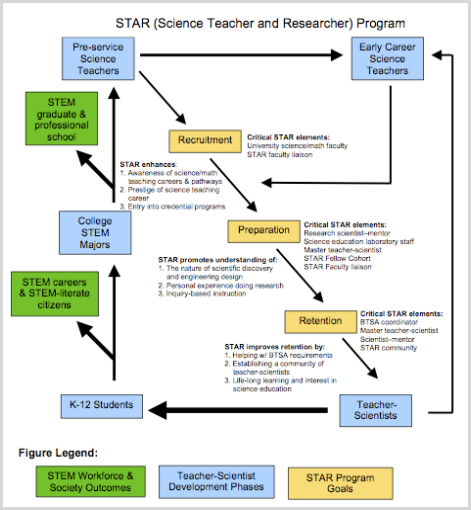
STAR - Science Teacher and Researcher Program

STAR Model

The Science Teacher and Researcher (STAR) program addresses the science and mathematics teacher recruitment and retention crisis by creating a prestigious dual "teacher-researcher" career path. Founded and implemented in 2007 by the Cal Poly Center for Excellence in Science and Mathematics Education (CESaME) on behalf of the California State University (CSU) system, STAR provides cutting edge research experiences and career development for pre-service and early career teachers during early critical years. By anchoring pre-service teachers in the scientific research community, they will come to better understand what it means to be a researcher as well as an effective teacher of science or mathematics.

Key experiences of STAR are one or more summers of paid research internship experience in national laboratories (Department of Energy, NASA) and other research facilities, weekly science education workshops, and opening and closing program conferences.

STAR has three main goals for addressing the crisis in science and mathematics teaching: (1) enhanced recruitment of high-quality teachers, (2) improved teacher education and professional development, and (3) improved teacher retention rates.



STAR Program Details

Through 8- to 10-week research internships at national lab facilities, STAR Fellows work closed with research mentors on cutting-edge science projects. STAR Fellows present their work at scientific poster sessions each summer. Facilitated by a university science education faculty member, a master teacher, and lab site education coordinator, STAR Fellows also meet for weekly half-day education workshops focused on integrating the "doing" of science with the "teaching" of science.



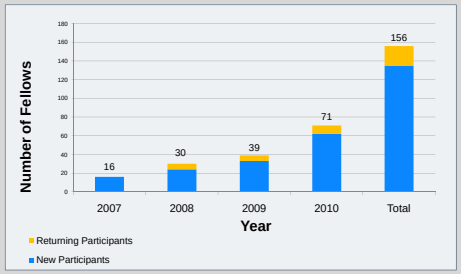

Sample Projects from STAR 2010

- Active Galactic Nuclei Variability with Wide-field Infrared Survey Explorer (WISE)
- Advanced Deposition Control for High Quality Coatings for "Green" Windows
- Algae and Cyanobacteria for use in Sustained Human Space Flight
- Analyzing Fourier Transforms for NASA DFRC's Fiber Optic Strain Sensing System
- Assessing Nuclear Proliferation by Using System Dynamic Modeling
- Carbon Flux Between Leaf Litter and Mineral Soil
- Characterizing Laser Communication Performance in a Simulated Space Environment
- A Comparitive Study of Botryllid Tunicates Regeneration in the San Francisco Bay
- The Design and Testing of a Ground-based Gamma Ray Telescopic Array
- Effective Area Validation of the Fermi Large Area Telescope
- Modernizing Accelerator Mass Spectrometer Data Acquisition
- The Oscillatory Motion of Carbon Nanotubules
- Physiological Effects of the Environmental Pollutant Nonylphenol on the Sea Squirt *Ciona intestinalis*
- Pre-earthquake Signatures in Thermal Infrared and Radar Data
- Proteomic Biomarker Discovery in Sickle Cell Disease
- *Yersinia pestis* Proteomics and Vaccine Development

Summer 2009 STAR Cohort

Growth of STAR: 2007-2010

Between 2007-2009, eight California lab sites hosted a diverse group of 85 STAR Fellows from 18 different CSU campuses. In summer 2010, the program expanded nationally to place 59 STAR Fellows in California and 12 STAR Fellows in new lab partnerships located in Colorado, Maryland, Tennessee, and Washington. This expansion was made possible through funding support provided by the NSF Noyce Scholars Program. The program successfully placed 36 Noyce Scholars during Summer 2010, and has placed 49 Noyce Scholars since the inception of the program.



The program has expanded from one California lab site in 2007 to 14 lab sites in 2010.

Summer 2010 STAR Cohort

STAR Goals

STAR strives to improve the overall quality of science and mathematics instruction by:

- Providing future science and math teachers with an authentic scientific research or engineering design experience in a national laboratory.
- Fostering inquiry-based science learning strategies.
- Supporting aspiring and early career teachers in the critical early years of their development.
- Encouraging aspiring teachers to pursue additional subject matter authorizations.
- Creating a sense of belonging to a larger community of scientists, teachers and educators.

Impact of STAR

STAR leverages the expertise and resources of the Department of Energy, NASA, educational institutions, and professional development programs, including the NSF Noyce Scholars Program, to develop the next generation of science and math teachers. Evaluation results indicate that the program is effective at recruiting high quality STEM majors into the teaching careers and impacting their attitudes and beliefs regarding the nature of scientific research and teaching science through inquiry. When surveyed at the end of the summer 2009, STAR Fellows indicated that STAR increased their interest in teaching (89%), contributed to feeling more prestige about teaching as a profession (89%), and made them feel like they were part of a broader community of teacher-researchers (100%). Plans are being developed to conduct a multiyear longitudinal study of STAR alumni and their students to demonstrate the impact of the STAR Program in the classroom.

Apply for STAR 2011

Applications for STAR 2011 will be available in fall and due on January 31. For application materials and additional information on the program, visit:

http://www.STARteacherResearcher.org

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