

## BILL CLINTON, REMARKS ON THE HUMAN GENOME PROJECT (2000)

*President Clinton gave these remarks given at the press conference announcing the first survey of the human genome project, what he calls “the most important and wondrous map ever produced by humankind.” Notice the quasi-religious significance Clinton gives to this achievement, and perhaps his lack of appreciation for the moral dilemmas it has created. There is a growing recognition that biotechnology may well provide both the greatest opportunities for and the fundamental threats to human liberty in the twenty-first century.*

. . . We are here to celebrate the completion of the first survey of the entire human genome. Without a doubt, this is the most important, most wondrous map ever produced by humankind.

The moment we are here to witness was brought about through brilliant and painstaking work of scientists all over the world, including many men and women here today. It was not even 50 years ago that a young Englishman named Crick and a brash even younger American named Watson, first discovered the elegant structure of our genetic code. “Dr. Watson, the way you announced your discovery in the journal ‘Nature,’ was one of the great understatements of all time. This structure has novel features, which are of considerable biological interest.” . . .

How far we have come since that day. In the intervening years, we have pooled the combined wisdom of biology, chemistry, physics, engineering, mathematics, and computer science; tapped the great strengths and insights of the public and private sectors. More than 1,000 researchers across six nations have revealed nearly all 3 billion letters of our miraculous genetic code. I congratulate all of you on this stunning and humbling achievement.

Today’s announcement represents more than just an epic-making triumph of science and reason. After all, when Galileo discovered he could use the tools of mathematics and mechanics to understand the motion of celestial bodies, he felt, in the words of one eminent researcher, “that he had learned the language in which God created the universe.”

Today, we are learning the language in which God created life. We are gaining ever more awe for the complexity, the beauty, the wonder of God’s most divine and sacred gift. With this profound new knowledge, humankind is on the verge of gaining immense, new power to heal. Genome science will have a real impact on all our lives—and even more, on the lives of our children. It will revolutionize the diagnosis, prevention and treatment of most, if not all, human diseases.

In coming years, doctors increasingly will be able to cure diseases like Alzheimer’s, Parkinson’s, diabetes and cancer by attacking their genetic roots. Just to offer one example, patients with some forms of leukemia and breast cancer already are being treated in clinical trials with sophisticated new drugs that precisely target the faulty genes and cancer cells, with little or no risk to healthy cells. In fact, it is now conceivable that our children’s children will know the term cancer only as a constellation of stars.

But today’s historic achievement is only a starting point. There is much hard work yet to be done. That is why I’m so pleased to announce that from this moment forward, the robust and healthy competition that has led us to this day and that always is essential to the progress of science, will be coupled with enhanced public-private cooperation.

Public and private research teams are committed to publishing their genomic data simultaneously later this year, for the benefit of researchers in every corner of the globe. And after publication, both sets of teams will join together for an historic sequence analysis conference. Together, they will examine what scientific insights have been gleaned from both efforts, and how we can most judiciously proceed toward the next majestic horizons.

What are those next horizons? Well, first, we will complete a virtually error-free final draft of the human genome before the 50th anniversary of the discovery of the double helix, less than three years from now. Second, through sustained and vigorous support for public and private research, we must sort through this trove of genomic data to identify every human gene. We must discover the function of these genes and their protein products, and then we must rapidly convert that knowledge into treatments that can lengthen and enrich lives.

I want to emphasize that biotechnology companies are absolutely essential in this endeavor. For it is they who will bring to the market the life-enhancing applications of the information from the human genome. And for that reason, this administration is committed to helping them to make the kind of long-term investments that will change the face of medicine forever.

The third horizon that lies before us is one that science cannot approach alone. It is the horizon that represents the ethical, moral and spiritual dimension of the power we now possess. We must not shrink from exploring that far frontier of science. But as we consider how to use new discovery, we must also not retreat from our oldest and most cherished human values. We must ensure that new genome science and its benefits will be directed toward making life better for all citizens of the world, never just a privileged few.

As we unlock the secrets of the human genome, we must work simultaneously to ensure that new discoveries never pry open the doors of privacy. And we must guarantee that genetic information cannot be used to stigmatize or discriminate against any individual or group.

Increasing knowledge of the human genome must never change the basic belief on which our ethics, our government, our society are founded. All of us are created equal, entitled to equal treatment under the law. After all, I believe one of the great truths to emerge from this triumphant expedition inside the human genome is that in genetic terms, all human beings, regardless of race, are more than 99.9 percent the same.

What that means is that modern science has confirmed what we first learned from ancient fates. The most important fact of life on this Earth is our common humanity. My greatest wish on this day for the ages is that this incandescent truth will always guide our actions as we continue to march forth in this, the greatest age of discovery ever known.