



4th Annual Student Research Conference

in Science, Mathematics, Engineering and Technology

Friday-Saturday, April 9-10, 1999

Illinois Institute of Technology

Dr. Marian Wilson-Comer

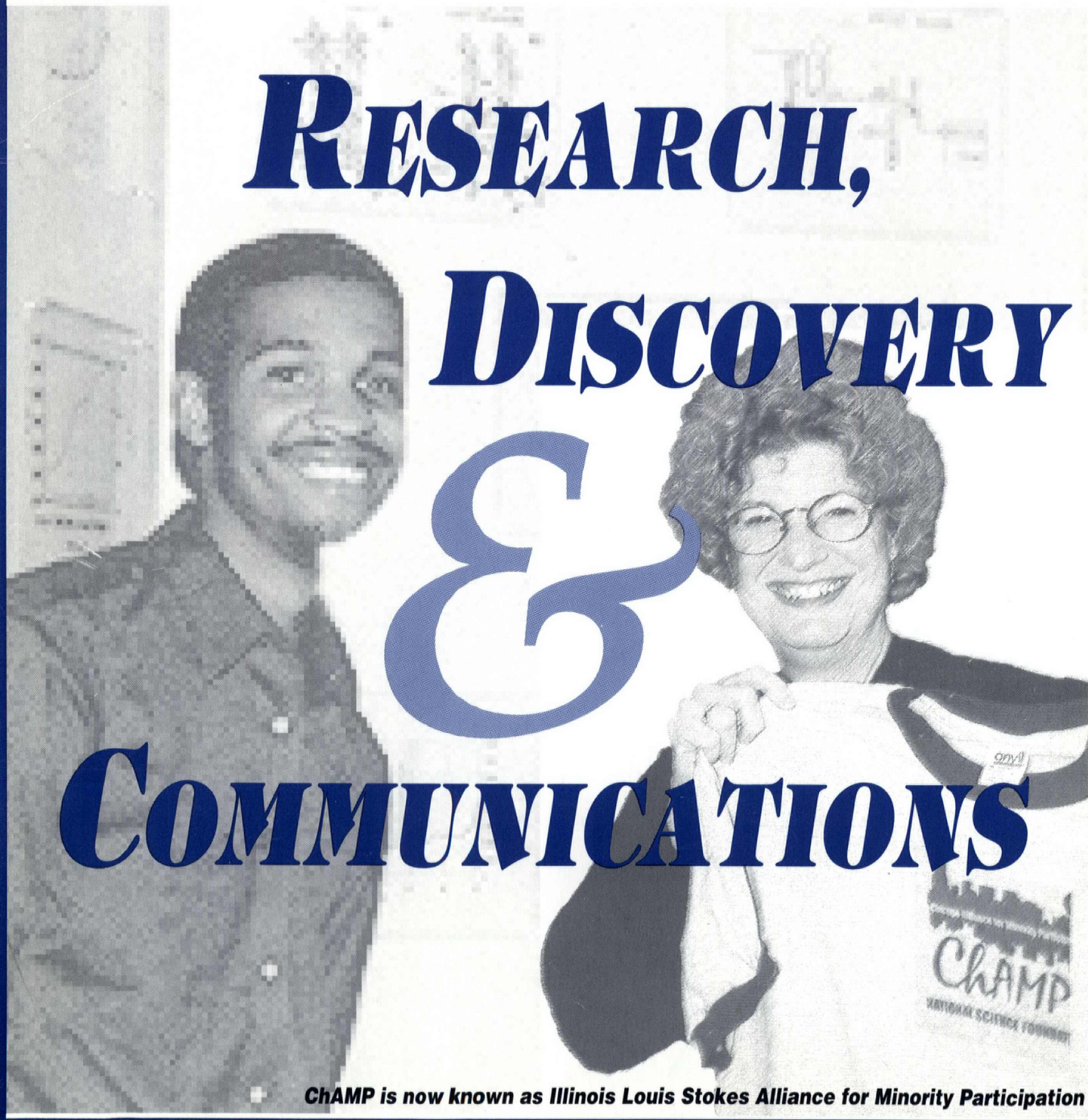
Executive Director ChAMP, Chicago State University

RESEARCH,

DISCOVERY

&

COMMUNICATIONS



ChAMP is now known as Illinois Louis Stokes Alliance for Minority Participation

***The Chicago Alliance for Minority Participation
gratefully acknowledges the support of***

The National Science Foundation

**Dr. Luther S. Williams, Assistant Director
Education and Human Resources**

**Dr. Roosevelt Calbert, Deputy Division Director
Human Resources and Development**

**Dr. Arthur J. Hicks, Program Director
Alliance for Minority Participation**

Illinois Board of Higher Education

Dr. Keith R. Sanders, Executive Director

Table of Contents

ChAMP Governing Board	1
ChAMP Program Advisory Council	2
ChAMP Program Coordinators	3
The ChAMP Office	4
ChAMP Overview	5
President's Message - Chicago State University	6
President's Message - Illinois Institute of Technology	7
Executive Director's Message	8
Message from the Conference Planning Committee	9 - 10
Illinois Institute of Technology Directory and Map	11
Biographies of Keynote Speakers	12 - 13
Conference Agenda	14 - 17
Platform Presentations	18 - 19
Posterboard Presentations	20 - 21
Abstracts	22 - 50
Photographs	Centerfold
Conference Participants	51-58

ChAMP Governing Board

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Seaway National Bank

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Science Communication

Senator Richard Durbin
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Laboratory

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Mr. James Foster
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Vice Chancellor for Student Affairs &
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Illinois at Chicago

Dr. Dorothy Strong
Regional Coordinator, CSI , Chicago
Public School

Dr. Rodger Jackson
Project Development Engineer,
Navistar International

Dr. Hazel Symonette
Office of Quality Control, University of
Wisconsin

Mr. Joseph E. Jannotta
Right/Jannotta Bray

Ms. Melanie Wojtulewicz
Chicago Systemic Initiative, Chicago
Public Schools

Senator Emil Jones, Jr.
Senate Democratic Leader

Ms. Bonnie Wood
Executive Director, East West Corporate
Corridor Association

**Chicago Alliance for Minority Participation 1999 Conference
Research, Discovery and Communication**

ChAMP Program Coordinators

University Partners

Dr. Rachel Lindsey, Dean
College of Liberal Arts and Sciences
Chicago State University

Dr. Lynn Narasimhan, Associate Dean
College of Liberal Arts and Sciences
DePaul University

Dr. Edwin Cehelnik, Chair
Science Department
Governors State University

Dr. Peter Johnson, Professor
Department of Chemistry
Illinois Institute of Technology

Dr. Charles E. Morris, Senior Associate
Center for Mathematics, Science and Technology
Illinois State University

Dr. Christine Hought, Assistant Professor
Natural Sciences and Mathematics
Loyola University

Dr. David Rutchman, Professor
Department of Mathematics
Northeastern Illinois University

Dr. Benjamin Shepherd, Professor
Department of Zoology
Southern Illinois University at Carbondale

Dr. Emil Jason, Professor
Department of Chemistry
Southern Illinois University at Edwardsville

Dr. Stephen Carr, Associate Dean
McCormick School of Engineering
Northwestern University

Dr. Antonio Pagnamenta, Professor
Department of Physics
University of Illinois at Chicago

Dr. Nicholas Pano, Associate Dean
College of Liberal Arts and Sciences
Western Illinois University

Community College Partners

Ms. Cynthia Vasquez-Barrios, Acting Director
Placement and Transfer Services
Richard J. Daley College

Ms. Paul Cusher, Director
Transfer Center
Olive Harvey College

Mr. Joe Kyle
Department of Biological Sciences
Kennedy-King College

Dr. Cecil Regner, Dean
College of Arts and Sciences
Malcolm X College

Ms. Diane Ostojic, Associate Dean
College of Liberal Arts and Sciences
South Suburban College

Dr. Bruno Bondavalli, Dean
Academic Affairs
St. Augustine College

Mr. Gregory Robinson, Counselor / Instructor
Counseling Center
Harry S. Truman College

Dr. Ghingo Brooks, Vice President
Academic Affairs and Student Placement
Harold Washington College

Dr. Benito Kalaw, Instructor
Department of Physical Sciences
Wilbur Wright College

Executive Office

Dr. Elnora D. Daniel
President ChAMP Board of Directors

Dr. Marian Wilson-Comer
ChAMP Executive Director

Ms. Yolanda Mc Gehee
Assistant to the Executive Director

Ms. Fay Edmond
Administrative Assistant

Mr. Robert T. Harris
Project Evaluator

Ms. Debra Lewis
Undergraduate Assistant

ChAMP Executive Office
Williams Science Center
Chicago State University
9501 S. Martin Luther King Drive
Chicago, Illinois 60628
773.995.3296

ChAMP Overview

The Chicago Alliance for Minority Participation (ChAMP) program, established in 1993 through a five-year cooperative agreement is funded by the National Science Foundation (NSF). ChAMP is one of a number of consortia of colleges and universities in the United States and Puerto Rico with the goal of significantly increasing the number of undergraduate and graduate degrees awarded to underrepresented minorities in science, mathematics, engineering and technology (SMET).

ChAMP represents the Illinois branch of the National Louis Stokes Alliance for Minority Participation program; it consists of twelve (12) Chicago Universities, nine (9) regional community colleges, and several research organizations. Together these groups participate in a collaborative effort to provide programs that improve the quality of science, mathematics, engineering and technology education for minority students. Each of these organizations has made a commitment of faculty, staff, research facilities and technical assistance to ensure successful opportunities for students participating in ChAMP programs.

Chicago AMP activities are comprehensive and multidisciplinary, focused specifically on SMET education. Great effort is expended to address transition points in a student's academic career and the provide intervention at junctures crucial to preventing withdrawal from the SMET pipeline. Consequently, critical transition points along the SMET education pipeline; high school-to-college, 2-year to 4-year college, undergraduate study and graduate study-to-careers, are addressed in various and innovative ways.

The efforts include:

- *Hands-on Research Opportunities*
- *Scholarship Programs*
- *Science Conferences*
- *Facilitated Study Group Sessions*
- *Professional Development*
- *Peer Mentoring Activities*
- *Summer Bridge Programs*
- *Tutoring Programs*
- *Internships*
- *Graduate Activities*

PRESIDENT'S MESSAGE

On behalf of the Chicago Alliance for Minority Participation (ChAMP), I would like to welcome you to the 4th Annual Student Research Conference, **“Research, Discovery and Communication.”** It is truly an honor and a pleasure to have you participate in this year's conference.

As in previous years we anticipate a forum that will allow all participants to explore the vast world of science. This task will be accomplished through various poster exhibits and oral presentations. In addition, two dynamic keynote speakers are scheduled to bring information concerning scholarships, internships, and career opportunities. Above all, those invited will have the opportunity to gain a wealth of knowledge through interaction with peers, faculty and other experts in a professional yet personal setting.

As you make your way through the next two days keep in mind the title of this year's conference, **“Research, Discovery and Communication”**. It is essential that you remember that the advancement of science is based on the contributions of several individuals working together to solve a problem. Thus, you must recognize the importance of **researching** a problem, **discovering** new approaches to finding solutions and **communicating** the results to others in the scientific community.

Best wishes for a successful and productive conference.

Dr. Elnora D. Daniel
President
Chicago State University
ChAMP Lead Institution
April 9-10, 1999

Illinois Institute of Technology

Lewis Collens
President
Illinois Institute of Technology
10 West 33rd Street
Chicago, Illinois 60616-3793
Telephone 312 567 5198
Fax 312 567 3004

April 5, 1999

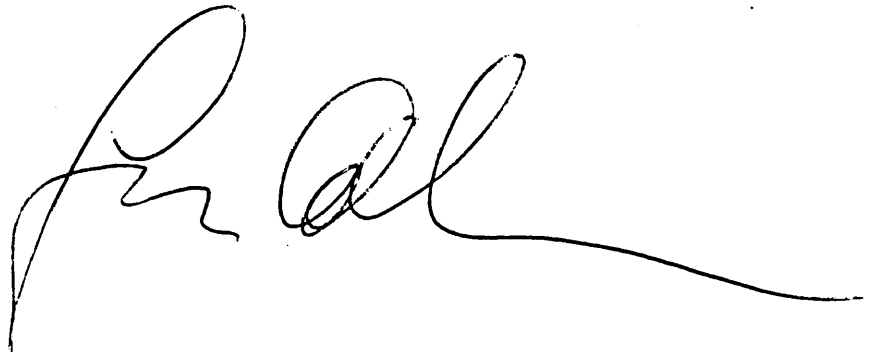
To: AMP Conference Participants

I am delighted to welcome you to Illinois Institute of Technology's Main Campus for the 4th Annual Chicago Alliance for Minority Participation Student Research Conference.

The AMP Program has become an important part of IIT's initiatives to support education of students who might not otherwise choose science and engineering careers. We have enjoyed working with all of the other Chicago area universities involved and look forward to continuing cooperation in supporting these kinds of initiatives.

Your deliberations and discussions can both help frame your future and reflect on your success in meeting the challenges of a rigorous college education.

Best of luck for the future.

A handwritten signature in black ink, appearing to read "L. Collens", with a long horizontal flourish extending to the right.



Chicago Alliance for Minority Participation

NATIONAL SCIENCE FOUNDATION

Chicago State University, Williams Science Center, Room 101A
9501 S. King Drive, Chicago, IL 60628 • (773) 995-3296 • FAX (773) 995-2966

Marian Wilson-Comer, Ph.D.
Executive Director

A MESSAGE FROM THE ChAMP EXECUTIVE DIRECTOR

We have looked forward to the Fourth Annual ChAMP Student Research Conference with much anticipation. The research presented this weekend will provide a brief glimpse of the role ChAMP is playing in preparing the SMET workforce of tomorrow. The members of the conference committee have worked long hours to prepare for this event. The success of the conference will be due in large part to their dedication.

In addition to recognizing the conference committee, I must recognize the efforts of the students whose work is being showcased this weekend. It is their curiosity and persistence that made this event possible. This weekend is a testament to the value of providing students with meaningful research experiences and high-quality mentoring.

I am pleased that you have joined us this weekend to celebrate the accomplishments of our students. On behalf of the ChAMP Board of Directors, the Program Advisory Council, Coordinators and ChAMP Student Research Conference Committee, I hope you enjoy the conference, make new friends, and find inspiration in the things you see and hear this weekend.

**Marian Wilson-Comer, Ph.D.
Executive Director, ChAMP**

Conference Planning Committee

ChAMP would like to thank the following people for their contributions and assistance in organizing the conference.

Dr. Peter Johnson, Committee Chairperson
Illinois Institute of Technology

Ms. Cheryl Caplan
Illinois Institute of Technology

Ms. Beatriz Jamaica
University of Illinois at Chicago

Ms. Yolanda Mc Gehee
Chicago AMP

Ms. Fay Edmond
Chicago AMP

Mr. Kevin G. Smith
Chicago State University

Dr. David Rutschman
Northeastern Illinois University

Dr. William Peterman
Chicago State University

Mr. Robert Harris
Chicago AMP

Message from the Conference Planning Committee

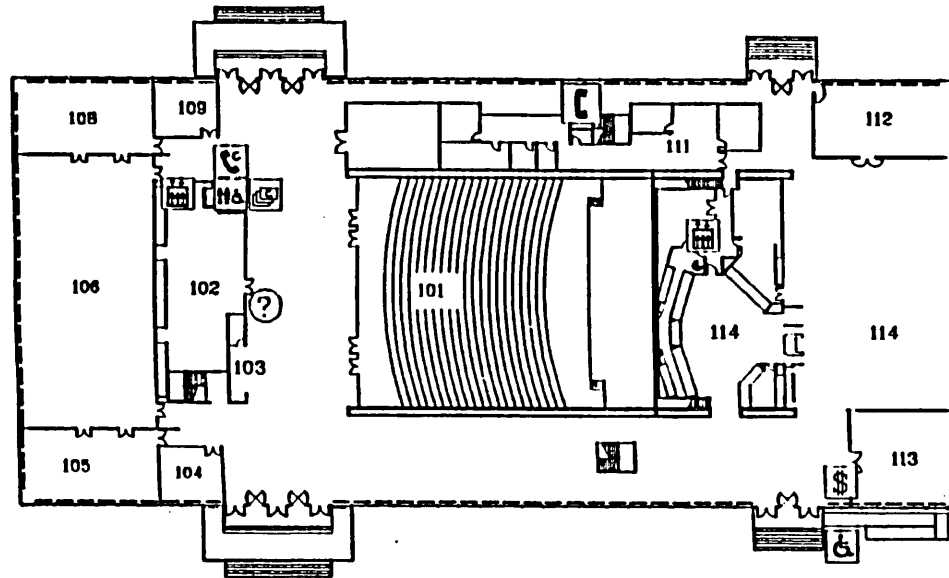
On behalf of the Illinois Institute of Technology, we would like to welcome you to the 4th Annual Chicago Alliance for Minority Participation Student Research Conference and to acknowledge the hard work and dedication of all the AMP student scholars, faculty, and staff.

In a 1993 article published in the "Atlantic Monthly," Dr. Stanley Fish, Dean of Liberal Arts and Sciences at the University of Illinois at Chicago wrote: "Efforts, designed to redress the imbalances caused by long-standing discrimination, are called affirmative action; to argue that affirmative action, which gives preferential treatment to disadvantaged minorities as part of a plan to achieve social equality, is no different from the policies that created the disadvantages in the first place is a travesty of reasoning. Reverse Racism is a cogent description of affirmative action only if one considers the cancer of racism to be morally and medically indistinguishable from the therapy we apply to it. A cancer is an invasion of the body's equilibrium, and so is chemotherapy; but we do not decline to fight the disease because the medicine we employ is also disruptive of normal functioning. Strong illness, strong remedy: the formula is as appropriate to the health of the body politic as it is to that of the body proper."

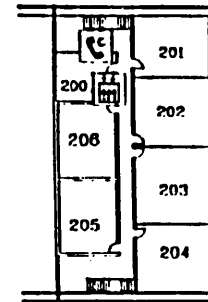
As serious threats to affirmative action, begun with the Fifth Circuit Court of Appeals outlawing of the University of Texas Law School's admissions programs in 1996, continue to surface and raise considerable debate, it is important that we reaffirm our commitment to programs that support underrepresented minorities entering and graduating from the science, mathematics, engineering and technology (SMET) disciplines. The coalition of Chicago area universities and colleges, under the ChAMP umbrella are proud of their successes in promoting the graduation of SMET majors amongst underrepresented groups.

One of ChAMP's nationally recognized successes has been the presentation of ChAMP Scholars at both national NSF meetings and at regional conferences. We feel great pride in continuing this strong tradition of undergraduate research by showcasing ChAMP Scholar talent at this, the 4th Annual ChAMP Student Research Conference. The lives of all ChAMP students, faculty, and staff have been enriched by the opportunities provided at these events to exchange ideas and strategies, learn from each other's cultures and traditions, and celebrate the academic explorations and successes of all AMP scholars. This year, the committee takes special pleasure in acknowledging the participation of our new downstate partners as we grow toward a state-wide alliance.

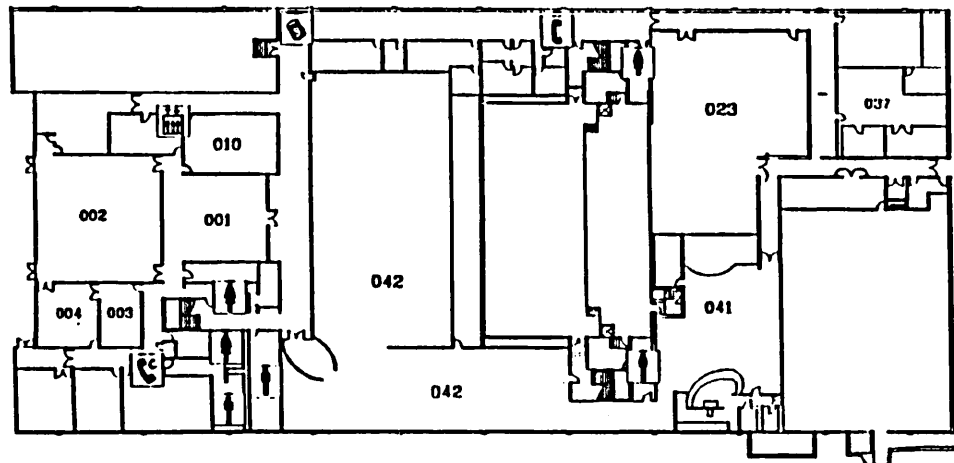
HERMANN UNION BUILDING



MAIN LEVEL



MEZZANINE



LOWER LEVEL

MAIN LEVEL












Alumni Lounge	108
Auditorium	101
Ballroom	106
Cafeteria	114
Commuter Lounge	112
Crown Room	104
Field Room	109
Hawk's Nest	103
Hermann Lounge	105
HUB/Student Activities Office	102
Multicultural Programs Office	113
Student Organization Center	111
Campus Information Center	102

MEZZANINE

Rooms 201-206

LOWER LEVEL

Armour Dining Room (Faculty Club)	002
BOG	041
Faculty Club Lounge	001
Food Service Office	037
Kitchen	023
North Dining Room	003
Rec. Center	042
South Dining Room	004
Trustee Dining Room	010

ATM	
Campus Phone	
Copier (Self-Service)	
Elevator	
Handicapped Access	
Information	
Public Phone	
Rest Room	  
Vending machines	

Our Friday Dinner Keynote Address will be given by

**Mr. Charles Whitmore
NRCS, Regional Conservationist**

Charles Whitmore was appointed Regional Conservationist for the Midwest region effective January 8, 1995 for the U.S Department of Agriculture, Natural Resource Conservation Service (NRCS). As regional Conservationist he is responsible for directing, coordinating, and integrating all phases of NRCS program activities.

Before his appointment to this position, Charles Whitmore served as Director of the Conservation Planning Division in Washington DC. He also served as State Conservationist in Illinois and Maine from 1987 to 1994. Prior to this experience, Charles worked for the SCS in Pennsylvania where he held the position of State Resource Specialist, Area Conservationist and District Conservationist. Whitmore began his federal career with the SCS in 1970 as a Soil Conservationist in Doylestown, Pennsylvania.

Charles, a native of Tennessee, graduated from Tennessee State University and received a B.S. in Agronomy in 1967 and a M.S. in Plant Science in 1970.

Charles and his wife, Cynthia have three children and live in Madison, WI.

Our Saturday Breakfast Keynote Address will be given by

Dr. Sylvester James Gates, Jr.
Professor of Physics, University of Maryland

Professor Gates completed his undergraduate education at the Massachusetts Institute of Technology. He earned his Ph.D. for studies of elementary particles and quantum field theory. Professor Gates has held faculty appointments at MIT and the University of Maryland at College Park. Additionally, he served as Physics Professor and Departmental Chair at Howard University. In July 1998 he was named the first John S. Toll Professor of Physics and thus the first African-American to hold an endowed chair in physics at a major research university in the U.S.

Prof. Gates has authored or co-authored over one hundred research papers published in scientific journals, co-authored one book and contributed numerous articles in others. His research, in the areas of the mathematical and theoretical physics of supersymmetric particles, fields strings, cover topics such as the physics of quarks, leptons, gravity, super and heterotic strings and unified field theories of the type first envisioned by A. Einstein.

He currently is a member of the American Physical Society, Sigma Xi and the National Society of Black Physicists (NSBP), he is also the past president of the NSBP. In 1988, he created NSBP-net a monitored, electronic mail system to foster greater communication among the community of minority physicists and physics students. Later he helped to foster the creation of the Web page for NSBP making the NSBP accessible on the World Wide Web. Dr. Gates has served as a consultant for the National Science Foundation, Department of Energy, Department of Defense, the Educational Testing Service and Tome-Life Books. He shared (with NASA astronaut Dr. Bernard Harris) the National Technical Association's (NTA) 1993 Technical Achiever of the year Award and received the NTA 1993 Physicist of the Year Award. Dr. Gates was chosen as the first recipient of the APS Bouchet Award and is a fellow of the APS and NSBP. From MIT in 1997, he was bestowed with the Martin L. King, Jr. Leadership Award. He is presently serving on the executive board of the APS and is a member of the 62nd College of Distinguished Lecturers of Sigma Xi.

His work, and that of others, was highlighted on a program "The Path of Most Resistance," as part of the PBS television series "Breakthrough: The Changing Face of Science in America" which was initially broadcast in April of 1996. In January 1998 he made a television appearance in "Mysteries of the Universe" as part of the PBS series "A Science Odyssey". In March of 1998, he was featured on the simultaneous C-Span television broadcast and Internet cybercast of the second Millennium Lecture by Prof. Stephen Hawking from the East Room of the White House.

Prof. Gates is married to a pediatrician, Dr. Dianna E. Abney and they have a set of twins, a daughter and a son. The family resides in Mitchellville, MD.

Conference Agenda

Friday, April 9

Conference Registration

Hermann Union Building, Gallery Lounge
4:00pm – 6:00pm

Poster Presentation Set-up

Hermann Union Building, Gallery Lounge
4:00pm – 6:00pm

Poster Presentation and Reception

Hermann Union Building, Gallery Lounge
6:00pm – 7:00pm

Conference Commencement

Hermann Union Building, Main Ballroom

7:00 – 9:00pm

Dinner

Welcome

Dr. Peter Johnson, Illinois Institute of Technology
Dr. Marian Wilson-Comer, Executive Director,
ChAMP

Welcome to Chicago AMP

Dr. Elnora D. Daniel
Chairperson,
ChAMP Governing Board

Welcome to Illinois Institute of Technology

Mr. Lewis Collens
President,
Illinois Institute of Technology

Introduction of Speakers

Dr. Stuart Cooper
Vice President,
Illinois Institute of Technology

Remarks

U.S. Representative Luis Gutierrez

Speaker

Mr. Charles Whitmore, USDA
Conservationist

Saturday, April 10

Registration and Breakfast

**Hermann Union Building,
Gallery Lounge**

8:00 – 9:15 a.m. Registration

**Hermann Union Building,
Main Ballroom**

8:00 – 9:15
a.m.

Welcome

Dr. Marian Wilson-Comer, Executive Director, ChAMP

Remarks

Illinois State Senate Democratic Leader Emil Jones, Jr.

Keynote Speaker

Dr. Sylvester J. Gates, Astrophysicist, University of Maryland

Morning Session

**Concurrent
Workshops**

9:15 – 10:15
a.m.

Communication, Technology, & the Entrepreneurial Spirit
Alumni Room

Communication, technology, and the entrepreneurial spirit represent the challenging career opportunities in the coming decade. As an undergraduate, are you ready to join the ranks of those conceiving and managing such leading edge corporations as Netscape, Amazon.com, or Lucent Technologies?

Moderator:

Mr. David Baker, Vice President, External Affairs, Illinois Institute of Technology

Panelists:

Mr. Danny Creed, Supervisor, ISDN Signals Group, Lucent Technologies

Dr. Eduardo DeSantiago, Assistant Professor, Civil Engineering,
Illinois Institute of Technology

Social Implications of Wide-spread Internet Usage
Trustee Room (lower level)

Moderator:

Dr. William Peterman

**Concurrent Workshops
(continued)**

9:15 –10:15
a.m. ***Is Graduate School For Me?***
Armour Faculty Club (lower level)

Former ChAMP Scholars share their experiences about deciding to attend graduate school, what graduate school is like, and their strategies for success.

Moderator:

Ms. Beatriz Jamaica, University of Illinois at Chicago

Panelists:

Ms. Silvia Antonio, Biological Science, Chicago State University

Mr. German Avila, Environmental Engineering, Illinois Institute of Technology

Ms. LaVerne Chambers, Mathematics, Northwestern University

Mr. Donald Jones, Electrical Engineering, University of Illinois at Chicago

Enhancing Career Potential – Getting the 4-Year Degree
Armour Faculty Club Lounge (lower level)

Moderators:

Dr. David Rutschman, Northeastern Illinois University

Gregory Robinson, City Colleges of Chicago

Panelists:

Ms. Paula Cusher, Transfer Coordinator, Olive-Harvey College

Mr. Anthony Gamboa, ChAMP Scholar, UIC and Truman College

Ms. Yvonne Gulli, Acad. Advisement Coordinator, Northeastern Illinois University

Mr. Zarrin Kerwell, Admissions Office, Northeastern Illinois University

Student Platform Presentations

10:30am – 12:30pm

Alpha Session, Alumni Room

Facilitator: Dr. Charles Morris, Senior Associate
Center for Mathematics, Science, and Technology
Illinois State University

Beta Session, Trustee Dining Room (lower level)

Facilitator: Dr. Emil Jason, Professor of Chemistry
Southern Illinois University at Edwardsville

See Platform Presentation listing for individual scheduled times and room assignments.

Recognition Luncheon

Hermann Union Ballroom

12:30 – 1:30 p.m.

Presentation of Awards

Mr. James Foster, Lucent Technologies

Introduction of Conference Committee

Dr. Peter Johnson, Illinois Institute of Technology

Student Poster Presentations

1:30 – 2:30 p.m.

Hermann Union Building, Gallery Lounge

Concluding Remarks

Hermann Union Building, Main Ballroom

2:30pm – 2:45pm

Dr. Marian Wilson-Comer, Executive Director, ChAMP

Chicago Alliance for Minority Participation 1999 Conference
Research, Discovery and Communication

Platform Presentations - Alpha Session,
IIT Hermann Hall, Alumni Room

Time	Paper #	Title & Author
10:30am	1	"CREATING A BOBCAT DATABASE MANAGEMENT SYSTEM", <u>Maria Isabel DeSoto</u> , Dr. Soon-Ok Park, Governors State University. Major: Computer Science
10:45am	2	"REMOTE LABORATORY OPERATION", <u>Orman C. Greaves, Jr.</u> , Leondo Phifer, Dr. Michael Hites, Illinois Institute of Technology. Major: Computer Engineering
11:00am	3	"PURIFICATION OF INCOMPLETE CORRINOID DIACIDS", <u>Marlon J. Jones</u> , Dr. Susan H. Ford, Chicago State University. Major: Chemistry
11:15am	4	"A SIMPLE ACCURATE DETERMINATION OF ZEOLITE PZC IN RELATION TO CATALYST PREPARATION", <u>Rolinda L. Negrete</u> , Dr. John R. Regalbutto, University of Illinois at Chicago. Major: Chemical Engineering
11:30am	5	"TESTING OF SURFACTANTS FOR USE IN REMEDIATION OF LIGHT NONAQUEOUS PHASE LIQUID CONTAMINANTS IN AQUIFERS", <u>Amadou M. Cisse</u> , Dr. Lizette Chevalier, Southern Illinois University-Carbondale. Major: Civil Engineering
11:45am	6	"HEAT TRANSFER ENHANCEMENT FROM DIMPLED SURFACES IN A SQUARE HORIZONTAL CHANNEL", <u>Andre' D. Harris</u> , Dr. Leslie Horton, University of Illinois at Chicago. Major: Electrical Engineering
12:00pm	7	"THE ULTRASTRUCTURE OF THE DRAINING LYMPH NODE AFTER INFECTION WITH LEISHMANIA MAJOR", Khara Scott, Brette Evans, Lennell Reynolds, Joyce Craig and Kevin Swier, Chicago State University, Major: Biological Sciences

Chicago Alliance for Minority Participation 1999 Conference
Research, Discovery and Communication

Platform Presentations - Beta Session
IIT Hermann Hall Trustee Room (lower level)

Time	Paper #	Title & Author
10:30am	1	"WEB-BASED INTERACTIVE TUTORIAL FOR BEGINNER COURSE IN CIRCUIT ANALYSIS (ECE 211)", <u>Tayo Ihimoyan</u> , Dr. Ophir Frieder, Illinois Institute of Technology. Major: Electrical Engineering
10:45am	2	"BACTERIORHODOPSIN AS A TARGET MOLECULE FOR PHOTODYNAMIC ACTION", <u>Kwana Patterson</u> , Lorraine Grand, Dr. Warren Sherman, Chicago State University. Major: Chemistry
11:00am	3	"SPACE TOMATOES: DOES PERCEPTION SWAY TASTE?", <u>Brian Apollo</u> , J. Chassagne, Dr. I. Dunn, Dr. Y. Osikanlu, Chicago State University. Major: Psychology
11:15am	4	"PRILSON SCRIBES AND ILLUMINATED HANDKERCHIEFS: RESEARCH INFORMING THE DEVELOPMENT OF PSYCHOLOGY OF MEXICAN AMERICAN PINTA CRAFT", <u>Lisette Haro</u> , Professor Victor A. Sorell, Chicago State University. Major: Psychology
11:30am	5	"CONSTITUTIONAL THEORY AND GROUP RIGHTS: ARE WE STILL IN THE 19 TH CENTURY?", <u>Jackie Lynn Coleman</u> , Dr. Bernard Rowan, Chicago State University. Major: Political Science
11:45am	6	"MATURE WOMEN STUDENTS: RESOURCES AND BARRIERS TO EDUCATION", <u>Alice M. Moore</u> , Dr. Jean Peterman, Dr. Arthur Redman, Chicago State University. Major: Sociology
12:00pm	7	"EXAMINING PRE-SERVICE STUDENTS' BELIEFS ABOUT THE TEACHING AND LEARNING OF MATHEMATICS", <u>Shelly M. Jones</u> , Dr. Carol Thornton, Illinois State University. Major: Mathematics Education

Posterboard Presentations
Hermann Hall Gallery Lounge

- | Poster # | Title & Author |
|----------|--|
| 1 | "SYNTHESIS OF 5'-PHTHALIMIDE-3'-ALLYLTHYMIDINE: AN AMINO-ACID NUCLEOSIDE PRECURSOR", <u>Nicholas Smith</u> , Michael Zemlan, Vaughn Williams, Dr. John C. Leitzel, Chicago State University. |
| 2 | "NUCLEOPHILIC DISPLACEMENT REACTIONS IN TRIPHASE CATALYTIC SYSTEMS", <u>Marquette L. Hilliard</u> , G. McClellan, N. Shabestary, Dr. S. Khazaeli, Southern Illinois University at Edwardsville. Major: Chemistry |
| 3 | "APPLICATION OF PHASE TRANSFER CATALYSIS IN NUCLEOPHILIC DISPLACEMENT REACTIONS", <u>Dana S. Morris</u> , R. L. Hickman, G. McClellan, N. Shabestary, Dr. S. Khazaeli, Southern Illinois University at Edwardsville. Major: Chemistry |
| 4 | "DEVELOPMENT OF A THEORY OF THE SPONTANEOUS EMISSION OF LIGHT FROM AN AIR BUBBLE: SONOLUMINESCENCE", <u>Walter Allen, Jr.</u> , Dr. Samuel Bowen, Chicago State University. Major: Physics |
| 5 | "HPLC INVESTIGATION OF INCOMPLETE CORRINOIDS", <u>La Shawn R. Yancy</u> , Dr. Susan H. Ford, Chicago State University. Major: Biochemistry |
| 6 | "SEPERATION OF THE CHEMICAL COMPONENTS IN A HOT WATER EXTRACTION OF <i>COSTUS SPECIOSUS</i> ", <u>Timitra Robinson</u> , Beatriz Hernandez, Lorraine Grand, Dr. Floyd Banks, Dr. Jorge Castillo, Chicago State University. Major: Biochemistry |
| 7 | "SOUTHERN HYBRIDIZATION ANALYSIS OF THE AVIAN chB6 GENE", <u>Marilyn Contreras -Pinegar</u> , Dr. Phillip E. Funk, DePaul University, Major: Biology. |
| 8 | "NEUTROPHIL MICROBICIDAL ACTIVITY IS ENHANCED BY LINCOSAMIDE ANTIBIOTICS", <u>Dorian J. Thompson</u> , Dr. D. J. Kitz, Dr. E. F. Jason, Southern Illinois University at Edwardsville. Major: Biology |
| 9 | "ORAL ADMINISTRATION VERSUS INJECTION OF GOLDFISH GROWTH HORMONE", <u>Jazz Burks</u> , Dr. Yvonne Harris, Harry S Truman College. Major: Biology |
| 10 | "A DATABASE SYSTEM ON THE WORLD WIDE WEB", <u>Olusegun R. Sobulo</u> , Dr. Peter Johnson, Cheryl Caplan, Illinois Institute of Technology. Major: Computer Engineering |
| 11 | "DEVELOPMENT OF A DIFFERENTIAL SOLVER TO ENABLE A STUDY OF BUBBLE DYNAMICS", <u>Cyril Wolff</u> , Dr. Samuel Bowen, Harry S Truman College. Major: Computer Science |

**Chicago Alliance for Minority Participation 1999 Conference
Research, Discovery and Communication**

- 12 "A STUDY OF ENTROPHY," Andrea Daniels, Dr. Paul O'Hara, Northeastern Illinois University. Major: Mathematics/Secondary Education "
- 13 "CLIENTS OF THE SPECIAL SUPPLEMENTAL FOOD PROGRAM FOR WOMEN, INFANTS, AND CHILDREN KNOWLEDGE OF NUTRITION LABELS", Millicent McNeil, Dr. Jean Memken, Illinois State University. Major: Family & Consumer Science.
- 14 "GENE EXPRESSION IN BREAST COANCER CELLS," Tiffany De Sadier, Dr. Yvonne Harris, Harry S. Truman College. Major: Biology
- 15 "OBSERVATIONS OF BONE DAMEGE PRODUCED BY CAPTIVE LIONS" , Alteheas Rayford, Dr. Richard G. Milo, Chicago State University. Major: Occupational Therapy
- 16 "THE OXIDATION OF of $Yb_2Cu_3O_7$ BY BROMINE", Carl Scott, Dr. David Hinks, Dr. Justin Akujieze, Chicago State University, Major: Biological Science.
- 17 "BACTERIOCIN PRODUCTION BY LACOBACILLUS ACIDOPHILUS EC14", Erik McClure and R. P. Sinha, Chicago State University, Major: Biological Science.
- 18 "THE ULTRASTRUCTURE OF THE DRAINING LYMPH NODE AFTER INFECTION WITH LEISHMANIA MAJOR", Khara Scott, Brette Evans, Lennell Reynolds, Joyce Craig and Kevin Swier, Chicago State University, Major: Biological Sciences.

THE ORIGIN OF SULFIDE MINERALS IN SILURIAN DOLOSTONE FROM DUBUQUE COUNTY, IOWA

Yvette S. Shiu, Department of Chemistry, Earth Science and Physics
Northeastern Illinois University
5500 North St. Louis Avenue
Chicago, Illinois 60625-4699

In this project, we are investigating the origin of the sulfide minerals in Silurian Dolostone from Dubuque County Iowa. These sulfide minerals are found in Silurian Dolostone, in places where Maquoketa shale contains a layer of oolitic hematite. This oolitic hematite layer is found where the Maquoketa is thickest. At this site, there were rock samples that had elongated vugs, which were lined with iron sulfide at the lower level of the dolostone. Due to the fact that sulfides are present within this elongated vugs, I am hypothesizing that iron from oolitic hematite was dissolved and reprecipitated as sulfides in the higher levels of dolostone.

The rock saw in the NEIU rock preparation lab was used to make thin sections of samples of rock from this location. Each sample was cut to 30-micron thickness and mounted onto a slide so it could be observed under a microscope. Of these sections, I isolated the sections that contain iron sulfide deposits and analyzed them using the petrographic microscope at NEIU. Further investigations will be done using the electron microscope at the University of Chicago. Another method that will be utilized is the X-ray diffractometer in the X-ray lab.

The study seeks to determine if there are variations in metal concentrations in the carbonate minerals around the vugs and in the sulfide minerals in the vugs. This can give insight into the formation of these mineral deposits.

THE ULTRASTRUCRURE OF THE DRAINING LYMPH NODE AFTER INFECTION WITH *LEISHMANIA MAJOR*

Khara Scott, Brette Evans, Lennell Reynolds, Joyce Craig and Kevin Swier

Department of Biological Sciences
Chicago State University
9501 S. King Drive
Chicago, IL 60628

The course of the infection and the development of a polarized CD4+ T cell response in mice experimentally infected with *L. major* have been well established. There is a strong induced response detectable in the draining lymph node during the first week of infection, and by 3-4 weeks CD4+ T cells have committed to either a Th1 or a Th2 phenotype, depending upon the strain of mouse infected. The mechanisms underlying these early innate and late adaptives are currently being investigated. We have begun a systematic analysis of the ultrastructure of the draining lymph node after *L. major* infection. At various times post-infection, draining lymph nodes were harvested, sectioned, and processed for transmission electron microscopy. We were unable to locate infected cells within one week of infection, but by two weeks infected cells were abundant. Infected cells were invariably surrounded by lymphocytes. At four weeks there was always a greater number of intracellular amastigotes per cell than at two weeks, suggesting that parasites were proliferating during this time period. Even when there were several amastigotes within a single cell, each was tightly surrounded by host membrane. Often cytoplasmic vesicles could be seen fusing with this parasitophorous vacuole (or budding from it). These may be transport vesicles for MHC loaded with *Leishmania* antigens.

EXAMINING PRE-SERVICE STUDENTS' BELIEFS ABOUT THE
TEACHING AND LEARNING OF MATHEMATICS

Shelly M. Jones

Mathematics Education
Illinois State University

Abstract

A study was conducted to examine pre-service students' beliefs about the teaching and learning of mathematics. The participants in the study were the students enrolled in the Fall 1998 section of MAT 152, Structure of Number Systems II, the second content course required of all prospective elementary school teachers. The course was designed to engage prospective teachers in the learning of mathematics through exploration and problem solving consistent with the recommendations of the National Council of Teachers of Mathematics (NCTM) Curriculum and Evaluation Standards.

All 31 students in the course agreed to participate in the initial phase of the study, which consisted of observing and collecting materials during the course. Of the 31 students (29 female, 2 male) 25 also completed belief questionnaires towards the end of the course. Finally, seven students were chosen from the 25 questionnaire respondents to participate in semi-structured interviews with the researcher.

Results of this study suggest that pre-service students on the one hand had more traditional beliefs about mathematics content and on the other hand had more reformed beliefs about mathematics pedagogy. It was found that pre-service students believed the method of instruction for this course affected their beliefs about the teaching and learning of mathematics. Teacher education courses designed to satisfy the recommendations of the NCTM can be effective early in the program of study for elementary mathematics education.

Southern Hybridization Analysis of the Avian chB6 Gene

Marilyn Contreras-Pinegar

Dr. Philip E. Funk

DePaul University

Abstract:

Previous work in the laboratory has suggested that the product of the chicken gene chB6 is important in the regulated death of B cells. However, no genes similar to) chB6 have been found in mammals, The overall goal of these studies is to use low-stringency hybridization to identify genes similar to chB6. To do this we elected to use the nonradioactive labeling and hybridization methods to avoid hazards associated with radioactive materials.

The experiment was proven successful but only after specific modifications were made. The initial trial, which followed the outlined protocol, did not prove to be effective. Trials were then made to test specific factors in the protocol and to identify the limiting step. DNA labeling was identified as the limiting step and modifications were made improve our labeling techniques. The labeling protocol identified in this hybridization techniques is useful, only if the DNA concentration is increased and a phenol chloroform mixture is used to extract the remaining proteins present prior to the, labeling step.

The next series of experiments will be to optimize conditions of the southern hybridization techniques so that it may be used to test for homologues of the avian gene chB6 in mammals (mouse, human). The sensitivity of this hybridization technique will be tested with BK3A and DT40 cells. BK3A cells are chB6 negative while DT40 are chB6 positive. Finally, this hybridization technique will then be used to probe DNA and RNA from mammalian tissues for a gene similar to cbB6.

**ORAL ADMINISTRATION VERSUS INJECTION OF
GOLDFISH GROWTH HORMONE**

Jazz Burks

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TRUMAN COLLEGE
1145 West Wilson
Chicago, Illinois 60649

Abstract

Growth hormone has been identified in both mammalian and nonmammalian vertebrae as an important factor necessary for normal growth and development. In fish, the growth hormone also plays a role in osmoregulation and reproduction. Traditionally, studies examining the effects of growth hormone on goldfish involved stimulating growth hormone production via stimulation by introduction of gonadotropin-releasing hormone (GnRH). Growth hormone administration has been shown to enhance growth rate in a number of species including fish. In this study, we are examining the effects of goldfish growth hormone as delivered by two methods: oral administration versus injection. Oral administration entails introduction to the food supply. Ten goldfish (*Carassius auratus*), five female and five male, will be isolated and raise in a partitioned 20 gallon tank and fed food pellets containing a specific concentration of goldfish growth hormone. Direct introduction of growth hormone into the blood stream entail intramuscularly or intraperitoneal interjections every 48 hours of a specific concentration of goldfish hormone to goldfish raised in a partitioned 20-gallon tank. The goldfish will be introduced to the hormone during their prime growth period. Goldfish will be weighed and tagged prior to the experiment and measurements of weight, length, and blood levels of growth hormone will be periodically determined. Evaluations of growth will be compared to a control group, which have not received the goldfish growth hormone. Physical conditions of the tank such as pH, ammonia levels, oxygen levels, will also be monitored regularly throughout the course of the experiment. Experiment will be terminated with the anesthetization and sacrifice of all goldfish and specific organs extracted, weighed and compared between the three experimental populations. Subsequent findings will vastly benefit the ornamental branch of aquaculture and the fish farming industries.

Fourth Annual Chicago AMP Student Research Conference

Development of A Differential Solver to Enable A Study of Bubble Dynamics

Cyril Wolff, Samuel Bowen
Department of Chemistry and Physics
Truman College, and Chicago State University
Chicago, IL

Abstract

As part of a larger study of the phenomena of sono-luminescence in which an oscillating bubble is driven by an external sinusoidal pressure, a suite of C++ programs is being developed to enable the numerical study of the non-linear differential equation for the radius of the bubble as a function of time under a variety of conditions and a range of parameters including viscosity, sound generation, density, and driving pressures. The development of this suite of programs requires significant study of C programming methodologies and numerical techniques for integrating differential equations. In addition to the development of the programs themselves, a study of instabilities in the numerical solutions has also been necessary. A brief description of the phenomenon associated with the bubble dynamics will be presented.

GENE EXPRESSION IN BREAST CANCER CELLS

Tiffany De Sadier

Biology Department

TRUMAN COLLEGE

1145 West Wilson

Chicago, Illinois 60649

Abstract

Breast Cancer is overwhelmingly the most serious malignancy of women. Over the past decade, a number of proteins have been shown to participate in the aberrant growth of breast cancer cells. In these studies, we are seeking to understand the critical events in tumor development and to apply this understanding to further examination of the breast cancer cell in comparison with normal breast cells using proteome analysis. This analysis is important as the majority of breast cancers have such a wide range of molecular changes that it is difficult to distinguish between genes that play a major role in tumor progression and those that represent abnormalities in DNA repair. This experiment will involve applying the techniques of 2-D gel mass spectroscopy, DNA sequencing, Western blot electrophoresis, protein purification, comparative genomic hybridization and LJV analysis of proteins. Protein sequencing will be performed using either Edman Degradation or mass spectrometry. Efficient protein purification to obtain sequence information will be achieved by the usage of the 2-D gel electrophoresis. The 2-D gels have high resolution power and a detection limit in the lower nanogram range for proteins. The use of the 2-D gel allows for possible analysis of signaling pathways activated by ligands. Given the rich population of proteins within the cells, the 2-D gel will be able to identify differences in the phosphorylation and glycosylation of proteins. Proteins will be extracted from frozen tumor specimens and assayed using the technologies previously mentioned to study the patterns of expression in genes specific for the specific breast cancer phenotype. These preliminary studies will identify changes in expression of genes whose products contribute to tumor progression and enhancement.





Chicago Alliance for Minority Participation

1999 CONFERENCE



Friday night keynote speaker USDA Conservationist, **Mr. Charles Whitmore** informs students of career opportunities.



Dr. Marian Wilson-Comer, ChAMP Executive Director, and **Dr. Elnora D. Daniel**, CSU President welcomes conference participants

Ms. Cheryl Caplan (IIT) and **Ms. Yolanda McGehee** (CSU)

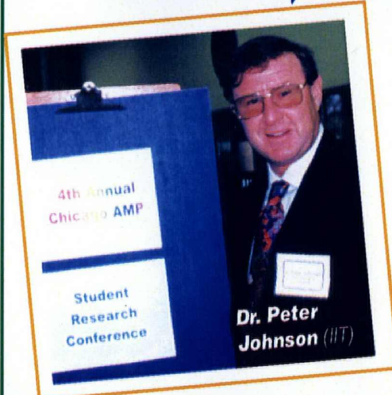


RESEARCH,

DISCO



Registration table

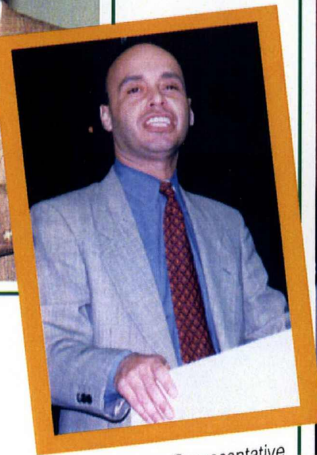


4th Annual Chicago AMP Student Research Conference

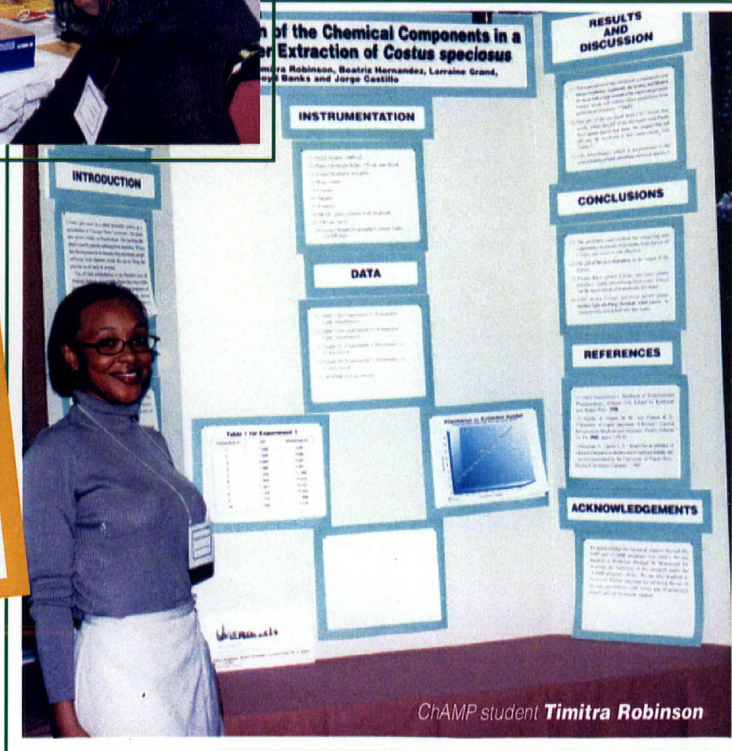
Dr. Peter Johnson (IIT)



ChAMP Program Advisory Council member **Dr. Rodger Jackson** and **Dr. James Forstall** (Associate Director of Grants Administration - Illinois Board of Higher Education)



United States Representative **Luis Gutierrez** gives opening remarks at Friday night dinner



ChAMP student **Timitra Robinson**

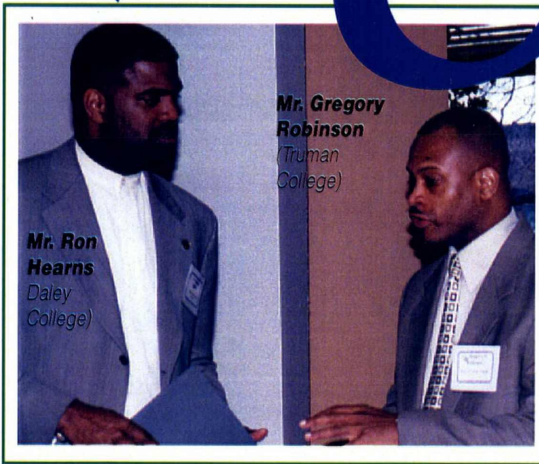
Dr. Uday Sukhtame (UIC), **Dr. Lynn Narasimhan** (DePaul), **Dr. Michael Mimnaugh** (CSU),
Dr. Antonio Pagnamenta (UIC)



Senator Emil Jones, Jr., and **Dr. Emil Jason** (SIU-ED)
Senator Jones gave opening remarks on Saturday.

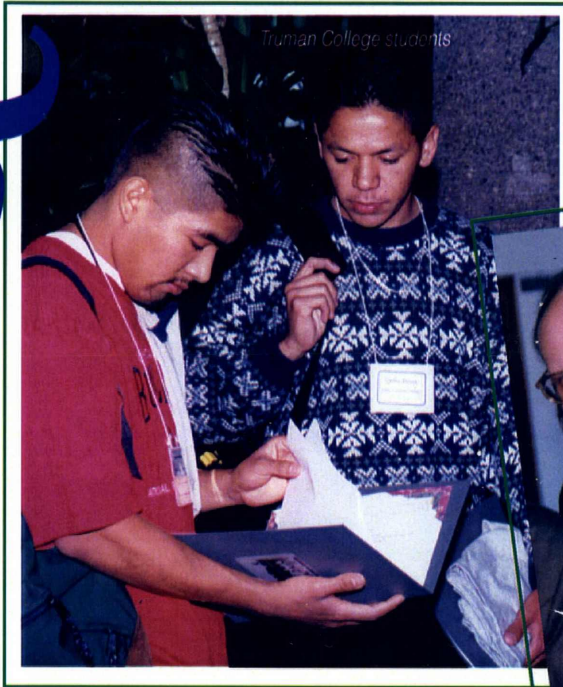


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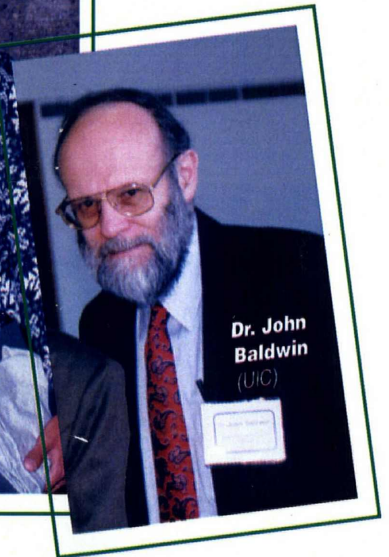


Mr. Ron Hearn
Daley College)

Mr. Gregory Robinson
Truman College)

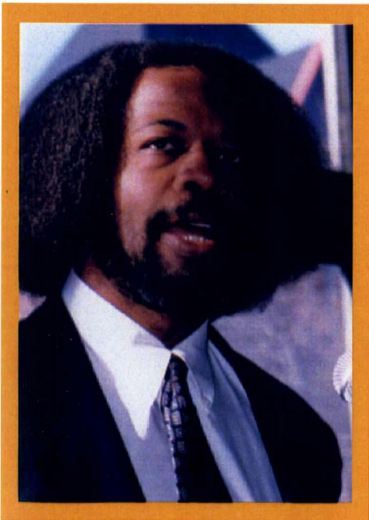


Truman College students



Dr. John Baldwin
(UIC)

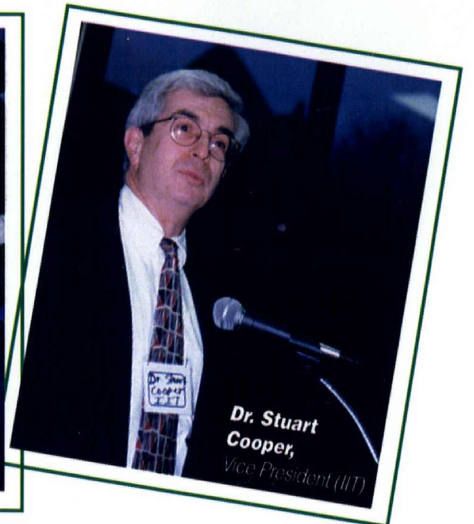
COMMUNICATIONS



Dr. Sylvester J. Gates, Jr., keynote speaker and physicist from the University of Maryland, captured everyone's attention on Saturday.



Nancy McDaniel (GSU), left, discusses workshops with conference participant



Dr. Stuart Cooper,
Vice President (IIT)

Testing of Surfactants for Use in Remediation of Light Nonaqueous Phase Liquid Contaminants in Aquifers

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**Submitted to the 4th Annual CHAMP Student Research Conference
in Science, Mathematics, Engineering and Technology**

Abstract:

Nonaqueous phase liquids (NAPLS) are one of the groundwater pollutants encountered in aquifers. NAPLS, such as gasoline and fuel, usually originate from a surface spill or a tank leak. This type of contaminant does not mix with water under natural conditions. Because of its low solubility and high toxicity, the NAPL represents a long-term danger to the aquifer. Remediation of NAPL contaminants is difficult due to their low mobility. If the NAPL is less dense than water (LNAPL), it will accumulate as an immiscible liquid at the capillary fringe. If the NAPL is denser than water (DNAPL), it will flow downward through an aquifer under the force of gravity. In order to enhance the remediation of NAPLS methods like surfactant flooding have been introduced.

Surfactant flooding is a modification of the pump and treat technology. The addition of surfactant may enhance solubilization or mobilization of the LNAPL. Enhanced solubilization has been investigated for the removal of DNAPLS, since mobilization would cause these pollutants to migrate into previously unpolluted regions of the aquifer. On the other hand, since LNAPLS naturally float on top of water and are unable to migrate through it, mobilization may help decrease the concentration of these pollutants in the aquifer. Typically, surfactants are used as a secondary treatment following pumping to remove free phase NAPL. Currently, we are investigating an innovative way of "pretreating" a LNAPL lens near the capillary fringe with surfactant prior to pumping.

The objective of this paper is to present the preliminary results of bench scale experiments. In particular, we will present the results of experiments designed to select surfactants. The material includes dodecane, quartz sand and APG@ surfactants.

PURIFICATION OF INCOMPLETE CORRINOID DIACIDS.

Marlon J. Jones and Susan H. Ford
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Cobyric acid and cobinic acid, which are structurally related to vitamin B-12, are complex organometallic molecules that belong to the corrinoid family. Corrinoids are macrocyclic tetrapyrroles containing a cobalt atom coordinated in the center of the ring which are naturally produced by microbes. The corrin ring system has alternating propionic and acetic acid substituents on its a, b, c, d, e, and g, positions. The group at the f position varies. We are interested in the diacids of these corrinoids as possible compounds to help clean up environmental hazards. Incomplete corrinoids act as catalysts to reductively dehalogenate soil and water pollutants such as carbon tetrachloride (CCI₄) and Lindane (hexachlorocyclohexane). In addition some incomplete corrinoid diacids are being used in studies of vitamin B-12 biosynthesis. Analytical electrophoresis and TLC are used to first characterize the diacids. The purification of the diacids is mainly carried out by preparative paper electrophoresis and preparative descending paper chromatography. Complete purification has been achieved for at least one corrinoid incomplete diacid. Work is continuing on purification of additional diacid. Characterization will be by high resolution C-13 NMR. Supported by NIH-GMS08043 (MBRS).

4th Annual Chicago AMP Student Research Conference

PRISON SCRIBES AND ILLUMINATED HANDKERCHIEFS: RESEARCH
INFORMING THE DEVELOPMENT OF A PSYCHOLOGY OF MEXICAN
AMERICAN PINTA CRAFT

Professor Victor Alejandro Sorell and Ms. Lisette Haro

Department of Art and Design (Office of the Dean of College of Arts and Sciences and
Office of International Programs) and Department of Psychology
Chicago State University
9501 King Drive
Chicago, IL. 60628

Abstract

Hundreds of illustrated patios (handkerchiefs) done by inmates were viewed at the Hourglass Prison Art Museum in Albuquerque, New Mexico. The researchers, Victor Sorell and Lisette Haro, met with the owner/archivist of the patios, Rudy Padilla. He purchased these patios from inmates who were or remain in the prison system in New Mexico.

The artwork was analyzed art historically and psychologically within the context of prisoner interviews. Former inmates showcased their artwork and described the meaning of many symbols. Moreover, they confided what they felt and thought while they were doing patios. They explained how doing this form of art made them feel as if they had been in therapy. They almost always felt better after they did a patio. Furthermore, they revealed what it was like to be in prison and how this artform helped them stay in touch with the outer world. Three men, who remain in prison in Los Lunas, New Mexico conveyed the harsh realities of pinta (prison) life they endure.

The researchers have found that this patio arte is indeed a form of therapy. Many inmates do patios when they are in lock-down. They have said that doing patios allows them to survive in this kind of environment. Doing patios permits them to know that they are human. In other words, when these inmates feel angry and aggressive, they do patios and feel more tranquil. While these prisoners are confined, the panos are an escape to the outer world. Through this form of "art therapy", self-esteem increases. Many pintos (prisoners) feel that they can do something well, which in turn makes them feel better about themselves. Moreover, panos have given many prisoners hope.

MATURE WOMEN STUDENTS: RESOURCES AND BARRIERS TO EDUCATION

Professor Jean Peterman and Alice M. Moore

Social and Behavioral Sciences
Chicago State University
9501 South King Drive
Chicago, IL 60628

ABSTRACT

Research Project - this project is a study of African American female students at Chicago State University who are at least 30 years old, and are first time or returning students. The purpose of this research is to explore the effects of resources and barriers to the educational experiences of African American women.

To date, I have interviewed seven women using a semi-structured interview guide. Preliminary results indicate that these students have much in common. For example, the majority of these have children and are married or in committed relationships. They are financing their education with part-time employment, student loans, and other forms of financial aid. They returned to school in hopes of obtaining better and stable jobs upon graduation.

A major difference in respondents' experience was support from their husbands or partners. Of the seven respondents, three husbands or partners were supportive and two were not. Two women were not in a relationship.

From this preliminary sample, one cannot conclude the effects of obtaining further education on these women's relationships with husbands or partners, family and friends. Except, perhaps these women would experience some measure of stress if they were denied support. Since this is on going project with interviews in progress, I have not attempted to draw any final conclusions.

SEPARATION OF THE CHEMICAL COMPONENTS IN A HOT WATER EXTRACTION OF
COSTUS SPECIOSUS

Timitra Robinson, Beatriz Hernandez, Lorraine Grand, Floyd Banks, and Jorge Castillo

Department of Chemistry and Physics, and Department of Biology
Chicago State University
9501 South King Drive
Chicago, Illinois 60628 – 1598

Abstract

Leaves from *Costus speciosus* plants grown in a green house and grown in a tropical climate were extracted with hot water. The pH of the tea is dependent on the origin of the leaves. Puerto Rico grown *Costus speciosus* produce light absorbing chemicals which can be successively extracted into hot water. Chicago State University *Costus speciosus plants* produce light absorbing chemicals which cannot be successively extracted into hot water.

CONSTITUTIONAL THEORY AND GROUP RIGHTS:
ARE WE STILL IN THE NINETEENTH CENTURY?

Jackie Lynn Coleman
Bernard Rowan

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Chicago State University
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Chicago, Illinois 60628-1598

Abstract

Contemporary discussions of public policy in the areas of race and gender tend to be limited by the ideology of political liberalism. The policy programmes and political assumptions of Democrats and Republicans alike arguably situate a self-reinforcing dynamic of more or less affirmative action, more or less enforcement of anti-discrimination practices, and more or less jobs, safe and affordable housing, programs, or placements in college cohorts. Progress is a function of the vagaries of taxation, electioneering strategies, public opinion, and national income forecasts.

Our paper looks to identify the underlying assumptions of constitutional and political thought at work in contemporary debates. We analyze the writings of nineteenth century legal jurisprudence, specifically cases from the Marshall, Taney, Chase, and Waite Supreme Courts. Through this discussion we highlight several aspects of political liberalism: the understanding of contracts, the nature of corporations, the role of government in commerce, and the understanding and rights of women and social groups. After revisiting these decisions, we make an argument about the rhetorical structure of American political thought as it relates to issues of race, gender, and class. These assumptions continue to impact the way policy debates are framed and presented. By examining such debates, their strengths and weaknesses as arguments, we hope to motivate new efforts in political theory and public policy.

The paper consists of five sections: first, we state the research problem and thesis of the project and situate the paper in context of relevant literatures; the second and third sections present and analyze the cases, noting major assumptions about liberalism and two competing perspectives, civic humanism and feminism. The fourth section applies the analysis to reconsider contemporary writings concerning groups based on race, class, and gender. Finally, we conclude with a series of evaluative findings and suggestions for further research.

OBSERVATIONS OF BONE DAMAGE PRODUCED BY CAPTIVE LIONS

Alethea Rayford
Department of Geography, Economics and Anthropology
Chicago State University
Chicago, IL 60628

Abstract

Animal bones are among the objects most frequently recovered from archaeological sites. This is especially true at Stone Age archaeological sites, where bones and stone tools account for the overwhelming majority of excavated remains. Taphonomists study the bone surfaces to learn about who or what killed the animals and how their bones got to where they are found. Of special interest are the roles of people and large carnivores (e.g., lions and hyenas) in collecting the bones. Ancient people may not have been proficient hunters; they may instead have scavenged meat and marrow from dead animals. In order to make accurate interpretations, taphonomists must gather information about marks on bones made under observed conditions. We have been collecting and studying the bones of animals that were eaten by lions at Cougar Valley Farm, an exotic animal sanctuary in Indiana.

So far we have examined fifty-one bones from three animal species- cows, pigs, and white-tailed deer. There are tooth marks on 92% of the bones. We have learned that lions can completely consume the limb bones of animals the size of adult pigs. The lions gnaw the bones of cows in a way that most archaeologists would associate with hyenas. Some of the bones we have collected resemble bones from archaeological sites in South Africa. We expect to obtain valuable information about the feeding behavior of lions, about what lion activities result in particular kinds of tooth damage, and about what features of the tooth damage can be used to infer the presence of lions at archaeological sites.

BACTERIORHODOPSIN AS A TARGET MOLECULE FOR PHOTODYNAMIC ACTION

Kwana Patterson, Lorraine Grand, Warren Sherman
Department of Chemistry and Physics
Chicago State University
Chicago, IL, 60628

Bacteriorhodopsin (BR) is a membrane bound protein that is found in the halophilic *bacterium Halobacterium kalobium*. This is a well-characterized protein that is widely studied because of its similarity to the light absorbing protein (rhodopsin) in the human eye. When BR is incorporated into synthetic cells ("liposomes"), it retains its physiological activity as a light-driven proton pump that pumps protons across the cell membrane. The goal of this research is to use BR as a target molecule for photodynamic action. Our objective is to assay damage to the BR target by measurement of changes in its pH response after photosensitization. These experiments were carried out by measuring the proton pumping action of the BR incorporated into liposomes and also in open fragments of its native lipids by exposing these suspensions to alternating light and dark conditions. For these measurements we used a micro glass electrode interfaced with the serial port of a microcomputer running Vernier data logging software. We found that after irradiation (632-nm red light from a continuous He-Ne laser) in the presence of the sensitizer phthalocyanine tetrasulfonate the magnitude of the BR pH response diminished. The cause of this change could be either damage to the liposome membrane which would cause protons to leak out or damage to the protein itself. To resolve this question we compared the proton pumping action of BR in liposomes and in the open fragments after photodynamic irradiation and it was concluded that the site of damage was to the protein. We will undertake further experiments to confirm this conclusion. (This work was supported by NIH grant GM-08043.)

DEVELOPMENT OF A THEORY ON THE SPONTANEOUS EMISSION OF LIGHT
FROM AN AIR BUBBLE: SONOLUMINESCENCE

Walter Allen, Samuel Bowen
Department of Chemistry and Physics
Chicago State University
Chicago, IL

Abstract

Sonoluminescence is the spontaneous emission of photons by means of an oscillating air bubble. In using a function generator in conjunction with amplifier, inductors, transducers, and a flask filled with water, the phenomena can be recreated. However the exact reason why the spontaneous emission of light occurs is not known at this point. However, the attempt to recreate the experiment is now in process at Chicago State University and a new theory is being developed such to describe this phenomena. Using commercially purchased transducers and electronics which were already owned by the university, the process of assembling an apparatus for observing this phenomena has been undertaken. The progress in setting up the apparatus and its future use in verifying a new theory of sonoluminescence will be briefly discussed.

HPLC INVESTIGATION OF INCOMPLETE CORRINOIDS

La Shawn R. Yancey and Susan H. Ford

Department of Chemistry and Physics
Chicago State University
Chicago, IL 60628

Corrinoids are complex organo-cobalt compounds that are divided into two groups based on the presence or absence of an alpha-side nucleotide loop at the f position. The two groups are known as the incomplete (without the (alpha loop) and complete corrinoids. The incomplete and complete corrinoids have been of interest to researchers because of their role in enzyme-catalyzed reactions.

The initial goal of this research was to develop a method that will optimize the separation of the incomplete corrinoids in their dicyano forms using high-performance liquid chromatography. This method will be used for assay of enzymes involved in corrinoid biosynthesis. Our most successful experiments have utilized a 0.02M Tris buffer (aqueous THF; ~pH 9) with linear or concave gradients, and a 0.46 x 25 cm C-18 Rainin reversed-phase column. Five microliters of 1M KCN have been added to each 20-ml injection sample to maintain the corrinoid in dicyano form. Using these methods, we have reproduced separation between dicyanocobyric acid and dicyanocobinamide of about 2 minutes (1 ml/min flow rate) and between dicyanocobinic acid 2 and dicyanocobinamide of about 0.4 minutes.

Our current research is focusing on the investigation of the HPLC behavior of GDP-cobinamide in an energy cocktail used for the assay of enzymes involved in corrinoid biosynthesis. The cocktail consists of ATP, GTP, PEP, Mg^{2+} , PK, DTT and EDTA. Glutamine and threonine are added to the cocktail followed by the addition of the corrinoids (i.e. cobyric acid, dicyanocobinic acid 2, and cobinamide). An imidazole buffer is added to the cocktail and the mixtures are incubated and later analyzed by HPLC. Supported by NIHGM08043 (MBRS).

SPACE TOMATOES: DOES PERCEPTION SWAY TASTE?

I. Dunn, Y. Osikanlu, B. Apollo and J. Chassagne

Psychology Department
Chicago State University
9501 S. King Drive
Chicago, Illinois 60628

Abstract

How do people honestly feel about consuming food or using products from outer space? It will be fascinating to see whether knowledge of an outer space connection creates either a positive or a negative attitude about the product. It is hypothesized that psychological factors will influence the perceived palatability of food linked to outer space.

Tomato seeds were flown in zero gravity aboard the space shuttle Challenger and were kept in space for several months. A sample of those same seeds were planted in Chicago State University's greenhouse and grown to full development. The "space tomatoes" were used in a series of "taste tests" conducted by Chicago State University's Psychology Department. Participants of the "taste test" also completed a questionnaire regarding their viewpoints on space exploration and technologically altered food. Our focus was to search for a relationship between perceived taste, viewpoints on space exploration, and technologically engineered food.

Nineteen adults, seventeen females and two males, of diverse ethnic backgrounds participated in this "Taste test". The results show that those participants who rated space explorations high had similar opinions of technologically engineered produce. No relationship between perceived taste and opinion concerning space exploration or technologically engineered foods was found. In conclusion, the findings from this experiment do not support the hypothesis that psychological factors influence the perceived palatability of foods linked to outer space.

**SYNTHESIS OF 5'-PHTHALIMIDE-3'-ALLYLTHYMIDINE: AN
AMINO-ACID NUCLEOSIDE PRECURSOR**

Nicholas Smith, Michael Zemlan, Vaughn Williams,

John C. Leitzel*

Department of Chemistry and Physics

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Novel backbone-modified oligonucleoside derivatives involving an amide-linked (peptide) backbone have recently been developed for use in hybridization studies and template-directed synthesis. Solid-phase synthesis of amino-acid nucleosides is used to assemble these oligomers.

The target compound shown below has been synthesized as a key intermediate in the production of amino-acid nucleoside monomers. Key steps in this synthetic route are conversion of the 3' C-O bond to a C-C bond, and of the 5' C-O bond to a C-N bond. Both of these essential transformations are accomplished in the generation of the intermediate shown.

Optimization of these synthetic steps is important for the scaleup necessary to generate adequate material for oligomerization of amino-acid nucleosides. The synthetic route to this intermediate will be shown in detail, along with data from the structural characterization of the molecule shown.

This work is supported by the National Institutes of Health Minority Biomedical Research Support Program with co-funding from the National Cancer Institute (G S06 GM/CA08043-27SD).

Heat Transfer Enhancement from Dimpled Surfaces in a Square Horizontal Channel

Andre' Harris

Faculty Advisor: Dr. Leslie Porter

Department of Electrical Engineering
University of Illinois at Chicago

Abstract

Many enhancements have been studied to provide increased heat transfer rates from high performance thermal systems. Industries use enhancements in order to develop more compact and less expensive heat exchangers. The development for the improved performance of the conventional heat exchangers stimulates interest in methods to augment or intensify the heat transfer. Researchers have been experimenting for years with surfaces that increase heat transfer rates. However in all cases the price one pays for this increase is higher power costs to pump the fluid. Presently, there's an interest in finding ways to increase the efficiency of heat transfer surfaces.

An experimental study will be conducted with the help of Andre' Harris to determine the heat transfer and friction factor of a turbulent flow in a horizontal dimpled square channel. This test section has the potential to increase the heat transfer dramatically, while barely increasing the pumping power. The sides and length of the square channel are 3.56 mm and 1828.8 mm respectively. The flow will be a single phase R113 refrigerant. The experiments will be conducted with the following conditions: mass flux range of 700 to 2200 kg/m²s, a power range of 60 to 700 W and a Reynolds number range of 4000 to 13000. The heat transfer and pressure drop results of the dimpled surface will be compared to a smooth surfaced channel of same dimensions and flow conditions. The results should show that the dimpled surface increases heat transfer without increasing the pumping power of the system substantially more than that of other enhanced surfaces.

A SIMPLE ACCURATE DETERMINATION OF ZEOLITE PZC IN RELATION TO CATALYST PREPARATION

Rolinda L. Negrete

Dr. John R. Regalbuto, Chemical Engineering

University of Illinois at Chicago
Chicago, Illinois

The process of characterization of zeolites is similar to the process with oxides. The point of zero charge (PZC), is defined as the point where positively charged sites equal the negatively charged sites and the net surface charge is zero and an important property of all solids in solution. Oxide PZC's can be measured by a simple process based on pH measurement. A series of solution of different pH is added to a relatively large quantity of solid. The solid exhibits a buffering effect which, except at very acidic or very basic conditions, draws the solution pH to the PZC of the solid. Knowing the PZC of the zeolite will serve well in characterizing the catalytic properties of the Zeolite materials, especially in catalyst preparation where metals are adsorbed onto the zeolites.

4th Annual Chicago AMP Student Research Conference

Creating a Bobcat Database Management System

Maria Isabel DeSoto and Soon-Ok Park

Computer Science Program
Division of Science
College of Arts and Sciences
Governors State University
University Park, IL 60466

ABSTRACT

I currently volunteer for a non-profit sports organization, the Bobcats, in my community in Tinley Park, Illinois. This organization develops and supervises participation in sports like baseball, softball, soccer, football, and cheerleading. Soccer is our second largest sport in the organization. For the past six years I have been the soccer commissioner for the Bobcats. The file organization and maintenance for soccer is very time-consuming. Since I am a computer major, I plan to use my computer knowledge to simplify my job and make it more efficient. For the fall of 1998 we had over 1600 soccer players. I expect an increase of at least 25 % for the fall of 1999.

I will create a database management system for Bobcat soccer using Microsoft Access. The Bobcat database management system is an effective way to use and capture player and volunteer information. I also plan to create an interface for the database management system that will make the system easier for the user. I will use Microsoft Visual Basic to create this interface. This system will produce various reports quickly to determine the number of teams per league and the number of managers and assistant coaches that volunteered. It will allow us to analyze the data from many different perspectives. For example, it will generate the total number of managers per league. If we don't have enough managers per league, we will use the list of assistant coaches to look for additional managers. Using the Bobcat database and the interface will make it easier for users to expedite information and reuse it.

A STUDY OF ENTROPY

Andrea Daniels and Paul O'Hara, Ph.D.

Mathematics
Northeastern Illinois University
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The objective of this research is to investigate the concept of entropy and apply it to both Statistical Mechanics and Information Theory. The methodologies utilized are taken from Thermodynamics, Statistical Mechanics, and Information Theory. By use of comparison, our ultimate goal is to determine if the three of them are equivalent.

NUCLEOPHILIC DISPLACEMENT REACTIONS IN TRIPHASE CATALYTIC SYSTEMS

M. L. Hilliard, G. McClellan, N. Shabestary and S. Khazaeli

Department of Chemistry

Southern Illinois University at Edwardsville

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Abstract

Nucleophilic displacement reactions often cannot be carried out in homogeneous solutions because the nucleophile and the organic substrate are not soluble in a common solvent. Under these circumstances, a phase transfer catalyst is used to facilitate the transfer of the nucleophile from an aqueous phase to an organic phase. In triphase catalysis, a class of layered silicate clays (Na-hectorite) is intercalated with various phase transfer catalysts (quaternary ammonium salts). After the catalyst is immobilized within the interlayers of the clay, they are accessible for reactions with reagents from the organic and aqueous phases under the appropriate conditions. The simplicity of catalyst recovery is generally organized as an important practical advantage of triphase catalysis over conventional liquid-liquid biphasic catalysis. In this research, the nucleophilic displacement reaction of n-butyl bromide to n-butyl chloride has been investigated using tetrahexyl ammonium bromide and tetraoctadecyl ammonium bromide along with hectorite clay as the solid support in the triphase reaction. The activation energy, rate, and percent yield of the triphase catalytic reaction were measured and compared with the corresponding biphasic catalytic system using the same catalysts. The recovery of the catalyst in the triphase system will also be discussed.

NEUTROPHIL MICROBICIDAL ACTIVITY IS ENHANCED BY LINCOSAMIDE ANTIBIOTICS

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Departments of Biological Sciences and Chemistry
Southern Illinois University at Edwardsville
Edwardsville, IL 62026

While antibiotics are well known as therapeutic agents used to treat infections, less is known about their ability to effect immune function in the recipient. Lincomycin and clindamycin, lincosamide antibiotics developed by the Upjohn Company, have been used to treat bacterial infections including those caused by anaerobic bacteria. Lincosamides are among the antibiotics known to be concentrated by host phagocytic immune cells, and our laboratory has previously reported that they both enhance immune functions including macrophage fungicidal activity, clearance of yeasts from organs of intravenously challenged mice and murine contact sensitivity to the chemical antigen dinitrofluorobenzene (JAC 23:721-729, 1989). Currently we are studying lincosamide drug effects on murine peritoneal-derived neutrophils, important cells participating in host inflammatory response. Since these drugs specifically effect prokaryotic cell targets, we are examining potential drug effects on neutrophil microbicidal activity for eukaryotic candidal yeasts. Both drugs boost neutrophil antifungal activity with lincomycin mediating greater enhancement. Drug effects on yeast uptake by neutrophils and optimal target:effector (yeast:neutrophil) ratios have been examined. These findings demonstrate that there are positive lincosamide antibiotic mediated effects on the immune system that are potentially beneficial to the host.

**APPLICATION OF PHASE TRANSFER CATALYSIS IN NUCLEOPHILIC
DISPLACEMENT REACTIONS**

D. S. Morris, R. L. Hickman, G. McClellan, N. Shabestary, S. Khazaeli

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Southern Illinois University at Edwardsville
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Abstract

In nucleophilic displacement reactions, the nucleophile and the organic substrate are not always soluble in a common solvent. Phase transfer catalysis is proposed as a method for allowing nucleophilic displacement reactions to occur. Phase transfer catalysis is a technique used to conduct a reaction between two or more reagents in two or more separate phases that do not come together and react under normal conditions. It enables nucleophilic displacement reactions to occur by either a biphasic reaction or a triphasic reaction using clay to immobilize the catalyst. We have taken this concept and employed it to the study of homogeneous and heterogeneous nucleophilic displacement reactions. We studied the conversion of n-butyl bromide to n-butyl chloride at various temperatures under biphasic and triphasic conditions. The catalysts used were tricaprylyl-methylammonium chloride, tridodecyl-methyl-ammonium chloride, tetrahexyl-ammonium chloride, tetrabutyl-ammonium chloride, n-octyl-trimethyl-ammonium bromide, and cetyl-trimethyl-ammonium bromide. The rate of the reaction and the activation energy was determined at various temperatures. Results of the triphasic reaction were compared to those of the biphasic reaction. We determined that the best catalyst to use was tetrahexyl-ammonium chloride. It had the highest reaction rates at the various temperatures, and it had the lowest energy of activation. We also determined that the triphasic reactions were faster in comparison to the biphasic reactions.

REMOTE LABORATORY OPERATION
Orman Greaves Jr- Dr. Michael Hites, Leonado Phifer
Mechanical Engineering Department
Illinois Institute of Technology

The conventional method of performing laboratory experimentation requires the individual(s) performing the experiment to be local. If the facilities for the experiment are not readily available, the experiment would have to be performed at another location increasing the amount of time, energy, and money spent. Academia and industry have historically been bound by this method to perform data acquisition and experiment control. The National Diagnostic Facility has considered a new unconventional method of performing data acquisition and experiment control by using the Internet. This unconventional method can be described as Remote Laboratory Operation. It will allow one to control a laboratory experiment and retrieve the results via the Internet. The current working demonstrations models were written using Internet Toolkit for LabVIEW[™] from National Instruments. The working demonstrations are the Online Can-Crusher, which demonstrates remote experiment control, and the Oscillating Fan Demonstration, which demonstrates data acquisition. The working models incorporate the following: Image acquisition from a CCD camera, Analog signal acquisition and processing, Analog signal generation for control and Multiple digital port activation for logic can control circuits. With remote capabilities, laboratories are not limited to local experiments; students and faculty can from any computer connected to the Internet perform experiments. Industry and academia have already used these techniques to expedite collaborations on research. The fan demonstration as well as an actual Mechanical Engineering Laboratory have been implemented using a new methods and technology that adds functionality and greater interaction. These two implementations use Microsoft's ActiveX technology, mores specifically Components Works[™] from National Insturments.

Bacteriocin Production by *Lactobacillus acidophilus* EC14

Erik McClure and R. P. Sinha

Department of Biological Sciences

Chicago State University

AMP- SSI 1999

Abstract

Lactobacillus acidophilus EC14 was found to produce a heat labile bacteriocin active against several gram-positive and gram-negative bacteria. Enzyme treatment showed that the bacteriocin was a nonlipoprotein. Cell-free supernatant obtained from an EC14 culture showed bactericidal activity at acidic(4.8) and neutral pH. A plasmid profile of EC14 indicated that the strain contains a plasmid believed to contain genes coding for the bacteriocin. Plasmid curing experiments correlated the loss of the plasmid with the loss of bactericidal activity. Experiments are underway to confirm the location of the bacteriocin producing gene(s) on the plasmid by electroporation of non-producing, plasmid-less bacterial strains with plasmid DNA isolated from the producer strain.

The Oxidation of YBa₂Cu₃O₇ by Bromine

Dr. David Hinks

Dr. Justin Akujueze

Carl Scott

Abstract

The effect of the lattice constants of YBa₂Cu₃O₇ when introduced to Bromine provides unique opportunity to explore the superconductivity of this material. By measuring the amount of Bromine that gets into the lattice we can determine what makes the lattice constants dramatically change from tetragonal (nonsuperconducting material) to (orthorhombic superconducting materials).

4TH ANNUAL 1999
 CHICAGO ALLIANCE FOR MINORITY PARTICIPATION STUDENT RESEARCH
 CONFERENCE IN RESEARCH, DISCOVERY AND COMMUNICATION

Last Name	First Name	School	Registrant	Presentation
Allen	Walter	Chicago State University	Student	Poster
Alexander	Nneka	Chicago State University	Student	
Antonio	Sylvia	Chicago State University	Student	
Apollo	Brian	Chicago State University	Student	Oral
Barnes	Quintella	Chicago State University	Student	
Blake	Nicole	Chicago State University	Student	Oral
Cannon	Michael	Chicago State University	Student	
Castillo	Jorge	Chicago State University	Faculty	
Chassagene	Jean-Pierre	Chicago State University	Student	
Coleman	Jackie Lynn	Chicago State University	Student	Oral
Corley	Arlicia	Chicago State University	Faculty	
Dunn	Ivy M.	Chicago State University	Faculty	
Edmond	Fay	Chicago State University	Faculty	
Haro	Lisette	Chicago State University	Student	Oral
Harris	Robert	Chicago State University	Faculty	
Hendricks	Tisha	Chicago State University	Student	
Jackson	Lacharmin	Chicago State University	Student	
Jones	Marlon	Chicago State University	Student	Oral
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Mason	Bridgette	Chicago State University	Student	
McClure	Erik	Chicago State University	Student	
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Mimnaugh	Michael	Chicago State University	Faculty	
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Robinson	Cinque	Chicago State University	Student	
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Swier	Kevin	Chicago State University	Faculty	
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Walter	Laurie	Chicago State University	Faculty	

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Gary	Tamara	DePaul University	Student	
Narasimham	Carolyn	DePaul University	Student	
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Unger	John	Governors State University	Faculty	
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Dixon	Tiffany	Harold Washington College	Student	
Etienne	Jeelem	Harold Washington College	Student	
Feliciano	Angela	Harold Washington College	Student	
Gallardo	Rebeca	Harold Washington College	Student	
Gonzalez	Hector	Harold Washington College	Student	
Hearns	Ronald	Harold Washington College	Faculty	
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Kearney	Janet	Harold Washington College	Student	
Robinson	Tonya	Harold Washington College	Student	
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Burks	Jazz	Harry S Truman	Student	
DeSadier	Tiffany	Harry S Truman	Student	
Drame	Djily	Harry S Truman	Student	
Flores	Carlos	Harry S Truman	Student	
Harvey	Cortez	Harry S Truman	Student	
Neah	Hortense	Harry S Truman	Student	
Nesbit	Cedric	Harry S Truman	Student	
Olvera	Dora	Harry S Truman	Student	
Robinson	Gregory	Harry S Truman	Faculty	
Ruwe	Diane	Harry S Truman	Faculty	
Sharkey	Kelly	Harry S Truman	Faculty	
Strickland	Vanessa	Harry S Truman	Student	
Valle	Guadalupe	Harry S Truman	Student	
Wolff	Cyril	Harry S Truman	Student	

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Ihimoyan	Tayo	Illinois Institute of Technology	Student	Oral
Johnson	Peter	Illinois Institute of Technology	Faculty	
Johnson	Porter	Illinois Institute of Technology	Faculty	
Jordan	Emery	Illinois Institute of Technology	Student	
Kolade	Babajide	Illinois Institute of Technology	Student	
LeBlanc	Latasha	Illinois Institute of Technology	Student	
Manov	Alex	Illinois Institute of Technology	Faculty	
O'Leary	John	Illinois Institute of Technology	Faculty	
Phifer	Leo	Illinois Institute of Technology	Student	Oral
Smith	George	Illinois Institute of Technology	Guest	
Snow	Carole	Illinois Institute of Technology	Faculty	
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Jany	Ocheng	IBHE	Guest	
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Jones	Kasandra	Illinois State University	Student	
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Nolden	Lawanna	Illinois State University	Student	
Ooro	Betty	Illinois State University	Student	
Visor	Julia	Illinois State University	Faculty	
White	Zinnita	Illinois State University	Student	

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Berry	Latonya	Malcolm X College	Student	
Calhoun	Kwanna	Malcolm X College	Student	
Cid	Rita	Malcolm X College	Student	
Dilaawar	Daamizafar	Malcolm X College	Student	
Jafri	Ali M.	Malcolm X College	Student	
Johnson	Nydra	Malcolm X College	Student	
Lambi	Sharon Nkah	Malcolm X College	Student	
Michlene	Sorrell	Malcolm X College	Student	
Nocentelli	Angelo	Malcolm X College	Student	
Reed	Anthony	Malcolm X College	Student	
Stovall	David	Malcolm X College	Student	
Villarreal	Sergio	Malcolm X College	Student	
Walls	Germaine	Malcolm X College	Student	
Watts	Marva	Malcolm X College	Faculty	
Adenekan	Patricia	Kennedy-King College	Student	
Adenekan	Yinka	Kennedy-King College	Student	
Anderson	Linda	Kennedy-King College	Student	
Awoniyi	Kemi	Kennedy-King College	Student	
Blanchard	Nicole	Kennedy-King College	Student	
Harris	Shyvonne	Kennedy-King College	Student	
Hatcher	Carmen	Kennedy-King College	Student	
Johnson	Brandy D.	Kennedy-King College	Student	
Keys	Carolyn	Kennedy-King College	Student	
Kyle	Joseph	Kennedy-King College	Faculty	
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Steels	Camille	Kennedy-King College	Student	
Tyes	Billy	Kennedy-King College	Guest	
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Whitney-Bey	Rachelle	Kennedy-King College	Student	
Woods	Latesha	Kennedy-King College	Student	
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Gulli	Yvonne	Northeastern Illinois University	Panelist	
Kargbo	John	Northeastern Illinois University	Student	
Kerwell	Zarrin	Northeastern Illinois University	Panelist	
Montgomery	Jermont	Northeastern Illinois University	Student	
O'Hara	Paul	Northeastern Illinois University	Faculty	
Paredes	Chris	Northeastern Illinois University	Student	
Poskozim	Paul	Northeastern Illinois University	Faculty	
Rutschman	David	Northeastern Illinois University	Faculty	
Shiu	Yvette	Northeastern Illinois University	Student	
Valle	Julio	Northeastern Illinois University	Student	

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Harper	Kimberly M.	Northwestern University	Student	
Alvarez	Vanesa	Olive-Harvey College	Student	
Arias	Raymond	Olive-Harvey College	Student	
AveryHart-Fulle	Vera	Olive-Harvey College	Faculty	
Barnes	Grover	Olive-Harvey College	Student	
Causher	Paula	Olive-Harvey College	Faculty	
Colinet	Gide	Olive-Harvey College	Faculty	
Ferguson	Austin	Olive-Harvey College	Faculty	
Flores	Maria	Olive-Harvey College	Student	
Hamilton	Brandi	Olive-Harvey College	Student	
Ibrahm	Sulaiman	Olive-Harvey College	Student	
Jones	Carolyn	Olive-Harvey College	Student	
Kahvand	Hassan	Olive-Harvey College	Student	
Lee	Ayanna	Olive-Harvey College	Student	
Levi	Cometta	Olive-Harvey College	Student	
Lofton	Michelle	Olive-Harvey College	Student	
Morris	Roxane	Olive-Harvey College	Student	
O'Neill	Katie	Olive-Harvey College	Student	
Onwung Hai	Kate	Olive-Harvey College	Student	
Pepper	Mary	Olive-Harvey College	Student	
Tomlin	Cecili D.	Olive-Harvey College	Student	
Willis	Jenifer	Olive-Harvey College	Student	
Zoller	David	Olive-Harvey College	Faculty	
Zoller	Timika	Olive-Harvey College	Student	
Canales, Jr.	Jose	Richard J. Daley College	Student	
Moreno	Ezequiel	Richard J. Daley College	Student	
Stewart	Jonathon	Richard J. Daley College	Student	
Alexander	Kathy	South Suburban College	Student	
Calhoun	Christine	South Suburban College	Faculty	
Liddell	Jeffrey	South Suburban College	Student	
Logan	Toi	South Suburban College	Student	
Olaley	Caleb	South Suburban College	Faculty	
Washington	Sheba	South Suburban College	Student	
Cisse	Amadou M.	Southern Illinois Univ. Carbondale	Student	Oral
Licardie	Geizi	Southern Illinois Univ. Carbondale	Student	
Quintero	Alex	Southern Illinois Univ. Carbondale	Student	
Sanchez	Nicolas	Southern Illinois Univ. Carbondale	Student	
Smith	Candice	Southern Illinois Univ. Carbondale	Student	
Washington	Erin	Southern Illinois Univ. Carbondale	Student	

Last Name	First Name	School	Registrant	Presentation
Banks	Ronald	Southern Illinois Univ. Edwardsville	Faculty	
Barnes	Tracy	Southern Illinois Univ. Edwardsville	Student	
Brown	Torrance	Southern Illinois Univ. Edwardsville	Student	
Cook	Kathleen	Southern Illinois Univ. Edwardsville	Student	
Dotko	Debra	Southern Illinois Univ. Edwardsville	Faculty	
Fuller	Montrice	Southern Illinois Univ. Edwardsville	Student	
Glass	Kinyata	Southern Illinois Univ. Edwardsville	Student	
Haynes	Johnny	Southern Illinois Univ. Edwardsville	Student	
Hillard	Marquetta	Southern Illinois Univ. Edwardsville	Student	Poster
Jason	Emil	Southern Illinois Univ. Edwardsville	Faculty	
Khazaeli	Sadegh	Southern Illinois Univ. Edwardsville	Faculty	
Lee	Shana	Southern Illinois Univ. Edwardsville	Student	
Morris	Dana	Southern Illinois Univ. Edwardsville	Student	Poster
Perry	Sarah	Southern Illinois Univ. Edwardsville	Student	
Rayford	Sonya	Southern Illinois Univ. Edwardsville	Student	
Thompson	Dorian J.	Southern Illinois Univ. Edwardsville	Student	Poster
VanNorman	Cynthia	Southern Illinois Univ. Edwardsville	Student	
Wallace	Wendi	Southern Illinois Univ. Edwardsville	Student	
Brown	Cornell	University of Detroit-Mercy	Student	
Cobb	Randall	University of Detroit-Mercy	Student	
Martin	April	University of Detroit-Mercy	Student	
Sands	Michael	University of Detroit-Mercy	Student	
Adebayo	Michael	University of Illinois at Chicago	Student	
Avila	Victor	University of Illinois at Chicago	Student	
Baldwin	John	University of Illinois at Chicago	Faculty	
Bravo	Luis	University of Illinois at Chicago	Student	
Carraminana	Rodrigo	University of Illinois at Chicago	Faculty	
Chambers	Laverne	University of Illinois at Chicago	Student	
Evans	Caroline	University of Illinois at Chicago	Student	
Garcia	Nancy	University of Illinois at Chicago	Student	
Gebrakidan	Sirak	University of Illinois at Chicago	Student	
Harris	Andre' D.	University of Illinois at Chicago	Student	Oral
Jamaica	Beatriz	University of Illinois at Chicago	Faculty	
Jones	Donald	University of Illinois at Chicago	Student	
Martinez	Lucila	University of Illinois at Chicago	Student	
Negrete	Rolinda L.	University of Illinois at Chicago	Student	Oral
Pagnamenta	Antonio	University of Illinois at Chicago	Faculty	
Peralta	Alfredo	University of Illinois at Chicago	Student	
Ruiz	Joel	University of Illinois at Chicago	Student	
Sola	Ruth	University of Illinois at Chicago	Student	
Sukhatme	Uday	University of Illinois at Chicago	Faculty	
Tapia	Carmelo	University of Illinois at Chicago	Student	
Tello	David	University of Illinois at Chicago	Student	
Valero	Jose	University of Illinois at Chicago	Student	
Vargas	Jose N.	University of Illinois at Chicago	Student	
Vassquez	Camille	University of Illinois at Chicago	Student	

Last Name	First Name	School	Registrant Presentation
Cortez	Juana	Wilbur Wright College	Student
Gamble	Lorina	Wilbur Wright College	Student
Garcia	Laura	Wilbur Wright College	Student
Gonzalezq	Jose	Wilbur Wright College	Student
Grimaldo	Henry	Wilbur Wright College	Student
Kalaw	Benito	Wilbur Wright College	Faculty
Salas	Martha	Wilbur Wright College	Student
Wipachit	Yolanda	Wilbur Wright College	Student
Zamarripa	Ignacio	Wilbur Wright College	Student
Zamarripa	Joaquin	Wilbur Wright College	Student
Zamudio	Cristina	Wilbur Wright College	Student
Creed	Danny	Lucent Technology	Guest
Gates, Jr	Sylvester	Univ. of Maryland	Guest
Foster	James	Program Advisory Council	Guest
Jackson	Rodger	Program Advisory Council	Guest
Jones, Jr.	Emil	Senator	Guest
Jordan	Frederick		Guest
Unruh	Kent	The Erie Technolgy Center	Guest
Whitmore	Charles	USDA, Regional Conservationist	Guest