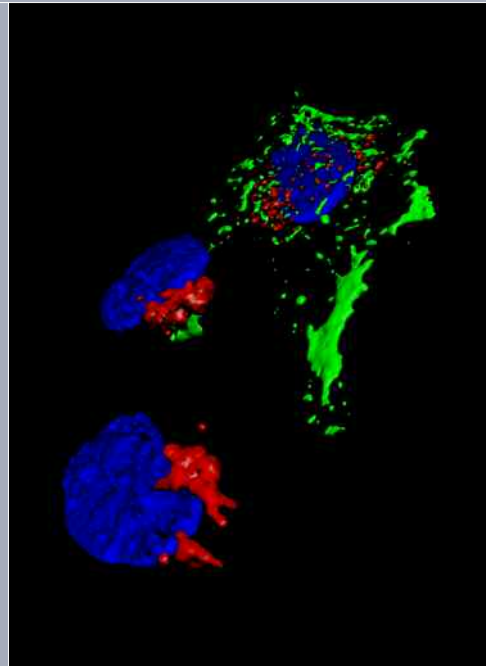


Awards, Education, Centers and Institutes, and Organizations

The 3A protein of coxsackievirus B3 disrupts the Golgi complex to inhibit protein trafficking. HeLa cells were transfected with a reporter construct expressing both the 3A protein and a marker membrane-traffic protein, eGFP(mem). Bottom, Untransfected cell showing intact Golgi (GM130 marker, red). Middle, Early transfection shows some trafficking of eGFP(mem), with some of the protein being retained in the Golgi, which is beginning to disperse. Top, Late in transfection, there is virtual disappearance of the Golgi, and scattered distribution of eGFP(mem). Nuclei are shown in blue. Images represent isosurface renderings of a confocal z series, created with the Imaris software package (Bitplane Scientific Solutions). Work done by J. Lindsay Whitton, M.D., Ph.D., Christopher T. Cornell, Ph.D., and Stephanie Harkins, M.S., in Dr. Whitton's laboratory; and William B. Kiosses, Ph.D., Core Microscopy Facility, Scripps Research.





Class of 2006

Kellogg School of Science and Technology

Staff Awards and Activities

Baran, P.S.—Beckman Young Investigator Award, Arnold and Mabel Beckman Foundation; Career Award, National Science Foundation; Young Investigator Award, Eli Lilly and Company; Excellence in Chemistry Award, Astra-Zeneca; Young Professor Award, E.I. du Pont de Nemours and Company; Excellence in Chemistry Award, Hoffmann-La Roche; Young Investigator Award, Amgen, Inc.; Searle Scholar Award, Kinship Foundation; Chemistry Scholar Award, GlaxoSmithKline; Fellow, Alfred P. Sloan Foundation.

Barbas, C.F. III—Fellow, American Association for the Advancement of Science; In-Cites Highly Cited Researcher, Thomson Scientific, Philadelphia, Pennsylvania; Member, Faculty in Chemical Biology, *Faculty 1000*, Biology Reports, Ltd.; Editorial Boards, *Bioorganic and Medicinal Chemistry Letters*, *Bioorganic and Medicinal Chemistry*.

Bartfai, T.—Fellow, American Academy of Arts and Sciences.

Boger, D.L.—Editor-in-Chief, *Bioorganic and Medicinal Chemistry Letters*; Editorial Boards, Tetrahedron Publications, *Organic Reactions*, *Current Opinion in Drug Discovery and Development*, *Current Drugs*.

Bokoch, G.M.—Editorial Boards, *Journal of Leukocyte Biology*, *Journal of Biological Chemistry*, *Molecular Pharmacology*.

Buchmeier, M.J.—Fellow, American Association for the Advancement of Science; Fellow, American Academy of Microbiology; Codirector, Pacific Southwest Center for Biodefense and Emerging Infectious Disease; Member, Scientific Advisory Boards, PathoSystems Resource Integration Center (Virginia Bioinformatics Institute), Predictive Biology Initiative, Pacific Northwest National Laboratories; Member, National Multiple Sclerosis Society Study Section; Editorial Boards, *Journal of Virology*, *Virology*, *Viral Immunology*, *BMC Microbiology*, *The Virology Journal*, *Journal of Neurovirology*, *Microbiology and Molecular Biology Reviews*.

Case, D.A.—Associate Editor, *Biopolymers*; Editorial Board, *Journal of Biomolecular NMR*.

Chisari, F.V.—Member, National Academy of Sciences; Member, Institute of Medicine, National Academy of Sciences; Member, Board of Scientific Councillors, National Institute of Allergy and Infectious Diseases;

Chairman, Hepatitis B Virus Symposium, International Congress of Virology, San Francisco, California; Editorial Boards, *Journal of Virology*, *Viral Immunology*, *Virology*, *Microbial Pathogenesis*, *Journal of Clinical Investigation*.

Conkwright, M.D.—Ruth L. Kirschstein National Research Service Award, National Institutes of Health.

Curtiss, L.K.—Member, Atherosclerosis and Inflammation Cardiovascular Sciences Study Section, National Institutes of Health; Associate Editor, *Journal of Lipid Research*; Editorial Board, *Arteriosclerosis, Thrombosis, and Vascular Biology*.

Danuser, G.—Associate Editor, *IEEE Transactions on Image Processing*; Editorial Board, *Biophysical Journal*.

Dawson, P.E.—Member, Faculty in Chemical Biology, *Faculty 1000*, Biology Reports, Ltd.; Editorial Boards, *International Journal of Peptide Research and Therapeutics*, *Letters in Peptide Science*.

Dyson, H.J.—Editorial Boards, *Journal of Magnetic Resonance*, *Biophysical Journal*.

Elder, J.H.—Editorial Boards, *Journal of Virology*, *Virology*.

Fokin, V.V.—William. H. Nichols Medal Award Distinguished Speaker, American Chemical Society New York Section, White Plains, New York.

Friedlander, M.—Alcon Research Award, Alcon, Inc.; Chairman, Special Emphasis Panel, National Eye Institute; Member, Neurosciences Blueprint Advisory Panel, National Institutes of Health; Member, Nanomedicine Initiative Advisory and Review Panel, National Institutes of Health Roadmap Program; Member, Trans-Institute Angiogenesis Research Program Portfolio Review, National Institutes of Health.

Gale, A.J.—Early Career Investigator Award, Bayer Hemophilia Awards Program, Bayer HealthCare L.L.C., Research Triangle Park, North Carolina; Career Development Award, National Hemophilia Foundation.

Gascoigne, N.R.J.—Member, Cellular and Molecular Immunology A Study Section, National Institutes of Health; Section Editor, *Journal of Immunology*.

Gerace, L.—Editorial Boards, *Journal of Cell Biology*, *BMC Cell Biology*.

Gottesfeld, J.M.—Associate Editor, *Journal of Biological Chemistry*.

Gottlieb, R.A.—Member, Research Committee, American Heart Association, Western Regional Affiliate; Member,

Myocardial Ischemia and Metabolism Study Section, National Institutes of Health; Editorial Boards, *American Journal of Physiology: Heart and Circulatory Physiology*, *Biochemical Journal*.

Griffin, J.H.—Distinguished Career Award, International Society for Thrombosis and Hemostasis.

Havran, W.L.—Editorial Board, *Immunological Reviews*.

Horwich, A.L.—Corecipient, Stein and Moore Award, the Protein Society.

Janda, K.D.—Section Head, Faculty in Chemical Biology, *Faculty 1000*, Biology Reports, Ltd.; Editorial Boards, *Chemical Reviews*, *Combinatorial Chemistry Research and Applications*, *Bioorganic and Medicinal Chemistry Letters*, *Bioorganic and Medicinal Chemistry*, *Combinatorial Chemistry High-Throughput Screening*.

Johnson, E.F.—Editor-in-Chief, *Drug Metabolism and Disposition*; Editorial Boards, *Journal of Biological Chemistry*, *Molecular Pharmacology*, *Archives of Biochemistry and Biophysics*.

Joyce, G.F.—Member, National Academy of Sciences; Member, Committee on International Security and Arms Control, National Academy of Sciences; Member, External Advisory Board, Beckman Institute, California Institute of Technology, Pasadena, California; Head of Faculty in Chemical Biology, *Faculty 1000*, Biology Reports Ltd.; Associate Editor, *BioSystems*, *Evolutionary Computation*, *Origins of Life and Evolution of the Biosphere*.

Lerner, R.A.—Fellow, American Association for the Advancement of Science; Robert A. Good Lecture in Immunochemistry, Robert A. Good Immunology Society, St. Petersburg, Florida; Editorial Boards, *Bioorganic and Medicinal Chemistry*, *Bioorganic and Medicinal Chemistry Letters*, *Catalysis Technology*, *Drug Targeting and Delivery*, *Journal of Virology*, *Molecular Biology and Medicine*, *Molecular Medicine*, *Journal of Peptide Research*, *Vaccine*, *Angewandte Chemie*.

Lotz, M.—President, Osteoarthritis Research Society International; Member, Skeletal Biology and Skeletal Regeneration Study Section, National Institutes of Health; Member, Faculty in Medicine, *Faculty 1000*, Biology Reports, Ltd.; Associate Editor, *Arthritis Research and Therapy*, *Journal of Immunology*; Editorial Boards, *Biotherapy*, *Osteoarthritis and Cartilage*, *Journal of Orthopedic Research*, *Modern Rheumatology*.

Markou, A.—Chair, Animal Models and Their Validity to the Disease Disorder Subcommittee, Task Force on

Medication Development, American College of Neuropsychopharmacology; Member, Neurobiology of Motivated Behavior Study Section, National Institutes of Health; Field Editor, *Neuropharmacology*; Editorial Boards, *American Journal on Addictions*, *Biological Psychiatry*.

Mason, B.J.—Field Editor, *Neuropsychopharmacology*.

Miles, L.A.—Thrombosis Special Recognition Award, Council on Atherosclerosis, Thrombosis, and Vascular Biology, American Heart Association; President, XVIIth International Congress on Fibrinolysis and Proteolysis; Chair, Women's Leadership Committee, Council on Arteriosclerosis, Thrombosis and Vascular Biology, American Heart Association and Review Committee 4B, American Heart Association Western States Affiliate Research Committee; Member, American Heart Association Western Consortium; Council Member, International Society for Fibrinolysis and Proteolysis; Member, Scientific Advisory Board Member, International Society of Thrombosis and Haemostasis; Editorial Boards, *Frontiers in Bioscience*, *Thrombosis and Haemostasis*.

Mowen, K.A.—Hulda Irene Duggan Arthritis Investigator Award, Arthritis Foundation.

Nicolaou, K.C.—G.M. Kosolapoff Award, Auburn Section, American Chemical Society; Burkhardt-Helferich Prize, Institute of Organic Chemistry, University of Leipzig, Leipzig, Germany; Co-Editor-in-Chief, *Chemistry & Biology*; Editorial Boards, *Tetrahedron Publications*, *Synthesis*, *Carbohydrate Letters*, *Chemistry—A European Journal*, *Perspectives in Drug Discovery and Design*, *Indian Journal of Chemistry*, Section B, *Combinatorial Chemistry High-Throughput Screening*, *Current Opinion in Bioorganic Chemistry*, *Current Organic Chemistry*, *Organic Letters*, *ChemBioChem*, *Chemistry and Biodiversity*, *Bulletin for the Chemical Society of Japan*, *Chemistry—An Asian Journal*.

Oldstone, M.B.A.—Fellow, American Academy of Microbiology; Member, Institute of Medicine, National Academy of Sciences; Elected Member, Scandinavian Society of Immunology, American Association of Physicians, American Society for Clinical Investigation; Member, Scientific Advisory Committee, Pew Scholars Program in the Biomedical Sciences; Editor, *Virology*, *Current Topics in Microbiology and Immunology*; Editorial Boards, *Immunity*, *Journal of Clinical Investigation*.

Polich, J.—Member, Cognitive Neuroscience Study Section, National Institutes of Health; Editorial Boards, *Brain Topography*, *Brain and Cognition*, *Clinical Neurophysiology*, *Journal of Psychophysiology*.

Pollard, K.M.—Member, External Advisory Committee, Center for Environmental Health Sciences, University of Montana, Missoula, Montana.

Rebek, J., Jr.—Medal of the Academy of Sciences, Prague, Czech Republic; Medal of the National Academy of Sciences, Letters and Arts, Modena, Italy; Member, Academia Europaea; Editorial Boards, Tetrahedron Publications, *Bioorganic and Medicinal Chemistry Letters*, *Bioorganic and Medicinal Chemistry*, *Chemistry and Biology*, *Current Opinion in Chemical Biology*, *Journal of Supramolecular Chemistry*.

Reed, S.I.—Editorial Board, *Molecular and Cellular Biology*.

Reisfeld, R.A.—Honorary Degree in Medicine, University of Genova, Italy; Coeditor, *Journal of Clinical Laboratory Analysis*; Editorial Boards, *Bioconjugate Chemistry*, *Cancer Biotherapy and Radiopharmaceuticals*, *Cancer Immunology and Immunotherapy*, *Cancer Research*, *Clinical Cancer Research*, *Hybridoma*, *International Journal of Oncology*, *Journal of Immunology*, *Tumor Targeting*.

Ruf, W.—Thrombosis Special Recognition Award, Council on Arteriosclerosis, Thrombosis, and Vascular Biology, American Heart Association; Editorial Board, *Journal of Thrombosis and Haemostasis*.

Salomon, D.R.—Chair, National Islet Center Resources Program, National Institutes of Health; Member, Transplantation, Tolerance, and Tumor Immunology Study Section, National Institutes of Health; Associate Editor, *American Journal of Transplantation*; Editorial Board, *Transplantation*.

Schlaepfer, D.D.—Established Investigator, American Heart Association.

Schmid, S.L.—MERIT Award, National Institutes of Health; Alex Novikoff Plenary Lecture, Lysosomes and Endocytosis Gordon Conference, Andover, New Hampshire; Fellow, American Association for the Advancement of Science; Board Member and Treasurer, Athena, University of California, San Diego; Member, Activities Review Panel, American Heart Association Western Division; Member, Review Panel, Howard Hughes Medical Institute International Research Scholar Program; Member, Advisory Committee, Burroughs Wellcome Career Awards in Biomedical Research; Editor-in-Chief, *Molecular Biology of the Cell*.

Sharpless, K.B.—William H. Nichols Medal, American Chemical Society New York Section, White Plains, New

York; Novartis Lecturer in Central Europe, Budapest, Hungary, Bratislava, Slovakia, and Prague, Czech Republic; Sessler Lecture, Stanford University, Stanford, California; J.P. Freeman Lectureship, University of Notre Dame, Notre Dame, Indiana; Backer Lecture, University of Groningen, Groningen, the Netherlands; Wheeler Lecture, University College Dublin, Dublin, Ireland; Closs Lecture, University of Chicago, Chicago, Illinois; Masamune Memorial Lecture, Massachusetts Institute of Technology, Cambridge, Massachusetts. Editorial Boards, *Advanced Synthesis and Catalysis*, *Beilstein Journal of Organic Chemistry*, *Bulletin of the Chemical Society of Japan*, *Chirality*, *Current Opinion in Drug Discovery and Development*, *Current Drug Discovery Technologies*, *Enantiomer*, *Organic Letters*. *Synlett*.

Stevens, R.C.—Editorial Boards, *Protein Expression and Purification*, *Biodrugs*, *Drug Discovery Today*, *The Protein Journal*.

Stuhlmann, H.—Member, Cardiovascular Differentiation and Development Study Section, National Heart, Lung, and Blood Institute; Editorial Board, *Stem Cells*.

Sutcliffe, J.G.—Member, International Advisory Board, International Institute of Molecular and Cell Biology, Warsaw, Poland; Member Program Committee, International Society for Neurochemistry; Editorial Boards, *DNA and Cell Biology*, *Molecular Neurobiology Reviews*, *Journal of Neuroscience Research*, *Journal of Molecular Neuroscience*, *Advances in Neuroscience*, *Journal of Neurochemistry*.

Tellinghuisen, T.L.—Career Development Award, National Institute of Allergy and Infectious Disease.

Theofilopoulos, A.N.—18th Annual Paul Klemperer Award, New York Academy of Science; Honorary Doctoral Degree, Medical School, Aristotle University, Thessaloniki, Greece; Honorary Doctoral Degree, Democritus Medical School, University of Thrace, Alexandroupolis, Greece; Corresponding Member, Academy of Athens; Editor, *Current Directions in Autoimmune Diseases* (book series); Editorial Boards, *Survey of Immunologic Research*, *Journal of Clinical Immunology*, *Journal of Experimental and Clinical Research*, *Journal of Clinical Immunology and Immunopathology*, *Journal of Immunopharmacology and Immunotoxicology*, *Journal of Autoimmunity*, *International Journal of Oncology*, *Scandinavian Journal of Immunology*, *Human Immunology*, *Japanese Journal of Rheumatology*.

Torbett, B.E.—Consultant, Center for Biologics Evaluation and Research Response, Food and Drug Administration, States as Certifiers; Member, AIDS Molecular and Cellular Biology Study Section, National Institute of Allergy and Infectious Diseases; Reviewer, Special Emphasis Panel, Program Project in Myeloid Biology, National Heart, Lung, and Blood Institute.

Vogt, P.K.—Medal of Distinction, Institute of Organic Chemistry and Biochemistry, Academy of Sciences of the Czech Republic; Fellow, American Academy of Arts and Sciences; Chairman, Scientific Advisory Board, Oncogene Research Institute, University of Singapore; Member, Selection Committee, Robert Koch Foundation; Member, Board of Directors, Foundation for Advanced Cancer Studies; Editorial Boards, *Virology*, *Journal of Virology*, *Current Topics in Microbiology and Immunology*, *Cancer Research*, *Proceedings of the National Academy of Sciences*, *Blood Cells*, *Molecules and Diseases*, *Cell Cycle*.

Waterman-Storer, C.M.—Who's Who in Science and Engineering, Marquis Publishing; Keith R. Porter Fellow, Keith R. Porter Endowment for Cell Biology; Director's Pioneer Award, National Institutes of Health; R.R. Bensley Award in Cell Biology, American Association of Anatomists; Established Investigator, American Heart Association; Chair, Summer Meeting Series, American Society for Cell Biology; Member, Cell Structure and Function Study Section, National Institute of General Medical Sciences; Faculty Member, Annual Summer Course, Marine Biological Laboratory, Woods Hole, Massachusetts.

Weissmann, C.—Distinguished Research Professor, Department of Biological Sciences, Florida Atlantic University, Jupiter, Florida; Warren Alpert Foundation Prize, Harvard Medical School, Boston, Massachusetts; DART/NYU Biotechnology Achievement Award for Basic Biotechnology, Biotechnology Study Center, NYU School of Medicine, New York, New York; Bernard Fields Lecture, Scripps Research Institute, La Jolla, California; Henry Kunkel Lecture, Cambridge, England; Geoffrey H. Bourne Memorial Lecture, St. George's University, Grenada, West Indies; Editorial Board, *Journal of NeuroVirology*.

Whitton, J.L.—Chair, Special Study Section on Vaccine Development, National Institutes of Health; Ad Hoc Member, Experimental Virology and Virology study sections, National Institutes of Health; Editor, *Virology*;

Acting Editor-in-Chief, *Viral Immunology*; Editorial Boards, *Journal of Virology*, *FEMS Medical Microbiology and Immunology*.

Wilson, I.A.—Fellow, Royal Society of London; Fellow, American Academy of Arts and Sciences; Member, Scientific Advisory Board, Keystone Symposia; Associate Editor, *Journal of Molecular Biology, Immunity*; Editorial Boards, *Science*, *Journal of Experimental Medicine*.

Wong, C.-H.—Georges Smets Chair Award for Organic or Polymer Chemistry, University of Leuven, Belgium; Scientific Advisor, Max-Planck-Institut, Dortmund, Germany; Editor-in-Chief, *Bioorganic and Medicinal Chemistry*; Editorial Boards, Tetrahedron Publications, *Current Opinion in Chemical Biology*, *Biocatalysis*, *Advanced Synthesis and Catalysis*, *Journal of the American Chemical Society*, *Chemistry—An Asian Journal*.

Wright, P.E.—Honorary Doctor of Science, University of Sydney, Sydney, Australia; Editor-in-Chief, *Journal of Molecular Biology*; Editorial Boards, *Biochemistry*, *Current Opinion in Structural Biology*, *Journal of Biomolecular NMR*.

Wüthrich, K.—Doctor of Science honoris causa, King George's Medical University, Lucknow, India; Doctor honoris causa, University of Pécs, Pécs Hungary; Honorary Member, Indian Biophysical Society; Corresponding Member, Nordrhein-Westfälische Akademie der Wissenschaften; Foreign Member, Korean Academy of Science and Technology; Honorary Member, Korean Magnetic Resonance Society; Sarojini Damodoran Lecture, Tata Institute of Fundamental Research, Mumbai, India; G.N. Ramachandran Memorial Lecture, Indian Biophysical Society, Pune, India; Editor-in-Chief, *Journal of Biomolecular NMR*; Editorial Boards, *Biochimie*, *Biopolymers*, *ChemBioChem*, *Current Opinion in Structural Biology*, *IUBMB Life*, *Journal of Magnetic Resonance*, *Journal of Membrane Biology*, *Journal of Structural and Functional Genomics*, *Proteins*, *Structure*.

Yagi, T.—Special Reviewer, Neurodegeneration, Neuroinflammation, Oxidative Stress, and Mitochondria Study Section, National Institutes of Health; Editorial Board, *Journal of Bioenergetics and Biomembranes*.

Yates, J.R. III—Herbert A. Sober Lectureship Award, American Society for Biochemistry and Molecular Biology; Christian B. Anfinsen Award, Protein Society.



Jeffery W. Kelly, Ph.D.

Kellogg School of Science and Technology

Vitality, innovation, interdisciplinary scientific exchange—these are some of the cornerstones of the Kellogg School of Science and Technology at Scripps Research.

This year was a significant one for graduate studies at the Florida campus with the enrollment of the first recruited graduate student, John Whitaker. He joins eight other Ph.D. candidates who transferred to Scripps Florida from the University of Michigan with Professor and Associate Dean William Roush. The introduction of 2-way, web-based conferencing technology now enables the Florida students to participate in California lectures in real time, as well as opening future Florida chemistry classes on asymmetric synthesis and related topics to interested California students. The technology also facilitates the meeting of thesis committees with faculty on both Scripps Research campuses.

In 2006, we welcomed a total of 42 new students to our Ph.D. program from undergraduate institutions including Dartmouth, Brown, Stanford, Cornell, Duke, Pennsylvania State, Tufts, University of Chicago, Uni-

versity of Hamburg, National Taiwan University, and the University of California system. Members of this year's entering class originally come from countries as far away as Australia, Slovenia, and China. The entering biology class of 27 is the largest in the history of the program.

Shortly after the first-year students arrived at Scripps Research, they began a 12-week class called Critical Thinking and Communication in Science to sharpen their skills in assessment and communication of scientific information and ideas. For the first time in 2006, the course included an introduction to the Scripps Research Kresge Library, with an overview of the library's resources and services, a hands-on orientation, and in-depth seminars on topics such as databases and citation management software. One of the course requirements is a research proposal suitable for submission to a variety of predoctoral fellowship competitions.

Another opportunity to learn about the institute's resources and to meet student and faculty colleagues was provided by the 2006 Faculty Student Retreat. Held at the Bahia Resort on Mission Bay, the retreat was similar to a professional scientific conference, with students from both Florida and California campuses presenting their research through 17 oral presentations and 150 posters that explored topics such as Micro-Capillary Crystallization and Adventures in Total Synthesis: The Stephacidin Family. Mike Burkart (Class of '99), now a faculty member in the chemistry and biochemistry department of the University of California, San Diego, also gave a talk, passing on his experiences in science and offering career advice to the Ph.D. candidates.

In 2006, numerous honors and awards were bestowed on Kellogg School students highlighting their accomplishments:

- An unprecedented number of students (5) were selected for National Science Foundation Fellowships: Daniel Bachovchin, Christine Fang, Graham Johnson, Costas Lyssiotis, and Adrian Ortiz.
- David Horning, a member of the entering class, won a highly competitive Hertz Foundation Fellowship, which aims to support the graduate education of "America's most promising technical talent."
- Lindsey Macpherson received a National Institutes of Health Ruth L. Kirschstein National Research Service Award.
- Stuart Webb won a 3-year fellowship from the National Institute on Deafness and Other Com-

munication Disorders of the National Institutes of Health.

- Sherry Niessen won a 2-year Career Development Award from the California Breast Cancer Research Program.
- Katherine Marcucci won an American Heart Association fellowship.
- Noah Z. Burns and Scott T. Harrison were honored for their research accomplishments at Roche's 3rd annual graduate research symposium, Excellence in Chemistry.

In 2006, Kellogg School student stipends and tuition were supported by generous donations from individuals, foundations, and corporations—including the Gustavus and Louise Pfeiffer Research Foundation, the William and Sharon Bauce Family Foundation, the Fletcher Jones Foundation, the ARCS Foundation, the Hertz Foundation, the Donald E. and Delia B. Baxter Foundation, the Koshland Foundation, the American Chemical Society, Novartis, the Gilula Memorial Fund, the Andrea Elizabeth Vogt Memorial Fund, David and Ursula Fairchild, and Lesly Starr Shelton.

The Skaggs Oxford Scholarship Program, a joint 5-year program of study at Scripps Research and Oxford University, continued in 2006 thanks to generous support by supermarket and drugstore leader L.S. Skaggs and his wife, Aline. The program's first student has now completed training at Scripps Research and is in the process of moving to Oxford University, where she will complete work for a joint Ph.D./D.Phil. degree.

In other program news, the Kellogg School has begun the 3-year process of obtaining reaccreditation. Accreditation is a continuous process of improvement and is divided into 3 stages: an institutional proposal, a capacity and preparatory review, and an educational effectiveness review. Six committees are providing input for the 3-year self-study process. (See http://www.scripps.edu/library/Accreditation/i_index.html for news and updates.)

In May, we celebrated the many accomplishments of our students and the Kellogg School program at the institute's 14th commencement ceremony, which honored 31 graduating students and two honorary degree recipients. Hon. Alice Sullivan (Ret.), a former California Superior Court judge and founder and chief executive officer of Private Judge, was honored for her role as former chair and current member of the Scripps Research Board of Trustees. Alexander Dreyfoos, a resident of West Palm Beach, Florida, who owns and

directs the private capital management firm, The Dreyfoos Group, was honored for his numerous scientific and engineering accomplishments and for his service as a member of the Board of Trustees. He and his wife, Renate, provided a generous gift of \$1 million to the institute in 2004.

At the ceremony, Judge Sullivan, whose remarks emphasized the importance of keeping an open mind and welcoming the unexpected, praised this year's graduates. "Today you are to be congratulated on your tremendous accomplishments in the classroom and the laboratory," she said to them. "This is a day to enjoy the promise of success that awaits you because of your intellect, your dedication, and your hard work. The trustees of Scripps Research are immensely proud to know that you will carry the name and reputation of The Scripps Research Institute wherever you go. . . you will honor us as we honor you."

**STUDENTS IN CHEMISTRY
AND CHEMICAL BIOLOGY
PROGRAMS**

Adrian Accurso

Dartmouth College, B.A.

Robert Aversa

Cornell University, B.A.

Daniel Bachovchin

Harvard College, A.B.

Catherine Barglow

Stanford University, B.S.

Robert Bates

Massachusetts Institute of
Technology, B.S.

John Beierle

Boston College, B.S.

Jacqueline Blankman

Northwestern University, B.A.

Grant Boldt

San Diego State University,
M.A.

Diana Bowley

University of Northern Iowa,
B.S.

William Brenzovich

College of William & Mary,
B.S.

Steven Brown

University of Wisconsin,
Madison, B.S.

Noah Burns

Columbia University, B.A.

Jason Chen

Harvard University, A.B.

Shuibing Chen

Tsinghua University, M.S.

Johnathan Chittuluru

Cornell University, B.A.

Chung-Han Chu

National Taiwan University,
B.S.

Ryan Clark

University of California,
San Diego, B.S.

Elizabeth Culyba

College of William & Mary,
B.S.

Trevor Dale

Simon Fraser University, B.S.

Stephen Dean

Vanderbilt University, B.S.

Jessica DeMartino

University of Delaware, B.S.

Michael DeMartino

University of Delaware, B.S.

Damian Ekiert

University of Chicago, B.A.

Shelby Ellery

Cedar Crest College, B.S.

Michael Evans

St. Mary's College of
Maryland, B.A.

Christine Fang

University of California, Los
Angeles, B.S.

Doug Fowler

Northwestern University, B.A.

Michael Frederick

University of Minnesota, B.S.

Brian Frezza

Carnegie Mellon University,
B.S.

Joie Garfunkle

Boston College, B.S.

Jovana Grbic

Northwestern University, B.A.

Yevgeniy Grigoryev

City University of New York,
B.A.

Carlos Guerrero

Harvard University, B.A.

Benjamin Hafensteiner

University of Rochester, B.A.

Geoff Halvorsen

University of Illinois, B.S.

Sarah Hanson

University of California,
Berkeley, B.S.

Nadia Haq

California Institute of
Technology, B.S.

David Harris

Cornell University, B.A.

Jennifer Hazen

Franklin & Marshall College,
B.A.

Simon Hilcove

Arizona State University, B.S.

Vu Hong

University of California,
Berkeley, B.S.

Chan-Woo Huh

Yonsei University, M.S.

Wooyoung Hur

Pohang University, B.S.

Reshma Jagasia

University of Alberta, B.S.

Valer Jeso

Massachusetts Institute of
Technology, B.S.

Robert Jones

Duke University, B.S.

Daisuke Kato

University of California, Davis,
B.S.

Dong-In Koo

Brown University, B.S.

Paul Krawczuk

New York University, B.S.

Tun-Hsun Kuo

National Taiwan University,
M.S.

Sen Wai Kwok

University of California,
San Diego, B.S.

Jolene Lau

California Institute of
Technology, B.S.

Aaron Leconte

Carleton College, B.A.

Hyun Soo Lee

Pohang University, M.S.

Sangyeul Lee

University of California,
Berkeley, B.S.

Ang Li

Peking University, B.S.

Weiwei Li

National University of
Singapore, M.S.

Yee Hwee Lim

University of Bristol, B.Sc.

David Lin

Stanford University, B.S.

Ricardo Lira

University of California,
San Diego, M.S.

Ewa Lis

Cornell University, B.A.

Chang Liu

Harvard University, B.A.

Jonathan Lockner

University of Illinois at
Urbana-Champaign, B.S.

Andre Loutchnikov

University of Toronto, M.S.

Colin Lowery

University of Virginia, B.S.

Costas Lyssiotis

University of Michigan, B.S.

Karen MacMillan

University of California, Davis,
B.S.

Thomas Maimone

University of California,
Berkeley, B.S.

Dena Marrinucci

University of Vermont, B.S.

Casey Mathison

Massachusetts Institute of
Technology, B.S.

Jeremy Mills

Vanderbilt University, B.S.

Amira Moreno Vera

University of Pennsylvania,
B.A.

Timothy Newhouse

Colby College, B.A.

Andrea Nold

Indiana University, B.S.

Christine Nguyen

Boston College, B.S.

Daniel O'Malley
Rice University, B.S.

Adrian Ortiz
University of Arizona, B.A.

Paresma Patel
University of North Carolina
at Chapel Hill, B.S.

Francis Peters
University of New South
Wales, B.S.

Anna Polk
Stevens Institute of
Technology, B.S.

Rajan Pragani
Goucher College, B. A.

Duane Prasuhn
Carnegie Mellon University,
B.S.

Benjamin Pratt
Dartmouth College, B.A.

Stanislav Presolski
Colby College, B.A.

Jessica Raushel
Texas A&M University, B.S.

Jeremy Richter
Butler University, B.S.

Tucker Roberts
Vanderbilt University, B.S.

William Robertson
University of Colorado, B.A.

Valentin Rodionov
University of Maryland, M.S.

David Sarlah
University of Ljubljana, B.S.

Martin Schnermann
Colby College, B.A.

Ian Seiple
University of California,
Berkeley, B.S.

Ryan Shenvi
Pennsylvania State University,
B.S.

Jun Shi
Wuhan University, B.S

Sarah Siegel
University of Virginia, B.S.

Corin Slown
Yale University, B.S.

Houchao Tao
Shanghai Institute of Organic
Chemistry, M.S.

Mark Tichenor
University of California, San
Diego, B.S.

Theresa Tiefenbrunn
California Institute of
Technology, B.S.

Jennifer Treweek
California Institute of
Technology, B.S.

George Scott Tria
Boston University, B.A.

Porino Va
University of Michigan, M.S.

Hillary Van Anda
Bryn Mawr College, A.B.

Jianhua Wang
University of Montreal, M.S.

Sheng-Kai Wang
National Tsing Hua
University, B.S.

John Whitaker
Washington State University,
B.S.

Landon Whitby
University of Utah, B.S.

SusAnn Winbush
University of California,
Los Angeles, B.S.

Yang Xu
University of California, Davis,
B.S.

Yang, Yu-Ying
National Chiao Tung
University, M.S.

Isaac Yonemoto
University of Chicago, B.S.

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Ronald A. Milligan, Ph.D.

The Center for Integrative Molecular Biosciences

The Center for Integrative Molecular Biosciences (CIMBio) was created in 2002 to foster collaborative research dedicated to elucidating the high-resolution structures, mechanisms of action, and in vivo dynamic behaviors of the cell's molecular machines. CIMBio now houses 20 research groups representing disciplines including chemistry, cell and molecular biology, electron microscopy, x-ray crystallography, advanced light microscopy, computational biology, and technology development. This year Floyd Romesberg, Philip Dawson, and Anette Schneemann relocated their research groups here, occupying new laboratories on the second floor of the building and adding strengths in chemistry and structural biology.

Our faculty members made a number of noteworthy scientific advances during the past year, a fact that was reflected in the number of papers published in top-ranking scientific journals. The following list highlights some of this groundbreaking science. In the journal *Cell*, Clare Waterman-Storer and her coworkers described fundamental dynamic molecular relationships that underlie rapid cell migration over substrates. Geoffrey Chang and members of his laboratory published a paper in *Science* describing the high-resolution structure of a

membrane protein transporter involved in multidrug resistance. Also in *Science*, Bridget Carragher, Clint Potter, Jack Johnson and their colleagues reported the structure of an infectious phage, visualizing the capsid, the tightly spooled, packaged DNA and the tail machinery that senses when packaging is complete. In an article published in *Nature*, groups headed by Dr. Carragher, Dr. Potter, and William Balch described the underlying structure of the coat protein complex-II molecular cage that mediates intracellular transport. Also in *Nature*, Ron Milligan and colleagues described the mechanism of minus-end directed motion by a microtubule bound kinesin. In *Nature Medicine*, Mari Manchester's group reported the use of a fluorescently labeled plant virus as a biosensor for vascular imaging. This novel methodology can effectively image the complete embryonic vasculature and highlight the process of angiogenesis in developing tumors.

It was a banner year for Clare Waterman-Storer. She received a number of honors and awards including the R.R. Bensley Award in Cell Biology from the American Association of Anatomists, the Director's Pioneer Award from the National Institutes of Health, and an Established Investigatorship from the American Heart Association.

During November 2005, 41 students from the United States, Canada, and Europe attended a 9-day practical course in molecular microscopy run by the National Resource for Automated Molecular Microscopy, our Biomedical Technology Resource Center sponsored by the National Center for Research Resources. Leading scientists in the field participated in lectures, research seminars, and practical sessions that covered the theory and practice of electron microscopy and image analysis. The formal lectures and research seminars attracted many attendees from the local scientific community. In all, 27 instructors and 18 assistants were involved in the course. Financial support for the course was provided by the National Center for Research Resources, The Agouron Institute, FEI Company, Gatan Inc., Protochips Inc., Tietz Video and Image Processing Systems, and Scripps Research.

The fourth in a series of training workshops on software for automated molecular microscopy was held during February 2006. Representatives from 5 institutions (Oxford; Purdue; Brandeis; University of California, San Diego; and State University of New York) attended and received intensive training on installation and use of software developed at the National Resource for Automated Molecular Microscopy.

In the coming year, Scripps Research will be the first research institution worldwide to receive a novel compact synchrotron light source. This Scripps Campus Synchrotron, to be housed in CIMBio, will significantly accelerate the pace of determining challenging protein structures (for example, membrane proteins and large macromolecular complexes) and structure-based drug design by enabling real-time experimental evaluation using high intensity, tunable x-rays on campus. This research is part of the new technology developments of the Accelerated Technologies Center for

Gene to 3D Structure in the Kuhn and Stevens Laboratories (<http://www.atcg3d.org>).

These activities and successes during the past year highlight the collaborative, interdisciplinary nature of the science being carried out at CIMBio. The enthusiasm of our faculty, staff, fellows, and students and their commitment to our collaborative mission are also evident at the standing-room-only biweekly forums—short seminars designed to promote interdisciplinary interactions.



Tamas Bartfai, Ph.D.

Harold L. Dorris Neurological Research Institute

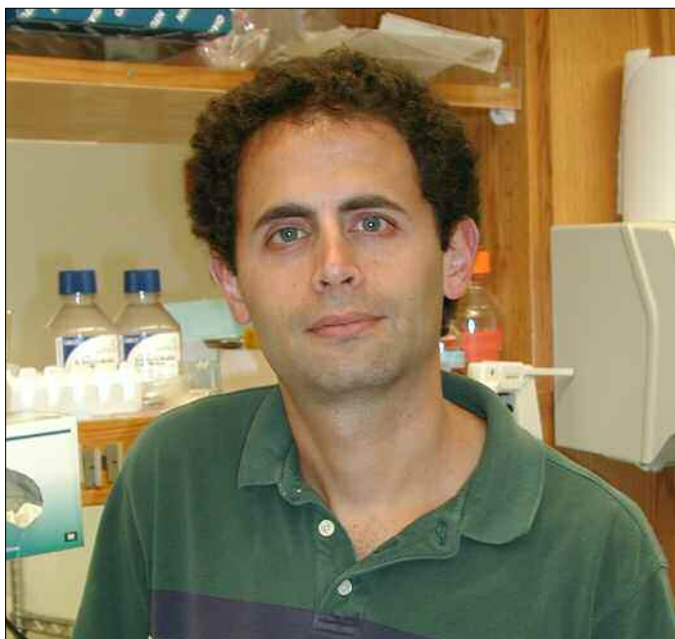
Tamas Bartfai, Ph.D., Director

Major depression and schizophrenia affect millions of people. Treatment of these conditions requires an understanding of their underpinnings, and this need is addressed by The Harold L. Dorris Neurological Research Institute. Founded in 1999 as the result of a long-term \$10 million commitment by Helen L. Dorris through the Harold L. Dorris Foundation, named in her brother's honor, the institute has attracted an international cadre of scientists from France, Switzer-

land, Sweden, Mexico, and Italy in such disciplines as neurology, immunology, chemistry, molecular biology, and endocrinology to study neurologic disorders.

The institute also funds the Helen Dorris Fellow in Schizophrenia, a named fellowship position for a post-doctoral researcher to study aspects of schizophrenia and depression from the neurobiological perspectives. The current fellow is Lisa Sharkey. The visiting professors at the institute in 2005 were the noted electrophysiologist and member of the French Academy of Sciences Henri Korn from the Pasteur Institute in Paris, France; noted pharmacologist and member of the Royal Swedish Academy of Sciences Lars Terenius from the Karolinska Institutet in Stockholm, Sweden; and molecular immunologist Hermann Gram and molecular pharmacologist Daniel Hoyer from Basel, Switzerland.

In 2006, the faculty of the institute expanded beyond the founding faculty members with the election of 3 talented young faculty members: Dorian McGavern, Eric Zorrilla, and Marisa Roberto.



Ben Cravatt, Ph.D.

Helen L. Dorris Child and Adolescent Neuro-Psychiatric Disorder Institute

The sequencing of the human genome promises to propel humans into the age of molecular medicine, where complex diseases are diagnosed and treated in a patient- and target-specific manner. For the

nervous system, in particular, the postgenome era holds the potential to deliver groundbreaking new medicines for previously intractable psychiatric disorders including anxiety, depression, and schizophrenia.

However, in order to realize this goal, a new breed of research institute is needed that cultivates cross talk among many experimental disciplines. Indeed, unraveling the complexities of the human brain and behavior can only be achieved by bringing together scientists from diverse backgrounds and expertise, including chemistry, physics, genetics, and behavior.

The Helen L. Dorris Child and Adolescent Neuro-Psychiatric Disorder Institute was established with a generous gift from mental health advocate and San Diego State University professor emeritus Helen L. Dorris. Her interest in mental health advocacy led her to provide the funding to establish this institute, which has a strong emphasis on interdisciplinary approaches to studies of neurologic and psychiatric disorders.

Specifically, the aim of scientists at the institute is to uncover the pathologic basis of mental disorders and to develop therapies for these disorders. In the past 3 years, several talented investigators have been recruited to join the institute. Together, these investigators are addressing many of the most challenging problems facing contemporary molecular and behavioral neuroscience. Their research promises to uncover fundamental mechanisms for brain function and to reveal novel strategies and targets for the treatment of nervous system disorders.



Steve Kay, Ph.D.

The Institute for Childhood and Neglected Diseases

The Institute for Childhood and Neglected Diseases (ICND) was established to apply cutting-edge research to understand the basic mechanisms underlying diseases of childhood and orphan diseases that lack efficacious treatments. Diseases in both these categories often affect populations in developing countries, where the health infrastructure may be too poor to support major research efforts on these problems.

Examples of such diseases include malaria, epilepsy, mental retardation, cystic fibrosis, chronic pain, and sleep disorders. The human and economic costs of these diseases are staggering. According to the World Health Organization, each year, the microorganism that causes malaria infects 300 million persons, and the

disease kills approximately 1 million persons. About 90% of the people who have malaria are in Africa, where the annual costs associated with the disease are \$12 billion. Malaria is the leading cause of childhood mortality in African countries.

Epilepsy is another widespread and costly disease. It affects about 2.3 million persons in the United States and accounts for \$12.5 billion in medical costs and reduced productivity each year.

Mental retardation is another condition that affects children everywhere; about 1% of American children 3–10 years old are mentally retarded. During the 1995–1996 school year, about 600,000 6- to 21-year-olds with mental retardation in the United States received special educational services, at a cost of about \$3.3 billion.

Housed in a state-of-the-art, 54,000-square-foot building on the east side of the Scripps Research campus, the ICND is a focus group within Scripps Research for young scientists who are working in areas relevant to the ICND mission. The concept of the ICND grew out of conversations in 1996 and 1997 among Scripps Research president Richard Lerner; John Moores, who was interested in supporting research on illnesses that affect people in developing countries; and the brothers Bernard and Marc Chase, who were interested in supporting research on childhood diseases. John and Rebecca Moores, Bill Bauce, and other automobile enthusiasts donated a number of vintage automobiles, which were auctioned to support the ICND. The Moores went on to contribute a valuable coin collection, as well as pledging \$5 million to be awarded over 5 years.

The Human Genome Project has led to a deeper understanding than ever before of the mechanisms underlying human disease. The ability to study the draft mouse and human genomes in parallel is providing an unprecedented opportunity to create a road map for assigning a physiologic function to all of the 35,000–45,000 human genes. This formidable challenge requires complex multidisciplinary approaches that allow scientists to create and implement the most powerful research tools available. Investigators at the ICND use genomics, proteomics, and advanced microscopic imaging technologies; develop many novel transgenic animal models; and aggressively apply these technologies in an effort to understand the mechanisms of action of a variety of diseases and conditions—malaria, mental retardation, neurodegenerative diseases, neuropathic pain, deafness, sleep disorders, migraines, and epilepsy, for example—

and to devise treatments for these maladies. ICND scientists plan to systematically study not only the genes associated with these abnormalities but also the interactions between the genes in living model systems.

ICND researchers have already been recognized by the international scientific community during the first 5 years of the institute's existence. In December of 2002, 3 of the highly prized Top Ten Breakthroughs of the Year of *Science* magazine were results produced by ICND researchers working on the malarial genome, mechanisms of pain perception, and processes important for sleep disorders and seasonal depression. This remarkable level of achievement speaks to the investment made in these research areas and bodes well for further rapid progress in the near future.

Faculty

Areas of Research

<i>Steve A. Kay, Ph.D.</i>	<i>Molecular mechanisms of circadian rhythms and sleep disorders, genetics of anxiety, novel targets in neurodegenerative diseases</i>
<i>William E. Balch, Ph.D.</i>	<i>Protein trafficking and the molecular basis for the hereditary childhood disease cystic fibrosis</i>
<i>Kristin Baldwin, Ph.D.</i>	<i>Molecular biology of the sense of smell, genetic mechanisms governing neural circuit development in the olfactory system and cortex</i>
<i>Shelley Halpain, Ph.D.</i>	<i>Organization and function of the neuronal cytoskeleton, mechanisms underlying potential treatments for Alzheimer's disease and repair of neuronal damage after trauma</i>
<i>Mark Mayford, Ph.D.</i>	<i>Molecular basis of cognitive function, including learning and memory disabilities and mental retardation</i>
<i>Ulrich Müller, Ph.D.</i>	<i>Molecular cell biology of mechanosensory perception and childhood deafness</i>
<i>Ardem Patapoutian, Ph.D.</i>	<i>Ion channels and receptors involved in nociception and neuropathic pain</i>
<i>Elizabeth Winzeler, Ph.D.</i>	<i>Functional genomic approaches to identifying targets in Plasmodium, the parasite that causes malaria</i>



SOCIETY OF FELLOWS EXECUTIVE COMMITTEE:

Left to right: back row: Chris Ramsey, George Nicola, Neil Hime, Anne Bellon, Kelly-Anne Purton, Justin Carlson, Ryan Wheeler; front row: Ralph Pantophlet, Adam Mullick, Ron Nepomuceno.

Society of Fellows

In its 44th year, the Society of Fellows took pride in maintaining its mission to serve the scientific community at Scripps Research, with particular emphasis on enhancing the trainee experience of junior scientists. We enjoyed a great year of bringing graduate students, postdoctoral fellows, and faculty members together in both professional and social arenas.

Our Distinguished Lecturer Series brought several prominent scientists to lecture and, more importantly, to interact with junior scientists. The society is thankful to the speakers for their excellent presentations: Claire Fraser, Paul Nurse, and Stanley Plotkin.

The Society also sponsored a wide range of career development workshops and seminars, most notably several postdoctoral career events including Jorge Cham (The Power of Procrastination), Jean-luc Doumont (Making the Most of Your Presentation), and a grantwriting workshop lead by Luc Teyton. These events were sponsored in partnership with Ryan Wheeler, manager of the newly formed Office of Postdoctoral Services, which has greatly expanded our reach by providing help in organizing events. We acknowledge Ryan's outstanding assistance and appreciate his commitment to fulfilling the society's aims.

The Fall Research Symposium was organized to draw postdoctoral scholars, graduate students, and faculty members together in an informal setting. The event, held in the Beckman Galleria, featured 52 poster presentations covering research projects from all departments.

With a generous contribution from our Human Resources department, we were able to initiate a postdoctoral tuition reimbursement program in the amount of \$400 to each fellow. Thus far, the program has funded

15 postdoctoral scholars for professional development coursework. Typical courses included certificate programs like Drug Discovery and Regulatory Affairs held at the University of California, San Diego, Extension. Such formal coursework provided our postdoctoral candidates with an important resume booster and gave them a complete edge in an increasingly competitive job market.

This year's social calendar was again packed with many entertaining events, including trips to the LA County Museum of Art and Universal Studios, a whale watching excursion, an historical tour of San Diego, and our annual Big Bear ski trip. Happy hours were held throughout the year to promote interaction among scientists at Scripps Research and those at nearby science institutions. This year's Hawaiian-themed summer bash was held at Canes Bar and Grill. In addition, a sunset yacht cruise around San Diego Bay was enjoyed by all who attended. Other notable social events this year included a premier showing of the movie *The DaVinci Code*, a day at the Del Mar races, and a World Cup soccer tipping contest.

Finally, at the annual spring vendor show, the society played host to approximately 100 scientific vendors, who displayed their latest scientific equipment and technology.

The Society of Fellows executive committee expresses its sincere gratitude to the Office of the President and Postdoctoral Services at Scripps Research for enthusiastic and continued support of the society's activities.

Executive Committee 2005-2006

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ACKNOWLEDGMENTS

The scientists who have contributed sections to this report wish to acknowledge the dedication and hard work of the laboratory technicians who helped bring the research to fruition, the administrative assistants who have made it presentable for publication, and the support personnel who provided critical specialized services and equipment.

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The Scientific Report is published annually by The Scripps Research Institute and is available on request from

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