohol Dependence.
• Thomas Achenbach, Ph.D., published a chapter on developmental psychopathology in the Oxford Textbook of Psychopathology.
• David Rottenstreich, M.D., published a book titled Child temperament: New Thinking about the Boundary Between Traits and Illness (Wiley
tenorton).
The Department of Radiology has focused on and implemented several quality improvement initiatives. The radiology “high reliability” program has encompassed several important projects, including both a radiation dose monitoring system (to track radiation dose for each patient over their lifetime), and a clinical decision support system (to help ordering doctors know which radiology test is most appropriate based on scientifically proven data). Patient chart information is now available on radiologist reading workstations. When a radiologist views an imaging study, the patient’s complete electronic health record is available on the same workstation, allowing the radiologist access to key patient history that can help guide the diagnosis. We also implemented a closed loop communication system to track radiologist recommendations for follow-up studies (e.g. short term follow-up for a polyp or nodule). The digital librarians track identified patients and confirm the recommended follow-up study has been performed, deferred or declined. This ensures that the patient will receive the necessary follow-up in time.

The use of ionizing radiation, especially in computed tomography (CT) and interventional radiology, is a concern, especially for patients who undergo multiple imaging studies. To track a patient’s lifetime exposure we have installed a radiation dose monitoring system. With our partners at Philips Healthcare, we have also installed CT technology that dramatically reduces the radiation dose while maintaining imaging quality. The technology, Iterative Model Reconstruction (IRM) enables a 60–80 percent lower radiation dose, and we are working closely with Philips to further optimize protocols. In interventional radiology, another upgrade that we have installed this year is “Clair,” which through changes in hardware and software enables exams to be performed with the same imaging quality but only half the radiation dose.

Important research initiatives continue in Radiology. Radiology faculty contributed to more than 50 research projects, including many from the College of Medicine, other UVM Departments, and industry-sponsored projects. Through generous funding from the Feorins family, researchers are investigating newly developed MRI techniques as biomarkers for Alzheimer’s Disease (AD). These techniques — some of which have been developed at UVM and benefit from the newly upgraded research MRI — aim to provide early diagnosis for patients at risk of AD, enabling earlier and more effective treatment, as well as monitoring the effects of treatment. Additionally, we continue with our successful international ultrasound program in sub-Saharan Africa.

The department remains dedicated to providing exceptionally high-quality radiology services to the Vermont community. As an academic center, we are also strongly committed to research and education, providing training to medical students and residents by nationally and internationally acclaimed faculty, using state-of-the-art imaging resources and equipment.

**SELECTED HIGHLIGHTS**

- Radiology faculty published in such journals as Radiographics, Radiology, Journal of the National Cancer Institute, Cancer Epidemiology, Biomarkers & Prevention, Cancer Cytopathology, Journal of Nuclear Cardiology, Fluoroscopy, Malpractice, and Radiographics
- Seventeen members of the department serve on national associations or committees
- Kristen DeStigter, M.D., was named chief of the Johns Hopkins Department of Radiology and was honored by Robert W. Erwin, M.D. with the 2014 Gold Professor in Radiology Award

**DEPARTMENT OF Radiology**

**Kristen K. DeStigter, M.D., Interim Chair**

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The Department of Surgery at the University of Vermont College of Medicine continues to excel as clinicians, educators and researchers. We recruit superb faculty with outstanding training and innovative skills. In 2014, our department welcomed Matthew Akel, M.D., (Vascular Surgery), Claude Deschamps, M.D., (Thoracic Surgery), David Diao, M.D., (Gastroenterology), Carlos Marroquin, M.D., (Transplant Surgery), Rich Grunert, M.D., (Urology), and Andrew Mahoney, M.D., (Urology). Our faculty continue to deliver high quality care to patients at The University of Vermont Medical Center, in close alignment with the University of Vermont College of Medicine. All of the surgical providers are enthusiastic about extending our surgical expertise throughout Vermont and upstate New York as part of the recently created University of Vermont Health Network. It is truly an exciting time for our region’s academic medical center.

The department’s educational and research missions continue to thrive as evidenced by the robust number of medical students in the surgery Senior Major Program every year. Each senior surgery major student completes a research project under the mentorship of one of the surgery faculty. An annual surgery research forum is held in May where the results of these research efforts are presented. Our Senior Majors also complete a month long surgery “boot camp” which sharpens their clinical skills in preparation for the onset of their residency training. The student award winners for 2014 are: Elizabeth Blaustein, Ph.D., Award; Dana Skontz, Howe Senior Student Award; Kevin Kuruvilla, H. Gordon Page Award; and Joanna Parisieux, The James E. Demules Surgical Research Award.


At this year’s College of Medicine Reunion Weekend, Martin Kopilowicz, M.D. ’52 received The Service to Medicine and Community Award, and Neil Hyman, M.D. ’84 received The Distinguished Academic Achievement Award. Both of these physicians are exemplary role models for students and residents.

**SELECTED HIGHLIGHTS**

- Faculty published in such journals as The Journal of Clinical Oncology, Radiology, Pediatric Cancer and Prostate Oncology, Journal of the National Cancer Institute, and the International Journal of Urology. Official Journal of the Japanese Urological Association

- The department moved forward with the establishment of fourteen Green and Gold Professorships. The financial resources for these professorships came from the generosity of the surgical faculty.

**DEPARTMENT OF Surgery**

**Mitchell Norotsky, M.D., Chair**

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**ANNUAL REPORT**

**VERMONT MEDICINE**

**2014 YEAR IN REVIEW**
In the last year, the University of Vermont Cancer Center made significant investments and progress in advancing transdisciplinary research, strengthening its three research program areas (Molecular Mechanisms of Malignancy, Host Factors and Tumor Progression and Cancer Control and Population Health Sciences), deploying a portfolio of cutting-edge clinical trials relevant to patient needs and promising research, enhancing clinical care and support services, and building community engagement and education programs.

The Center for Clinical and Translational Science (CCITS) is dedicated to the pursuit of transdisciplinary research that translates knowledge from the cellular and molecular level into interventions for individuals and populations. The center provides a seamless opportunity for young professionals to be trained in clinical and translational research through a Certificate, a Master of Science, or a Doctor of Philosophy degree under the auspices of the CCITS Educational Program led by Benjamin Littenberg, M.D. The other important mission of the Center is to facilitate and carry out transdisciplinary research. To this end, the Center has four faculty members with unusual skills. They are Indra Neil Sarkar, Ph.D. and Elizabeth Chen, Ph.D., bioinformatics, Christopher Jones, Ph.D., health care economist, and Thomas Simpatico, M.D., public psychiatry and medical director of the Medicaid Program in the State of Vermont. Combining their skills they have forged novel interdisciplinarity interactions with others at the University, at the University of Vermont Medical Center, and throughout the state.

The Center for Clinical and Translational Science

The Center for Clinical and Translational Science is a key component of the Vermont Cancer Center that brings together a multi-disciplinary team of scientists, clinicians, and partners to support translational research and training. The Center has four faculty members with unusual skills: Indra Neil Sarkar, Ph.D. and Elizabeth Chen, Ph.D., bioinformatics; Christopher Jones, Ph.D., health care economist; and Thomas Simpatico, M.D., public psychiatry and medical director of the Medicaid Program in the State of Vermont. Combining their skills, they have forged novel interdisciplinary interactions with others at the University, at the University of Vermont Medical Center, and throughout the state.

SELECTED HIGHLIGHTS

- Christopher Jones, Ph.D., et. al. published "An Algorithm to Analyze Cost Heterogeneity using Counterfactual Scenarios in Evidentiary versus Open-Label Abdominal Aortic Aneurysm Repair".
- Predicting Costs for Subsequent Patients in the Journal of Health Economics and Outcomes Research.

Cancer Center member and Breast Cancer Conference chair Patti O'Brien, M.D., is interviewed by a local television news crew during the conference, which drew more than 350 participants.

SELECTED HIGHLIGHTS

- Clinical and Translational Research Symposium titled "Epigenetics and Cancer" drew more than 120 attendees.
- UVM's members published in such journals as Nature Genetics, Journal of the National Cancer Institute, Journal of Cell Biochemistry, and DNA Repair.
- Members were recipients of several notable honors, including: Judith Van Heuten, Ph.D., UVM Presidential Distinguished University Citizen Award, Diane Jaworski, Ph.D., and
- Rebecca Wilcox, M.D., (Krapcho-Nourse Excellence in Teaching Awards); Sylve D'Orchies, Ph.D., (University Scholar); Mark Plante, M.D., Eline Everett, M.D., Noel Zakae, M.D., and Ted James, M.D., (UVM Medical Group Awards for excellence in teaching and research).
- The Community Education Outreach Program brought half-day, full-day educational experiences to more than 15 schools in Vermont, highlighting advanced technologies in cancer research.

SELECTED HIGHLIGHTS

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- The Community Education Outreach Program brought half-day, full-day educational experiences to more than 15 schools in Vermont, highlighting advanced technologies in cancer research.
The Center of Biomedical Research Excellence (COBRE) in Neuroscience was established in 1995 to provide a multi-disciplinary team of scientists and clinicians elucidating microbial pathogenesis and the immune response to infections. Its goal is to devise new strategies for the detection, prevention, and treatment of infectious and immunological diseases. Our research is highly relevant to other diseases, such as cancer, autoimmune disorders, and atherosclerosis.

The COBRE supports nine multi-year research projects in four UVM colleges who interact on a daily basis through weekly joint research-in-progress meetings. Recent breakthroughs include:

- Identification of new drugs against Cryptosporidium parvum, a major cause of diarrheal disease
- Identification of the lysosomal enzyme Gasp and proteoglycans as major determinants of susceptibility to Lyme arthritis and rheumatoid arthritis
- Development of a new Dengue virus vaccine with the National Institutes of Health (NIH) and Johns Hopkins University
- Identification of genes involved with inflammation in lupus

This grant supported the creation of COBRE Imaging Facility located in the Experimental Building. In sum, the Neuroscience Center provides personnel and access to sophisticated equipment dedicated to live imaging, and a Cell/Molecular Core, which provides personnel and access to sophisticated equipment required to complete cellular and molecular biology experiments.

The Neuroscience COBRE also created a Translational Core to facilitate interactions between clinical and basic neuroscientists and supported a summer undergraduate research program. During the first ten years of funding, the Neuroscience COBRE supported nine multi-year research projects and eight pilot projects for junior investigators. In 2011, five additional years of NIH support for the Neuroscience COBRE Center was obtained. This transitional COBRE grant provides continued support for the research cores created in the first ten years of COBRE funding and over the first three years, supported four one-year Pilot Projects in the areas of stroke and neurovascular interactions or neural regulation of autonomic nervous system development, function and disorders. A highlight of the past year is the acquisition of a Yokogawa Spinning Disk confocal microscopy system, which was purchased through the award of a $325,000 NIH Shared Instrument grant. This new confocal imaging system will be housed in the COBRE Imaging Facility located in the Green Building. In sum, the Neuroscience COBRE supports research cores that are broadened faculty research capabilities and access to these core facilities has significantly increased the competitiveness of neuroscience faculty extramural funding.

The Vermont Center for Immunology and Infectious Diseases (VICID) is a multidisciplinary team of scientists and clinicians elucidating microbial pathogenesis and the immune response to infections. Its goal is to devise new strategies for the detection, prevention, and treatment of infectious and immunological diseases. Our research is highly relevant to other diseases, such as cancer, autoimmune disorders, and atherosclerosis.

The VICID comprises 25 faculty in eight departments in four UVM colleges who interact on a daily basis through weekly joint research-in-progress meetings. Recent breakthroughs include:

- Identification of new drugs against Cryptosporidium parvum, a major cause of diarrheal disease
- Identification of the lysosomal enzyme Gasp and proteoglycans as major determinants of susceptibility to Lyme arthritis and rheumatoid arthritis
- Development of a new Dengue virus vaccine with the National Institutes of Health (NIH) and Johns Hopkins University
- Identification of genes involved with inflammation in lupus

Center director Ralph Budd, M.D., mentors undergraduate students such as Kathleen Bashart in his Green Building laboratory.

Clinical investigations of infectious diseases are conducted through the College of Medicine’s Division of Infectious Diseases, and for autoimmune and rheumatic diseases through the Division of Rheumatology and Clinical Immunology. An important development in 2014 was the opening of the new Vermont Department of Health Building at the UVM Colchester Research Facility, which includes a joint research laboratory with UVM investigators to study complicated infectious organisms.

The center’s vibrant research training program for undergraduate and graduate students, and postdoctoral fellows is supported by funds from an NIH COBRE [Center of Biomedical Research Excellence] Grant and an NIH Training Grant.

An active seminar series brings to campus outstanding investigators in immunology and microbiology. The center also supports core facilities in next-generation sequencing, microarray, bioinformatics, proteomics, cell imaging, and flow cytometry.

The VICID is affiliated with the UVM Vaccine Testing Center (VTC), a research team committed to decreasing the global burden of infectious diseases. The VTC performs clinical trials of candidate vaccines and monitors the human immune response, and also conducts international field trials of vaccines and therapeutic agents for infectious diseases. Current vaccine research at the VTC focuses on Dengue, West Nile Virus, Rotavirus, Polio, and Cholera.

Vermont Lung Center

The Vermont Lung Center (VLC) at the University of Vermont College of Medicine was established in 1995. Funded by the National Institutes of Health (NIH), the VLC first focused on understanding the fibrinolytic and inflammatory processes that lead to restrictive lung disorders and often death — still a current theme of interest of the center. Today the center has a number of foci of research that include epithelial biology, immunity, cell signaling and lung mechanics for which its researchers have developed a robust national and international reputation. Multiple members of the VLC serve on NIH review panels, with Charles Irvin, Ph.D., and Yvonne Janssen-Heininger, Ph.D., chairing study sections. VLC members published 69 peer-reviewed papers during 2014. Faculty continue to enjoy robust extramural research support from NIH and the private sector. The center’s NIH T32 training grant was renewed for another five years with a perfect score. This grant is given to programs that provide outstanding training in developing a research career in pulmonary sciences and lung disease.

During this year, VLC member Jason Rosi, Ph.D., became deputy editor of the Journal of Applied Physiology. Dr. Irvin was named a fellow of the European Respiratory Society. Dr. Janssen-Heininger was a visiting professor in the Department of Respiratory Medicine, Maastricht University Medical Center, Maastricht, The Netherlands; and Mercedes Rincon, Ph.D., was co-chair of the NIH workshop: “Finding Ways to Foster SBIR/STTR Applicants from IDAaS: Centers.” Faculty in the VLC published in such journals as American Journal of Infection Control, Journal of Critical Care, Critical Care Medicine, and American Journal of Respiratory Critical Care Medicine.

Professor of Neuronal Sciences Rae Nabi, Ph.D., directs the Neuroscience Graduate Program and leads the summer undergraduate research program.

Professor of Pathology and Vermont Lung Center member Yvonne Janssen-Heininger, Ph.D., works with a graduate student in her laboratory in the Health Sciences Research Facility.

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