Thesis: A History of Cellular Senescence and Its Relation to Stem Cells in the Twentieth and Twenty-First Centuries [1]

By: Bartlett, Zane Keywords: Stem cells [2] Cellular Senescence [3]

Editor's note:

Zane Bartlett defended his thesis titled “A History of Cellular Senescence and Its Relation to Stem Cells in the Twentieth and Twenty-First Centuries” in November 2015 in front of committee members Jane Maienschein, James Hurlbut, and Karin Ellison earning him a Master of Science degree. https://repository.asu.edu/items/36376 [4]

Abstract:

Researchers in the twentieth and twenty-first centuries identify the study of the intrinsic and external factors that influence human aging as senescence [5]. A commonly held belief in the year 2015 was that at least some kinds of cells can replicate over long periods or even indefinitely, therefore meaning that the cell does not undergo senescence [5], also known as replicative senescence [5], and is considered immortal.

This study aims to provide information to answer the following question: While some scientists claim they can indefinitely culture a stem cell line *in vitro* [6], what are the consequences of those culturing practices? An analysis of a cluster of articles from the *Embryo Project Encyclopedia* provides information to suggest possible solutions to some potential problems in cell culturing, recognition of benefits for existing or historical culturing practices, and identification of gaps in scientific knowledge that warrant further research. Recent research suggests that hESCs, and immortalized cell lines in general, do not escape the effects of senescence [5]. While there exists a constant change in the practices of cell culturing, a large portion of scientists still rely on practices established before modern senescence [5] research: research that seems to suggest cultured hESCs, among other immortal cell [7] lines, are not truly immortal.

This study aims to provide information to answer the following question: While some scientists claim they can indefinitely culture a stem cell line in vitro, what are the consequences of those culturing practices? An analysis of a cluster of articles from the Embryo Project Encyclopedia provides information to suggest possible solutions to some potential problems in cell culturing, recognition of benefits for existing or historical culturing practices, and identification of gaps in scientific knowledge that warrant further research.

Subject

Aging [8] Ageing [9] Senescence [10] Cell Culture Techniques [11] Cell Culture [12]

Topic

Processes [13] Publications [14]

Publisher

Arizona State University. School of Life Sciences. Center for Biology and Society. Embryo Project Encyclopedia.

Rights

Format

Essays and Theses [15]

Last Modified

Thursday, December 17, 2020 - 00:00

DC Date Accessioned

Wednesday, December 16, 2020 - 23:55

DC Date Available
Wednesday, December 16, 2020 - 23:55

DC Date Created
2020-12-16

- Contact Us

- The Embryo Project at Arizona State University, 1711 South Rural Road, Tempe Arizona 85287, United States

---

Source URL: https://embryo.asu.edu/pages/thesis-history-cellular-senescence-and-its-relation-stem-cells-twentieth-and-twenty-first

Links
[1] https://embryo.asu.edu/pages/thesis-history-cellular-senescence-and-its-relation-stem-cells-twentieth-and-twenty-first
[2] https://embryo.asu.edu/keywords/stem-cells
[3] https://embryo.asu.edu/keywords/cellular-senescence
[4] https://repository.asu.edu/items/36376
[5] https://embryo.asu.edu/search?text=senescence
[6] https://embryo.asu.edu/search?text=in%20vitro
[7] https://embryo.asu.edu/search?text=immortal%20cell
[8] https://embryo.asu.edu/library-congress-subject-headings/aging
[9] https://embryo.asu.edu/library-congress-subject-headings/ageing
[10] https://embryo.asu.edu/library-congress-subject-headings/senescence
[11] https://embryo.asu.edu/medical-subject-headings/cell-culture-techniques
[12] https://embryo.asu.edu/medical-subject-headings/cell-culture
[13] https://embryo.asu.edu/topics/processes
[14] https://embryo.asu.edu/topics/publications
[15] https://embryo.asu.edu/formats/essays-and-theses