



## [UC Santa Cruz Genomics Institute](#) Backgrounder: The 1985 Santa Cruz Workshop and the Origins of the Human Genome Project

In 1984, [Robert L. Sinsheimer](#), then chancellor of UC Santa Cruz, made a proposal to [UC President David P. Gardner](#) to establish an Institute to Sequence the Human Genome on the UCSC campus. Sinsheimer recognized that knowledge of the human genome would be an invaluable resource for all of biology and medicine. In addition, he wanted the young UCSC campus to be recognized for its biology research and saw the institute as a way to put UCSC in the forefront of biology for many decades.

Although his proposal was not funded, Sinsheimer continued to pursue the idea of sequencing the human genome. He discussed it with other molecular biologists at UCSC, and they decided to convene [a workshop](#) to explore the feasibility of the project. The participants included UCSC researchers [Harry Noller](#), [Robert Edgar](#), [Robert Ludwig](#), and [Kivie Moldave](#); [David Botstein, now at Stanford University](#); [Walter Gilbert of Harvard University](#); [Leroy Hood, who now heads the Institute for Quantitative Systems Biology in Seattle](#); and [John Sulston, who later directed the Sanger Center](#), the leading genome center in England.

Sinsheimer later recalled that as the workshop progressed, "the mood of the participants swung from extreme skepticism to confidence in the feasibility of such a program." Differences of opinion then emerged as to its desirability--whether the cost was justified, for example--but the question had changed from "Can it be done?" to "Should it be done?"

In his 1994 book [Gene Wars: Science, Politics, and the Human Genome](#), [Robert Cook-Deegan](#) noted that the 1985 Santa Cruz workshop planted the seed for what later became the Human Genome Project. Some of the participants, like Harvard's Gilbert, became ardent promoters of the concept. While the institute Sinsheimer proposed never materialized, "...the idea of sequencing the human genome moved on to other pastures, having acquired a life of its own," Cook-Deegan wrote.

Other scientists then made independent proposals to sequence the human genome, notably [Renato Dulbecco of the Salk Institute](#) and [Charles DeLisi of the U.S. Department of Energy](#) (DOE). Ultimately, the [Human Genome Project](#) was officially launched in 1990 as a joint project of the DOE and the National Institutes of Health.



Later, the Human Genome Project became an international effort to sequence the entire human genome and to identify all of the genes encoded within it. Spelled out in some 3.2 billion units of DNA strung together on chromosomes, the human genome sequence represents the complete genetic instructions for human life. A working draft of the sequence was completed in June 2000, and the first analyses of the human genome were published in February 2001.

This landmark achievement marked the transition to what has been called the post-genomic era. Revolutionary technologies have begun to elucidate the functions of all human genes and the variations of those genes that make each of us unique. This era has already seen the beginnings of precision medicine, based on deep understanding of key molecular mechanisms and capable of delivering treatments individually tailored to the genetic makeup of each patient.

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