
Book Review

Stem Cell Wars: Inside Stories from the Frontlines

Eve Herold, foreword by Dr George Q. Daley

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It is an undeniable challenge to address the multitude of political, social, scientific, and regulatory issues that surround stem cell research, particularly in a way that articulates all of the issues and perspectives surrounding each of the stakeholders involved. By its very nature, embryonic stem cell (ESC) research evokes a litany of moral and ethical controversies due to the processes utilised in deriving the cells themselves. As the topic of ESC is very sensitive and has been highly publicised, it may also be expected that many individuals have already established firm opinions regarding several key issues. As noted by Steinbock,¹ the heart of the ESC debate involves the human embryo, wherein two polarised perspectives may either view its status as:

- (1) A human subject with a moral status grounded in the criterion of its genetic makeup (ie, that an embryo is defined as biologically human); or
- (2) A mass of undifferentiated cells having no morally different status than other cells in the human body (ie, that an embryo has

no characteristics of a human person such as consciousness or sentience).¹

Although several other viewpoints exist within this spectrum, virtually every commission that has considered the moral standing of the human embryo has conferred upon it an entitlement of special or profound respect.^{1–3}

Intended for a general readership, *Stem Cell Wars: Inside Stories from the Frontlines* is authored by Eve Herold, who serves as the Director of Public Policy Research and Education at the Genetics Policy Institute. Its layout and nontechnical prose is suited for those who are interested in the issues that surround stem cell research but may lack first-hand exposure to primary literature in the field. Overall, the purpose of the book is:

to clear up some of the widespread misconceptions about [stem cell research]... to provide readers with an understanding of how the promise of regenerative medicine is being threatened by a new, and highly undiplomatic, political order... to illuminate

the basic science [of stem cell research]... [and] to provide a better understanding of [how stem cell research] came to be hijacked by groups that have used it to serve a larger political agenda (p. 18).

In addressing these, Herold places a strong emphasis on certain perspectives regarding the political issues that surround ESC research. Throughout the text, the author personalises the debate by integrating vivid patient narratives with her own commentary and selected material from the scientific literature and lay press.

While *Stem Cell Wars* does address a number of important points concerning ESC research, it does not necessarily seek to strike a comprehensive balance in articulating its purpose. While this approach may be potentially viewed as biased or oversimplified, Herold does offer a passionate discussion that appears to be shared among various politicians, scientists, and members of society. However, in putting forth such debate without assessing all viewpoints and without comprehensively referencing work from the primary literature, the overall credibility and uptake of the *Stem Cell Wars* among scholars may indeed be hampered. Although it could potentially alter the tone of the message that Herold wants to share, broadening the scope of the work to include more thorough citation would be helpful in establishing a stronger foundation to move forward with the ESC debate. Overall, this approach would at the very least have provided a reader the ability to develop a broader knowledge base beyond the immediate text by exposing them to the breadth and complexity of competing arguments.⁴⁻¹²

Concerning more intricate details of the text, the foreword presented by George Q. Daley (an Associate Professor of Biological Chemistry and Molecular Pharmacology at Harvard Medical School and an Associate Professor of Pediatrics at Children's Hospital in Boston) clearly articulates his stance regarding the moral status of the human embryo as 'I do not find the arguments

defending the rights of embryos compelling enough to warrant prohibitions or even significant restrictions on embryonic stem cell research' (p. xvi). Herold presents provocative points of view throughout *Stem Cell Wars* that frequently target an organised minority whom she perceives as having influenced public policy by strategically providing misinformation and inducing unwarranted hysteria. As such, the work may appear principally as a diatribe against those whose efforts have sought to contain the expansion of stem cell research under more strict ethical or moral guidelines. Again, while a comprehensive discussion of all of the issues according to each stakeholder may be of interest in a more academic sense, Herold remains steadfast in her goal – to push resolution of divergence and to move forward rapidly in the development of novel ESC therapies. In one of the most pragmatic and thought-provoking statements of the text concerning the moral and ethical issues of the research, the following is proclaimed: 'Thinking in terms of absolutes can only lead us into a state of paralysis over this issue [pertaining to embryonic stem cell research] and leads us to do nothing to address our real, far from theoretical problem – the large unsatisfactory state of human health' (p. 137).

This aforementioned statement alludes to how Herold begins her text by emphasising the failures of modern clinical science to provide *bonafide* cures for several chronic diseases, even though others have addressed how recent innovations do indeed offer substantial benefits.¹³ In this context, the potential gains from stem cell research are described for conditions wherein no highly efficacious therapeutic approaches currently exist (eg genetic diseases, organ transplantation, spinal cord injuries, various forms of cancer). While the successes of adult stem cell research are recognised, the innovations from these lines are presented as dwarfing those that may ultimately be achieved in years to come via ESC – a

position that tends to be supported by several members of the scientific community.

In addressing other elements of *Stem Cell Wars*, one of the more important discussions involves an explanation of reproductive versus therapeutic cloning, followed by potential misconceptions that may ensue concerning the relevance of each to ESC. Also reviewed is a historical view of religion's role in healthcare that is presented by discussing Europe's first hospitals, the study of anatomy, vaccinations, surgical procedures, organ transplantation, and *in vitro* fertilisation. Although the text also presents a timeline which summarises several key developments between late 1998 and early 2006, the reader should note that much has happened since the book's publication concerning both research and policy. To illustrate, scientists have been working to identify potential methods for new cell line derivation, exemplified in part by the work of Klimanskaya and colleagues which may ultimately result in the extraction of ECB without destroying embryos (and may thus enable researchers to investigate new lines utilising public monies).^{14,15} De Coppi *et al.*¹⁶ reported the successful isolation of amniotic stem cell lines that may provide alternatives to ESC. Emerging research is additionally being presented concerning the potential of reprogramming cells to an embryonic state.¹⁷ Regarding policy, the California Institute of Regenerative Medicine (CIRM) announced in 2007 that \$45m in research grants were being awarded, making the agency the single largest funding source of ESC research in the US.¹⁸ In the months following this announcement, California's Proposition 71 (ie the legislation that implemented CIRM) was constitutionally upheld by the supreme court of that state.¹⁹

Herold continues by sharing her assessment of the interplay of the politics surrounding abortion and ESC and then focuses upon an apparent disconnect that exists between the public's opinion versus differing positions held by certain state, federal, legislative, and

judicial entities. Also addressed are the efforts of researchers and advocacy groups to promote ESC and to highlight issues involving conflicting legal opinion. Importantly, one of the most compelling contributions of *Stem Cell Wars* involves the author's first-hand exposure and account of the controversies surrounding Woo Suk Hwang, a former leading stem cell researcher whose work was initially heralded as the first successful human ESC derivation via therapeutic cloning that established patient-specific lines. Exposed amidst illegal payoffs to egg donors and Hwang's self-acknowledged exaggerations of research findings, the Seoul National University announced that the seemingly groundbreaking findings were ultimately unreliable and fabricated. The fallout impacted the national pride of South Korea and hope for ESC researchers worldwide that had attempted to build upon the research conducted in Hwang's labs.

Stem Cell Wars concludes with the author reminding the reader of the importance of ethical oversight and safety monitoring in conducting ESC research, particularly concerning the development of sophisticated regulation and science to avoid repeating an incident similar to that of South Korea's. She also cautions those in the US whose intent is to restrict ESC research, noting that other nations including Britain, Israel, and Singapore have already established leadership roles concerning government-funded research and centralisation (eg formalising regulatory standards and guidelines within stem cell banks). Concerns of 'brain drain' are addressed by the author, which is a notable concern that has also appeared within the scientific literature.²⁰ In its final chapter, *Stem Cell Wars* stresses the need for transparency concerning the administration of research funding to deter fraud or deceit. Finally, the question that Herold poses in her closing paragraph is one that persons on every side of the ESC debate must ultimately face: 'Will we have more compassion for theoretical, potential persons than we do for the living?' In retrospect,

perhaps this point of moral and ethical contention best embodies the drive to continue research in this emerging and important area of study.

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