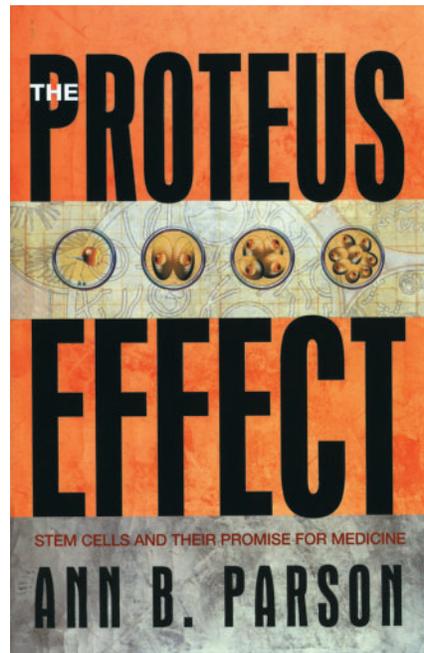


STEM CELLS: THE CONTROVERSY CONTINUES



The Proteus Effect: Stem Cells and Their Promise for Medicine

Ann B. Parson

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Stem cells – cells that can divide to self-renew and can also differentiate into a number of different cell types – have been very much in the public eye over the last few years. The media have been abuzz with reports of potential stem cell-based treatments for a multitude of ailments, ranging from Parkinson's disease through heart failure to incontinence. Both contenders for last year's US presidential election were highly vocal on the issue of human embryonic stem cell research, a controversy that is still raging. High time, then, for a popular science book about stem cells to surface.

The Proteus Effect: Stem Cells and Their Promise for Medicine is such a book. It differs from other 'lay' guides to the subject in that its primary focus is the science and history leading up to modern day stem cell research, rather than the ethics of deriving and using these cells. Parson presents the story in terms of experiments and scientists, beginning with investigations into hydra regeneration in

1740 before leaping forward to the 1950s when research into mouse teratomas began to lay the foundation for the discovery and characterisation of stem cells as we know them. There follow chapters introducing haematopoietic stem cells, epidermal stem cells, embryonic stem cells and neural stem cells, and some of the actual and potential medical uses of each, before the ethical debate over cloning and embryonic stem cells rears its head. Parson deals even-handedly with the arguments for and against without overstating the case for either side or allowing these questions to distract the reader from the science and medical promise of stem cells, which is, after all, what this book is about.

Towards the end of the book, as the world of stem cell biology begins to diversify, the book struggles between being a strict chronological account of events and carrying each individual scientist's story all the way through. One area that comes across as poorly handled is the adult brain neurogenesis story. Chapter 6 is devoted largely to the discovery of neurogenesis in the brains of songbirds, and this focus on a single topic makes this section much more engaging than previous chapters. However, a brief concluding paragraph mentions that by 1995, neurogenesis had been spotted in the brains of a number of adult mammals, not including humans. One would have thought that these discoveries warranted rather more attention than the passing comment they actually receive. Even more peculiar is the fact that the momentous discovery of neurogenesis in the adult human brain in 1998 does not even get a mention in this chapter, but is set aside until chapter 10. By the end of chapter 11 the effort to tell the account as a coherent story is given up, and current progress in the various areas of stem cell research is summed up individually, in brief headed paragraphs. This stylistic change jars somewhat after the chapters of unbroken narrative and raises the suspicion that the book's final section was thrown together rather too quickly.

The book largely progresses logically from experiment to experiment, liberally sprinkled with direct quotations from the researchers involved, making for a fairly readable potted history of the field as well as an insight into the scientific method. The major flaw of this approach is that, because so many different scientists are introduced in such quick succession, none stands out. This is a shame, because the quality of the writing is not nearly good enough to allow the story to stand up alone – the reader needs characters, faces to the

many voices. Parson makes little effort to instil dimensionality into the players beyond the occasional superficial description (it's interesting to note the large number of eminent biologists who have 'bushy eyebrows'!). In fact, the two occasions on which individual characters are given a chance to shine are the only points at which the narrative begins to show signs of coming to life. Chapter 1, devoted almost entirely to 18th century biologist Abraham Trembley and his experiments on hydra, is genuinely captivating, as is the account in chapter 6 of Fernando Nottebohm's research linking the biology of birdsong to adult brain neurogenesis.

The book's focus is noticeably US-centric, and while this is probably due to the heavy dependence of the book on direct interviews, some important international stem cell research is left out as a consequence. For instance, despite plenty of discussion on the potential benefits of therapeutic cloning, no mention is made of the South Korean team who first

successfully derived a human embryonic stem cell line from a cloned human blastocyst early last year (Hwang et al., 2004). In fact, the reader might be forgiven for thinking that very little research into stem cell biology goes on outside the USA.

As a popular science book, *The Proteus Effect* misses the mark. It is difficult to tell exactly at whom this book is pitched, given that the language is generally non-technical and easy going, but the complete lack of figures and diagrams makes the text very dense. Parson lacks the eye for the telling detail or the amusingly interesting fact that draws the reader on, which is what really distinguishes good popular science writing. Her writing style is rather insipid, and attempts to counter this only serve to irritate, coming as they do in the form of incongruous colloquialisms and inane asides. A misconceived attempt to add drama by bracketing the story between two chapters on umbilical stem cells falls totally flat, drama certainly not being a notable feature of the bulk of the text.

Occasional malapropisms (for example 'desecrated' instead of 'decimated') and clumsy use of integrated quotations further serve to make this book utterly put-downable. Given that popular science books on the high-profile subject of stem cell research are so difficult to come by, it is a great shame that this offering is markedly substandard. Despite this, the quality of the information in *The Proteus Effect* is good enough that it might make a good primer for a student beginning in the field, should they be willing to trawl through it.

10.1242/jeb.01514

Reference

Hwang, W. S., Ryu, Y. J., Park, J. H., Park, E. S., Lee, E. G., Koo, J. M., Jeon, H. Y., Lee, B. C., Kang, S. K., Kim, S. J. et al. (2004). Evidence of a pluripotent human embryonic stem cell line derived from a cloned blastocyst. *Science* **303**, 1669-1674.

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