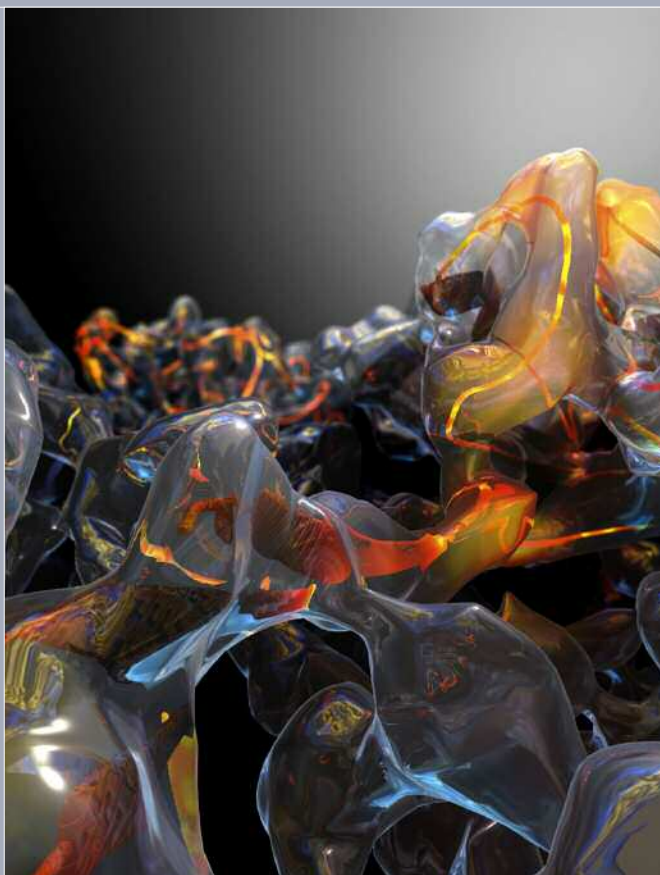


Awards, Education, Centers, Institutes, and Organizations

Bacteriophage λ provides an exceptionally accessible system for studies on viral maturation. Initial subunit assembly leads to a properly assembled, but fragile, particle that is the substrate for double-stranded DNA packaging enzymes. During DNA packaging, the particle undergoes reorganization, increasing its stability and allowing binding of the stabilization protein gpD. The 14 N-terminal residues of the bacteriophage cementing protein gpD are disordered in the absence of the capsid substrate. Upon binding to the capsid shell, a trimer of gpD molecules stabilizes the capsomers at all 3-fold symmetric sites. Stabilization occurs through the formation of a 4-stranded β -sheet, which includes the N terminus of gpD. Shown here is the N-terminal arm of gpD in a molten/disordered state, becoming solid as it is integrated into the λ capsid. Image created by Graham Johnson, graduate student with Art Olson, Ph.D., professor, Department of Molecular Biology, on the basis of electron microscopy data obtained by Gabe Lander, graduate student with Jack Johnson, Ph.D., professor, Department of Molecular Biology, and Bridget Carragher, Ph.D., associate professor, Department of Cell Biology.





2008 Graduating Class

Staff Activities and Awards

Baldwin, K.K.—Pew Scholar; New Faculty Award, California Institute for Regenerative Medicine.

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*.

Beutler, B.—Balzan Prize, International Balzan Foundation, Italy and Switzerland; Member, National Academy of Sciences.

Beutler, E.—First Annual Wallace H. Coulter Award for Lifetime Achievement in Hematology, American Society of Hematology; AABB Karl Landsteiner Award and Lectureship; Donald I. Feinstein Distinguished Lecturer, University of Southern California, Los Angeles, California; Member, National Academy of Sciences, Institute of Medicine of the National Academies, American Academy of Arts and Sciences; Chairman, Scientific Advisory Board, Burnham Institute for Medical Research; Member, Scientific Advisory Boards, Edwards Lifesciences, iMetrikus, Optimer Pharmaceuticals; Contributing Editor, *Blood Cells, Molecules and Diseases*; Associate Editor, *Acta Haematologica*.

Boger, D.L.—Nieuwland Lecturer, Notre Dame University, Notre Dame, Indiana; Wyeth Lecturer, University of Strathclyde, Glasgow, Scotland; 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*.

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

Chun, J.—Chancellor's Award Lecture, Neuroscience Center of Excellence, LSU Health Sciences Center, School of Medicine, New Orleans, Louisiana.

Chisari, F.V.—Fellow, American Academy of Microbiology; Member, National Academy of Sciences; Member, Class IV Membership Committee, National Academy of Sciences; Member, Scientific Advisory Board, Center for the Study of HCV, Rockefeller University, New York, New York; Member, National Advisory Committee, Pew Scholars Program in Biomedical Sciences; Member, National Advisory Committee, Howard Hughes Medical Institute; ISI Highly Cited Researcher; Lerner Lecturer, Cleveland Clinic Foundation, Cleveland, Ohio.

Cleveland, J.L.—Editor, *Molecular and Cellular Biology*; Senior Editor, *Molecular Cancer Research*; Associate Editor, *Molecular Biology of the Cell*, *Cell Death and Differentiation*.

Curtiss, L.K.—Fellow, American Heart Association; Associate Editor, *Journal of Lipid Research*; Editorial Board, *Atherosclerosis, Thrombosis, and Vascular Biology*.

Danuser, G.—Fellowship, Marine Biological Laboratory, Woods Hole, Massachusetts; Associate Editor, *IEEE Transactions on Image Processing*; Editorial Board, *Biophysical Journal*.

Dawson, P.E.—Chair, American Peptide Symposium, 2011; Councilor, American Peptide Society; Member, Nominating Committee, American Peptide Society; Member, Faculty in Chemical Biology, *Faculty 1000*, Biology Reports, Ltd.; Editorial Board, *International Journal of Peptide Research and Therapeutics*.

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

Ehlers, C.L.—Thurman Award, Bowles Center for Alcohol Studies, University of North Carolina, Chapel Hill; Merit Award, National Institutes of Health; Member, National Institute on Alcohol Abuse and Alcoholism Council; Member, Extramural Advisory Board, National Institute on Alcohol Abuse and Alcoholism.

Fokin, V.V.—Society of Synthetic Organic Chemistry of Japan Award.

Gascoigne, N.R.J.—Member, Program Committee, American Association of Immunologists; 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*.

Goodin, D.B.—MERIT Award, National Institutes of Health.

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

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

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

Johnson, E.F.—Treasurer-elect, International Society for the Study of Xenobiotics; Editor-in-Chief, *Drug Metabolism and Disposition*; Editorial Board, *Molecular Pharmacology*.

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, Faculty in Chemical Biology, *Faculty 1000*, Biology Reports, Ltd.; Associate Editor, *Evolutionary Computation, Origins of Life and Evolution of the Biosphere*.

Kelly, J.W.—Vincent du Vigneaud Award, American Peptide Society.

Kenny, P.J.—New Investigator Research Award, James and Esther King Biomedical Research Program, Florida Department of Health; Research Award, The Landenberger Foundation.

Lerner, R.A.—Jesse W. Beams Memorial Lecture in Biophysics, University of Virginia, Charlottesville, Virginia; K.T. Wang Bioorganic Chemistry Lectureship, Taipei, Taiwan; 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, Vaccine, Angewandte Chemie*.

Lotz, M.—Member, Board of Directors, 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*; Editorial Boards, *Biotherapy, Osteoarthritis and Cartilage, Journal of Orthopedic Research, Modern Rheumatology*.

Miles, L.A.—Ad Hoc Reviewer, Program Project Grants, Special Emphasis Panel, National Heart, Lung, and Blood Institute; Member, Faculty of Pharmacology and Drug Discovery, *Faculty 1000*, Biology Reports, Ltd.; Editorial Board, *Frontiers in Bioscience*.

Mowen, K.A.—Hulda Irene Duggan Arthritis Investigator, Arthritis Foundation; Young Career Scientist Award, Donald and Delia Baxter Foundation.

Nicolaou, K.C.—Award of Excellence, Western Regional Meeting, American Chemical Society; August-Wilhelm-von-Hofmann-Denkmonze Award; Marvel Lecturer, University of Illinois at Urbana, Champaign, Illinois; Creigee Lecturer, University of Karlsruhe, Germany; Behringer Simon Lecturer, ETH, Zurich, Switzerland; Co-Editor-in-Chief, *Chemistry and 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, International Journal of Oncology.

Oldstone, M.B.A.—Fellow, American Academy of Microbiology; Elected Member, National Academy of Sciences, Institute of Medicine; Scandinavian Society of Immunology; American Association of Physicians; American Society for Clinical Investigation; Editor, *Virology, Current Topics in Microbiology and Immunology*; Editorial Boards, *Immunity, Journal of Clinical Investigation, Cell Host Microbe*.

Polich, J.—Editorial Boards, *Brain and Cognition, Journal of Psychophysiology*.

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

Rebek, J., Jr.—Ta-shue Chou Award, Academia Sinica, Taiwan; Joullie Lecturer, University of Pennsylvania, Philadelphia, Pennsylvania; Member, Wittgenstein Prize Committee; Editorial Boards, *Bioorganic and Medicinal Chemistry Letters, Bioorganic and Medicinal Chemistry, Chemistry and Biology, Journal of Organic Chemistry, Current Opinion in Chemistry Biology, Journal of Supramolecular Chemistry*.

Reed, S.I.—Editorial Boards, *Molecular and Cellular Biology, Cell Cycle*.

Reisfeld, R.A.—Temporary Member, Cancer Immunopathology and Immunotherapy Study Section, National Institutes of Health; 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.—Sol Sherry Distinguished Lecture in Thrombosis, American Heart Association Scientific Sessions; Editorial Board, *Journal of Thrombosis and Haemostasis*.

Saez, E.—Career Development Award, American Diabetes Association.

Schmid, S.L.—MERIT Award, National Institutes of Health; Fellow, American Association for the Advancement of Science; Member, Scientific Advisory Committee, European Molecular Biology Laboratory; Member, New Investigator Finalist Review Panel, Howard Hughes Medical Institute; Member, Women in Cell Biology Committee, American Society for Cell Biology; Editor-in-Chief, *Molecular Biology of the Cell*.

Schork, N.J.—Member, Singapore Consortium of Cohort Studies Advisory Board, National University of Singapore; Member, Gallo Center Scientific Advisory Board, University of California, San Francisco.

Sharpless, K.B.—Honorary Doctorate, Hong Kong University of Science and Technology, Hong Kong; Nobel Laureate Lectures, Griffith University, Brisbane, Australia; Editorial Boards, *Advanced Synthesis and Catalysis*, *Arkivoc*, *Beilstein Journal of Organic Chemistry*, *Bulletin of the Chemical Society of Japan*, *Chemistry—An Asian Journal*, *Chirality*, *Current Opinion in Drug Discovery and Development*, *Current Drug Discovery Technologies*, *Enantiomer*, *Organic Letters*, *Synlett*, *Topics in Stereochemistry*.

Siggins, G.R.—Inducted into the Grand Island, Nebraska, High School Hall of Honor.

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

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

Tan, E.M.—Lifetime Achievement Award in Lupus Research; Editorial Boards, *Journal of Molecular Medicine*, *Journal of Clinical Immunology*, *Clinical and Experimental Medicine*.

Tellinghuisen, T.L.—Editorial Board, *Journal of Virology*.

Topol, E.J.—Joseph C. Greenfield, Jr., Distinguished Professor, Duke University, Durham, North Carolina; 10th Annual Hatter Lecture, University of Cape Town, Rondebosch, South Africa, and University College of London, England; Arthur Gordon Visiting Professorship, University of California, Los Angeles, School of Medicine; National Medical Honoree, Johns Hopkins Medical Center Heartfest; 35th Annual Arvilla Berger Lecture, University of Rochester, New York; Member, Expert Panel on Targeted Genome-wide Resequencing in Well-Phenotyped Populations, National Heart, Lung, and Blood Institute.

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, Wellcome Trust.

Vogt, P.K.—Annual Science in Medicine Lecture, University of Washington, Seattle, Washington; Meyenburg Foundation Lecture, German Cancer Research Center, Heidelberg, Germany; Chairman, Scientific Advisory Board, Oncology Research Institute, National University of Singapore; Member, Scientific Advisory Board, Robert Koch Foundation; Member, Board of Directors, Foundation for Advanced Cancer Studies; Member, Scientific Advisory Board, Sidney Kimmel Foundation for Cancer Research; Editorial Boards, *Oncogene*, *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*.

Weissmann, C.—Editorial Board, *Prion*.

Whitton, J.L.—Chair, Special Study Section on Vaccine Development, National Institutes of Health; Member, Advisory Committee on Fellowships, National Multiple Sclerosis Society; Member, Career Awards for Medical Scientist Committee, Burroughs Wellcome Fund; Member, Review Committee, American Heart Association; Ad Hoc Member, Experimental Virology and Virology study sections, National Institutes of Health; Editor, *Virology*; Editorial Boards, *Viral Immunology*, *Journal of Virology*, *FEMS Medical Microbiology and Immunology*.

Wilson, I.A.—Honorary Doctorate of Science, University of St. Andrews, Scotland; Fellow, Royal Society of London; Fellow, American Academy of Arts and Sciences; Corresponding Fellow, Royal Society of Edinburgh; Member, Board of Directors, Keystone Symposia; Associate Editor, *Journal of Molecular Biology*, *Immunity*; Editorial Boards, *Science*, *Journal of Experimental Medicine*.

Wittenberg, C.—Editorial Board, *Molecular and Cellular Biology*.

Wright, P.E.—Member, National Academy of Sciences; Editor-in-Chief, *Journal of Molecular Biology*; Editorial Boards, *Biochemistry*, *Current Opinion in Structural Biology*, *Journal of Biomolecular NMR*.

Wüthrich, K.—Doctor of Medicine honoris causa, University of Pécs, Hungary; Doctor of Chemistry honoris causa, Universidad del Norte, Asunción, Paraguay; Doctor honoris causa, Lomonosov Moscow State University, Moscow, Russia; Laurea Specialistica in Biotechnology honoris causa, University of Verona, Italy; Docteur honoris causa, Université René Descartes, Paris, France; Editor-in-Chief, *Journal of Biomolecular NMR*; Associate Editor, *Advanced Science Letters*; Editorial Boards, *Biochimie*, *Biomolecular NMR Assignments*, *Biopolymers*, *ChemBioChem*, *Chemical Physics Letters*, *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.—Editorial Board, *Journal of Bioenergetics and Biomembranes*.

Kellogg School of Science and Technology

In 2008, the graduate program built on its many successes and continued to evolve to meet a dynamic future. The leadership of the program changed hands as Jeffery Kelly, Lita Annenberg Hazen Professor of Chemistry and a member of the Skaggs Institute for Chemical Biology, went on to assume other responsibilities. He is now chair of the Scripps Research Department of Molecular Biology and chair of the board of the Skaggs Institute for Research, one of the Skaggs family's major mechanisms for its philanthropy. As dean, Jeff presided over 8 years of tremendous growth in which the number of students in the program grew by 50%. The curriculum also underwent significant expansion, and revisions allowed more flexibility in coursework for students. In addition to helping establish the graduate program as part of the Florida campus, Jeff was instrumental in establishing the Scripps Research/University of California, San Diego (UCSD) Medical Scientist Training Program, the Scripps Research/UCSD Skaggs School of Pharmacy joint degree program, and the prestigious Skaggs Oxford Scholarship Program, a joint academic training program at Scripps Research and Oxford University.

I am privileged to take over the leadership of the Kellogg School, with the valuable support of associate deans Steven Mayfield and William Roush. My 7 years as associate dean of the Kellogg School and 10 years as a member of the Scripps Research faculty will inform my leadership of the program. I look forward to working with my fellow deans, faculty colleagues, students, and staff to advance the goal of providing the most conducive environment possible for students to make important discoveries as a stepping stone for their careers.

In the 2008 commencement ceremonies, we recognized the accomplishments of 28 students graduating from the Kellogg School program. Their Ph.D. advisors stepped up to the stage one by one to speak about the array of scientific and personal accomplishments of each



James R. Williamson, Ph.D.

graduate, including 2 graduates from the Florida campus. Also at the event, the institute awarded an honorary degree to Scripps Research trustee Claudia S. Luttrell, whose achievements include promoting scientific collaboration as a member of the Scripps Research Board of Trustees, president of the Skaggs Institute for Research at Scripps Research, and chair of the Skaggs Oxford Scholarship Program. Distinguished scientist Scripps Research Professor Ernest Beutler delivered the keynote address, advising the graduates to tackle difficult scientific problems and to distrust scientific dogma and consensus.

The Kellogg School now has more than 300 distinguished alumni, including the 2008 graduates. Recent graduates have gone on to work in both academia and industry, including at the University of Chicago, Northwestern University, the Burnham Institute for Medical Research, and the La Jolla Institute of Allergy and Immunology, Pfizer, Celldex Therapeutics, the Genomics Institute of the Novartis Research Foundation, Exelixis, and Johnson & Johnson.

As the new academic year began this fall, a record number of students arrived on both the Florida and the California campuses, bringing the total number of students at the Kellogg School to 248—including 17 Florida students, 10 Skaggs Oxford Scholars, and 2 UCSD Medical Scientist Training Program (M.D./Ph.D.) students. For the entering Florida class, an unprecedented 75% of offers extended to students were accepted: 9 of 12 offers made.

We held a variety of events to help orient the new students, including lunch with the deans, a picnic with continuing students, and presentations by the graduate office and human resources department. In addition, new students enrolled in the required Critical Thinking and Communication in Science course. In this course, students examine research methods in experimental biology and chemistry, gain skills in the communication and assessment of scientific information and ideas, and review how to apply for fellowship awards such as those offered by the National Science Foundation.

The annual student-faculty symposium in September, held at the Bahia Resort Hotel on San Diego's Mission Bay, provided another kind of learning experience for Kellogg School students from both Florida and California, as well as those residing in Great Britain for the Skaggs Oxford program. All continuing students presented their research in poster sessions or lectures, honing their presentation skills and receiving valuable feedback on their individual projects. First-year students also attended the symposium, interacting with fellow students and fac-

ulty members, and learning about the research projects ongoing in laboratories throughout Scripps Research.

As in previous years, the stipends and tuitions of the Kellogg School students were supported by generous donations from individuals, foundations, and corporations. These included gifts from the Achievement Rewards for College Scientists Foundation, Inc., the American Chemical Society, the American Society for Engineering Education, the William and Sharon Bauce Family Foundation, the Donald and Delia Baxter Foundation, Bristol-Myers Squibb, the Norton B. Gilula Memorial Fund, the Fannie and John Hertz Foundation, the Fred Hutchison Cancer Research Center, the Fletcher Jones Foundation, Daniel Koshland, Merck and Co., the National Institutes of Health, Novartis Institutes of Biomedical Research, Inc., the Gustavus and Louise Pfeiffer Research Foundation, Roche Pharmaceuticals, the Norman and Margaret Lassey Fund at the San Diego Foundation, the Andrea Elizabeth Vogt Memorial Fund, and anonymous gifts such as that supporting the Bagel Graduate Student Fellowship.

New this year was the addition of a Leadership Fellows Fund created by the Scripps Research Board of

Trustees to support students in their first year at the Kellogg School. The new fund is currently supporting 15 promising first-year graduate students in their studies.

Even as our academic program is in full swing, we continue to make progress in the 3-year process of reaccreditation by the Western Association of Schools and Colleges. Our last accreditation, in 1999, was granted for 10 years, the maximum period possible. For the current reaccreditation review, we have established a number of committees, including a steering committee and 3 self-study working groups consisting of faculty, students, postdoctoral fellows, and administrative staff, to assess the program's strengths and areas for improvement. We have also received input from other members of the campus community, including alumni, through our accreditation Web site and open forum discussions, surveys, and focus group sessions.

We appreciate your valuable perspectives and suggestions for fine-tuning our program and confirming our commitment to excellence.

**STUDENTS IN
CHEMISTRY AND
CHEMICAL BIOLOGY
PROGRAMS**

Jason Abbot
Northwestern University, B.S.

Adrian Accurso
Dartmouth College, B.A.

Klaus Albertshofer
State Agricultural Engineering
School (Germany), B.S.

Erin Anderson
Illinois Wesleyan University,
B.A.

Robert Aversa
Cornell University, B.A.

Daniel Bachovchin
Harvard College, A.B.

Maria Bagonis
University of Oxford, M.S.

Robert Bates
Massachusetts Institute of
Technology, B.S.

John Beierle
Boston College, B.S.

Steven Bischof
St. John's University, B.A.

Jacqueline Blankman
Northwestern University, B.A.

Alex Brasher
University of Florida, B.S.

Steven Brown
University of Wisconsin,
Madison, B.S.

Noah Burns
Columbia University, B.A.

Devon Cayer
University of California,
Los Angeles, B.S.

Jae Won Chang
Sogang University, M.S.

Bradley Charette
University of Nebraska, B.S.

Ming Chen
Brown University, M.S.

Johnathan Chittuluru
Cornell University, B.A.

Chung-Han Chu
National Taiwan University,
B.S.

Elizabeth Culyba
College of William and Mary,
B.S.

Stephen Dean
Vanderbilt University, B.S.

Peter Diez
Florida State University, B.S.

Katharine Duncan
Amherst College, B.A.

Damian Ekiert
University of Chicago, B.A.

Shelby Ellery
Cedar Crest College, B.S.

Keary Engle
University of Michigan, B.S.

Brian Frezza
Carnegie Mellon University,
B.S.

Thomas Gaj
University of Arizona, B.S.

Joie Garfunkle
Boston College, B.S.

Christine Fang Gelin
University of California,
Los Angeles, B.S.

Ramesh Giri
Tribhuvan University, M.Sc.

Yevgeniy Grigoryev
City University of New York,
B.A.

Will Gutekunst
University of Oklahoma, B.S.

Geoff Halvorsen
University of Illinois, B.S.

David Harris
Cornell University, B.A.

Jennifer Hazen
Franklin and Marshall College,
B.A.

Paul Hernandez
University of California,
Berkeley, B.S.

Simon Hilcove
Arizona State University, B.S.

Vu Hong
University of California,
Berkeley, B.S.

- Marisa Hovlid**
University of Minnesota, B.S.
- William Hudson**
Duke University, B.S.
- Wooyoung Hur**
Pohang University, B.S.
- Yoshihiro Ishihara**
McGill University, M.S.
- Robert Jones**
Duke University, B.S.
- Mingchao Kang**
University of Hong Kong, B.S.
- Daisuke Kato**
University of California,
Davis, B.S.
- Stephanie Kazane**
Boston College, B.S.
- John Kiappes**
Rice University, B.S.
- Alexander Kislukhin**
Russian Academy of Science,
M.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.
- James Lajiness**
Hope College, B.S.
- Jonathan Lam**
University of British Columbia,
B.S.
- Jolene Lau**
California Institute of
Technology, B.S.
- Aaron Leconte**
Carleton College, B.A.
- Hyun Soo Lee**
Pohang University, M.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.
- Chang Liu**
Harvard University, B.A.
- Jonathan Lockner**
University of Illinois,
Urbana-Champaign, B.S.
- Jonathan Long**
Columbia University, B.A.
- 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.
- Denis Malyshev**
Russian Academy of Science,
M.S.
- Dena Marrinucci**
University of Vermont, B.S.
- Tiansheng Mei**
Lanzhou University, B.S.
- Jeremy Mills**
Vanderbilt University, B.S.
- Amira Moreno Vera**
University of Pennsylvania,
B.A.
- Timothy Newhouse**
Colby College, B.A.
- Christine Nguyen**
Boston College, B.S.
- Andrea Nold**
Indiana University, B.S.
- Derrick Ong**
National University of
Singapore, M.S.
- Adrian Ortiz**
University of Arizona, B.A.
- Katerina Otrubova**
San Diego State University,
M.S.
- Paresma Patel**
University of North Carolina,
Chapel Hill, B.S.
- Francis Peters**
University of New South
Wales, B.S.
- Rajan Pragani**
Goucher College, B.A.
- Stanislav Presolski**
Colby College, B.A.
- Timothy Reichart**
University of Virginia, B.S.
- Tucker Roberts**
Vanderbilt University, B.S.
- Rodrigo Rodriguez**
San Diego State University,
B.S.
- William Robertson**
University of Colorado, B.A.
- Andrew Ryan**
Carleton College, B.A.
- Lisa Ryno**
Trinity University, B.S.
- David Sarlah**
University of Ljubljana, B.S.
- Aaron Sather**
University of Oregon, B.S.
- Mark Schallenberger**
University of Montana, B.S.
- Ian Seiple**
University of California,
Berkeley, B.S.
- Christopher Shanks**
New College of Florida, B.A.
- Jun Shi**
Wuhan University, B.S.
- Sarah Siegel**
University of Virginia, B.S.
- Devin Sok**
Stanford University, B.S.
- James Solomon**
University of California, San
Diego, M.S.
- Benjamin Stein**
University of Arizona, B.S.
- Derek Swingle**
Trinity University, 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.
- Andrew Ullman**
Carleton College, B.A.
- Florina Voica**
Smith College, B.A.
- Donghui Wang**
Lanzhou University, B.S.
- Jianhua Wang**
University of Montreal, M.S.
- Kai Wang**
Peking University, B.S.
- Lingshan Wang**
Dartmouth College, B.S.
- Sheng-Kai Wang**
National Tsing Hua University,
B.S.
- Masayuki Wasa**
Brandeis 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.
- Amanda Wolfe**
North Carolina State
University, B.S.
- Brady Worrell**
Purdue University, B.S.
- Jun Yin**
Indiana University, B.S.

Maben Ying

Wake Forest University, M.S.

Isaac Yonemoto

University of Chicago, B.S.

Travis Young

Boston College, B.S.

Wayne Yu

Portland State University, B.S.

Andrea Zuhl

Northwestern University, B.A.

**STUDENTS IN BIOLOGY
AND BIOPHYSICS
PROGRAMS****Phillip Aoto**University of California, Irvine,
B.S.**Kathryn Applegate**

Centenary College, B.S.

Rena Astronomo

Simon Fraser University, B.S.

Maria Bagonis

University of Oxford, M.S.

Michael Barnes

University of Notre Dame, B.S.

Gira Bhabha

University of Chicago, B.A.

Eric Brustad

Purdue University, B.S.

Anne Bunner

Iowa State University, B.S.

Russell Burge

Arizona State University, B.S.

Stuart CahalanUniversity of California, San
Diego, B.S.**Joshua Chappie**

Brandeis University, M.S.

Stephen Chen

Rice University, B.S.

Yee-Ting Chong

Cornell University, B.A.

Eugene ChunUniversity of California,
Berkeley, B.A.**Ronald Coleman**California State University,
Fullerton, B.S.**Corey Dambacher**San Diego State University,
M.S.**Lorenzo de Lichtervelde**

University of Louvain, B.S.

Neekesh DhariaUniversity of California, San
Diego, B.S.**Myles Dillon**University of California, San
Diego, B.S.**Melissa Dix**Pennsylvania State University,
B.S.**Bao Duong**University of California, Los
Angeles, B.A.**Hunter Elliot**

The Colorado College, B.A.

Jason Fiedler

University of Minnesota, B.A.

Kelly Flanagan

Saint Louis University, B.S.

Kwesi Frimpong-BoatengUniversity of Massachusetts,
M.S.**Anna Galkin**

Cornell University, B.S.

Marin GantnerUniversity of Puget Sound,
B.S.**Laurie Gay**California Polytechnic Institute,
B.S.**Sulagna Ghosh**

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The Center for Integrative Molecular Biosciences

The Center for Integrative Molecular Biosciences (CIMBio) was created in 2002 to foster collaborative research dedicated to elucidating structure-function relationships of the cell's molecular machines. During the past year, our faculty made a number of noteworthy scientific advances. The following list highlights some of this groundbreaking science.

Gaudenz Danuser continued his cutting-edge work on computational and microscopic methods for quantifying cellular processes, in particular those involving the dynamics of the cellular cytoskeleton and endocytosis. He published several high-profile papers in *Nature Methods* and *Developmental Cell*. He was honored for this work by the Biophysical Society, which awarded him the Michael and Kate Bárány Award for Young Investigators for his "outstanding seminal contributions in diverse areas of cell biology, particularly to our understanding of cell cytoskeleton dynamics and function using speckle microscopy."

Mark Yeager and colleagues published a detailed molecular model of the full-length capsid protein of HIV type 1 in *Cell*. This protein forms a cone-shaped capsid shell around the genome of the virus. The structure reveals novel features of interactions between subunits in the HIV type 1 capsid that may serve as new targets for antiviral therapy.

Several groups in CIMBio study the assembly and functional characterization of virus particles, including Marianne Manchester, Anette Schneemann, John E. Johnson, and M.G. Finn. Drs. Manchester, Schneemann, and Yeager collaborated to develop a novel virus-based nanoparticle that displays parts of the anthrax toxin cellular receptor on its surface. This engineered particle prevented cell death by anthrax toxin and, when complexed with the anthrax protective antigen, served as a novel vaccine antigen that could protect animals from toxin challenge after a single immunization. Published in *PLoS Pathogens*, this work received wide media cover-



Ronald A. Milligan, Ph.D.

age from *Science Daily*, *The Scientist*, and the Associated Press.

Dr. Manchester also collaborated with Dr. Finn to develop novel virus-based nanoparticles that specifically target tumor cells, with the long-term goal of targeting drugs to tumors in the body. Their work, published in *Chemistry and Biology*, showed that particles could be specifically targeted to folic acid receptors that are upregulated on the surface of tumor cells. Using novel chemical methods to vary ligand density, the scientists tailored the particles for receptor recognition. They also developed novel virus-based contrast agents for magnetic resonance imaging.

Dr. Finn and his group continued their studies on displaying carbohydrates on the surface of virus-based nanoparticles and constructing polyvalent glycan ligands on the surface of particles. In collaboration with James Paulson, they showed the usefulness of the particles as carbohydrate vaccines. This work was highlighted in the *Journal of the American Chemical Society*.

Claudio Joaziero was the recipient of an American Cancer Society Research Scholar award. He published a study in *PLoS ONE* on the genome-wide characterization of E3 ubiquitin ligases. Until this work, hundreds of human E3 ligase-encoding genes were known to exist, but their approximate number and complete inventory were unavailable, despite their critical importance for many biological processes and diseases. Dr. Joaziero and his group discovered a previously uncharacterized human E3, termed MULAN, that localizes to mitochondria, regulates the organelle's morphology and distribution, and activates NF- κ B signaling. The discovery of MULAN opens the way to determining how mitochondrial signaling and dynamics are linked, which could lead to new ways of thinking about these processes. *PLoS ONE* selected this article, from among more than 120 others, to be highlighted as the top research they have published on cell signaling. Dr. Joaziero also served as the co-organizer of the American Association for Cancer Research meeting, Ubiquitin and Cancer: From Molecular Targets and Mechanisms to the Clinic, held in San Diego.

Several CIMBio postdoctoral fellows and doctoral candidates received prestigious fellowship awards this year. Kristopher Koudelka was awarded fellowships from the Achievement Rewards for College Scientists Foundation, Inc., and the Fletcher Jones Foundation. Nicole F. Steinmetz was awarded a fellowship from the American Heart Association. Jessica Petrillo was

awarded a Ruth L. Kirchstein Postdoctoral Fellowship from the National Institutes of Health and a Science and Technology Policy Fellowship from the American Association for the Advancement of Science.

Between November 10 and 16, 2007, the National Resource for Automated Molecular Microscopy (headed by Bridget Carragher and Clint Potter) held the third in a planned series of biennial training courses designed to provide extensive exposure to electron cryomicroscopy and image analysis. This year, a major goal of the course was to discuss some of the challenges in electron cryomicroscopy that remain to be solved, including improvements in specimen preparation, imaging, processing, and reconstruction required to reach higher resolutions and solve small structures with limited symmetry or conformational variability. The course had 111 official participants, which included many leaders in the field.

Finally, a 5-day training workshop was held at the National Resource for Automated Molecular Microscopy on March 10 to 14, 2008. The purpose of the workshop was to introduce the Legimon automated imaging system to those groups who want to use it at their home institutions. Participants were from the following institutions: University of Pittsburgh School of Medicine, Howard Hughes Medical Institute/Janelia Farm Research Campus, New York University Medical Center, Biocenter Finland, Max Planck Institute of Molecular Cell Biology and Genetics Dresden, Weizmann Institute of Science, Yale University, and the National Institute of Arthritis and Musculoskeletal and Skin Diseases.

Harold L. Dorris Neurological Research Institute

Schizophrenia and major depression affect many millions of people worldwide. Treatment of these psychiatric diseases requires an understanding of their underpinnings, and this need is the driving force for research at the Harold L. Dorris Neurological Research Institute. Founded in 1999 with a \$10 million long-term commitment by Ms. Helen Dorris through the Harold L. Dorris Foundation, named in her brother's honor, the institute has attracted an international cadre of scientists from France, Switzerland, Sweden, Mexico, Italy, Spain, and Hungary in disciplines such as neurology, immunology, chem-



Tamas Bartfai, Ph.D.

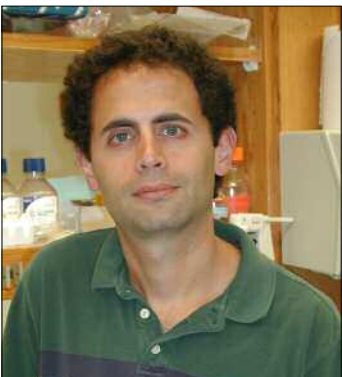
istry, molecular biology, and endocrinology to study neurological disorders.

The Harold L. Dorris Neurological Institute also funds the Helen Dorris Fellow in Schizophrenia, a named fellowship position for a postdoctoral researcher to study aspects of schizophrenia and depression from molecular and cellular neurobiological perspectives. The current fellow is Olivia Osborn from Oxford University in England. The visiting professors at the institute in 2007 were the well-known 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 from Novartis Global Research, Basel, Switzerland.

The major lines of research carried out by in vitro and in vivo techniques are on the effects of galanin on depression and neurogenesis and on IL-1 signaling in the nervous system and its involvement in stress, depression, and febrile responses.

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.



Ben Cravatt, Ph.D.

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. 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.



NETWORK FOR WOMEN IN SCIENCE OFFICERS:

Left to right: back row: Emily Plummer, Leah Shriver, Namandje Bumpus; front row: Elizabeth Culyba, Crystal Moran, Sophie Rozenzhak.

Network for Women in Science

The Network for Women in Science (NWIS) was founded in 2003 by graduate students, postdoctoral fellows, and faculty members at Scripps Research. Since its inception, NWIS has endeavored to provide support, guidance, and opportunity for female scientists at Scripps Research, to create awareness of issues that affect the development and success of women's scientific careers, to promote diversity at Scripps Research, and to make a positive difference in the culture of science for the benefit of the entire scientific community. During the past year, NWIS has seen some big changes. A new executive committee of postdoctoral fellows and graduate students is now leading the group, with renewed enthusiasm in the original mission, along with a few ideas of their own. A new monthly coffee hour, open to the entire Scripps Research community, serves as the centerpiece for NWIS activities. The aims of the coffee hour are to provide a friendly environment for networking and opportunities to discuss key topics that affect the lives of all scientists and to draw on the knowledge and experience of fellow scientists. Successful graduate studies, the scientific peer-review process, discrimination, and industry networking are examples of topics recently discussed. Participants include Scripps Research staff at diverse points in their careers, including graduate students, faculty, staff scientists, lab technicians, and industry representatives.

Dedicated to working closely with local professional organizations, including the Society of Fellows, the Association for Women in Science (a national organi-

zation), and the Kellogg School of Science and Technology Distinguished Lecturer Series, NWIS recently collaborated with the Society of Fellows to host a graduate student and postdoc mentoring luncheon. This event provided a forum for postdocs to meet and share their experiences with graduate students at Scripps Research. NWIS has also been an active participant in the process by which the graduate program at Scripps Research seeks reaccreditation by the Western Association of Schools and Colleges, with NWIS members serving on committees that address personal and professional development of graduate students and postdoctoral scientists.

Upcoming events include a panel on alternative careers in science and increased exploration of mentoring opportunities for young scientists. In particular, NWIS offers practice and coaching for committee meeting examinations, as well as national and international meetings. Participation in NWIS is always up to the individual, with no minimum level required.

NWIS expresses its appreciation to the Kellogg School of Science and Technology, particularly Jamie Williamson, Marylyn Rinaldi, and Diane Kreger for their enthusiastic support of our activities; Jan Hill and Ryan Wheeler of the Postdoctoral Services Office; and the following faculty for their participation and support of NWIS events: Bridget Carragher, Erica Ollmann Saphire, Sandra Schmid, and Kristin Baldwin.

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2007-2008

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SOCIETY OF FELLOWS EXECUTIVE COMMITTEE: *Left to right: back row: Althea Capul, Leah Schriver, Stephan Meister, Nicklas Schöne, Scott Westenberger, Geza Ambrus-Aikelin, Joao Dias, Jill Sabeti; front row: Peter Haberz, Olivier Harismendy, Julie Pilotte.*

Society of Fellows

The Society of Fellows is the oldest existing postdoctoral association in the nation. For its 46th year, the Society held to its mission of fostering scientific and social interaction among the Scripps Research community with an emphasis on improving the postdoctoral experience at Scripps.

The Distinguished Lecturer Series has continued to invite the world's most successful senior researchers to share their career path and scientific experience with junior scientists. This year we were honored to host Randy Schekman (2002 Lasker awardee) from the University of California, Berkeley, and Joe Goldstein (1985 Nobel Prize winner for Physiology or Medicine) from the University of Texas Southwestern Medical Center.

The Fall Research Symposium is the only scientific meeting held at Scripps Research that gathers researchers from all scientific areas (chemistry, structural biology, immunology, experimental medicine, neurobiology, cell and molecular biology). Reserved for the presentation of unpublished work from postdoctoral researchers, the 2007 edition was one of the most successful ever. More than 80 abstracts were submitted, and 12 of them were selected for oral presentation. This day brought together postdoctoral scholars, faculty, and graduate students in an informal setting that offered a unique opportunity to learn about the latest and most exciting work at Scripps Research.

In collaboration with the Office of Postdoctoral Services at Scripps Research and offices from the Salk Institute and the University of California, San Diego, the Society of Fellows contributed to the organization of the Lab Management Course held at the Salk Institute.

More than 100 postdoctoral scientists and young faculty received training to help them lead innovative and productive research programs. The society also hosted a series of seminars on funding and grant application, with speakers from major institutions, such as the National Institutes of Health and the National Institute of Allergy and Infectious Diseases, and experienced researchers who gave tips about the application and review process. The Society of Fellows and the Office of Postdoctoral Services also teamed up to offer several other professional development events in the past year, including an academic job search seminar in the fall, a Career Adventures Beyond the Bench panel in the winter, and a panel on high school and community college teaching careers for Ph.D.s in the spring.

This year also marked the establishment of links with the postdoctoral community at Scripps Florida. With the help of the Office of Postdoctoral Services, we are advising postdoctoral researchers at Scripps Florida on how to start their own association, have offered travel awards for the 2008 symposium, and will be sponsoring the first speaker for their Distinguished Lecturer Series.

The Society also organized numerous popular social events to bring together scientists and staff outside of their laboratories: monthly happy hours held on campus; the traditional Halloween party, which took place on a boat cruising San Diego Bay; the annual summer bash at Canes Bar and Grill in Mission Beach; and the ski trip to Big Bear mountain resort. All these events are renewed annually by popular demand and undoubtedly strengthen the links between members of the Scripps Research community. To diversify the attendance at our events, we also sponsored and organized a wine tasting outing, a fishing trip to the Coronado Islands, and a night at the Del Mar race track. Once again, we renewed our financial support of the Mobility Pond, the Scripps Research drama group. Their brilliant performance brought crowds to the Committee Lecture Hall and was followed by a well-attended reception.

Finally, the vendor show was organized in May as our annual fundraiser. It was again a resounding success, bringing more than 100 vendors on the campus to showcase their latest technologies and services.

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

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