LIFE SCRIPT How The Human Genome Discoveries Will Transform Medicine And Enhance Your Health

by Nicholas Wade

Simon & Schuster, 204 pp, \$23.00, 2001

REVIEWED BY PHILIPPE FROGUEL
Barts & The London Genome Centre
University of London, London, UK

"The sequencing of the human genome makes it possible to envisage for the first time the creation of a genetically more just society. The price is to alter the human germline in the name of health." With this strong statement, Nicholas Wade, journalist at *The New York Times*, propels the reader along the glorious adventure discovery of the human genome in his new book *Life Script*, with the explicit goal to show unequivocally that—as the subtitle claims—it "will transform medicine and enhance your health". Anticipated benefits of the Human Genome Project (HGP) include new 'miracle' proteins to cure terrible diseases, DNA chips to find new treatments and cures, and single-nucleotide polymorphisms to elucidate the basis of disease with the promise of pharmacogenetics for personalized medicine. Closing Pandora's box of the world's ills and conquering virtually all disease is no longer considered a dream, as evidenced by 97% of Icelanders who have not exercised their theoretical right to opt out of a government genetic database. However, according to Wade's expectation, the future is obviously more uncertain for the surgeons who will not have any more use for scalpels, and the pharmacists who won't have the opportunity to "poison the flesh with chemical drugs." The reign of regenerative medicine has arrived, Wade says, and the instrument of this revolution will be the stem cell. The icing on the cake is the belief that these tools will not simply increase human life expectancy (that is, the mean), but also our life span (the maximal duration). As a consequence, the new frontier of the life sciences is

not only to provide a better life to humans, but also to explore the potential for immortality. According to Bill Haseltine, CEO of Human Genome Science, and apparently Wade's mentor in the prospects of genomics, "our generation is the first to be able to map a possible route to individual immortality." "Bravo, New World" is the title of the last chapter of *Life Script*, in which the author presents a view sympathetic to the future development of improved humans.

But is this New World really so promising? At the risk of being viewed as conservative, I offer that this new heaven is not entirely appealing. Imagining the happy few protected against everything but boredom, I am reminded of those Greek myths depicting crazy immortal gods constantly fighting and using poor mortal humans as playthings. In this story, the lucky few of the New World will undoubtedly have expensive insurance policies to ensure access to the cells of immortality. No such chance for the remaining 99% of humanity who will die 'prematurely'—in contrast to the near-gods who may well live as long as Methuselah. Surprisingly, Wade never raises the issue of dissemination of the achievements presented in this book. Who will really benefit from this envisaged sea change? The 'genetically just society' is just as virtual as the goals of the most preeminent biotech companies that the book presents with great sympathy—revolutionizing medicine, providing unlimited access to new tissues to replace damaged organs and developing miracle proteins that cure most diseases without side effects. It is remarkable that in this book the few academic scientists expressing an opposing viewpoint are lost within an army of corporate managers who are convinced of the beauty and the ultimate success of their quest.

Although the chapters on the promises of the genomic revolution are to my mind scientifically somewhat ridiculous and in some respects morally appalling, the real interest of the book is the first half in which Wade tells us an old-fashioned dirty human story, known as the 'race for the human

genome'. Readers who are not part of the genetics research community will be astonished, at the very least, to see how far from altruism and friendly competition this race truly was. One shocking anecdote features a Nobel Prize winner who compares Craig Venter's assault on the genome with

Hitler's annexation of the Czech Republic and demands his colleagues in the public consortium to identify themselves with either Chamberlain or Churchill. And the meticulous report of the endless war between the Celera team and the academicians is a true masterpiece, which alone recommends *Life Script*. Ultimately, Wade writes,

"in such a contest there could be no losers", although the Nobel foundation may face a hard choice in awarding its prize for the human genome. However, Wade may be wrong! In the March issue of the *Proceedings of the National Academy of Sciences*, three leaders of the HGP castigate Venter, claiming that in a desperate attempt to mask the failure of his whole-genome shotgun strategy, Venter carved up sequence information from the public database into pieces that could be easily reassembled. According to Philip Green of the University of Seattle, "the Nobel Prize is sort of underlying all these controversies," as "only three people can get it" (*Science* 295, 1817; 2002). (99, 3712; 2000) The elucidation of the life script might increase human life span, but it certainly will not temper human ambition. In this regard, the New World will be regrettably similar to the old one.

**Do you have thoughts or ideas for
the Book Review section?**

**Suggestions of books or topics are
greatly appreciated.**

**Nature Medicine welcomes your comments
and encourages you to contact
us at our email address:**

medicine@natureny.com