Jennifer A. Dounda and Samuel H. Steinberg: A Crack in Creation—The New Power to Control Evolution

Ken Jones¹

© Springer-Verlag GmbH Germany, part of Springer Nature 2018

Bibliography

A Crack in Creation – The New
Power to Control Evolution
Jennifer A. Dounda, Samuel H. Steinberg
Boldley Head, London, UK, 2017, pp 304
ISBN 978-1-8479-2381-3
GBP 20.00

It is a rare privilege to read a book that discloses not only the history of a major scientific breakthrough, but also the thought processes of the team of scientists that eventually led to its discovery. Equally impressive is the modest confession of the lead discoverer, where she admits her comfort zone is “the edge of a Petri dish”. That CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) is a very strong candidate to win the next Nobel in Chemistry or Physiology or Medicine cannot be doubted. In all probabilities, it will also be the discovery of this century, if only because it has universal application to all living cells.

Although the DNA structure was elucidated in 1953, a further 50 years elapsed before the Human Genome Project provided not only the exact positioning of the 3.7 billion individual ‘letters’ that make up the code, but also the methodology to map the defects in the genes that cause hereditary diseases. Some 10 years later, logic and inspirational tenacity have resulted in the most powerful tool ever thought possible, one that manipulates the DNA code in infinite ways. It is, however, a technology, so powerful it also provides opportunities for mischief, especially since there is

no trace of the genome once the gene editing process is complete. Another unusual factor is cost. Any conventionally equipped biological laboratory with the necessary expertise can research the area at a starting cost of about \$2000. Consequently, CRISPR experimentation is growing exponentially, mostly in plant and animal research, but not all necessarily having wholly acceptable targets. In 2015, Prof. Dounda convened “The IGI Forum on Bioethics”, with the objective of creating and seeking a global consensus to prevent any misuse of this powerful new technique. The basic fear remains that a maverick scientist, or very much worse a maverick state, will attempt to exploit this technology to create an unprincipled and immoral advantage, whether in humans, plants, animals, or the microbiological world.

Although relatively few of the gene locations that cause more than 4000 known hereditary diseases have been determined, animal trials are showing the way forward. For example, mouse models have demonstrated that the CRISPR-Cas9 plasmid is wholly effective in mitigating the major symptoms of Duchenne Muscular Dystrophy (DMD). Breakthroughs on several more hereditary diseases are anticipated shortly. The earliest CRISPR applications to emerge are likely to be those associated with plants, for example, resistance to drought and diseases, followed closely by insect modification, where elimination of the malaria-causative plasmodium parasite in mosquitoes is already well advanced.

This exceedingly well written book describes a technology of earth-shaking implication. Whilst a fascinating read for technologists, there is an additional objective, to bring a better understanding of the technology to a non-scientific audience. The authors have supplemented the text with ample diagrams to clarify what are often difficult-to-understand concepts. Ten million copies of Steven Hawking’s book “A Brief History of Time” were sold. This book will have far more impact, and is far more understandable. Buy, absorb, debate, and lobby, with the objective of creating legislation that prevents abuse.

✉ Ken Jones
chromatographia@springer.com

¹ Knutsford, UK