

Personalia

Vadim V. Demidov, Center for Advanced Biotechnology, Boston University, Boston, MA 02215, USA. tel: +1 617 353 8500, fax: +1 617 353 8501, e-mail: vvd@bu.edu

Cracking the genomes: J. Craig Venter at his 55th anniversary

He is certainly the scientist of the year, and maybe that of the century or even the post-genomic millennium. The future will decide, but now virtually everybody knows that Craig Venter is one of the key people who yielded the recent breakthroughs in decoding the human genome. There is no doubt this will have a huge impact on tomorrow's search for new drugs and new targets.

These days, Venter wears two hats, being both a scholar as Chair and Chief Scientist of The Institute for Genomic Research (TIGR; Rockville, MD, USA), and a businessman as President and Chief Scientific Officer of Celera Genomics (Rockville, MD, USA). Worrying about the future of mankind in the post-genomic era, Venter is also actively involved in the public policy that strongly advocates new laws against genetic discrimination that should affect science and civil ethics, and research policy.

However, it was not always so: Craig Venter is a medicinal biochemist by educational background and began his professional life far from his current field of genomics. Before this, he successfully studied biochemistry of the cardiovascular and nervous systems, as well as the human brain.

Craig Venter saw his 21st anniversary in Vietnam serving as a hospital corpsman in the middle of the war. Surviving this war, he realized that there is too little time in life to waste. It was from this important perception that Craig Venter derived his impatience to make things happen quickly. It took a mere six years from his initial entry into college to the award of his PhD! He is also a keen surfer, regularly riding the waves on the coast of northern California; it being in his nature to take such risks.

Venter's major scientific career started in 1984 at the National Institute of Neurological Disorders and Stroke (Bethesda, MD, USA). At that time, he analyzed the adrenaline and acetylcholine receptors and their corresponding genes, and produced monoclonal antibodies to them, which gradually led him into the field of genomics. In 1986, he pioneered



J. Craig Venter

J. Craig Venter was born on 14 October 1946 in Salt Lake City, UT, USA. After doing military service in Vietnam where he worked in Danang Naval Hospital's emergency room, he entered college earning his BA degree in biochemistry (1972) and PhD in physiology and pharmacology (1975) from the University of California at San Diego (UCSD; CA, USA).

Before joining the National Institutes of Health (NIH) in 1984 as a section and lab chief, Venter researched cardiovascular pharmacology at the UCSD and taught biochemistry and pharmacology to students at the State University of New York (Buffalo, NY, USA). In 1992, he left the NIH and founded The Institute for Genomic Research (TIGR; Rockville, MD, USA) and, in 1998, Celera Genomics Corporation (Rockville, MD, USA) to focus on sequencing the genome of various species, including humans.

The author of >160 research articles, J. Craig Venter is one of the most cited scientists in biology and medicine today. He has received numerous honors, including the Beckman Award (1999), Chiron Corporation Biotechnology Research Award (1999), King Faisal International Prize for Science in Biology (2000), American Chemical Society (ACS) Perlman Memorial Lectureship Award (2000) and ACS Howe (2001) Award. J. Craig Venter was also nominated as Scientist of the Year by *R&D Magazine* and was selected as Man of the Year by the *Financial Times* and as a runner-up for *Time* magazine's Person of the Year.

the use of automated DNA sequencers and then during 1990–1991, he and his collaborators were the first to apply the expressed sequence tag (EST) and cDNA approach, an original strategy to search for new genes without having to sequence the entire genome. This strategy has now become one of the standard ways to map complex genomes and allowed Venter's team to identify many more genes than were previously known.

However, having essentially no support for his innovative ideas at the National Institutes of Health (NIH; Bethesda, MD, USA), Venter resigned in 1992 from his permanent NIH position to set up, with his wife Claire Fraser and some of his NIH colleagues, the non-profit organization, TIGR, then linked to for-profit Human Genome Sciences, where he intended to start cracking the genomes and raise the money needed to finally pursue his own science. It was a very risky move: at that time he had, according to rumours, only US\$2,000 in his bank account. Since then, Craig Venter has orchestrated many scientific breakthroughs in genomics.

These include the determination and analysis of the complete genomic sequences of: the first non-viral, free-living organism, the bacterial pathogen, *Haemophilus influenzae* (1995); the first hyperthermophilic archaebacteria, *Methanococcus jannaschii* (1996); and the fruit fly *Drosophila melanogaster*, a key tool of many genetic studies (2000).

In 1998, to further accelerate his discoveries, Venter founded Celera Genomics Corporation, which takes its name from the Latin word for swiftness, thus highlighting the company's and founder's primary goal. Now, Celera and TIGR are the Yin and Yang of genomics with Celera emerging as the Microsoft of the genomics field. This science-industry alliance and use of 'heretical' whole-genome shotgun-sequencing strategy, complemented with high-throughput capillary sequencers and supercomputers, have made it possible for Venter's team to obtain the essentially independent working-draft of the human genome.

Of course, it would be fair to say that he is not the only smart guy who managed to do this, but he is definitely the man who really turned this project around with his team accomplishing the goal in record time. Nevertheless, he still aims to complete an even more ambitious plan: to finally 'polish' the human sequencing data to the quality of a 'gold' version in a remarkably short period – by the end of 2001! It should be a nice present for his 55th birthday.