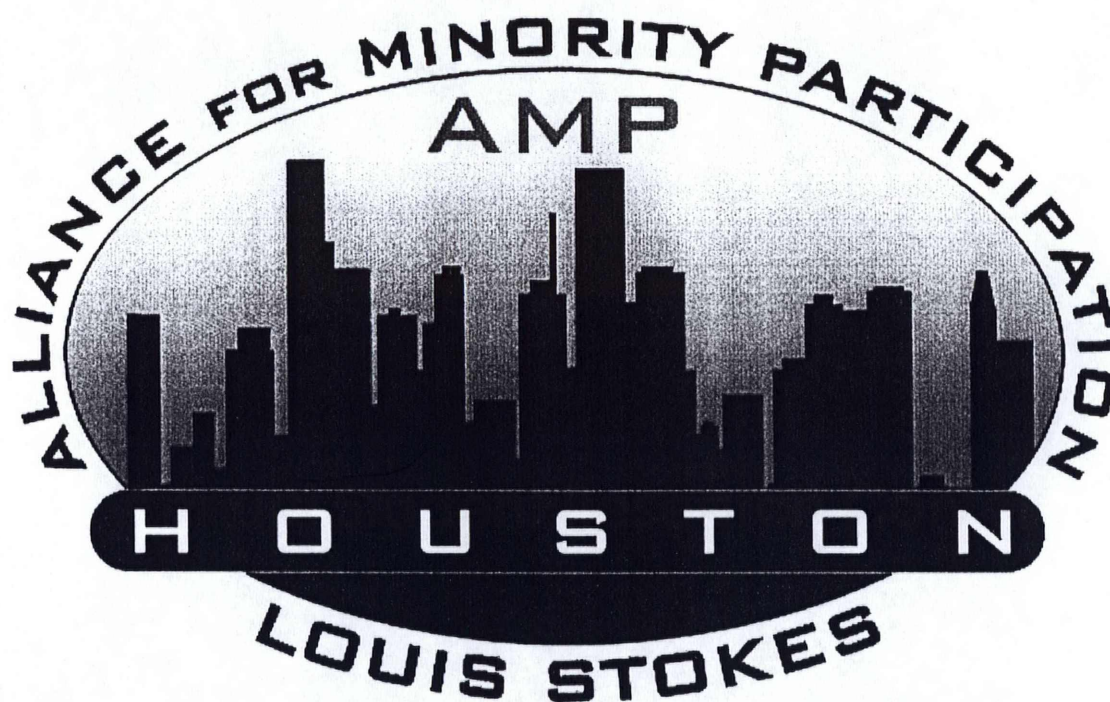


# First Annual Student Research Conference

**"Building A Community of Scholars"**



*Hosted by*

**Southwest Texas State University**

July 21-23, 2000

## **Program Synopsis**

**The Houston Louis Stokes Alliance for Minority Participation (H-LSAMP) is a comprehensive, interdisciplinary, regional coalition comprised of the following partner institutions: the University of Houston, the University of Houston-Downtown, the University of Houston-Victoria, Rice University, Southwest Texas State University, Texas Southern University, the Houston Community College System and San Jacinto College District. The Houston AMP also includes the Houston Independent School District. A primary aim of the Alliance is to significantly increase the quantity and quality of underrepresented minority students earning B.S. degrees in science, mathematics, engineering, and technology (SMET) disciplines from partner institutions, and prepare them for graduate degrees in these fields.**

**Program priorities focus on four central approaches. These entail a collaborative learning approach emphasizing group study and support; positive and sustained interaction with faculty; intensive interactions with other support persons at the university and the wider community (alumni, parents, mentors from industry and community organizations); and interaction with class projects. All partners share a strong commitment to the goal of increasing retention, access, and opportunities for minority students in SMET fields. Accordingly, H-LSAMP is systematically assisting students in developing a supportive community, and presenting opportunities for students to grow academically, professionally, and personally. Another major function of H-LSAMP is to provide student financial aid to support tuition and related university fees.**

**The H-LSAMP will continue to focus on the institutional issues that impede minority student success in SMET programs, including placing a major emphasis on retention. Attainment of our chief goal will be largely determined by success not only in recruiting minority students into SMET programs at partner institutions, but also in nurturing these students through the SMET pipeline from the undergraduate to the graduate level.**

**A variety of programs and activities are geared towards enhancing student success, including SMET curriculum reform, supplemental instruction, bridge programs, undergraduate research, and summer internships. Southwest Texas State University is the host institution for the annual Summer Scholars Retreat, which serves as a forum for faculty-mentored research projects.**

**H-LSAMP operations are supported primarily through funding provided by the National Science Foundation (NSF). The H-LSAMP is indebted to NSF for its generous support of programs and activities to increase minority participation in the SMET enterprise.**

## AGENDA

### First Annual Student Research Conference Southwest Texas State University

Friday, July 21, 2000

1:00-2:30 p.m. **REGISTRATION FOR ALL STUDENTS, FACULTY, STAFF**

*Location: Lantana Hall, Lobby*

3:30-5:00 p.m. **CAMPUS TOUR**

6:00-8:00 p.m. **DINNER**

*Location: LBJ Student Center, Third Floor, Ballroom*

**Presiding:** Dr. Roberto Garza  
Executive Director  
Houston Alliance for Minority Participation

**Welcome:** Dr. Stanley C. Israel, Dean  
College of Science  
Southwest Texas State University

**Greetings:** Dr. John Bear, Dean  
College of Natural Sciences and Mathematics  
University of Houston  
Principal Investigator, H-LSAMP

“What is the H-LSAMP?”

Dr. Roberto Garza

**Introduction of  
Keynote Speaker:** Mr. Roman Gomez  
Senior  
Major: Biology  
Southwest Texas State University

**Keynote Speaker:** Dr. Illya Hicks  
Professor, Industrial Engineering  
Texas A&M University

Dr. Hicks was born and raised in Waco, Texas. He received his undergraduate degree in Mathematics from Southwest Texas State University, where he was a member of the Varsity football team. After receiving his undergraduate degree, he entered into the graduate program of the Computational and Applied Mathematics Department at Rice University. While in graduate school, Illya received an AT&T Labs fellowship. He received his doctoral degree in the spring of 2000 and will begin a tenure-track professorship in the Industrial Engineering Department at Texas A&M University. The title of his dissertation is “Branch Decompositions and their Applications” and his research interests are in combinatorial optimization, operations research, graph theory, and integer programming.

8:30-10:00 p.m. **STUDENTS GIVING ORAL RESEARCH PRESENTATIONS WILL MEET IN  
TEACHING THEATRE TO SET UP FOR SATURDAY**

**Saturday  
July 22, 2000**

**7:30-8:30 a.m. BREAKFAST**

*Location: LBJ Student Center, Third Floor, Ballroom*

**8:45-11:20 a.m. ORAL RESEARCH PRESENTATIONS**

*Location: LBJ Student Center, Fourth Floor, Teaching Theatre*

**Moderator:**

Dr. Roberto Garza

**Session 1**

Bich-May Nguyen  
Sophomore, Biology major  
University of Houston

**“Characterization of Zinc Inefficient Mutants in *Medicago truncatula*”**

Zinc deficiency is one of the most widespread micronutrient deficiencies limiting crop production and quality in cereals. Our lab and others strive to genetically assist plants to improve micronutrient levels to enhance human nutrition and health, especially for people in the developing world who exist on diets of mainly staple foods, e.g. rice, wheat, maize, which are poor sources of micronutrients. Specifically, the research I assisted focused on understanding zinc nutritional physiology in higher plants. In general, knowledge of zinc homeostasis on a plant and cellular level is limited. We wanted to study how zinc is utilized and handled on a cellular and sub cellular basis. To conduct this research, we isolated four mutants with suspected altered metal requirements from the model legume *Medicago truncatula*. Using these mutants as tools to analyze zinc homeostasis at the biochemical and cellular levels, we examined the effect of zinc concentration in the growth media on the improvement of the mutant phenotype and on individual plant parts. In brief, we learned that a group of *M. truncatula* mutants has been identified that has altered requirements for zinc. Specifically, plants must be grown in elevated zinc levels to exhibit normal growth. Although zinc levels in the leaves of the mutants are in the classically sufficient range, when plants are grown at lower zinc levels, amelioration of the mutant phenotype by increased zinc levels suggests that a metabolic zinc deficiency exists in these plants.

## **Session 2**

Curll Dowden, Jr.  
Junior, Chemical Engineering major  
University of Houston  
Faculty Advisor: Dr. Reena M. Shull

### **“Mathematical Reasoning and Teaching Proficiency”**

This study focuses on research related to number sense, computational estimation, mental computation, number size, and evaluation of these number ideas. Some interesting comparisons are made with numbers and their application in both the classroom (from a theoretical standpoint) and the real world (from a more practical standpoint). The following questions will be addressed in the course of this study: how do people develop estimation skills? How can estimations skills be taught? What techniques do skilled mental computers use? And what kind of difficulties do students have with the large numbers or small numbers close to zero? Furthermore, researchers often define a problem as a situation that requires resolution and for which the person sees no obvious path to solution. This study places emphasis on the importance of problem solving in middle school mathematics. It also explores what is involved in solving certain problems and why students have difficulties in solving those problems. Sources of difficulty such as reading and a lack of knowledge of the concepts are viewed in depth as well. In addition, beliefs that problems should be solved quickly and easily are questioned, because development of a procedural knowledge with no conceptual knowledge backing only hampers the student's progress. Several suggestions are made for teachers to help students solve problems, such as ways of creating an inspirational classroom climate, allotting sufficient time, and grouping students for effective problem solving.

## **Session 3**

Diana Anukwuem  
Sophomore, Biochemistry major  
University of Houston  
Faculty Advisor: Dr. Ronald Kerman, UT Health Science Center

### **“Identification of Antibodies Against Transplantation Antigens in the Serum of Potential Transplant Recipients”**

When patients are put on a list to receive an organ, certain tests are done to match the recipient with a potential donor. This experiment compared the results obtained by using the AHG-CDC procedure (the old crossmatch procedure) with that of the new procedure PRA-STAT. Our lab presumed that the PRA-STAT would be clinically more informative than the AHG method. This is because the AHG assay is a membrane dependent assay and there may be antigens that could cause cell death. Other problems that may arise may be attributed to the different sources of complement or the variability of target cells used in the assay (peripheral blood, lymph node, or spleen cell targets). Since the PRA-STAT does not rely on the AHG methodology, but rather uses a fixed soluble HLA antigen as its target, our lab surmised that it would be more informative. We conducted this experiment by comparing two groups of patients—those treated with the standard immunosuppressive drugs cyclosporine and prednisone, and those treated with the above and rapamycin—a new immunosuppressive drug.

#### Session 4

Gerrick Green  
Sophomore, Computer Science major  
Texas Southern University  
Faculty Advisor: Dr. Bobby Wilson

“The Power of Language”

Demonstrates the relevancy of language exchange between computers and human voice. Exhibits next generation technology that will be commonplace for mainstream America via verbal programming.

#### Session 5

Kenneth Daniels  
Senior, Chemistry major  
Texas Southern University  
Faculty Advisor: Dr. Bobby Wilson

“The Synthesis and Characterization of Diiodobis(dihydrobis(pyrazolyl)borate)hafnium(IV)”

The reaction product of hafnium(IV) tetraiodide with potassium dihydrobis(pyrazolyl)borate in a 1:2 molar ratio is diiodobis(dihydrobis(pyzazoly)borate)hafnium(IV). The coordination complex has been characterized by high-resolution proton nmr analysis. The intention of this research was to determine whether or not hafnium(IV) indeed coordinated with the dihydrobis(pyrazolyl)borate anion.

#### Session 6

Sumiko Armstead  
Sophomore, Biology major  
University of Houston

“Gene Therapy for the Heart”

During the summer of 1968, I performed research in a cellular biology laboratory at Baylor College of Medicine. Our goal was to find the gene that signals production of the heart. My project was to prepare a specific vector deoxyribonucleic acid to be inserted into transgenic mice. I cut the DNA with various enzymes and ligated certain molecules to the DNA to ensure that it would knock out or over-express a certain gene. After viewing the phenotypes of the transgenic mice, I would be able to determine if this gene signals production of the heart. This information will be sued for future advances in techniques of gene therapy.

**Session 7**

Wole Olugbenle  
Junior, Computer Science major  
University of Houston-Downtown

**“GK-12 Mathematics and Science Teachers Program”**

NSF GK-12 Fellows gain experiences and develop skills that will enable them as scientists to advance educational excellence in both K-12 and university arenas. The program teams undergraduate and graduate students with middle school science and mathematics teachers for an ongoing exchange of knowledge in science and mathematics and effective teaching. I have just completed a two-week workshop called GIRLTECH which involved teaching teachers how to utilize the web in their classrooms and showed them how to create web pages with tutorials, tests, lessons and many other things. They also receive intensive technology training and explore innovative teaching strategies that impact gender equity in the classroom.

**11:20-11:30 a.m.           BREAK**

**11:30 a.m.  
-12:30 p.m.           PANEL DISCUSSION**  
**“Building Collaborative Learning Communities Among Students”**

**Session 1           Administrative Viewpoint (30 minutes)**

**Moderator:**  
Ms. Sylvia Foster, Director, Scholar Enrichment Program  
University of Houston

**Panelists:**  
Mr. John Matthews, Program Coordinator, PROMES  
University of Houston

Dr. Jerry Paskusz, Director, PROMES  
University of Houston

Ms. Frankie Solomon, Director, Learning Center  
University of Houston-Downtown

Ms. Michelle Tolbert, LSAMP Program Coordinator and Recruiter  
Texas Southern University

Dr. Selina Vasquez, Assistant Professor, Mathematics  
Southwest Texas State University

**Session 2**      **Student Viewpoint (30 minutes)**

**Moderator:**

Mr. Curll Dowden, Junior, Chemical Engineering  
University of Houston

**Panelists:**

Ms. Diana Anukwuem, Sophomore, Biochemistry  
University of Houston

Megan Edmondson, Sophomore, Biology  
University of Houston

Mr. Reynaldo Guerra, Senior, Mechanical Engineering  
University of Houston

Kristy Sam, Junior, Biology  
University of Houston

1:15 p.m.

**ALL STUDENTS MEET IN LANTANA HALL LOBBY BY 1:15 P.M. AND TOUR GUIDES WILL TAKE YOU TO THE LUNCH LOCATION. EVEN STUDENTS WHO ARE STAYING IN BERETTA DORM SHOULD MEET IN LANTANA LOBBY.**

1:30-2:30 p.m.

**LUNCH**

*Location: Old Fish Hatchery Building, C.M. Allen Parkway*

**NOTE:** The caterer will only be serving from 1:30-2:30 p.m., so please be prompt.

2:30-4:30 p.m.

**TUBING**

*San Marcos River*

**NOTE:** Tickets that identify you as part of our group are available at the lunch location. When you present one of these tickets at the tube office, you will be given a tube and two taxi ride tickets. Otherwise they will expect you to pay cash.

6:00-9:00 p.m.

**AWARDS BANQUET**

*Location: LBJ Student Center, Ballroom*

**Presiding:**      Dr. Roberto Garza

**“Formation of a Houston Alliance for Minority Participation  
Alumni Association”**

**Presentation of Awards:**      Dr. Greg Passty  
Associate Dean, College of Science  
Southwest Texas State University

**Introduction of  
Keynote Speaker:**      Ms. Diana Anukwuem  
Sophomore  
Major: Biology  
University of Houston



**Keynote Speaker:** Dr. Donna Washington-Stokes  
Postdoctoral Associate, U.S. Naval Research Laboratory  
Washington, D.C.

Dr. Stokes received her bachelor's degree in Physics at Southern University in Baton Rouge, Louisiana in 1988. She went on to the University of Houston where she received her Masters degree in Physics in 1992 and her Doctorate in Physics in 1998. She is currently a postdoctoral associate at the US Naval Research laboratory in Washington, DC, where she works in the Optical Sciences Branch. Her work there involves the electrical and optical characterization of solid state semiconductor lasers. Dr. Stokes is also a member of a number of professional scientific societies such as the American Physical Society. In the fall, she will be a professor in the Department of Physics at the University of Houston.

**Presentation:** "The H-LSAMP Web Site"  
Mr. Rick George, System Architect  
Ms. Tammy Hong, Webmaster  
University of Houston

**Closing Remarks:** Dr. John Bear  
Dr. Stanley Israel

**9:00 - 10:00 p.m.**

**POST BANQUET MEETING FOR ALL AMP STAFF**

*Location: LBJ Student Center, Third Floor, Ballroom*

Mr. Rick George will make a presentation to the AMP staff on the database modeling he is doing for the Alliance's master database.

**Sunday  
July 23, 2000**

**8:00-10:00 a.m.**

**STEERING COMMITTEE MEETING (closed meeting)**

Dr. Roberto Garza

*Location: LBJ Student Center 3-12.1*

**10:30 a.m. - Noon**

**BRUNCH**

*Location: J. C. Kellam Building, 11<sup>th</sup> Floor*

**NOTE:** Enter Building through doors by the ponds near back parking lot

**Noon-1:30**

**CHECK-OUT**

*Location: Dorm Lobby*

**NOTE:** All that is involved in checking out is returning your room and dorm building keys to the Main Desk at your dorm. The Main Desks of Lantana and Beretta Halls will be staffed from Noon to 2:00 p.m. to handle checkout, which should give you time to pack and check out after brunch.

H-LSAMP First Annual Student Research Conference  
"Building a Community of Scholars"  
List of Participants

Students

Southwest Texas State University

Badillo, Nadia  
Barksdale, Brandy  
Blanco, John  
Chima, Vivian  
Contreras, Jesse  
Curette, Alvin  
De Leon, Gustavo  
De Los Santos, Manuel  
Fernandez, Janelle  
Gallegos, Kristan  
Gomez, Roman  
Grace, Vashti  
Gray, Scott  
Hernandez, Abigail  
Hollinger, Alvin  
Marshall, Latasha  
Medel, Andreanna  
Miller, Cienna  
Miranda, Vanessa  
Moore, Nakita  
Navarro, Angelica  
Ntibayindusha, Eleanore  
Ramirez, Diana  
Robertson, Richard  
Rodriguez, Monica  
Sainz, Robert  
Santos, Michael  
Thompson, Gerald  
Whittington, Douglas  
Williams, Nikki

Texas Southern University

Anderson, Kia  
Brown, Erica  
Castellanos, Ahtavea  
Cocknell, Bresean  
Daniels, Kenneth  
Esco, Kadedra  
Green, Gerrick  
Hammonds, Shavono  
Johnson, Rochelle  
King, LaKiesha  
Lee, Cherie'  
Muhammad, Abdel  
Muhammad, Aleena  
Padmore, Adrian  
Poole, Jessica  
Robinson, Cliff  
Simmons, Michael  
Simon, Le'Krystal  
Tarver, Siobhan

Texas Southern University (cont.)

Tatum, Katoria  
Walker, Victoria  
West, Donquetta

University of Houston

Anaya, Mario  
Anchondo, Moises  
Anukwuem, Diana  
Armstead, Sumiko  
Barnes, Ruby  
Blanco, Lorena  
Brown, Bree  
Cano, Lorenzo  
Castellano, Karina  
Celestine, Kimberly  
Coleman, Charissa  
Dowden, Jr., Curll  
Ebrahimi, Yasmine  
Edmonson, Megan  
Erfan, Jessica  
Espitia, Gabriel  
Fernandez, Yvette  
Forsac, Agnes  
Franco, Enedelia  
Frazier, Winfred  
Fu, Yuchan  
Gallegos, Adan  
Garza, Raul  
Glass, Sharifa  
Gonzalez, Nestor  
Guerra, Reynaldo  
Gutierrez, Monica  
Guzman, Saul  
Hernandez, Alma  
Herrera, Caridad  
Herrera, Emilio  
Higgins, Ashley  
Ibarra, Vanessa  
Iloabachie, Dube  
Jew, Christy  
Kalantarians, Sevak  
Kologinczak, Ashley  
Kriseman, Yana  
Lopez, Aaron  
Marquez, Elias  
Martinez, Bertha  
Melgar, Kenny  
Meza, Jose'  
Moncivais, Armando  
Montelongo, Noemi  
Moreno, Keith  
Mouzi, Lisa  
Napolez, Sophia

### **University of Houston (cont.)**

Navarro, Ramon  
Nguyen, Bich-May  
Orosco, Nancy  
Padron, Jose  
Perez, Melissa  
Plasencia, Joyleen  
Ramirez, Magdalena  
Roberts, Joel  
Rodriguez, Marisa  
Ruiz, Jessica  
Saleem, Asra  
Salinas, Viviana  
Sam, Kathy  
Sam, Kristy  
San Miguel, Paul  
Sanchez, Monica  
Shah, Dhruvil  
Stewart, Wesley  
Taylor, Carissa  
Tran, Vera  
Ugoh, Margaret  
Valdez, Alfonso  
Vasquez, Arturo  
Vu, Christopher  
White, Camille  
Wofford, Travis

### **University of Houston-Downtown**

Cavazos, Maria  
Clark, Margot  
Everado, Luna  
Foster, Abram  
Harris, Cyril  
Higgenbotham, John  
Leal, Diana  
Montes, Isaura  
Morales, Miriam  
Nguyen, Boch-Thoa  
Olugbenie, Wole  
Paul, Dennis  
Uffort, Ekong  
Valadez, Daniel  
Vieyra, Jaime

### **Judges, Oral Research Presentations**

Dr. Tom Arsuffi, Biology, Southwest Texas State University  
Dr. Dana Garcia, Biology, Southwest Texas State University  
Dr. Joyce Fischer, Mathematics, Southwest Texas State University

## **Summer Weekend Scholars Retreat Planning Committee**

Dr. Roberto Garza, H-LSAMP Executive Director, University of Houston  
Dr. Carlos Gutierrez, Professor, Physics, SWT  
Dr. Stanley C. Israel, Dean, College of Science, SWT  
Dr. Glenn Longley, Director, Edwards Aquifer Research and Data Center, SWT  
Dr. Gregory Passty, Associate Dean, SWT  
Ms. Barbara Pascoe, Assistant to the Dean, SWT  
Dr. Max Warshauer, Professor, Mathematics, SWT  
Dr. Linette Watkins, Assistant Professor, Chemistry, SWT

### **Other Participants**

#### Rice University

Chatman, Ms. Theresa (Outreach Manager)

#### Southwest Texas State University

Cradit, Ms. Lisa (Student Development)  
DeLeon, Dr. John (Technology)  
Morey, Dr. Susan (Mathematics)  
Murr, Mr. Chris (Financial Aid)  
Pascoe, Dr. Charles (Theatre)  
Singh, Dr. Sukhjit (Mathematics)  
West, Dr. Sandra (Biology)  
Winek, Dr. Gary (Technology)

#### Texas Southern University

Atkins, Dr. Dottie (English)  
Hudnall, Mr. Erl (Photography)  
Pickens, Ms. Eva (Photography)

#### University of Houston

Matthews, Mr. John (Program Manager, PROMES)  
Mendez, Mr. Ben (Program Manager, Scholar Enrichment Program)  
Paskusz, Dr. Jerry (Director, PROMES)

#### University of Houston-Downtown

Berry, Mr. Theo (Recruiter)  
Gad, Ms. Sangeeta (Director of Recruitment)  
Garcia, Mr. Rene' (Technical Support)  
Nakamura, Ms. Mitsue (Faculty Member and Advisor)  
Solomon, Ms. Frankie (Director of Learning Center)  
Tejani, Mr. Aon (Technical Support Manager)

Houston Louis Stokes Alliance for Minority Participation  
(H-LSAMP)

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