STAR - Science Teacher and Researcher Program

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STAR Goals

STAR strives to improve the overall quality of science and mathematics instruction with the following goals:
1. Attract undergraduate science and mathematics majors to teaching careers by providing them with professional identities as scientists as well as educators
2. Allow future science and mathematics teachers to gain first-hand experience within applied research settings
3. Cultivate increased interest and prestige in the science and mathematics teaching profession to address the severe shortage of science and mathematics teachers in California
4. Anchor pre-service teachers in a community of scientific practice, so that they will come to better understand what it means to be a scientist and a teacher of science or mathematics
5. Foster inquiry-based science teaching strategies and increase science and math interest and learning among K-12 students
6. Reduce science and mathematics teacher attrition

Program Products

STAR Fellows are expected to prepare an abstract and research poster for presentation at the STAR closing conference as well as at lab site poster sessions. Starting in 2011, STAR Fellows will also be expected to prepare an educational artifact that links their research to the classroom.

Growth of STAR: 2007-2010

Between 2007-2010, STAR has supported 156 internships at 15 different lab sites. STAR Fellows represent 30 different universities, including 21 CSU campuses, and 49 have been Noyce Scholars.

The program has expanded from one California lab site in 2007 to 15 lab sites in 2010.

Evaluation Data

As of fall 2010, 88% of alumni (2007-2010) are currently on a teaching career path.

Sample Projects from 2010 STAR Fellows

- 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 Comparative Study of Balintre 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 Nanotubes
- Physiological Effects of Environmental Pollutant Nonylphenol on 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

Not Pursuing Teaching

- Pre-Credential: Job Seeking, Subbing or Tutoring
- Credential: Job Seeking
- Credential: With Intent to Teach
- Not Pursuing Teaching

Science Teaching Efficacy Belief Instrument (STEBI-B)

- Efficacy Belief increased 5%
- Outcome Expectancy increased 10%
- Both increases were statistically significant (p < .01)

Views on Science and Education Questionnaire (VOSE)

- The belief that theories can change and do evolve to be more accurate with accumulated data
- The idea that scientists’ personal beliefs and expectations can influence observations
- The belief that a scientist’s intuition contributes to science
- The belief that scientists must invent new methods
- Beyond the traditional definition of the scientific method
- The belief that no fixed scientific method exists

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For more info: http://www.STARteacherResearcher.org

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Program Operations

Through 8- to 10-week research internships at national, independent, and university lab facilities, STAR Fellows, comprised of pre-service and early career science and math teachers, work closely 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 weekly for half-day education workshops focused on integrating the “doing” of science with the “teaching” of science.

Summer 2009 STAR Cohort

Summer 2010 STAR Cohort

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