

NASA Harriett G. Jenkins Pre-Doctoral Fellowship Project (JFPF)
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Project Description

The Harriett G. Jenkins Pre-doctoral Fellowship Project (JFPF) was established in September 2000 as a result of a cooperative agreement between NASA Headquarters' Office of Education and the United Negro College Fund Special Programs Corporation (UNCFSP). The project is named in honor of Dr. Harriett G. Jenkins, the former NASA Assistant Administrator of Equal Opportunity Programs. Today, Dr. Jenkins continues to make significant contributions to the Nation's aerospace industry and the technical workforce. Her dedication to institutions of higher education is exhibited by the support and development of numerous programs designed to build institutional research capabilities. Dr. Jenkins' devotion has led to an increase in the number of women, minorities and disabled persons earning post-baccalaureate degrees in the science, technology, engineering, and mathematics (STEM) disciplines, and a corresponding rise in participation in the NASA-sponsored research and education community.

Building upon the work of Dr. Jenkins, the JFPF has further increased the number of technical women, minorities, and persons with disabilities participating in the workforce, helping meet the demand for skilled workers in STEM-related disciplines. Since the program's inception, 211 students have been awarded JFPF fellowships of which 119 have received PhDs and 18 confirmed they currently work at a NASA center.

Project Goals

Goal 1: Increase the number of underrepresented minority graduate students and preparing them to enter the STEM workforce.

Objective 1.1: Annually provide tuition assistance and stipend support for up to 20 underrepresented students in pursuit of Master's and Doctoral degrees in NASA-related disciplines.

Objective 1.2: Annually provide a 10-week, hands-on research experience at a NASA Center.

Objective 1.3: Provide two (2) professional and career development activities within the first two years of fellowship tenure.

Objective 1.4: Coordinate an annual symposium event designed to promote networking collaboration and information exchange amongst project constituents and relevant NASA stakeholders.

Goal 2: Develop student's skill sets and competency in applied science and engineering by providing collective and individual outreach opportunities.

Objective 2.1: At the end of Year-1, as part of their professional development workshop, JFPF fellows are assigned a policy-based real life, open ended issue/problem to Cohorts that directly or indirectly impacts NASA.

Objective 2.2: The fellows are provided the opportunity to present their group project findings at the annual symposium event.

Project Benefits to Outcomes 1 and 2

The JFPF Project directly supports the NASA Strategic Plan and the Office of Education's Outcomes. Specifically, JFPF aligns with Outcome 1, *"contribute to the development of the STEM workforce in disciplines needed to achieve NASA's strategic goals through a portfolio of investments,"* and Outcome 2, *"attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty."*

JFPF continues to meet outcomes 1 and 2 by increasing the number of women, minorities and persons with disabilities participating in the STEM workforce, thereby helping meet the demand for skilled worker in STEM-related disciplines. Since the program's inception in 2000, 211 students have been awarded fellowships.

Project Accomplishments

UNCFSP has worked closely with NASA since 2000 to meet NASA's vision to inspire, engage, educate, and employ in the STEM disciplines. The JFPF Project serves as a major contributor to NASA's student pipeline. To date, 211 JFPF fellowships have been awarded and the following has been accomplished:

- 128 females and 83 males
- 119 Fellows have received PhD's (18 in the last fiscal year)
- 54 Fellows have received MS degrees (2 during the last fiscal year)
- 18 Fellows have confirmed employment with NASA (*5 are conducting Post Doctoral Research, 13 are working at a NASA Center through employment by NASA or a Contractor*)
- 40 fellows have pursued their JFPF sponsored graduate degrees at minority institutions
- 30 fellows participated in the 2012 JFPF center-based experience (CBRE)
- 18 fellows were selected as NASA Ambassadors
- 5 fellows were invited to present their research at the International Aeronautical Congress in Naples, Italy

The Annual JFPF Symposium provided participants the opportunity to network, conduct formal research presentations, participate in professional development training, and collaborate on research ideas. The theme of the 2012 JFPF Symposium was ***Celebrating Success: Promoting Excellence in NASA Related Research and Workforce*** and took place July 19-22, 2012 at the Hyatt Regency Orlando International Airport. The Symposium was a jointly hosted with the

NASA Motivating Undergraduates in Science and Technology (MUST) 21st Century Leadership Symposium and NASA Kennedy Space Center. Participants included undergraduate and graduate minority students, faculty members from minority institutions, community leaders, and NASA officials. Eight JFPF fellows and two alumni presented their NASA related research at the Symposium:

Research Presentation Titles
The Environmental Dependence of Galaxy Disk (Re) Growth
Behavior Analysis of Yellow Ratsnakes; A Predator of the Threatened Florida Scrub-Jay in the Kennedy Space Center’s Merrit Island National Wildlife Refuge
Preparing the Micro-X Mission for Flight
Rationale Design of Multifunctional Nanostructured Materials
Revisiting the Activity-Variability Relation with Kepler Data
Characterization and Control of Permanent Magnet Synchronous Motors
Microgravity Effects on the Electrochemical Oxidation of Ammonia: A Parabolic Flight Experiment
Selective and Sensitive Detection of Primary Amines in Titan Tholins Using 18 Crowns -6 Ether Complexation and Fixed Charge Derivation
Seismic and GPR Measurements in Polar Environments
Hydrothermal Fabrication of Iron Sulfide Chimneys and Organic Molecules

The 2012 JFPF Symposium provided various professional development seminars and inspiring talks by visionaries like *Ellen Patnaude* of the Leader’s Institute, *Brian Wong* of Kiip, and *Jonathan Sprinkles*.

Project Contributions to Annual Performance Indicators (API) Measures

Since the project’s inception in 2000, JFPF has continued to meet the goal of increasing the number of women and minorities.

Measure Number	Annual Performance Indicator (API) Description
PART Measure 1	Achieve 40 percent participation of underserved and underrepresented (race and/or ethnicity) in NASA higher education projects
PART Measure 2	Achieve 45 percent participation of women in NASA higher education projects

The current enrollment for 2012 is 66% female and 71% report being a minority (*14 Hispanic, 2 American Indian or Alaskan Native, 21 African American, 1 Native Hawaiian*). Both of these percentages exceed the API Measures.

Project Partners and Role of Partners in Projects Execution

The United Negro College Fund Special Programs Corporation is the Principle Investigator for JPPF.

A total of 30 JPPF students participated in the 2012 JPPF Center Based Research Experience (CBRE) at the following eight (8) NASA centers:

- NASA Ames Research Center (ARC)
- NASA Dryden Flight Research Center (DFRC)
- NASA Glenn Research Center (GRC)
- NASA Goddard Space Flight Center (GSFC)
- NASA Jet Propulsion Laboratory (JPL)
- NASA Johnson Space Center (JSC)
- NASA Kennedy Space Center (KSC)
- NASA Marshall Space Flight Center (MSFC)

The following NASA facilities and University also hosted JPPF students for their CBRE.

- **Wallops Flight Facility (WFF)**
- **Sands Missile Range (WSMR)**
- **University of Kansas**