UC SANTA BARBARA

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Human Genome Research in Progress at UCSB

Alec M. Wodtke, and Norbert O. Reich, both professors of chemistry at the University of California, Santa Barbara, have been awarded a grant in the amount of $257,819, by the National Institutes of Health, as part of the Human Genome Project. This grant represents the first participation by the University of California, Santa Barbara in this major international research effort.

Wodtke, a physical chemist, and Reich, a biochemist, have pooled their talents to develop a new technology called "rapid evaporative cooling mass spectrometry," which may allow future researchers to sequence DNA at extraordinarily high speeds. If successful, genome sequencing for individuals may, for the first time, become a reality.

"This is really the code for making human life," said Wodtke, "a book, if you will, containing some 3 billion letters. Right now, we're trying to find a way to read such a large number of letters fast enough that we can look at the genome of, say, a person a day!

If we can do that, the enormous quantity of genomic information that will then become available would represent the beginning of a new age of genetic medicine."

The U.S. Human Genome Project, jointly sponsored by the U.S. Department of Energy and the U.S. National Institutes of Health, began officially in 1990 as a $3

billion program to find the estimated 80,000 human genes and to determine the sequence of the 3 billion DNA building blocks that underlie all of human biology and its diversity.

Subtle DNA abnormalities or mutations are responsible for many inherited diseases such as cystic fibrosis and sickle cell anemia, or may predispose an individual to cancer, major psychiatric illnesses, and other complex diseases.

The researchers said that the Human Genome Project is ushering in a whole new era of biomedical research, in which ultimately physicians will be able to tailor drug therapies according to genetic information, which they can access in real time.

With the new information will come a whole new set of ethical questions, as to how that personal information is used. "One would hope that information would be used by insurance companies to help prevent disease, rather than to discriminate against high-risk patients," said Wodtke. "There are many beautiful examples of how early detection can help change your strategies in treating the disease," he said.

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.