NATURE|Vol 449|18 October 2007

sequence the *Haemophilus influenzae* genome, which was eight times larger than the previous record. Instead of painstakingly cloning, mapping the clones and sequencing them, they blasted *H. influenzae* DNA into fragments, sequenced these, and used a computer to assemble the complete genome that graced the cover of *Science* on 28 July 1995. WGA became standard procedure for microbes: *Mycoplasma genitalium*, *Methanococcus jannaschii* and many more quickly followed.

By 1998, the Human Genome Project, financed by the NIH and the US Department of Energy (DoE), was making slow and steady progress by mapping clones, sequencing them and using the map to assemble the genome. In May of that year, everything changed. Venter announced that he and Hunkapiller (by now running Applied Biosystems) were forming a private company, Celera, to sequence the human genome more cheaply and faster than the non-commercially funded consortium, later called the International Human Genome Sequencing Consortium. They would use WGA and capillary sequencers not yet built.

The announcement, covered by the world's press, was met with incredulity (WGA would never work with a genome so complex), consternation (the human genome would be in the hands of a private company) and fear (would Congress and the Wellcome Trust cut off funding for the public project?). Days later at the Cold Spring Harbor Laboratory Genome Mapping and Sequencing meeting on Long Island, New York, the tension was palpable — and exciting. With characteristic chutzpah, Venter fanned the sparks when he suggested that the NIH and DoE teams give up on the human genome and do the mouse instead.

Jim Watson was at the meeting, asking the elite how they were to counter-attack. It was not the US cavalry but the British Grenadiers — John Sulston and Michael Morgan of the Wellcome Trust — who restored confidence. The public effort girded its loins and stepped up the pace. Interactions between public and private projects remained poisonous. Occasional attempts at reconciliation foundered on data-release issues.

Only three years later, first drafts of the human genome were published simultaneously by Celera and the public consortium. Venter shared a podium with Francis Collins, head of the US genome project, and President Bill Clinton at the White House, while UK Prime Minister Tony Blair attended via satellite link. Even this moment of triumph held no reconciliation. Venter balked at the standard requirement that all data should be provided in the paper, so Celera published in *Science*, as it had agreed, with restricted access. The public group, making all their sequence available for free, published in *Nature*. Squabbling continued over exactly how the private sequence had been assembled. Many people's worst opinions of Venter were confirmed when he admitted that most of the Celera sequence was his own, rather than that of anonymous DNA donors. One journalist called it a "high point in the annals of egotism".

Called to account

This year, Venter and Watson became the first people to have their entire genomes sequenced and made public. Both believe that deciphering our individual genetic inheritance will lead to better health: if there are no therapies yet for what is found, the risk might be minimized. Venter underlines the point throughout his book by describing what particular genes mean for him. For example, he takes a statin to lower his cholesterol levels, because he has the *E4* allele of the *APOE* gene that increases the risk of Alzheimer's disease.

I have interacted with Venter over the years since our first meeting in 1990, and have heard many strong opinions of his character. *A Life Decoded* is a fair representation of the man. It may even be more revealing than he thinks.

But the differing published accounts of the *Drosophila* and human-genome sequencing projects are reminiscent of the fable about the blind men who described an elephant by touch. Reading the books by John Sulston and Georgina Ferry (*The Common Thread: A Story of Science, Politics, Ethics and the Human Genome*), James Shreeve (*The Genome War: How Craig Venter Tried to Capture the Code of Life and Save the World*), Michael Ashburner (*Won for All: How the* Drosophila *Genome Was Sequenced*) and now Venter's contribution, it is scarcely credible that the protagonists lived through the same events. Robert Cook-Deegan's *The Gene Wars: Science, Politics, and the Human Genome* provided an authoritative, inside-the-Beltway account of the early days of the Human Genome Project, but what we need is a record of the whole project by a team of historians with no axe to grind.

Such an endeavour should begin with a comprehensive collection of material, along the lines of Thomas Kuhn's *Sources for History of Quantum Physics*. Kuhn and his colleagues interviewed the participants in, and found primary documents relating to, the greatest change in our view of the physical world since Isaac Newton. The greatest project in biology so far deserves to be similarly documented. The principals are still with us, as are their e-mails.

Chargaff called the heroes of *The Double Helix* "a new kind of scientist, one that could hardly have been thought of before science became a mass occupation, subject to, and forming part of, all the vulgarities of the communications media". Four decades on, our infinitely more vulgar media has called Venter many things: maverick, publicity hound, risk-taker, brash, controversial, genius, manic, rebellious, visionary, audacious, arrogant, feisty, determined, provocative. His autobiography shows that they are all justified. ■

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A gallery of micrographs

German biologist Ernst Haeckel branded radiolarians — tiny seawater plankton — one of the "art forms of nature", an accolade borne out under the scrutiny of the scanning electron microscope almost a century later. These single-celled animals come in a variety of intricate shapes, as shown in this image of a radiolarian shell. It is one from a striking collection of micrographs assembled by the Science Photo Library for *Microcosmos* by Brandon Broll (Firefly Books, 2007).

The book includes some 200 images, taken at up to 22 million times magnification, of subjects drawn from biology, mineralogy and technology. Readers can marvel at pictures of a hummingbird hawkmoth's tongue and of nanowires just ten atoms wide, of exotic gallstone crystals, butterfly scales and hairy gecko feet. Although kettle scale and a wound dressing in filigree may be a step too far into the microcosmos, there is wonder lurking in these too.

The micrographs are showcased with cunning digital artistry to impart colour. In places this borders on the fanciful (garish crystals of vitamin C and a Siberian microdiamond), but otherwise brings the pictures sharply to life.