CITY SCIENCE FUNDED FOR 5 MORE YEARS
NSF Funds City Science Under Local Systemic Initiative

UCSF and SFUSD will continue their on-going City Science collaboration with a five-year, $3.9 million award from the National Science Foundation aimed at instituting District-wide and systemic reform of science education in San Francisco elementary schools. The new grant will support Phase II of City Science, involving the transition from a Teacher Enhancement Project to a Local Systemic Initiative. In Phase II, efforts will be broadened from providing professional development for teachers in curriculum implementation and leadership to approaching reform on a systemic basis involving whole schools and sustainable district-wide systems of support.

The initiative is designed with a shared leadership organization, drawing on SFUSD administrators at the District and site level, teachers, parents, SEP staff, and members of the scientific community. Teachers will also be involved who have developed leadership capacity during the previous few years through their work in City Science, the Exploratorium, and a variety of District programs, especially the Science Leadership Team. These teachers will provide leadership within a network of new structures at various levels that will extend and sustain the reform effort throughout the District.

The new structures include: 1) eight focus schools in which entire school communities will collaboratively develop and implement site-based plans for a new approach to learning science; 2) summer institutes for beginning teachers to provide them with experience in inquiry-learning, along with in-depth exploration of the District science curriculum; 3) summer institutes for leadership teachers that will provide an on-going source of professional development for the District; 4) annual summer lab schools for young people in which pedagogy, curriculum, scientist participation, and teacher reflection will be modeled and refined; 6) Curriculum Kit Clubs for experienced and beginning teachers in order to deepen and expand their understanding of the curriculum units and provide additional experience in the process of inquiry; 6) professional development for school principals to keep them abreast of and include them in the systemic initiative; and finally 7) study groups in which teachers will develop strategies and adapt tools for assessment that support new methods of instruction, address the impact of the reform on students with special needs, and provide models for integration of science and math with other areas of the curriculum. Changes in the District infrastructure will center around assessment, professional development, and materials maintenance.

The summer institutes for teachers—the City Science component most familiar to UCSF participants—will remain as a partnership activity. This coming summer, like summers since 1991, City Science Leadership Teachers will be paired with UCSF scientists who in turn will work with teachers new to science education. This Entry Level Program will operate on a two-year cycle, offering two-week summer institutes, four one-day workshops, and four Kit Club meetings per school year. At different intervals through 1999, groups of 125 new teachers will be recruited to enter the two-year program.

(See City Science, p. 2)
Fall Kick-Off Gets Face-Lift

Every year, we start off the school year with a social and informational event called the SEP Kick-Off. This fall, the Kick-Off will take on the format of a mini-conference to disseminate important information more effectively and consistently. It will include brief sessions, many of which will be repeated, for each of SEP’s major programs. For example, if you want to know about MedTeach, go to that session, meet some teachers and medical students experienced with MedTeach, ask questions, and get information on expectations and the selection process. For people new to SEP, we there will also be a general overview session. We promise to provide ample opportunity for mingling, munching, and grabbing armloads of give-away’s. The Kick-Off date will be announced at the beginning of the school year. Δ

Evaluating Local Sytemmic Initiatives

On March 5-6th in North Carolina, Janice Low and Margaret Clark joined with a group of evaluators and principal investigators for the National Science Foundation’s Local Systemic Initiatives programs. The purpose of the gathering was to assist in the design of a “core evaluation” that could be used for all of the projects that will be funded under this new initiative. NSF has contracted with Horizon Research, Inc., of Research Triangle Park, NC, to coordinate an evaluation that will help identify the most effective ways of bringing about lasting reform in science education. Over the course of the two-day meeting, participants provided critiques and suggestions for three instruments to be used in the evaluation. The first instrument is a teacher questionnaire to be given to all teachers who are expected to be involved in the project. The second is a guide for classroom observations, to be conducted in 10 classrooms each year of the 5-year projects. Finally, an instrument for evaluation of staff development activities was addressed. With the input from NSF program officers, principal investigators, and professional evaluators, it is expected that these tools will be extremely valuable for identifying and sharing what is learned in the projects. Δ

(From City Science, p. 1)

Staffing for City Science as a Local Systemic Initiative reflects the strong partnership between the District and the University during the first phase of City Science. Bonnie Coffey-Smith, SFUSD K-5 Science Coordinator and Janice Low, SEP Academic Coordinator, will share responsibilities as City Science Co-Directors. With former City Science Principal Investigator Bruce Alberts serving in Washington as President of the National Academy of Sciences, Peter Walter, Professor and Chair of the UCSF Department of Biochemistry and Biophysics, has come on board as the new Principal Investigator. SEP Director Margaret Clark will devote her effort to coordinating City Science scientists, and Andy Estrin and Margo Fontes will continue as City Science Resource Teacher and SFUSD K-12 Science Materials Resource Coordinator respectively. SFUSD Supervisor Maria Santos and SEP Executive Director Liesl Chatman will continue to provide overall support, assistance with strategic planning, and coordination with other programs. Δ

City Science is an excellent opportunity for scientists to get involved in the community, rekindle their enthusiasm for science, and participate in the national science education reform movement. Watch the SEP Newsletter for articles on Kit Clubs, Focus Schools, and the other City Science activities involving scientists. Interested UCSF scientists may call Margaret Clark at 476-0338 or Janice Low at 476-6930. Δ
The Women’s TRIAD Project in Science Education was given a highly favorable review by NSF program officer Lola Rogers and has been recommended for continued funding. SEP is looking forward to the coming year when Triad will expand to eight middle schools from the current four. A lot has happened in this first year, including club set-up, recruiting girls, creating exciting activities and investigations for the club members, changes in Triad staff, and a lot of learning about teachers and scientists working in teams. The project kicked off in December with an organizational and training retreat for the teacher and scientist club sponsors. Clubs began meeting in January, concentrating on hands-on science. At the end of January, project coordinator Lisa Weasel left to pursue her research on gender issues in science on a full-time basis. Tracy Stevens, Ph.D. has been hired to serve as interim coordinator until a national search can be conducted for a permanent replacement. Tracy has been involved with SEP and City Science for the past four years, so the transition went smoothly. In the midst of this changing of the guard, the newly formed Triad teams have done a wonderful job developing and leading their girls’ science clubs at Giannini, Francisco, M.L. King, and S.F. Community Middle Schools.

Triad participants have enjoyed explorations on a wide variety of topics in this first year. Girls have investigated dry ice, built electrical circuits, and taken nature walks. They’ve also dissected various things including squids, lambs’ hearts, chick embryos and small appliances. Two of the clubs visited UCSF where they got a first hand look at their scientist-sponsors’ research, while another club had their scientists bring a bit of UCSF to them—conducting experiments on the olfactory capabilities of the worm *C. elegans* at a club meeting. Other topics of investigation by the various clubs have included kitchen chemistry, the brain, the solar system, explosions, aerodynamic properties of paper airplanes, sound and hearing, biographies of female scientists, and explorations from the NSF-funded Microcosmos Curriculum from Boston University.

One of the stated goals of the Triad Project is to familiarize the girls with the use of hand tools. It has been identified that many girls have little or no experience with tools, have a fear of tools, and identify them as “for boys”. Deda Gillespie, Poe Asher, and Kristin Sorensen from the Francisco team put together well-equipped tool boxes for each triad club, and led a workshop for the teacher/scientist teams on the proper use and care of the tools. Then the clubs went to work. The girls used the tool kits to build electrical circuits, to take apart small appliances, and to make kites that represented the distance from the sun to the planets, with the kite being the sun and the planets placed along the string at appropriate intervals. Several clubs combined building with planting projects: The SF Community and Giannini clubs have built solar greenhouses and planted them with various seeds, and Francisco girls have reclaimed the school’s garden; building new planter boxes and reclaiming the old ones by planting flowers, fruits and vegetables.

In addition to all this activity at the school sites there have been wide array of field trips. The M.L. King club has taken an overnight trip to the Marin Headlands, the Francisco club went to Kristin’s parents’ farm, the Giannini club visited the Fitzgerald Marine Reserve, and the S.F. Community girls went to the Mission Science Center, took part in the Expanding Your Horizons conference at Mills College in Oakland, and will be going to the Monterey Aquarium soon. Several of the clubs have visited the Steinhart Aquarium and the Exploratorium, and all of the clubs have been to the Morrison Planetarium.

The Triad staff and the club sponsors participated in a Spring retreat in May to discuss lessons learned from this year and to plan for next year when we will expand from four to eight clubs. The final event for this Triad year will be in Golden Gate Park in June. The Triad clubs will spend a (hopefully) sunny Saturday doing science and sharing with the other clubs some of the activities they have done this year in Triad. If you are a scientist or teacher interested in Triad for next year, call Tracy at 502-5137.
WASHINGTON & MARINA TAKE TOP HONORS IN LESSON PLAN CONTEST

The Lesson Plan Contest this year was a huge success all around. We had many great entries at both middle and high school levels, including ones from schools that hadn’t previously participated in the contest. We hope to hear from these schools again, and from other new ones next year. More than 180 students from 14 different schools entered the contest. In addition, many new judges were recruited, which helps us expand our UCSF volunteer base.

As always, the Lesson Plan Presentations were diverse, exciting, and inspiring (see accompanying photos and article by students!). The Awards Ceremony took on an unexpectedly new format this year, with Tracy Stevens and Helen Doyle, Lesson Plan Contest Coordinators, presenting a hands-on lesson called Genetic Onioneering. While it may not have been as polished as some of the winning lesson plans, everyone seemed to enjoy it. We welcome exciting, interactive ideas for next year’s ceremony—maybe this could be a challenge for next year’s judges (!?).

Many thanks to all the participants in the Lesson Plan Contest: students, teacher coaches, teachers who hosted a lesson plan presentation, UCSF judges, finalist selection committee members, and SEP staff members.

The winners in the High School Division were: 1st Place: George Washington HS, Ms. Ruth Green, Eric Yip, Ying Shu Chen, Eric Li, Wilson Wong, Wai Yan Chan. 2nd Place: Abraham Lincoln HS, Mr. Jim Oberdorf, Julie Huynh, Michelle Wan Yee Lau; Mission HS, Ms. Yiu M. Chan, John Huynh, Sun Wu, Kelvin Song. 3rd Place: Lowell HS, Mr. E. G. Lehmann, Calise Yim Yuen Cheng, Sylvia Ng; Balboa HS, Mr. Art Walker, Primalee Iguban, Angelica Cunanan; John O’Connell HS, Mr. Robert Baños, Rayannah Salahuddin, Jennifer Lewis; George Washington HS, Mr. Daryl Zapata, Kalman Lau, Simson Chan, Leo Kwong, Alex Chan, Brian Ng; George Washington HS, Mr. Daryl Zapata, Linda Yee, Jenny Gaw, Stacy Zabala, Annie Lo.

The winners in the Middle School Division were: 1st Place: Marina MS, Ms. Lorraine Perry, Christian Herman, Vongsavanh Phanhdara, Janice Salomon, Thaihoa Tran. 2nd Place: Marina MS, Mr. Gerry Pelletier, William Yu, Mike Voong, Patrick Fong, Phillip Cheng; Everett MS, Ms. Nicole Gottfried, Stella Adelman, Matthew Bruno, Amber Hill, Georgia Leung. 3rd Place: Roosevelt MS, Ms. Ramona Muniz, Susan Tche, Qiu Ming Chen; Marina MS, Ms. Lorraine Perry, Mark Shapiro, Artem Spassky; Marina MS, Ms. Lorraine Perry, Anna Tan, Amy Lui, Victoria Gong; A. P. Giannini MS, Ms. Amy Colt, Heather Brandt, Ellen Cronin; Horace Mann MS, Mr. Ed Colacion, Lan Quang, Chi Quang.

A LESSON WELL PLANNED

BY CHRISTIAN HERMAN

During the months of March and April, many middle school students in the school district were able to leave class and miss many assignments. You might be asking yourself why were these children able to skip class? Well while they missed assignments, they were carefully planning out lessons to teach younger students. I was one of those students who were missing class and lowering my grade dearly. But beside that fact, I think that the SEP Lesson Plan Contest is a very good experience for all children. It teaches them responsibility, planning skills, and it also helps you with your oral presenting skills. I think the most important thing that you learn is how to work with people. When you teach a lesson plan, you not only work with your group members, but also with the students you are teaching.

Planning a lesson can be very tough. It took my group days of practicing and we still couldn’t get our lesson done, without making mistakes. When we taught our lesson in front of the judges, our group wasn’t that nervous. We were more afraid that we would forget what we were going to say. I actually felt comfortable teaching the lesson. I guess I was comfortable because the kids are much smaller than us and maybe because the judges were in street clothes. If the judges were in suits, I would have probably done a lot worse.

Our lesson plan turned out great and I’m encouraging children like myself to enter in the SEP Lesson Plan Contest next year.

Christian is a 7th grader at Marina Middle School. ‘His team presented Pass Me the Light, which won first prize.’
Two-Time Champs

This year our SEP team is made up of five young, healthy members—Eric Yip, Eric Li, Wilson Wong, Wai Yan Chan, and Ying Shu Chen. Winning the SEP two consecutive years is a tremendous encouragement to us, for it has given us the message, “nothing is impossible once you set your heart to it.” The hours we spent preparing for our lesson plan did indeed get us somewhere. This wonderful experience of working together in a team has increased our cooperativeness, group spirit, and interest in science. Accepting the challenge of completing the application on time (we faxed our application 1 minute before the deadline), arranging and preparing for the lesson, overcoming feelings of anxiety, fear and shyness, and actually carrying out the lesson plan have made us more thoughtful and responsible. On the other hand, our lesson also stimulated our students’ interest in science and encouraged them to try “working things out” themselves. Overall, SEP is a remarkable and intellectually stimulating experience that can change a person’s view of his future and outlook on life. Δ

Submitted by the team members.

Evolutionary Class-ics

Thanks to the SEP program, Ms. Burke’s class at James Lick Middle School was able to follow through on their avid interest in the evolution of early man with real scientists in the classroom. The students had become fascinated with the way in which archaeologists form theories from real evidence and decided to try this process out for themselves. Starting off by noting changes in human skulls over millions of years up to *Homo sapiens*, the students turned to examine something real and more available—real animal skulls brought in by Liesl Chatman and Helen Doyle. As they learned to closely examine the skulls, students discussed what their observations might mean with respect to what the animal might have eaten or how it moved. For example, locating eye socket openings, ear openings, and various muscle attachments allowed the students to theorize as to whether the animal was predatory or herbivorous. Examination of the varied teeth throughout the animal kingdom was very popular.

The students went on to discover that early human legs and thumbs had to operate in certain ways in order to allow them to survive in a changing environment. As a result of their inquiries, they built both leg and thumb models to explore these ideas. The students came up with many more questions, including questions about muscle energy and diet and how human learning compares and differs from that of other animals.

As some parents stated, “This will give the kids something to build on for the next few years.” Ms. Burke’s class recommends exploring the connections between science and social studies whenever possible! Δ

This article and the accompanying illustrations were submitted by Ms. Susan Burke, Nica Brown, Tony Brown, Alejandro Campos, Jose Carias, Leslie Flores, Reynaldo Pacheco, Walter Scott, John Slater, Steven Smith, Michael Uribe, Edward White, Reggie Whitley, and Alvin Williams—all of James Lick Middle School.
Eleven high school students and two SFUSD science teachers will experience the joys and frustrations of scientific research by spending ten weeks in laboratories at UCSF this summer in the SEP Summer Internship Program. By giving students an early encounter with basic science and clinical research at its best, we hope to encourage them to pursue their studies in science and to consider science or health careers in their future. A rewarding internship experience will help students gain the confidence and motivation they need to stick with a difficult science program in college. For the teacher interns, this experience will provide immersion in the scientific process and first-hand knowledge of science-as-inquiry. Taking this process and first-hand knowledge of science-as-inquiry. Taking this

We have obtained funding for eleven student interns from the National Institutes of Health (NIH), the American Chemical Society’s Project Seed, and the Lange Fund of the Department of Physiology. The competition for the student internship positions was tough. More than fifty students applied, after initially being nominated by their science teachers, and eleven students were chosen after an interview with SEP staff. These students are now being interviewed by potential scientist mentors and will be assigned to labs soon. They have already experienced a hands-on Saturday workshop in which they learned some basic laboratory techniques. Over the summer they will participate in seminars, tours, and student presentations, in addition to their research projects.

The two teacher interns will also be funded by the NIH; they are Rosa Haberfeld from Herbert Hoover Middle School and Kristen Sorensen from Francisco Middle School. The students who will be interns this summer are: Rayannah Salahuddin and Stephanie Ruffin of John O’Connell High School; Michelle Lau, Candace Fong, Anne Chen, Judy Lam, and Joyce Oloresisimo of Lincoln High School; Janel Tate and Lamas Helaire of Philip and Sala Burton High School; Oscar Acevedo of Mission High School; and Xiu Qing Tan of Washington High School. The UCSF intern sponsors include graduate students, Senior Research Assistants, post-doctoral fellows, and faculty from many departments of the university. We thank in advance all the sponsors who will take the time to guide these students in the lab. And we thank the many teachers who nominated their most promising students—we are extremely pleased with the group we have, and regret that we couldn’t take more. For more information about the SEP Summer Internship Program, call Helen at 476-0300 or Tracy at 502-5137.

Where Biotechnology Meets the Shoreline:
My Experience at a Lab on the Hill
by Annika Kahn

Upon entering the grounds of the V.A. Hospital located at 49th Avenue and Clement, I was overcome by the exquisite beauty of the hospital’s location as was I with the homeobox gene research going on in Dr. Corey Largeman’s laboratory.

I met Dr. Largeman in my science class the Spring of 1994. He had courageously volunteered to help my class out with the gel electrophoresis process taking place within the series of high school DNA lab protocols that I had decided to try out on my eighth graders. After an exchange of appreciation for each other’s daily tasks, and with facilitation by Margaret Clark, I was able to work that following summer in Dr. Largeman’s lab.

I recall one of my first journal entries: Today at the V.A. I watched Corey inject two rabbits of different weight with human protein from a homeobox gene. The genes express proteins, or RNA, which signifies that the gene is working—doing something. Corey hopes that the rabbits will produce antibodies to the foreign proteins which will indicate that the homeobox gene under study is indeed working.”

I was fascinated with the research surrounding homeobox genes and was incredibly impressed with the way Dr. Largeman ran his lab. Amidst the daily lab routines, research meetings, hematologist, microbiologist, dermatologist encounters, practicing PhD students and one middle school science teacher, Dr. Largeman maintained a light, often humorous setting. This type of directorship appeared to have quite a positive effect on those working in his lab: I witnessed incredibly hard-working, professional people using advanced equipment, techniques, and ideas to produce front line scientific results. I suppose, being a public school teacher, I particularly noticed the balance between instruction, leadership, and effective results.

Alongside my fascination with how a scientist runs a lab and coordinates research, I also learned a great deal about how genetic information is stored, mutations, transcription, protein synthesis, and how one even begins to go about locating homeobox genes.

I am grateful for this experience, as the benefits of my spending time in Dr. Largeman’s lab have made their way into this year’s eighth grade class, as, again, had Dr. Largeman.

Annika Kahn teaches science at James Lick Middle School and participates in SF Base.
BrainLink Comes to San Francisco

Have you ever wondered why brains have those funny-looking wrinkles in them? Or why your brain can be tricked by optical illusions? These intriguing questions, and many others, can be explored through BrainLink, an interdisciplinary, interactive set of lesson plans developed by the Baylor College of Medicine in Houston. BrainLink is already being used by elementary and middle school teachers throughout the country, and now SFUSD teachers and others in the Bay Area have the chance to learn about this exciting curriculum.

SEP is one of three regional centers that will be disseminating BrainLink over the next five years. Helen Doyle and Liesl Chatman spent several days in Houston this past April learning the curriculum and experiencing the activities. The curriculum consists of four independent units; each can be used for up to several weeks in the classroom.

The first workshop was piloted on May 19 at the Professional Development Day for SFUSD elementary teachers and was very well received. The workshop benefited from the expertise of several scientists: Sophia Colamarino, Michael Gold, Kimberly Tanner, and Marc Weisskopf. We also hope to train some of the medical students who participate in the MedTeach program, so that they can visit different sixth grade classes as experts in BrainLink. All in all, BrainLink is a lot of fun, a great way to develop a relationship with a neuroscientist, and exciting for both teachers and students. Look for upcoming information about workshops, or let us know if you want to participate. To find out more about BrainLink, call Helen at 476-0300 or Liesl at 476-0337. If you live outside the Bay Area, call BrainLink at Baylor College of Medicine in Houston, 1-800-798-8200. Δ

NAS Presidents’ Circle Visits SF

Members of the Presidents’ Circle of the National Academy of Sciences (NAS) and Institute of Medicine visited 9 SFUSD schools during the course of their annual meeting held in here San Francisco this past May 4-6. The meeting, titled “Science Education Reform: Creating Local Capacity for Systemic Change,” was held here because the NAS has identified San Francisco as a city in which a large number of innovative and effective programs in science education are operating within the context of systemic reform. Members were interested in Project 2061, City Science, SF Base, the Interactive Mathematics Program (IMP), and the Women’s Triad Project.

Members prepared for the school visits in a variety of ways. Upon arrival, they participated in one of four hands-on workshops, heard an address given by SFUSD Superintendent Waldemar Rojas, and listened to a panel discussion on local efforts in science education reform. Panel members were Lane Conn, San Francisco State University; Maria Santos, SFUSD; Lynn Rankin, the Exploratorium; and Liesl Chatman, UCSF. The following people were involved in presenting local workshops: City Science was conducted by SEP staff along with Ellen Champlin; SF Base was coordinated by Len Poli and involved many students and teachers; and IMP was given by Theresa Hernandez Heinz and Donna Gaarder.

Many thanks go out to the principals and math/science staffs at the following schools: Cesar Chavez ES, Francisco MS, Horace Mann MS, Lakeshore ES, Mission HS, San Francisco Community School, Spring Valley ES, Thurgood Marshall HS, and Washington HS. Behind the scenes work in local coordination was performed by Liesl Chatman, Lane Conn, Len Poli, and Carmelo Sgarlato along with other members of the Math/Science Unit and the SEP staff. Δ
**Want Ads**

**POSITION AVAILABLE: SEP**

**Teacher-in-Residence.** Must be a tenured SFUSD science teacher, grades 6-12. Will provide support for UCSF volunteers and assist school sites in developing linkages with outside resources. See official posting in the SFUSD WAD or call Liesl Chatman for a full description, 476-0337.

Application deadline: June 23rd.

**POSITIONS AVAILABLE: UCSF**

**Women Scientists** for the Triad Project. 16 positions open for the '95-96 school year. 20-25 hour per month commitment. $3,000 stipend. Contact Tracy Stevens for details, 502-5137.

**POSITIONS AVAILABLE: UCSF**

Scientists to work with City Science Kit Clubs. 11 positions open for the '95-96 school year. 4 club meetings with teachers and 2 planning retreats.

Stipend amount to be announced. Contact Margaret Clark, 476-0338

**WANTED: MACINTOSH computers, monitors, modems, and external floppy or hard disk drives** — for schools and the SEP Office. Also **IBM computers** (especially 386 models) for schools.

**WANTED: Blood pressure cuffs** for the SEP Resource Center.

**Update Talks**

SEP sponsored two curriculum updates this year at The SFUSD Parkside Center. In February, Dr. Jay Levy from UCSF led a spirited discussion about HIV transmission and AIDS prevention. One discussion topic of particular interest was the difficulty of getting through to at-risk youth and the importance of doing so at an early age and repeatedly through the years. “We have a vaccine,” Dr. Levy said. “It’s called education.”

In March Yolanda Gutierrez from UC Berkeley brought us up to date on the current thinking in nutritional science. She interpreted the new food pyramid for us and used it as a guide for a discussion of the nutritional needs of school children, adults, and pregnant teens. Particularly memorable was her discussion of the cholesterol content of a brains and liver—finally a sound excuse for not eating liver!!

We would like to thank both Dr. Levy and soon-to-be-Dr. Gutierrez for taking time from their busy schedules to bring us the latest information from these important fields.

<table>
<thead>
<tr>
<th>Events Calendar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>June 20</strong></td>
</tr>
<tr>
<td><strong>June 23</strong></td>
</tr>
<tr>
<td><strong>August 14-25</strong></td>
</tr>
<tr>
<td><strong>September 4</strong></td>
</tr>
<tr>
<td><strong>September 5</strong></td>
</tr>
<tr>
<td><strong>September 6</strong></td>
</tr>
<tr>
<td><strong>September 18</strong></td>
</tr>
</tbody>
</table>

226
Science and Health Education Partnership
University of California
San Francisco, CA 94143-0905