Genentech

Genentech was the first biotech company based exclusively on recombinant DNA technologies. The name, Genentech, stands for *Gen*etic *En*gineering *Tech*nologies, an abbreviation created by Dr Herbert Boyer, one of its founders, in 1976. Since it was not just an ordinary biotech start-up but also an extremely successful one, it is worth studying its history. In her short book, Sally Smith Hughes does exactly that, and includes in her study the key scientists involved, their competing interests, and the reactions of the public, who followed these events with considerable apprehension, subjecting the technology to a great deal of scrutiny.

rDNA technologies were invented by Herbert Boyer of the University of California San Francisco (UCSF) and Stanley Cohen of Stanford University. Boyer was a specialist in restriction enzymes, which are able to cut DNA into pieces of defined lengths, while Cohen's specialty was plasmids, small circular DNA molecules which he and others had isolated from bacterial cells. In early 1973 they got together and, in due course, cut and recombined DNA fragments for the first time. When their results were published in early 1974, the research received considerable coverage from the media, catching the attention of a young investment banker, Bob Swanson. He managed to convince Herbert Boyer of the potential for a company to commercialize this invention, but also of the need for appropriate financial backing to ensure its success. Thus, in early April 1976, Genentech became an incorporated company on the promise of 100000 US Dollars as seed money.

Boyer had the advantage of working in a department at UCSF that had the necessary technology at hand to provide the genetic information for commercially important products, in particular for insulin and growth hormone. When word got out that the laboratory of Howard Goodman had cloned the genes for rat insulin and human growth hormone, the Boyer–Cohen technology attracted even more attention, not only from Genentech but also from pharmaceutical companies such as Eli Lilly, Novo Nordisk, Johnson & Johnson, and Hoechst. I myself remember visiting Genentech in early 1978, together with Dr. Hans-Herrmann Schoene, then Director for Biochemistry at Hoechst AG, the German pharmaceutical giant (which later disappeared following mergers). At that time Hoechst was offered a 5% share of Genentech for 10 million US dollars. Unfortunately, rDNA technologies at the time were too novel, too experimental, and too unconventional for the somewhat traditional pharmaceutical industry to adopt them unconditionally.

The book describes these and other developments in intriguing detail, including the impressive entrepreneurship of Bob Swanson, who was faced not only with innumerable scientific and commercial uncertainties surrounding the production of hormones and other proteins but also with an increasingly heated public debate about the potential hazards of recombinant DNA research. This debate resulted in the NIH Guidelines, which imposed considerable restrictions on rDNA research. Some scientists tried to dodge them, using loopholes that were not covered by the guidelines. One trick was to use synthetic (chemically synthesized) genes as opposed to genetic material from natural sources, a strategy that was as effective as it was dubious, raising serious issues about scientific integrity! Fortunately for all the parties involved, the restrictions were soon lifted. Lengthy and costly litigations were thus avoided.

The various research partnerships, patents, and agreements that Swanson negotiated at the time subsequently led to numerous legal challenges, including one in which the ownership of the genetic material was disputed. The basis of one of the most threatening of these litigations, described in this book, was the transfer of clones from Howard Goodman's laboratory at UCSF to Genentech's premises in South San Francisco, the so-called "midnight raid", which was carried out on New Year's Eve 1978 by Howard Goodman's postdocs Axel Ullrich and Peter Seeburg. At that time Seeburg had already signed up with Genentech. Ullrich would follow somewhat later. Today, these two are the directors of Max Planck Institutes in Heidelberg and Munich, respectively. Goodman himself soon moved to Boston to become the director of the newly founded Department of Molecular Biology at the Massachusetts General Hospital, supported by a grant of 90 million US dollars from Hoechst AG.

These and other events, including the build-up to the Initial Public Offering (IPO) in October 1980, ensure that the story of Genentech's beginnings is extremely juicy and packed with suspense. I strongly recommend the book to readers who are interested in the origins and commercial implementation of a technology that was, and probably still is, even more far-reaching in its effects than the invention of X-radiography or the discovery of antibiotics.

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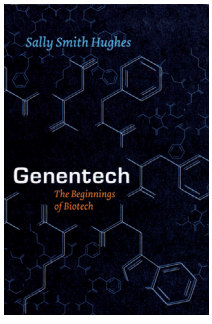

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