

# SEP NEWSLETTER

## CALIFORNIA LAWMAKERS SUPPORT UC'S K-12 OUTREACH EFFORTS

### SEP expands with new resources from UC, NSF

Faces are smiling around the SEP offices these days. After years of operating programs with a hand-to-mouth budget and the insecurity that comes from extramural funding, several boats sent out over the past year have sailed back into the harbor – with a little help from the California State Legislature. The first boat came back with news from the University of California Office of the President (UCOP) that SEP would receive an allocation of \$125,000 to initiate a California Science Project for professional development in San Francisco's public schools. A second boat sailed back from the National Science Foundation (NSF) with the news that SEP's Triad program received a continuing grant of \$900,000 over three years to expand the program and create a national dissemination package (see article, page 6). And then, a big clipper ship came back from UCOP with the news that UCSF had received a block allocation of \$895,000 for 98-99 to support University-School Partnerships, of which \$400-500,000 will go to SEP, in order to work with low performing high schools and their feeder schools.

With the exception of the NSF funds, these allocations have come

*SEP volunteers staff the surplus equipment and supplies give-away as teachers select items to take back to their schools and classrooms – always a popular activity at the Fall Kick-Off (see article, page 3).*

through the California State Legislature. This past August, California lawmakers allocated a total of \$38 million to the University of California for academic outreach programs involved with K-12 education. There was one caveat, though – that \$31 million of these allocations be matched with other funding sources and/or in-kind contributions. UC also will administer \$12.2 million in State-legislated funds

(AB 1734; Mazzoni) to support the California Subject Matter Projects. The net result of this infusion of resources and matching funds with existing resources is that UC spending on outreach programs is expected to reach \$125 million, more than double \$65 million spent in 97-98.

The charges of these moneys are to increase the number of educationally disadvantaged students eligible and  
*(UC K-12 Outreach continued on page 3)*

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## About SEP

The Science & Health Education Partnership (SEP) is a collaboration between the University of California, San Francisco (UCSF) and the San Francisco Unified School District (SFUSD). Its mission is to support high quality science and health education for all students in San Francisco's public schools and to serve as a national model of partnership. Programs include partnerships between UCSF volunteers and SFUSD teachers, MedTeach, Triad, the operation of a Resource Center, the Student Lesson Plan Contest, equipment and supply donations to schools, and internships for teachers and high school students. SEP also supports SFUSD programs including City Science and SF Base. SEP is an Academic Unit under the UCSF Office of Student Academic Affairs and is made possible in part through funds from NSF, the Howard Hughes Medical Institute, the UC Office of the President, the UCSF Chancellor, Genentech, and private donations.

SEP General: (415) 476-0300  
Fax: 476-9926  
Resource Center: 502-6689  
web: <http://www.ucsf.edu/sep>

### Team SEP

Liesl Chatman  
Executive Director  
476-0337 / [liesl@itsa.ucsf.edu](mailto:liesl@itsa.ucsf.edu)

Helen Doyle, Ph.D.  
Coordinator, Middle School Programs  
502-6324 / [hdoyle@itsa.ucsf.edu](mailto:hdoyle@itsa.ucsf.edu)

Tracy Stevens, Ph.D.  
Coordinator, High School Programs  
502-5137 / [tracys@itsa.ucsf.edu](mailto:tracys@itsa.ucsf.edu)

Erin Strauss  
Coordinator, Elementary School Programs  
476-0338 / [citysci@itsa.ucsf.edu](mailto:citysci@itsa.ucsf.edu)

Patricia Caldera, Ph.D.  
Interim Coordinator, Triad  
502-6690 / [pcaldera@cgl.ucsf.edu](mailto:pcaldera@cgl.ucsf.edu)

Kimberly Tanner, Ph.D.  
NSF Fellow  
476-6937 / [kim@phy.ucsf.edu](mailto:kim@phy.ucsf.edu)

Erik Wilson, Ph.D.  
NSF Fellow  
502-6689 / [erikred@itsa.ucsf.edu](mailto:erikred@itsa.ucsf.edu)

Roberta Heidt  
SEP Administrative Assistant  
476-0300 / [rhp@itsa.ucsf.edu](mailto:rhp@itsa.ucsf.edu)

Cynthia Gusman  
City Science Administrative Assistant  
476-6937/[cgusman@muse.sfusd.k12.ca.us](mailto:cgusman@muse.sfusd.k12.ca.us)

*Kimberly Tanner, Patricia Caldera, and Erik Wilson transition into new roles with SEP.*

## Team SEP Expands

There are three new but familiar faces at SEP. Patricia Caldera, Kimberly Tanner, and Erik Wilson are all former volunteers who have moved into new positions. Patricia Caldera is the new interim coordinator for Triad, replacing Kimberly Tanner who has become SEP's second National Science Foundation (NSF) Postdoctoral Fellow in Science, Mathematics, Engineering, and Technology Education (PFSMETE). The first NSF fellow, Erik Wilson, has now been with SEP for a year.

Patricia has been an active SEP volunteer in many elementary and middle school programs over the years. She was born and raised in Mexico where she received a degree in Chemistry from the Universidad de Guanajuato. After moving to the USA, she received a Ph.D. in organic chemistry from New York University in 1984. She then worked in the laboratories of Almira Correia, Neal Castagnoli, and Tack Kuntz at UCSF and rekindled a long-standing interest in science education. After many positive experiences as a volunteer, she now looks forward to the new challenge of coordinating Triad (see page 4).

Kimberly was a long-time SEP volunteer during her graduate years and then served as the 1997-98 interim coordinator for Triad. Kimberly is

excited to return to research, sans rats, and will now be working in collaboration with the Stanford Center for Educational Research. Kimberly plans to evaluate SEP programs that promote scientist-teacher partnerships, determine strategies which promote successful partnerships, and assess the impact of these collaborations on students, teachers, and scientists. The results of her studies will be used to create materials to aid universities and school districts nationwide interested in founding partnership programs modeled on SEP's programs.

Erik started as a volunteer by working with teachers to build a support website for the SFUSD K-5 science kits (<http://nisus.sfusd.k12.ca.us/programs/cipd/science/>) and has continued that project as an NSF PFSMETE. He has also assembled a new SEP website (<http://www.ucsf.edu/sep/>) with a searchable database for the SEP Resource Center and articles from old SEP newsletters. Erik has also done online science talks with Tapped In, a virtual professional development environment for teachers (<http://www.tappedin.org/>) and is working on the UC NEXUS project. Erik hopes to find ways to improve the use of the Internet as a channel for scientist-teacher partnerships and for teacher professional development. *-EW*

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## SEP Kicks Off Its 12th Year

San Francisco teachers, UCSF volunteers, and honored friends and guests celebrated a dozen years of partnership in science and health education at the annual SEP Kick-Off Conference at UCSF on October 14. With over 200 attendees, this year's Kick-Off was the most well attended in recent years. Opening remarks from SEP Executive Director Liesl Chatman and State Assembly Member Kerry Mazzoni set a tone of excitement and anticipation for the upcoming year's programs, which were described in individual workshops following the welcoming ceremony. Assembly Member Mazzoni discussed bills and budget items passed by the Assembly that will affect public education statewide in the future and she responded to questions on a variety of related issues. As described in the front page article, SEP was pleased to announce that new funds from the UC Office of the President will provide continued support for current programs and allow for more focused partnerships with individual schools and for SEP's participation in the California Science Project. Assembly Member Mazzoni wrote and sponsored the bill that includes support and guidelines for the California Subject Matter Projects including the Science Project.

The Kick-Off continued with individual program workshops highlighting opportunities at each grade level as well as general programs such as the SEP Resource Center. A major new program this year is the Triad Alliance for Gender Equitable Education, recently-funded by the National Science Foundation, which will continue the work of the Triad Project in middle schools (see article on p. 4). Following the workshops, the Kick-Off reception was as chaotic and upbeat as ever, with teachers selecting their free lab supplies and raffle items and UCSF volunteers waiting patiently to get fingerprinted in compliance with the new state law. Friends and colleagues greeted each other and shared summer adventures and school "war stories" over food and drinks. Another school year is well

underway!

Thanks go out to the UCSF volunteers who helped with the registration and give-aways and especially to the San Francisco School Volunteers office for their help with fingerprinting. Also many thanks go to the San Francisco teachers and UCSF volunteers who make the partnership happen. *-HD*

*(UC K-12 Outreach from page 1)*

competitive for UC admissions and to improve student achievement in low-performing schools. Of the \$38 million, \$15 million is dedicated to school-centered outreach and \$15 million to student-centered outreach, two approaches recommended in the Report of the UC Outreach Task Force (7/97). School-centered outreach involves establishing partnerships with low-achieving schools in cooperation with local community colleges and universities. The aim of the school-centered partnership efforts is to achieve major improvements in student learning outcomes and to effect broad scale changes in school culture and practice in order to improve college-going rates of students. Activities, which are in alignment with the ongoing work of SEP, include professional development for teachers, curriculum support and enhancement, and support for beginning teachers. Student-centered outreach focuses on academic development programs that work directly with students to increase the number of students in disadvantaged circumstances who are eligible and competitively eligible to attend the University. Examples include programs such as Mesa and Puente, and test-preparation courses, Saturday academies, and summer programs for students.

SEP staff members have begun the work of talking with teachers, principals, and District leadership to formulate plans which address the goals of the various stakeholders. At the same time, staff members have been meeting with representatives from other UC campuses under the leadership of Karl Pister, Bob Polkinghorn, Margaret Heisel, and Dennis Galligani from UCOP to share strategies. A major emphasis of the work ahead will be to document and evaluate these efforts in order to inform practice, design, and policy decisions. Programs that present the most clear and concise evidentiary cases before the legislature will be more competitive for sustained funding. The UC system-wide evaluation effort is being overseen by Saul Geiser. *-LC*

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*With the infusion of new resources, aspects of Triad which were cut last year, such as Family Science Nights as shown here at Luther Burbank Middle School, can be restored.*

## Triad Evolves with a New NSF Award

Perseverance pays off. That's one of the lessons the Triad program tries to instill in its students, and that's the lesson that the program itself has learned. Readers familiar with the Triad effort – which encourages girls and women in math, science, and engineering – know that without renewed NSF funding last year, the program operated on a shoestring budget. But staff and participants persevered. Everyone chipped in and the program continued at 12 SFUSD middle schools with the participation of 23 UCSF scientist, 22 SFUSD teachers and more than 300 students. At the same time, the renewal grant was revised and resubmitted. In September, NSF notified Principal Investigator Liesl Chatman, that the evolving effort proposed in the Triad Alliance for Equitable Teaching was awarded. What follows is a brief description of the new directions in which Triad is heading.

While Triad's continuing mission is still to promote the interest of girls and women in science and to promote gender equity in science education, the new funding will enable SEP to expand the program. With the 1998-2001 award,

SEP/Triad will both pioneer a multi-tiered professional development program in gender equity and undertake a comprehensive research, documentation, and dissemination effort. The goals for the professional development program are to: 1) engage teacher and scientist partners in professional development focused on implementing equitable teaching strategies and engaging in reflective practice (see related article on Case Study Teams, page 6); 2) develop a cadre gender equity leaders and mentors in the public schools and university; and 3) enable teacher and scientist partners to pursue research into the effectiveness of their gender equity efforts on girls. In addition, since this work is of national interest, documentation of Triad and its outcomes will be assembled into a "how-to" manual and dissemination package during the third project year. Through these goals, Triad aims to affect coeducational classrooms, build sustainability, and disseminate the Triad model.

In order to accomplish these revised goals, the Triad Alliance will expand through three integrated programmatic

strands which will allow the program both to bring in new teachers and scientists and to provide growth for veteran participants wishing to continue their work with Triad. These program strands are:

Introductory Program in Gender Equity  
Leadership & Mentorship Network  
Equity Action Research Group

The Introductory Program will be for new participants (teachers and scientists in their first and second year of participation). In recruiting new teachers, Triad's emphasis will be focused on beginning and non-science credentialed teachers because a key finding in the Triad evaluation was that Triad had the most significant impact on these teachers. The Leadership & Mentorship Network and the Equity Action Research Group will best serve veteran participants (teachers and scientists in their third year and beyond). These two strands are designed to promote new personal growth and program sustainability, to create products for dissemination, and, most importantly, to deepen teachers' and scientists' ability to implement gender-fair teaching practices.

An exciting aspect of the continuing effort is that SEP will work with an external evaluation team headed by J. Myron (a.k.a. Mike) Atkin, Professor and former Dean of the Stanford Graduate School of Education. Mike has done extensive research on collaborative alliances and action research. He will work with a team composed of two of his graduate students with additional support from one of SEP's postdoctoral fellows and past Triad Coordinator, Kimberly Tanner (see article, page 2).  
-PC, LC

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# Case Study Teams & Student Learning

the questions moved from roots to stems to leaves, it became clear that while the students knew something about structure, function was a different matter entirely.

That afternoon, the teacher found herself wrestling with what to do next. Should she just tell her students what she wanted them to know? Would that result in the best kind of learning? Were there things the students could do with actual plants that would help them develop their understanding of function?

The teacher decided to share her questions with her colleagues at that week's Case Study Team meeting, a structure designed to provide opportunities for the Lab School teachers to talk with one another about their classroom practice. At the meeting, a group consisting of a teacher from each grade level at the school, their UCSF scientist partners, and City Science staff members wrestled with problem. The discussion was rich. When is it appropriate to just give students information? Is inquiry a practical instructional approach? In what ways does the nature of the questions that a teacher uses with her students affect their ability to think about a problem? How much does a teacher need to know about the function of plant parts in order to adequately facilitate her students learning about the subject? The teacher went into her classroom the following day armed with a variety of concrete suggestions she could try with her students.

The City Science Summer Lab for Learning, piloted this past summer as part of the City Science LSC, was well under way. The second graders were busily engaged in a study of plants. They had made observations about the plants in and around the school yard, looked at the seeds in a variety of fruits, germinated an assortment of seeds, and examined the growth of roots. Their teacher had taught the unit before, and things were progressing well. In this case, however, the teacher had taken on a new focus – developing her students' understanding of the concepts outlined in San Francisco Unified School District's life science content standards.

She was working on addressing Content Standard #11, Structure and Function: "Students understand that living things have features that enable them to survive." From their work, it was clear that students had a firm grasp on the kinds of features they could expect to find on a plant. They could draw and label plant parts, point them out on a plant, and talk about them. Surely, given this ability, they would also have some ideas about how those plant parts helped the plant to survive.

The class gathered for a discussion. The teacher began, "Why do you think a plant needs roots?" SILENCE. Prodding resulted in a few ideas, but as

This story is illustrative of the kind of reflective practice in which City Science teachers are currently engaging. The City Science Staff has learned a great deal from working with the Science Focus Schools and the Summer Lab for Learning and from collaborating with other projects such as the LASERS LSC, a consortium of seven school districts, the Life Lab Science Program and UC Santa Cruz. This growing body of knowledge and experience has been used to focus the City Science effort on site-based professional development. A total of 29 SFUSD elementary schools and 65 Site Science Leaders (SSL's) have signed on to work together to actively support their school science programs and begin Case Study Teams

at their school sites. Professional growth opportunities are being offered at all levels to prepare the SSL's and their fellow teachers to engage in productive dialog about the many issues involved in science teaching and learning. With two years of NSF funding remaining, it is an exciting fall for City Science. -ES

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# 1998 SEP Summer Internship Program

Smoking prevention in teens, herbal remedies for ovarian cancer, wound healing, and gene expression in sheep lung... What do these things have in common? They are all projects pursued by high school students in SEP's Summer Internship Program. This past summer, fifteen research groups from UCSF opened their labs and offices to juniors and seniors from San Francisco's public high schools. The interns spent eight weeks working on research projects on the Parnassus, Laurel Heights, Mt. Zion, and VAMC campuses. Each student worked closely with a laboratory mentor. The mentors, who are graduate students, postdocs, technicians, and professors, are the heart and soul of the internship program, generously giving many hours of their valuable time to teaching and supervising their interns.

In addition to their research projects, the students met weekly for enrichment activities. This year, they discussed how a drug goes from lab bench to bedside with Glynis McCray from Genentech and explored the possibility of extraterrestrial life with Chris McKay from NASA Ames. They met Moses Kim, the first high school intern ever to take part in the summer program, who is now a graduate student in Liz Blackburn's lab, attended a panel discussion on college life by college students in the Summer Research Training

Program, took a tour of the UC Berkeley campus, and met with a UCB admissions officer to learn about the application process. The last three meetings of the summer were devoted to the interns' own presentations. Each intern gave a short talk about his or her research, and presented a poster at a reception for their teachers, mentors, and family members.

Taking part in the internship program gives students opportunities and experiences that are valuable and eye opening. In the words of intern Roslyn Guanzon from Thurgood Marshall High School:

"My overall opinion of my two months that I spent in the lab is that it was a great experience. I learned a lot of new things about the human body and how it functions, not only from my lab, but also from the presentations and posters of my fellow interns. One of the most important things that I learned in working in the Ralston Laboratory is that there is no such thing as a finished project when it comes to science. I found out that patience is one of the key qualities a person must have if he or she chooses to work in the lab.

"I value this experience because now I have a better sense of understanding in science. This experience has made me think of pursuing a career in the science and/or medical field, something I was sure I had ruled out as one of my possible career choices. I am very proud of my work this summer and I hope that students will not pass up the opportunity of this valuable experience."

The interns are chosen in a rigorous selection process. First they are nominated by their science or health teacher. They then submit an application that includes a letter of intent, resume, and information about

their science coursework, work experience and attitudes about science. On the basis of the applications and

*"One of the most important things that I learned in working in the Ralston Laboratory is that there is no such thing as a finished project when it comes to science."*

letters of recommendation from their teachers, students are selected for one-on-one interviews with SEP staff members. This year SEP received 72 applications, and interviewed 35 students for the 15 positions available. The selected students were a great group from diverse backgrounds, with

interests in many aspects of scientific and medical research, and pursued projects with mentors from many departments and disciplines:

Cody Verdugo from Galileo worked with Kurt Zingler in Nigel Killeen's lab in Micro and Immunology; Diana Pogranichnaya from Lowell worked with Peter Hwang in Robert Fletterick's lab in Biochemistry and Biophysics; Lizbeth Evangelista from Marshall worked with Charlene Bayles in Raza Aly's lab in Dermatology and Microbiology; Roslyn Guanzon from Marshall worked with Sandy Canchola in Henry Ralston's lab in Anatomy; Monica Bussey from Marshall worked with Brad Taylor in Allan Basbaum's lab in Anatomy; Howard Ruiz from Marshall worked with Margaret Walsh in Dental Public Health and Hygiene; Nhung Dao from Marshall worked with Clay Johnston in Neurology; Janet Liang from Washington worked with Beth Bell and Seema Bhatnagar in Mary Dallman's lab in Physiology; Arpi Siyahian from Lincoln worked with Kirk Riemer in Reproductive Endocrinology; Chia Jane Lee from Lincoln worked with Laslo Komuves in Corey Largman's lab in Medicine — Heme/Onc; Gwendolyn Gonzales from Burton worked with Tracy Weitz at the National Center for Excellence in Women's Health at Mt. Zion; Binting Huang from Galileo worked with Peter O'Hara in his lab in Anatomy; Sharlene Wu from Marshall worked with Supriya Shivakumar in

*(continued on next page)*

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*(Summer Interns from previous page)*

Karen Smith-McCune's lab in OB/Gyn; Christine Ndiaye from Marshall worked with Kimberly Topp in her lab in Physical Therapy; and Dorothy Lau from Lincoln worked with Jennifer Dockter in Charles Ordahl's lab in Anatomy.

SEP sends a hearty THANK YOU to the PI's, mentors, speakers, and lab members who gave of their time, space, and mentorship to make the Summer Internship Program a great success.

The SEP Summer Internship Program is generously supported by the French Foundation, the Genentech Foundation, the Lange Fund of the Physiology Department, the National Institutes of Health, and the UC Office of the President.                    -*TS*

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## Events Calendar

Scientist Orientation Series  
Nov. 18, Dec. 1, & Dec. 10

Thanksgiving  
(SEP closed/no school)  
Nov. 26-27

UCSF Science Education Club  
Dec. 14

City Science  
Professional Development Day  
Dec. 9

SFUSD Winter Break (no school)  
Dec. 21 - Jan. 1

Martin Luther King, Jr. Day  
(no school/SEP closed)

## Fingerprinting: it's the **LAW!**

A new state law requires that all public school volunteers who have contact with children are fingerprinted and cleared through the CA Dept. of Justice prior to entering a classroom. Through the generous support of the San Francisco School Volunteers office along with Cynthia Gusman (pictured left), SEP has already fingerprinted over 100 volunteers and will continue to offer fingerprinting at the SEP Resource Center on an ongoing basis free of charge. Because processing can take 6-8 weeks, we recommend that those interested in volunteering in the future get printed now. Call SEP at 476-0300 between 8 a.m. and noon for more information. *-HD*