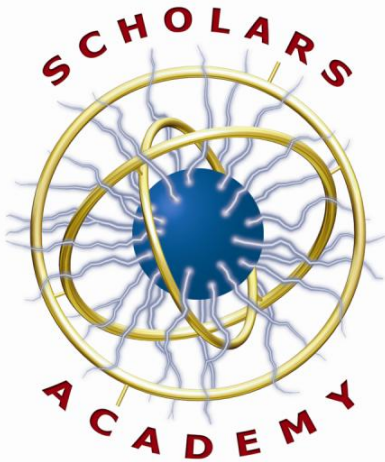




# Increasing Underrepresentation in STEM: The Scholars Academy A Model for Student Success



## Presenters:

**Director – Dr. Mary Jo Parker**

**Program Manager – Mr. Rene Garcia**

**Peer Mentor Coordinator – Ms. Mitsue Nakamura**

The Scholars Academy is funded by the National Science Foundation (0728408, 0909948, 0934913), U.S. Nuclear Regulatory Commission (NRC-27-10-1121), Joint Admission Medical Program (K-2-01024), Texas Workforce Commission, Brown Foundation, Hamill Foundation, Welch Foundation (BJ-0027), Shell Oil Company Foundation, and UHD Donors.



# Background Information

Urban 4-Year University since 1974

Hispanic Serving Institution

Minority Serving Institution

**Tuition is 3rd most affordable in Texas**

Over 40 bachelors and master degrees

Almost 14,000 Students

Over 3,000 new students each year

Over 2,000 graduates each year

940 majors in STEM

# UHD Scholars Academy



**Mission:** To increase by 100% the number of students graduating with degrees in STEM.

**Vision:** To support 100% matriculation into graduate programs, professional programs, and STEM industry careers





# Academically Competitive

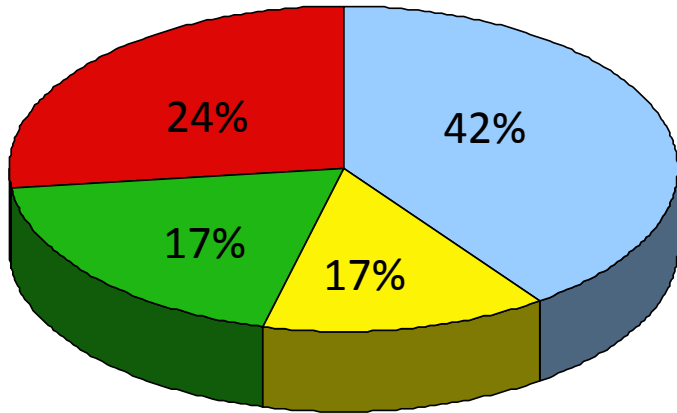


- Minimum 3.0 GPA
- Minimum 1,000 SAT (500 math/500 verbal)
- Prefer completion of Pre-Calculus
- Two Letters of Recommendation
- Essay describing academic goals
- Resume or Curriculum Vita
- Limited Funding for Non-Residents
- Applications online: [www.uhd.edu/scholars](http://www.uhd.edu/scholars)

# SA Demographic Overview

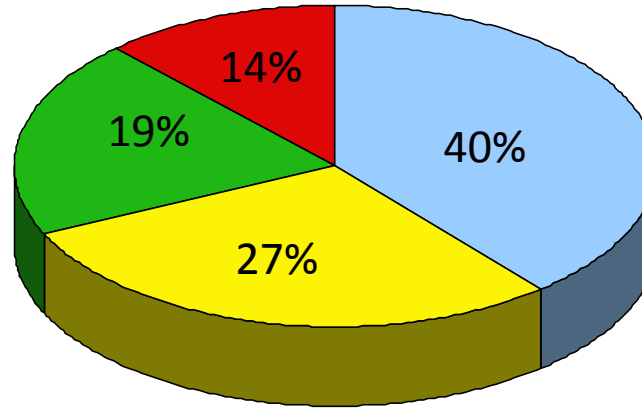


**Scholars Academy**



**Male - Female**  
 44% - 56%

**UH-Downtown**



**Male - Female**  
 40% - 60%

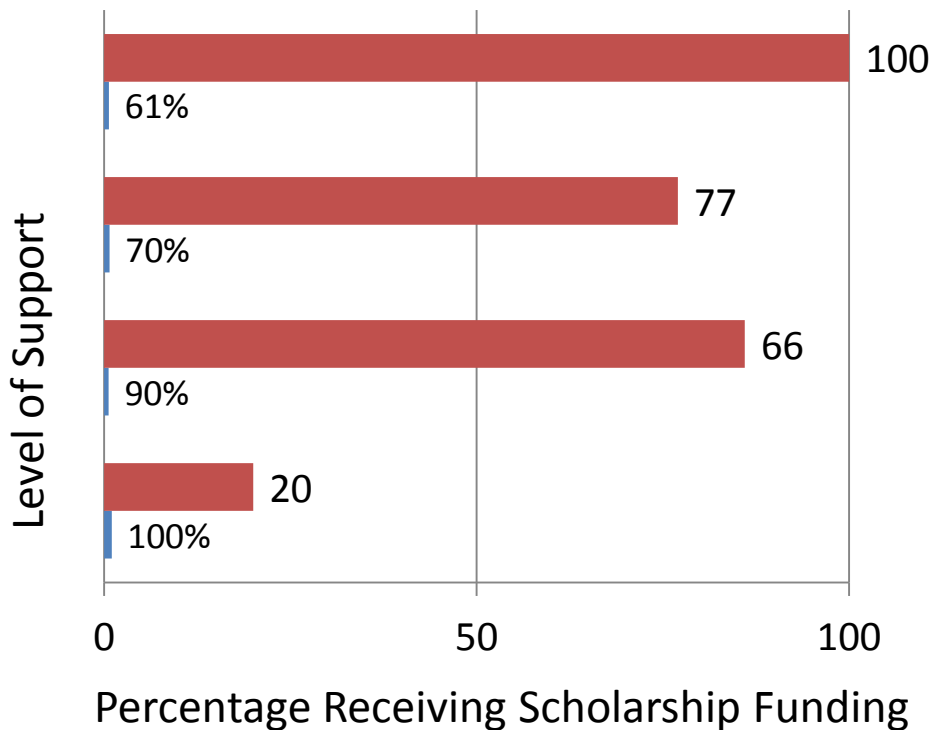
- Hispanics
- African American
- Caucasian
- Asian/ Other

UHD has the most diverse student population of any liberal arts university in the Western U.S., according to *U. S. News & World Report*.

# SA STEM Demographics



## Tuition Scholarship Support



SA FTIC Graduation Rate  
**47.34%**

SA FTIC 6-Year Graduation Rate  
**42.51%**

SA FTIC 1-Year Retention Rate  
**64.08%**

SA FTIC Entering  
 Grad/Professional School  
**44.9%**

SA Total Entering  
 Grad/Professional School  
**40.6%**

Value Added to UHD  
 FTIC 6-year Graduation Rate  
**1.73% (over 1999-2006)**



# Graduation Demographics



## SA Prior and Current Members (1070)

AI – 0.6%; A/O – 24.8%; **Black – 16.4%; Hispanic – 37.9%; W – 20.4%**

## SA STEM Graduation Rate (522 or 48.8%)

AI – 0.4%; A/O – 31.6%; **Black – 13.8%; Hispanic – 33.3%; W – 20.9%**

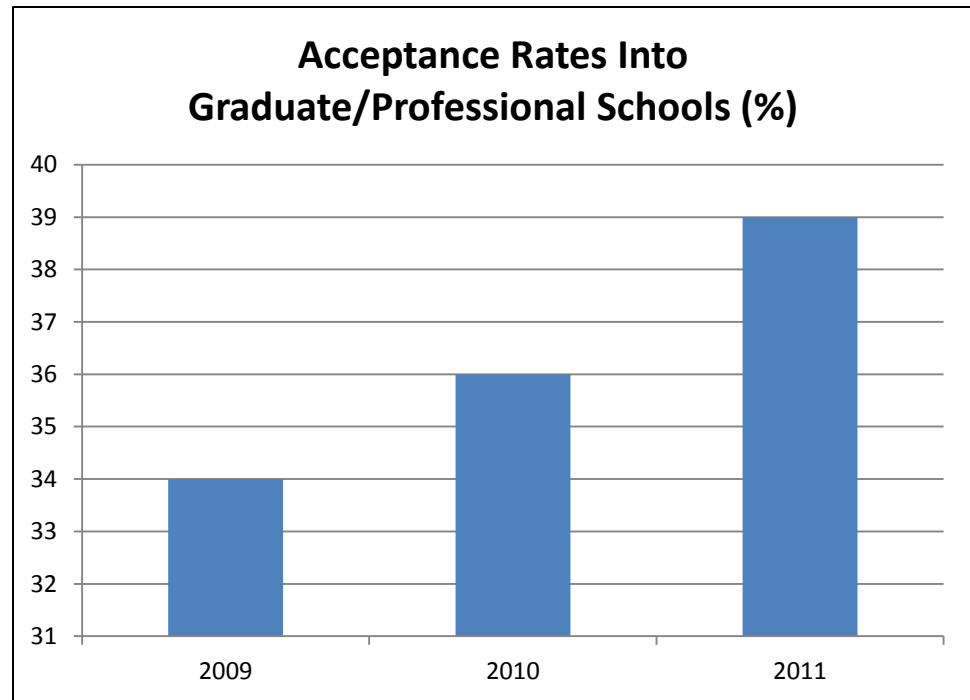
## SA Entering Grad/Professional School (212 or 40.6%)

AI – 0.9%; A/O – 31.1%; **Black – 20.8%; Hispanic – 27.8%; W – 24.1%**

# Overview of Effectiveness



Acceptance into  
Post-Baccalaureate  
Programs



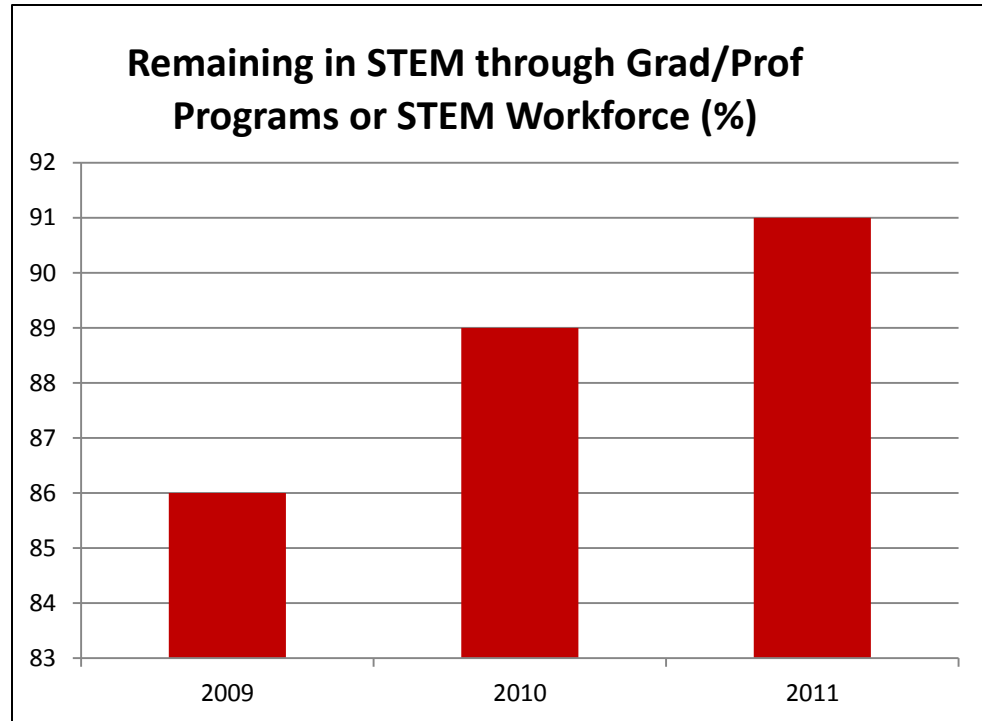
Three year review of increases in acceptance rates into graduate and professional schools by UHD SA STEM undergraduates.



# SA Efficacy



Continuance in  
STEM Beyond  
Undergraduate Years



Three year review of increases in continuity into graduate and professional schools by UHD SA STEM undergraduates following graduation.

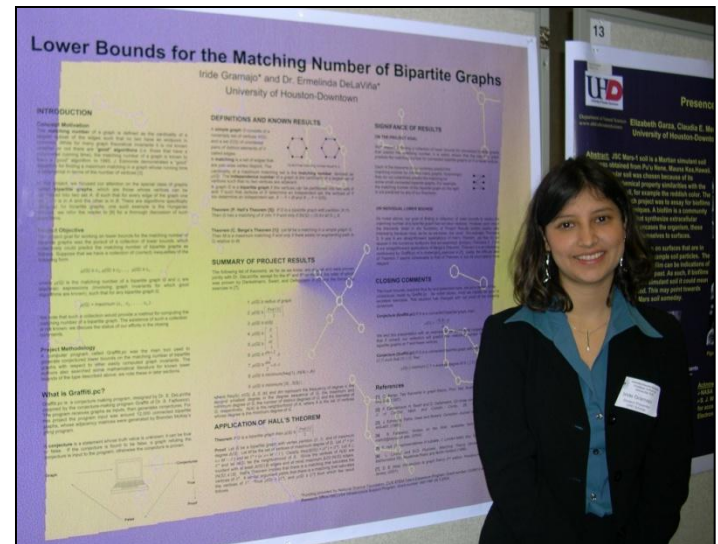
# SA Five Point Model

- **Point 1: Scholarship Support**
  - Barriers to underrepresented project participants are eliminated through academic scholarships. Academic scholarship support ranges from \$3200 to \$8000 per year with stipulations and academic requirements.
- **Point 2: Mentoring**
  - Assignment of SA students to faculty mentor and peer mentor groups. The mentoring activities last the entire 2-4 years in SA; Pre-Start week-long orientation session for entering SA students and parents (early August), a core College Success Program (CSP) course for freshmen and transfer students.
- **Point 3: Broadening Experiences**
  - STEM seminars/field trips by faculty mentors or guest faculty (provided as a mechanism to further broaden and/or provide detailed understanding of STEM career/research possibilities; service learning activities; intervention series per semester presented by faculty mentors.
- **Point 4: Graduate School Preparation**
  - Exposure and preparation for graduate school through development of CV and Personal Statements; a Graduate School and Internship Fair, and GRE Prep workshops (on average students increase their combined Verbal and Quantitative GRE scores by 200 points).
- **Point 5: Scholarly Research/Internships**
  - Opportunities by PhD faculty-mentored research occurs on-site and off-site in competitive research programs nationally; support for conference dissemination of research findings; and possibly co-authorships of published research. SA members are required to submit to 2 research/internship opportunities per semester. These may be internally or externally sponsored.

# Support Programs



- Freshman Programs
- Mentors & Tutors
- Seminars & Fieldtrips
- Service Learning
- Undergraduate Research
- Conferences and Travel
- Social Activities
- GRE Workshops
- Graduate School & Internship Fair





# Freshman Programs



- Summer Prep for Freshmen
  - Testing, STEM Advising, Registering, Research Days
- Parent / Student Colloquium Dinner
  - Providing a better understanding of college expectations & the caring community in which they are joining at UHD
- Pre-College Workshop
  - Exposure to **research** and **college life** in a one-week intensive workshop; Common Book Project
  - Freshman each paid \$220
- College Success Program (CSP)
  - Continue acclimation to college life



# Innovative Freshman and Transfer Seminar (CSP)



## The What

- 1) Building a cohort community of learners, thereby increasing retention.
- 2) Providing first generation STEM students foundational reading, writing, presentation skills, and knowledge/skill of applied research, thereby enabling a visioning process of advanced graduate work for minority students.
- 3) Building leadership skill sets through teamwork and service learning, thus building self-sufficiency, confidence, capacity for the rigors of university academics and STEM careers.

College Life – Scavenger Hunt

Time and Stress Management

Notetaking

Plagiarism

Curriculum Vitae & Personal Statement Development

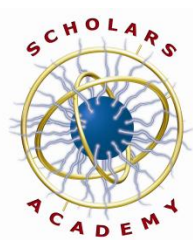
Service Learning

Technology in Mathematics

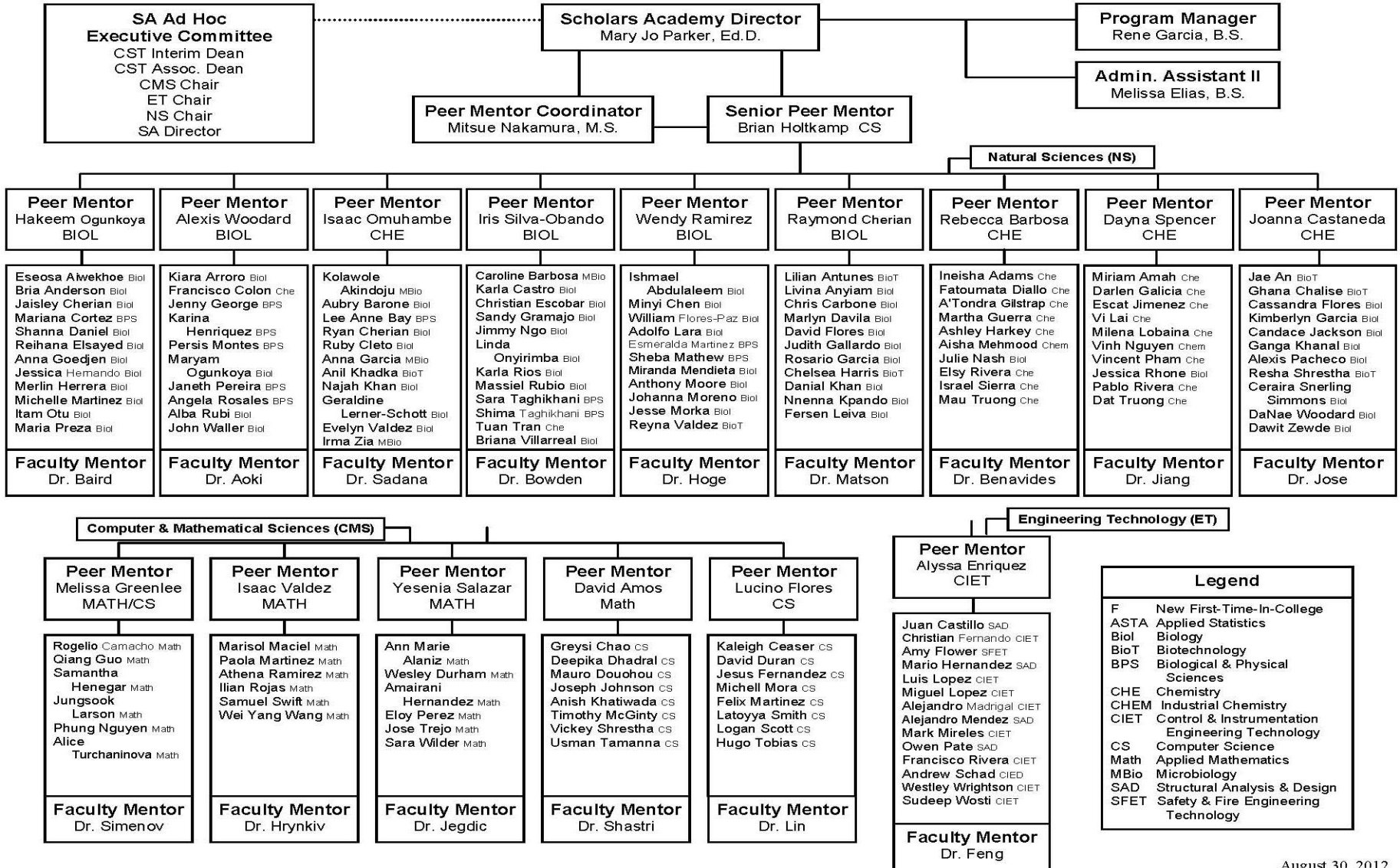
Field Trip

Research Through Movie Project

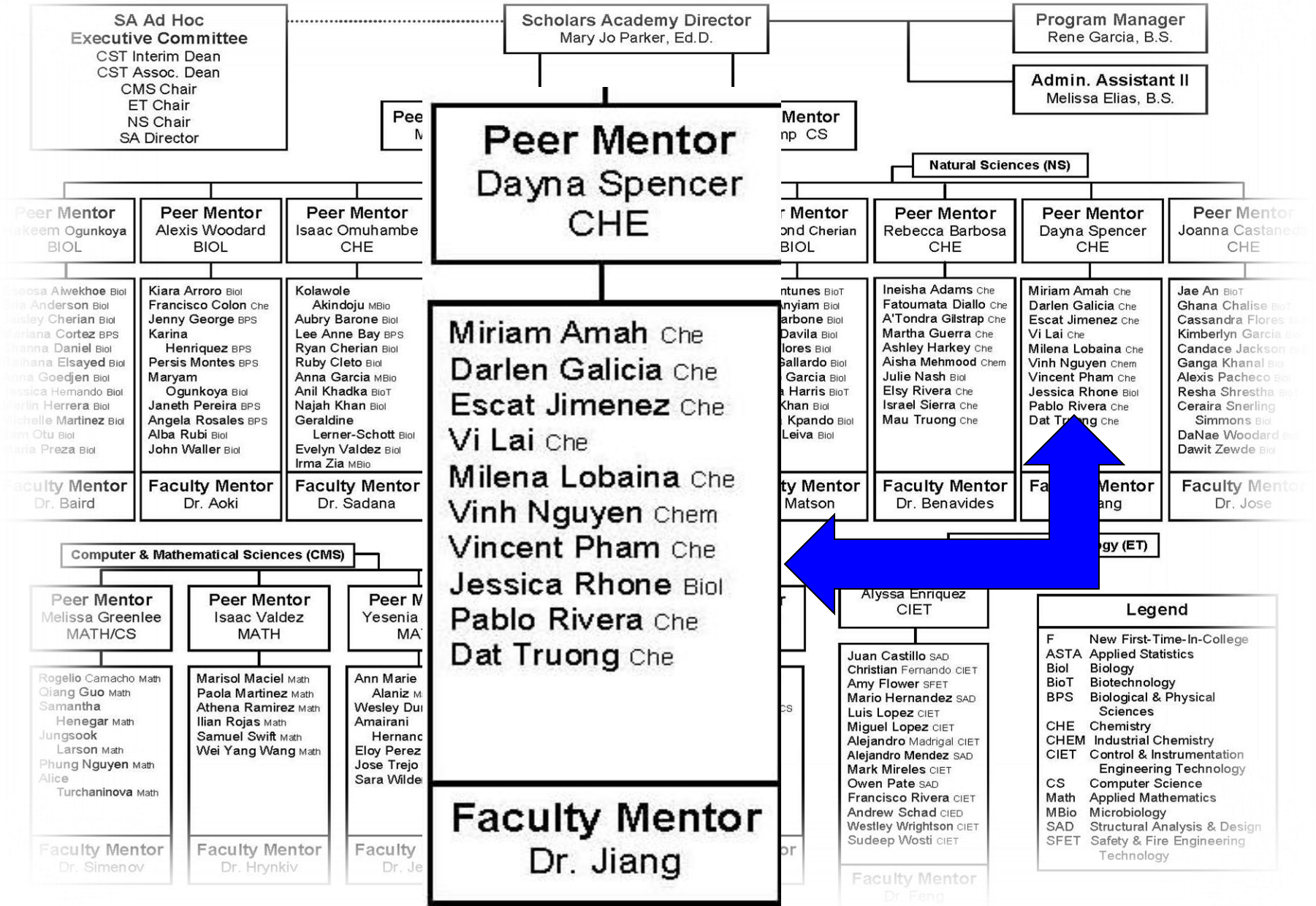
# Mentoring Support



## Fall 2012 UHD Scholars Academy Roster



Fall 2012 UHd Scholars Academy Roster



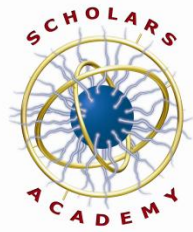
**Peer Mentor**  
**Dayna Spencer**  
CHE

**Miriam Amah** Che  
**Darlen Galicia** Che  
**Escat Jimenez** Che  
**Vi Lai** Che  
**Milena Lobaina** Che  
**Vinh Nguyen** Chem  
**Vincent Pham** Che  
**Jessica Rhone** Biol  
**Pablo Rivera** Che  
**Dat Truong** Che

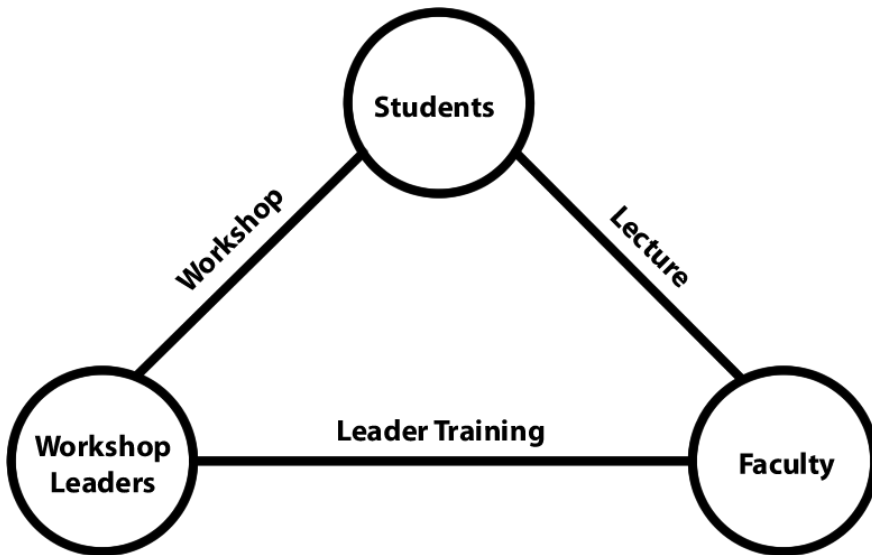
**Faculty Mentor**  
**Dr. Jiang**

Legend	
F	New First-Time-In-College
ASTA	Applied Statistics
Biol	Biology
BioT	Biotechnology
BPS	Biological & Physical Sciences
CHE	Chemistry
CHEM	Industrial Chemistry
CIET	Control & Instrumentation Engineering Technology
CS	Computer Science
Math	Applied Mathematics
MBio	Microbiology
SAD	Structural Analysis & Design
SFET	Safety & Fire Engineering Technology

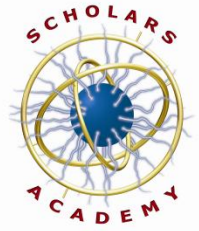
# Tutoring Services



- Free Tutoring for most STEM courses
  - Includes lower and upper level courses
- Peer-Led Team Learning ([www.pltl.org](http://www.pltl.org))



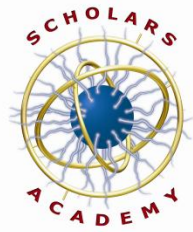
# Service Learning



- Peer Mentors organize group volunteer activities
- Reflections in surveys and presentations
- About 400 volunteer hours per semester



# Field Trips and Seminars



- Houston Crime Lab
- Texas A&M College of Veterinary Medicine
- NASA Johnson Space Center
- Texas Brazos Bend State Park
- Texas A&M Nuclear Science Center
- Memorial Hermann Hospital
- Huntsville State Park Blue Lagoon Quarry
- HAAC Fermentation/Winery
- Schlumberger, ExxonMobil, Sharkbyte Studios
- Houston area construction sites
- UH Visual Computing Lab
- UH Pharmacy School
- M.D. Anderson Cancer Center
- Austin area Geology Field Trips
- Museum of Health and Medical Science
- Green's Bayou Wetland Mitigation Bank
- Houston Museum of Natural Sciences
- Downtown Houston Historic District
- Science & Engineering Fair of Houston
- Bayer Plant in Baytown
- Plus numerous off-campus conferences



# Undergraduate Research



- **Year-round Undergraduate Research Program**

Paid research program where Academy students work with PhD faculty in STEM fields at UHD (about 50 students).

- **Promotion of Off-Campus Research**

Students participate in collaborative off-campus research programs (about 20 placements each summer).

- **Conference Travel Support**

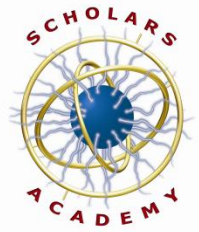
Paid Travel for students presenting research at peer-reviewed scientific conferences nationwide (70-80 yearly).

- **Student Research Conference**

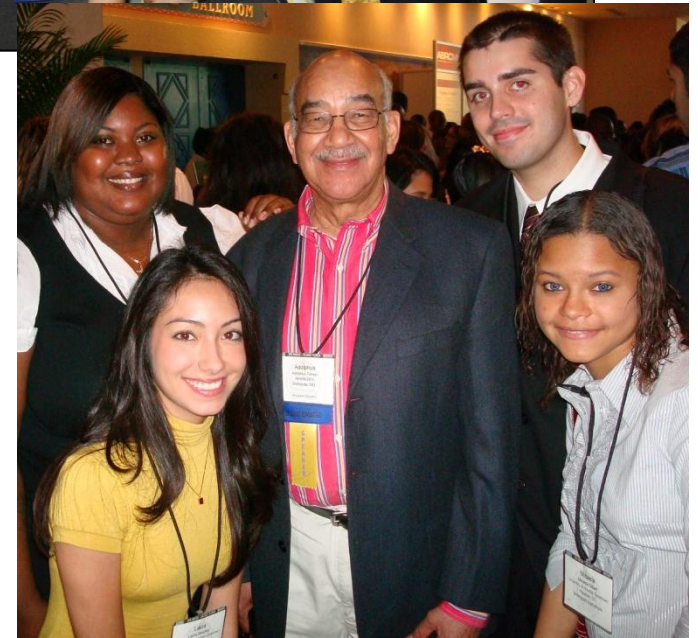
Campus-wide student research conference held each spring at UHD (about 100 posters yearly).



# Student Travel



- Texas Branch of the American Society for Microbiology (ASM)
- Georgia Institute of Technology FOCUS Scholars Program
- Mathematical Association of America (MAA) Joint Mathematics Meetings
- National Sigma Xi Student Research Conference
- Annual Biomedical Research Conference for Minority Students (ABRCMS)
- National Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) Conference
- Hispanic Engineer National Achievement Awards Conference
- Annual Texas Undergraduate Mathematics Conference
- National Institute of Standards and Technology (NIST) Annual Conference
- National Conference on Undergraduate Research (NCUR)
- American Chemical Society National Meeting
- South Texas Chapter of the Health Physics Society



# Social Activities

- Student Clubs in STEM
  - Community Service
  - Pizza/Puzzle Party
  - Programming Contests
  - Science Jeopardy
  - Tutoring/Reviews
  - Mission Trips
  - Socials / Parties
  - Throw Pie at Teacher





# Summary Results



- In our 14<sup>th</sup> year of...
  - Educating Students and Graduating Leaders
- Over 1,000 Scholars
- Over 3,600 scholarships awarded (> \$6M)
- Over 750 community service hours yearly
- Over 100 research presentations yearly
- Over 600 Alumni
- 39% in Graduate/Professional Schools

# Recent Recognitions



- **Excelencia in Education 2011 Competition**

- The Scholars Academy nominated and notified as one of 15 Finalists
- Featured in Examples of Excelencia! – <http://edexcelencia.org>



- **2011 President's Higher Education Community Service Honor Roll**

- Scholars Academy is one of three UHD programs recognized as contributors towards the award
- Awarded by the Corporation for National and Community Service



# Student Success Results



## 39% Attend Graduate/Professional School

- Arizona State University
- Baylor College of Medicine
- Columbia University
- Harvard University
- Johns Hopkins University
- Penn State University
- Prairie View A&M University
- Rice University
- Texas A&M University
- Texas Tech University
- University of Houston-Central
- University of Maryland
- University of Notre Dame
- University of Southern California
- University of Texas El Paso
- UT Medical Branch-Galveston
- UT Health Science Centers – Dallas/Houston/San Antonio
- York University (Europe)



**S**cholarship and  
Stipend Support

**T**utors and Peer  
Mentors

**U**ndergraduate Faculty  
Mentors

**D**iversity

**N**ational Recognition

**T**raining in  
STEM  
Research

**S**ervice and  
Outreach

**E**stablishing a  
Bridge

**C**ommunity  
Building

**C**ulture of Academia

**S**uccessful  
Entrance into  
Graduate and  
Professional  
Schools

**U**se of STEM Seminars  
and Fieldtrips

**E**xpanding the  
STEM Pipeline

**S**TEM Graduate  
School  
Prep

Scholarship and  
Stipend Support

Tutors and Peer  
Mentors

Undergraduate Faculty  
Mentors

Diversity

# Student

National Recognition

Training in  
STEM  
Research

Service and  
Outreach

Establishing a  
Bridge

# Success

Community  
Building

Culture of Academia

Successful  
Entrance into  
Graduate and  
Professional  
Schools

Use of STEM Seminars  
and Fieldtrips

Expanding the  
STEM Pipeline

STEM Graduate  
School  
Prep

163 STEM undergraduate Academy members




UHD Scholars Academy – Spring 2012

# Acknowledgements



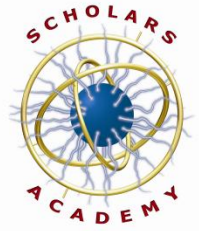
## Founders and Initial Grant Writers

- Larry Spears, Professor in Chemistry, UHD
- Richard Alo, Professor in Computer Science, UHD

 Current and prior SA Directors and the SA Program Manager are recognized and acknowledged as innovators and leaders in developing the SA to its current level of success.

## Current and prior Funding Agencies

- National Institutes of Health
- National Science Foundation
- Texas State Legislature
- Texas Workforce Commission
- Brown Foundation, Hamill Foundation, Welch Foundation
- Shell Oil Company Foundation
- U.S. Army Research Office
- U.S. Department of Education
- U.S. Nuclear Regulatory Commission
- U.S. Office of Naval Research
- University of Houston-Downtown



**Thank You for Your Attention.**

**Questions?**

**[www.uhd.edu/scholars](http://www.uhd.edu/scholars)**