



CHICAGO AREA UNDERGRADUATE RESEARCH SYMPOSIUM

April 1, 2006

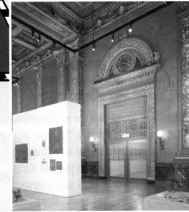
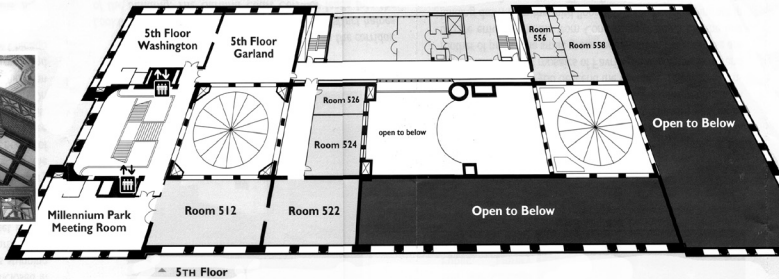
8:30 a.m - 4:30 p.m.	Registration <i>First floor, 78 E. Washington Street Entrance</i>
9:00 a.m.	Continental Breakfast <i>Claudia Cassidy Theater</i>
9:30 a.m.	Opening Address <i>Claudia Cassidy Theater</i> Steven J. Sibener, Ph.D., Carl William Eisendrath Professor of Chemistry at The University of Chicago and head of the James Frank Institute
10:00 a.m.	Poster Session I <i>Preston Bradley Hall</i>
11:00 a.m.	Poster Session II <i>Preston Bradley Hall</i>
12:00 noon	Lunch <i>Preston Bradley Hall</i>
1:00 p.m.	Research Lecture <i>Claudia Cassidy Theater</i> Milan Mrksich, Ph.D., Department of Chemistry, University of Chicago
1:30 p.m.	Oral Presentations I <i>Claudia Cassidy Theater</i>
2:30 p.m.	Coffee Break <i>Claudia Cassidy Theater</i>
3:00 p.m.	Oral Presentations II <i>Claudia Cassidy Theater</i>
5:00 p.m.	Banquet Dinner <i>Preston Bradley Hall</i> Keynote Address by Hunter O'Reilly, Ph.D., Loyola University Chicago
6:00 p.m.	Dessert & Awards Ceremony <i>Preston Bradley Hall</i>

Chicago Cultural Center Map

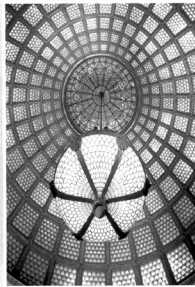
Garland Court



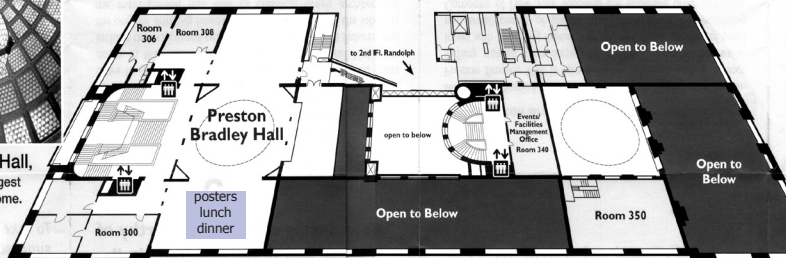
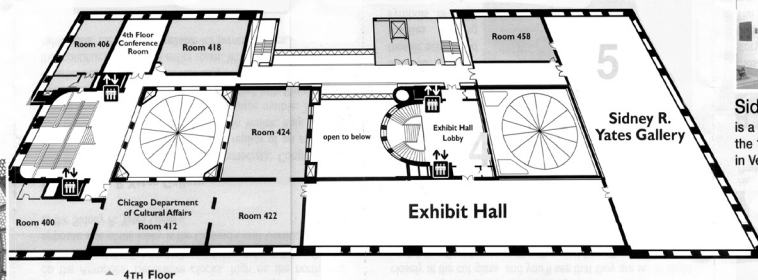
The stairway leading to the 5th floor was inspired by the Bridge of Sighs in Venice, Italy.



Sidney R. Yates Gallery is a replica of an assembly hall in the 14th century Doge's Palace in Venice, Italy.



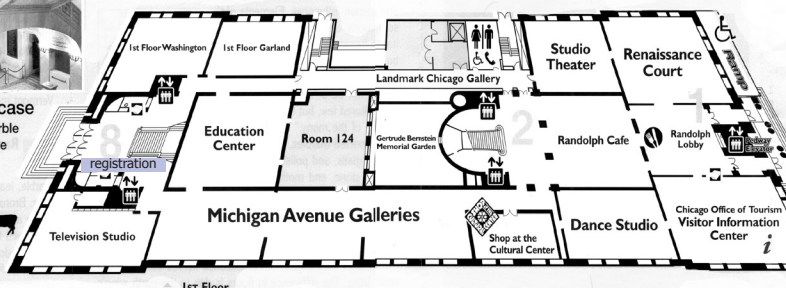
Preston Bradley Hall, home of the world's largest stained glass Tiffany dome.



The coffered ceiling of G.A.R. Memorial Hall



The Grand Staircase is of white Carrara marble decorated with intricate multicolored mosaics.



The neo-classic architecture of the Randolph Street Entrance is Greek revival.

78 E. Washington Street

77 E. Randolph Street

Michigan Avenue



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Kevin Miklasz
James Waters

Interschool Advisory Committee:

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Vivian Ferry, The University of Chicago
Laura Hughes, Northwestern University
Emily Miller, Loyola University Chicago
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Chandler Robinson, Northwestern University
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Anna Yan

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Charles Green
Angela Stathos
Samuel Undine
Christopher Whaley

Advisor: Joe Cribari

Acknowledgements



The Chicago Area Undergraduate Research Symposium would not have been developed without the help of numerous people. In particular, we would like to thank the following people for their help and support:

DePaul University

- Lynn Narasimhan of the IST center

Illinois Institute of Technology

- Allan S. Myerson, Provost and Senior Vice President
- Carlo Segre, Professor of Physics and Associate Dean of the Graduate College

Loyola University Chicago

- Professor G. Hunter O'Reilly
- Professor David Slavsky, Dean of the College of Arts and Sciences
- Professor Michael Garanzini, President
- Professor John Frendreis, Provost
- Professor Jeffrey Doering, Department of Biology Chairperson
- Professor David Crumrine, Department of Chemistry Chairperson
- Professor Asim Gangopadhyaya, Department of Physics Chairperson
- Professor R. Scott Tindale, Department of Psychology Chairperson

Northwestern University

- President Henry S. Bienen
- Professor Daniel Linzer – Dean Weinberg College of Arts and Sciences
- Ronald Braeutigam – Associate Dean for Undergraduate Studies
- Dr. Steven T. Rosen, MD, FACP – Northwestern University Feinberg School of Medicine
- Professor SonBinh T. Nguyen
- Professor Teresa K. Woodruff
- Professor Mark Hersam
- Professor Stephen Fisher – Assistant Provost
- Professor Hilary A. Godwin
- Thy Nguyen – Assistant Director Career Services
- Northwestern University Biomedical Engineering Department

The University of Chicago

- Professor Steven J. Sibener – Head of the James Frank Institute
- Professor Milan Mrksich
- William Michel - Asst. Vice President for Student Life and Assoc. Dean of the College
- John Boyer - Dean of the College

- Thanks to all the undergraduate volunteers for all of their help.



To all CAURS Participants,

Welcome to the 2nd Annual Chicago Area Undergraduate Research Symposium! This symposium is a citywide event meant to promote undergraduate research and to foster interaction between all of the Chicago area universities. The organization is entirely student-run, with undergraduates taking time to organize every aspect of the event and to ensure its success. I would like to personally thank all of the CAURS committee members and student volunteers for helping to make this year's event such a success.

The participation in this year's event looks to be nearly double that of last year. For this, we thank all of the student presenters who have taken time to share their research with other members of the Chicago Area scientific community and all of the faculty members from each school who have graciously dedicated their time to this event. I want every student presenter to realize that you will be presenting your research to an excellent audience this year, whether it be the world-renowned expert in your field or a fellow student at the neighboring institution that happens to share your research interests. Take full advantage of this wonderful opportunity!

I am extremely happy to see the growing success of CAURS, and hope that it will become a staple of the Chicago science community for years to come! To all participants, I sincerely hope that you will enjoy all of the presentations at this year's event!

A handwritten signature in cursive script that reads "Kevin Miklasz".

Kevin Miklasz
CAURS Co-director
University of Chicago Student

ILLINOIS INSTITUTE
OF TECHNOLOGY

Transforming Lives. Inventing the Future.

April 1, 2006



Allan S. Myerson, PhD, PE
Provost & Senior VP
Phillip Danforth Armour
Professor of Engineering

Perlstein Hall, Room 223
10 West 33rd Street
Chicago, IL 60616

312-567-3163
312-567-7018 Fax
myerson@iit.edu

Dear CAURS Participants and Visitors:

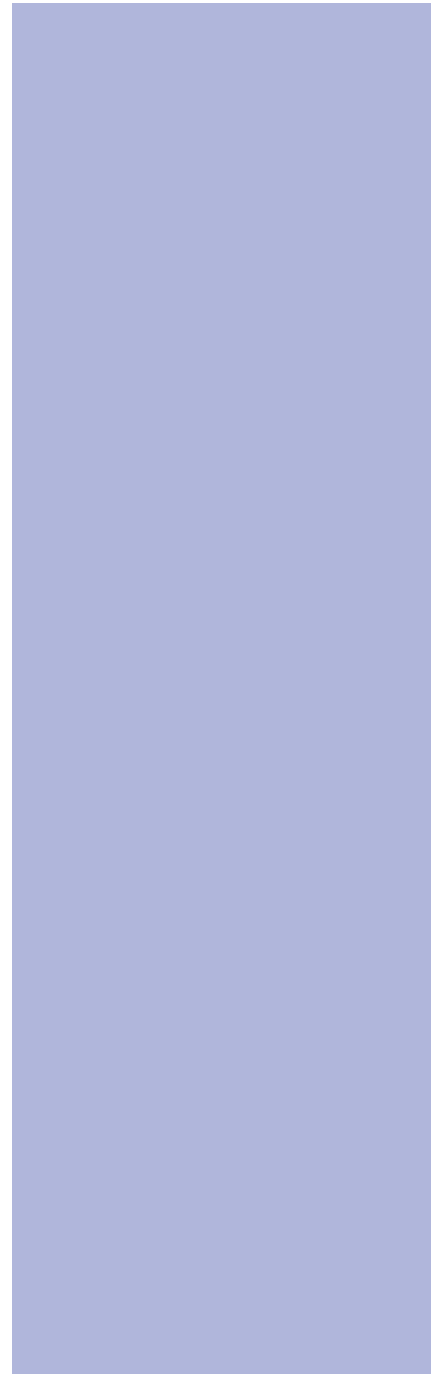
On behalf of Illinois Institute of Technology, welcome to the second annual Chicago Area Undergraduate Research Symposium. I am delighted that IIT is one of the sponsors for this event and that IIT students are participants and organizers.

Undergraduate research is a vital part of a university's activity. This event affords an opportunity for students to utilize what they learn in the classroom and make informed decisions about their careers in science and engineering.

Today's events would not be possible without the efforts of the student organizers. Such an inter-institution event is challenging to coordinate and they have all done an outstanding job. Congratulations!

Sincerely,

Allan S. Myerson





NORTHWESTERN UNIVERSITY

April 1, 2006



Henry S. Bienen, PhD
President
Northwestern University
Rebecca Crown Center
633 Clark Street
Evanston, Illinois 60201

847-491-7456
847-467-3104 Fax
nu-president@northwestern.edu

Dear CAURS Participants and Visitors:

On behalf of Northwestern University, I welcome you to the second annual Chicago Area Undergraduate Research Symposium. Northwestern has a deep and sustained commitment to undergraduate research; I am very pleased that many Northwestern students are participants and organizers of today's event.

Research is an integral part of academia and it is my hope that your experience here will broaden and deepen your appreciation of the research process and encourage you to involve yourself in it. By investing yourself in a hands-on research project you gain significant insight into some topic area and valuable experience in creating new knowledge.

I would especially like to thank all the organizers of this symposium. Coordinating a cross-university program like this one involves a great deal of time and effort; their dedication is very much apparent in this exceptional event.

Sincerely,

Henry S. Bienen
President



April 1, 2006

Dear CAURS Participants,

On behalf of the faculty, staff, and students at the University of Chicago, welcome to the 2nd Annual Chicago Area Undergraduate Research Symposium. The University of Chicago is pleased to host the event this year.

A group of undergraduates from universities around Chicago have been working together all year to create this symposium. As talented undergraduate researchers, I wish you the best of luck as you learn from each other's research and compete for awards. The events of the day are designed to promote beneficial interactions between the students, professional researchers, illustrious speakers, and distinguished faculty in attendance – I hope you will make the most of all today has to offer.

Thank you for taking part in the 2006 Chicago Area Undergraduate Research Symposium (CAURS). I hope you find this event a valuable resource for experiencing first-hand the cooperative endeavors of the Chicago research community.

Sincerely,

John W. Boyer
Dean
Martin A. Ryerson
Distinguished Service Professor of History



John W. Boyer, PhD
Dean
Martin A. Ryerson
Distinguished Service
Professor of History
The University of Chicago

1116 East 59th Street
Chicago, Illinois 60637

773-702-8576
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FACULTY RESEARCH AWARDS

The Faculty Research Awards are presented to professors who have fostered and developed undergraduate research at their academic institutions.

Carlo Segre, Illinois Institute of Technology

Carlo Segre began his scientific career with bachelors degrees in chemistry and physics from the University of Illinois at Urbana-Champaign. He received his Ph.D. in physics from the University of California, San Diego in 1981. After two years as a post-doc, he joined the faculty at the Illinois Institute of Technology, where today he serves as a professor of physics, and Associate Dean of the Graduate College. A member of the American Physical Society and Sigma Xi, he is also a senior staff member of the Center for Synchrotron Radiation Research and Instrumentation at IIT, and the Deputy Director of the Materials Research Collaborative Access Team at the Advanced Photon Source at Argonne National Laboratory. In addition to all of these responsibilities, Professor Segre finds the time to mentor numerous undergraduate students, and has been the instrumental voice of the students working to further IIT's CAURS participation.

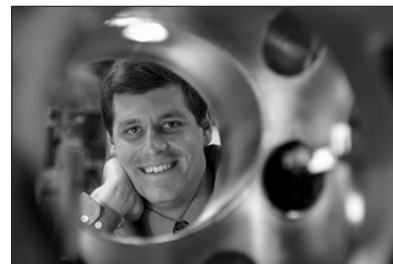


John Kelly, Loyola University Chicago



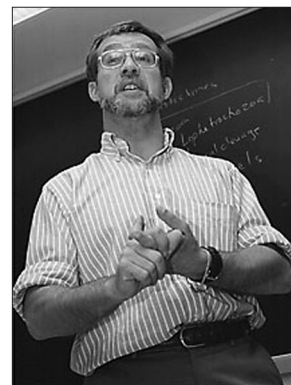
Mark Hersam, Northwestern University

Mark C. Hersam is an Assistant Professor of Materials Science and Engineering in the McCormick School of Engineering and Applied Science at Northwestern University. His research group, which includes numerous undergraduates, develops scanning probe microscopy (SPM) techniques to enable single molecule sensing, characterization, and actuation. Professor Hersam received his B.S. and Ph.D. degrees in Electrical Engineering from the University of Illinois at Urbana-Champaign. He also received a Marshall Scholarship, which he used to complete an M.Phil. degree in Microelectronic Engineering and Semiconductor Physics from the University of Cambridge (UK). He has won numerous awards including an Alfred P. Sloan Research Fellowship, an NSF CAREER Award, and an Arnold and Mabel Beckman Young Investigator Award. Professor Hersam is widely involved in promoting undergraduate education and undergraduate research. His teaching has been honored by Northwestern University's student government, which placed him on the Faculty Honor Roll in 2004, and by the Materials Science and Engineering Department, which gave him the Teacher of the Year Award in 2003. Professor Hersam has promoted undergraduate research by mentoring undergraduates in his laboratory. He also directs the Nanoscale Science and Engineering Center's REU at Northwestern, which annually gives undergraduates the opportunity to experience nanotechnology research. Furthermore, Professor Hersam has served on the faculty review board for the Northwestern Undergraduate Research Journal for all three years of the Journal's existence.



Michael LaBarbera, The University of Chicago

Mike LaBarbera is a professor in the Department of Organismal Biology and Anatomy and the Department of the Geophysical Sciences. Mike's research interest cover a variety of morphological issues, from the mechanical properties of snail shells, to the evolution of swimming in scallops, to the hydrodynamics of flow past crinoid tube foot arrays. His primary research interest lies in the design of fluid transport systems in invertebrates and vertebrates. Mike teaches several courses a year open to both undergraduates and graduates. His lectures are captivating and enlightening, while his labs are fast-paced and interactive. His students are continually working on a broad variety of problems, usually related to his own research only in that their problems involve biomechanics. Mike has guided his students through investigations into the biomechanics of flying snakes, insect breathing, and fish fins. He is extremely dedicated to helping his students understand biomechanical issues both inside the classroom and in the lab.



Awards for best oral presentation, best poster presentations, best abstract, and project proposal will be announced after dinner at the Dessert and Awards Ceremony.