

The 21st Century: The Age of Biology



Доктор Крейг Вентер, який зробив значний внесок у визначення геному людини і сконструював перші клітини з синтетичним геномом, у свій час висловив думку, що 21 сторіччя буде СТОРІЧЧЯМ БІОЛОГІЇ. Й зараз ми спостерігаємо, як вона втілюється у життя

The Century of Biology

CRAIG VENTER AND **DANIEL COHEN** ARE TWO OF THE WORLD'S LEADING GENETIC SCIENTISTS. WHEN VENTER, AN AMERICAN, WAS AT THE NATIONAL INSTITUTES FOR HEALTH, AND COHEN, A FRENCHMAN, WAS AT THE CENTER FOR THE STUDY OF HUMAN POLYMORPHISM IN PARIS, THEY PIONEERED THE MAPPING OF THE HUMAN GENOME, IDENTIFYING DNA FRAGMENTS AND THEIR FUNCTION.

DR. VENTER WENT ON TO LEAD THE MAPPING OF THE HUMAN GENOME. DR. COHEN IS THE PRINCIPAL SCIENTIST AT THE PARIS-BASED GENSET, A COMPANY FOCUSING ON THE GENETIC ORIGINS OF ALZHEIMER'S DISEASE AND PROSTATE CANCER. THIS WAS FIRST PUBLISHED IN *NPQ* IN 1997.

PARIS — If the 20th century was the century of physics, the 21st century will be the century of biology. While combustion, electricity and nuclear power defined scientific advance in the last century, the new biology of genome research — which will provide the complete genetic blueprint of a species, including the human species — will define the next.

For the first time, we will have a complete description of life at the most fundamental level of the genetic code. This map will describe for us the exact content and structure, not only of each and every gene associated with a species, but also the precoded information, or "chemical spelling," that controls when a particular gene is turned "on" or "off," leading to a biological effect. In humans, for example, this means we will know exactly what genetic predisposition makes a person susceptible, say, to prostate cancer or Alzheimer's disease. We will also know how to manipulate a gene to produce blue eyes or dark skin. The human genome is 1.5 meters long and has three billion letters, all of which are likely to be decoded, along with the genomes of hundreds of other species, by the year 2005.

The millions to billions of letters in the genetic code of each species from

Dr. Craig Venter, who made key contributions to sequencing the human genome and who created the first cells with a synthetic genome, suggested that we indeed live in the age of biology: **"If the 20th century was the century of physics, the 21st will be the century of biology"** /*New Perspectives Quarterly* 21 (4), 73—77 (2004).

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