

A unique summer program designed to attract Mexican-American students

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A unique summer program designed to attract Mexican-American students to follow careers in science is meeting with marked success at the University of California, San Diego,

Now in its second summer, the 10-week program is supported by a \$12,000 grant from the Alfred P. Sloan Foundation. Nine Spanish-surname undergraduates at UC-San Diego, four of them women, make up the current group. Included in the grant is a \$75 weekly stipend for each student to help defray living expenses while devoting full time to the program.

Each student is assigned a project requiring the application of science skills and is allotted space in a research laboratory, working alongside graduate students, post-doctoral fellows and professors. Each trainee's work is observed and evaluated by a faculty member, and many of UC-San Diego's most distinguished scientists cooperate in the program.

Dr. Arthur Diaz, UC-San Diego assistant professor of chemistry who organized and supervises the program, said he was moved to submit a proposal for its funding because relatively few students with Spanish surnames now seek careers in the physical and health sciences. In fact, Diaz noted, the number of Mexican-Americans in the UC-San Diego student body is disproportionately low.

"On our own campus, situated in an area where 15 percent of the primary-secondary school population have Spanish surnames, this last academic year there were approximately 350 Mexican-American students in an undergraduate population of some 4,500. Of these 350, only 40 or so expressed interest in science and pre-professional studies. The purpose of our program is to cope with this problem at the freshman-sophomore level, since it is at this level that students begin to select a career."

Diaz said he had no difficulty recruiting candidates.

"All we had to do was to tell one student about the opportunity, and the news spread like wildfire. The fall-out from this program is fantastic. These students are regarded as role models, and their peers are watching them very carefully."

In addition to working in a laboratory, students attend seminars where they hear scientists lecturing on such topics as the nature and function of enzymes, the chemistry of drug action, history of the lunar surface, and conversion of solar energy. There also are problem-solving sessions in which students are challenged to propose solutions to knotty questions in such timely subject-matter as air pollution and barbiturate poisoning.

Students also study basic theory, operation and application of such research instruments as mass spectrometers, scintillation counters, polarimeters and vaporphase chromatographs. They also observe computer operations and prepare simple computer programs.

This summer's participants are engaged in a variety of investigations. For example, one is working on the isolation and purification of DNA strains in certain small sea animals. Another is helping to design instrumentation

for the detection of small contaminants and minor metals in the atmosphere. Still another is studying the bioluminescence of certain insects.

Problems are posed for students which tax their Imaginations and skills. Here are samples:

- Given that the atomic composition of the entire universe is approximately 93 percent hydrogen and 7 percent helium, what percent of the universe, by weight, consists of hydrogen atoms?

- While parathion has proved successful in combating certain pests in agricultural fields, it also provides a health hazard since it is readily absorbed by the skin with severe consequences. However, sprayed parathion decomposes to an inactive form under normal conditions, with a half-life of approximately two and one-half hours. Once a field is sprayed, assuming normal dosage, the activity of parathion must be reduced to .1 percent before the health hazard is eliminated. Calculate the amount of time one must wait before entering the field.

- The most abundant element dissolved in sea water is chlorine at a concentration of 19 grams per kilogram of sea water. The volume of the earth's oceans is 330 million cubic miles. Assuming that the density of sea water is one gram per cubic centimeter, how many gram-atoms of chloride are potentially available from the oceans?

Reaction to the program from students has been almost uniformly positive, according to Diaz.

"The knowledge and experience I gained was fantastic," said one student. "In addition to turning me loose in his laboratory, the professor to whom I was assigned tutored me in organic chemistry and gave me enough reading material to keep me busy."

Another said he was able "to develop a better attitude toward laboratory work, and to overcome some residual fears I had about chemistry and genetics."

Just as valuable, in its way, was the finding on the part of one student that science as a career was not for him.

According to Diaz, most of the students hope to do graduate work in the health sciences to become medical doctors or technicians.

"In most cases there appears to be real commitment," Diaz noted. "In last summer's program, four students worked beyond their 10 weeks and up to the beginning of classes, some without financial compensation. Nearly all of last year's group are helping minority students by tutoring them in chemistry. Several have shown interest in developing an exchange program with the University of Baja California in Tijuana."

Diaz said he is preparing a proposal for increased funding for next summer's program at UC-San Diego to open training opportunities to a greater number of students.

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