

**Shi V. Liu's True World-First Important Discoveries and Accommodations found in
Mainstream Journals**

Areas of Discoveries and Traditional Views	Shi Liu's World-First Discoveries and Views (Representative publications)	Accommodations later published in mainstream journals
<p>Bacterial/Cell Life: Bacteria do not age and die; Some cells such as stem cells and cancer cells are immortal; The life cycle of bacterium/cell equals its cell cycle; One mother bacterium/cell divides into two daughter bacteria/cells; The bacterial/cell age cycles between 0 and 1.</p>	<p>Bacteria have intrinsic aging and will die naturally; All cells include stem cells and cancer cells are mortal; The life cycle of bacterium/cell is longer than its cell (reproduction) cycle because the lifespan of a bacterium/cell should include a juvenile phase incapable of reproduction, an adult phase capable of reproduction and a senescent phase losing reproductive capability; A mother bacterium/cell reproduces a child bacterium/cell. This mother bacterium/cell does not “transform” into another child bacterium/cell but remains alive and may reproduce more offspring bacteria and cells; The age of bacteria/cells can be recorded by their living time. The age of bacteria/cells increase as they live longer and such aging is irreversible; Biotic aging is an evolutionary continuance of abiotic aging. Organisms age and die because they are made of degradable abiotic materials; Cell division is a fundamental conceptual mistake. An offspring cell come from reproduction of various structural layers of a mother cells. (11, 12, 15, 18, 20, 21, 23, 25, 29, 32-37)</p>	<p>Senescence exists in an asymmetric bacterium but still adheres to the dogma of one mother bacterium divides into two daughter bacteria (2); Ageing and death occurs in an symmetric bacterium but still adheres to the dogma of one mother bacterium divides into two daughter bacteria (38); Stem cells may age but still adheres to the dogma of one mother bacterium divides into two daughter bacteria (4, 5); Two bacteria divided from one mother bacterium bears a parent and offspring relationship but consider bacterial aging as a result of asymmetric distribution of damage in cell division (1).</p>
<p>DNA/Chromosome Segregation: The segregation of DNA/chromosome is random in cell division.</p>	<p>The segregation of DNA/chromosome is not random in cell reproduction but follows a specific pattern that is the older template DNA is kept by the mother cell and the younger template DNA is received by the child cell; There is a synchrony between the age of DNA/chromosome and the age of cell; Damaging and aging of DNA/chromosome is an important factor in determining the intrinsic aging of cell; DNA/chromosome contained in stem cells is relatively older DNA/chromosome in multicellular organisms. It suffers from aging impact which may result in carcinogenic changes; A synchrony between DNA/chromosome age and cell age in cell reproduction extends the biological implications of the semi-conservative DNA replication.</p>	<p>Nonrandom chromosomal segregation was observed in some embryonic stem cells but such phenomenon was considered as a cell differentiation. The two cells formed from one cell are still called as daughter cells (3); High degree nonrandom DNA segregation was observed in some stem cells but not non-stem cells. Still believe that one mother cell divides into two daughter cells and even claim that the daughter cell receiving the old template DNA is a self-renewed stem cell</p>

	(10, 13, 17, 19, 24, 27, 28, 30, 31, 33)	and that old template DNA is the immortal strand (6)
<p>Definition and Scope of Heredity:</p> <p>The genetic base sequence of DNA is inheritable but the epigenetic base modification is non-inheritable. Heredity is often equaled with genetics.</p>	<p>Heredity includes genetic inheritance of DNA base sequence and epigenetic inheritance of DNA base modification. DNA base sequence inheritance provides a basic assurance for the species stability but DNA base modification and its inheritance provides a mechanism for organisms to adapt to different living environment (19, 26, 31).</p>	<p>Such deep insightful views have not been seen in others' publication.</p>
<p>Origin and Evolution of Life:</p> <p>All extent lives are descended from a common cellular ancestor.</p>	<p>Life could not all originated from a common cellular ancestor but might come from different acellular ancestors. The independently originated life forms show a radical distribution and can have parallel evolution. The different lines of evolution series can have different evolution "speed". Different environments can have different fitters (14, 16).</p>	<p>The common ancestors are a cell community (40). Evolution can be collective (39), parallel (7) and explosive (8)</p>
<p>Human Origin and Evolution:</p> <p>All human came from a common hominin ancestor. Human evolution is a single line linear process of from black/primitive to white/advanced.</p>	<p>Different human species came from different non-human ancestors. Different human species have undeniable biological differences but such differences should not be equal with any direct "superior"/"inferior" differences. As a common classification of <i>Homo</i> genus, different human species should entitled with some common human rights. Human beings should reject the thinking of repelling different human species and destroying enemies and resort to the construction of harmonious society which preserves difference while seeks commonality (9, 22).</p>	<p>Fighting against race discrimination is a common goal of human society. Constructing a harmonious society is a proposal made by Chinese leaders to the world. But no one has offered a scientific basis for these views from a new perspective on the origin and evolution of life including human life.</p>

References and Annotations

1. **Ackermann, M., L. Chao, C. T. Bergstrom, and M. Doebeli.** 2007. On the evolutionary origin of aging. *Aging Cell* **6**:235-44. [Note: This is, besides me, the first other publication in the world which admits that the two bacteria come from one bacterium bear a parent-offspring relationship. However it is 8 years later than the conclusion I made in my 1999 *Science in China* publication.]
2. **Ackermann, M., S. C. Stearns, and U. Jenal.** 2003. Senescence in a bacterium with asymmetric division. *Science* **300**:1920. [Note: This was heralded as the world first discovery on bacterial aging. However, it is four years later than my 1999 *Science in China* publication. One of the authors, U. Jenal who was a mentor of Ackermann who was studying for a PhD degree at that time, attended the 1997 ASM (American Society for Microbiology) General Meeting where I presented my discovery on bacterial life to the large-scale public world for the first time. In addition, the method used by this

2003 Science paper is the same as I described in my earlier patent disclosure.]

3. **Armakolas, A., and A. J. Klar.** 2006. Cell type regulates selective segregation of mouse chromosome 7 DNA strands in mitosis. *Science* **311**:1146-9. [Note: This report has been regarded as the world-first observation on nonrandom chromosome segregation. However, such observation is already predicted 7 years ago in my 1999 *Science in China* publication. The corresponding author of this paper, A. J. Klar is a senior investigator in the National Cancer Institute (NCI) of NIH. He told me that my seminar (given in 1997 as invited by NCI for describing bacterial life and intrinsic cell aging and nonrandom DNA segregation) "touched his heart".]
4. **Brack, A. S., M. J. Conboy, S. Roy, M. Lee, C. J. Kuo, C. Keller, and T. A. Rando.** 2007. Increased Wnt signaling during aging alters muscle stem cell fate and increases fibrosis. *Science* **317**:807-10.
5. **Chambers, S. M., C. A. Shaw, C. Gatz, C. J. Fisk, L. A. Donehower, and M. A. Goodell.** 2007. Aging hematopoietic stem cells decline in function and exhibit epigenetic dysregulation. *PLoS Biol* **5**:e201. [Note: This paper was considered as the world-first report on the epigenetic contribution to stem cell aging. However, my 2005 publications in *Logical Biology* had already depicted such mechanisms in greater details and such knowledge was presented to an international meeting on aging held in Italy in 2006 which was attended also by the corresponding author, M. A. Goodell of Baylor Medical College of USA. Thus she should know the existence of my prior publications in this area.].
6. **Conboy, M. J., A. O. Karasov, and T. A. Rando.** 2007. High incidence of non-random template strand segregation and asymmetric fate determination in dividing stem cells and their progeny. *PLoS Biol* **5**:1120-1126 [Note: This paper has been heralded as the world-first discovery on nonrandom DNA segregation. But it is 8 years later than the conclusion that I reached in my 1999 *Science in China* publication. The segregation pattern described in this paper was already clearly depicted in a drawing contained in my 2005 publication in *Logical Biology*. The corresponding author of this paper, T. A. Rando of Stanford University, was told by me in person about my earlier publications while he was in the 2006 International Aging meeting in Italy where all the detailed information and references of my discovery in this area were presented in a poster. Nevertheless, Rando still ignored the prior knowledge and self-claimed his world-first discovery.].
7. **Doolittle, W. F., and E. Baptiste.** 2007. Pattern pluralism and the Tree of Life hypothesis. *Proc Natl Acad Sci U S A* **104**:2043-9.
8. **Koonin, E. V.** 2007. The Biological Big Bang model for the major transitions in evolution. *Biol Direct* **2**:21.
9. **Liu, S. V.** 2007. Admitting different origins for human species, constructing harmonious society for human beings *Pioneer* **2**:39-42.
10. **Liu, S. V.** 2006. Are stem cells really immortal cells? *Logical Biology* **6**:71-75.
11. **Liu, S. V.** 2006. Cell division versus cell reproduction: No evidence for cell "division". *Logical Biology* **6**:62-64.
12. **Liu, S. V.** 2006. Cell does not cycle and cannot be divided. *Logical Biology* **6**:103-105.
13. **Liu, S. V.** 2005. "Cellular senescence": What does it really mean? *Logical Biology* **5**:308-310.
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16. **Liu, S. V.** 2006. Evolution: an integrated theory - Criticisms on Darwinism - Fifteen years ago.

- Pioneer **1**:10-28. [Note: This is the same paper that was given to Woese in 1991 and might be the true origin for some later discoveries made by Woese as represented in references 39 and 40.]
17. **Liu, S. V.** 2007. Immortal strand does not exist but nonrandom strand segregation should be universal. *Logical Biology* **7**:50-60.
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 21. **Liu, S. V.** 2004. Method and apparatus for producing age-synchronized cells. **US patent US6767734B**. [Note: This patent was filed in 2000 and was disclosed to public by US patent and Trademark Office in 2001. The method described in this patent was used in the Ackermann et al.'s 2003 *Science* report.]
 22. **Liu, S. V.** 2007. A natural outcome long-predicted by an alternative theory on the origin and evolution of life. *Top Watch* **2**:47-48.
 23. **Liu, S. V.** 2004. Prokaryotic aging: Breaking through the "cell cycle" limitation. *Logical Biology* **4**:1-6.
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heralded as the world-first discovery of aging and death in a symmetric bacterium. But this discovery was 6 years later than my discovery on the same bacterium reported in my 1999 *Science in China* publication.]

39. **Vetsigian, K., C. Woese, and N. Goldenfeld.** 2006. Collective evolution and the genetic code. *Proc Natl Acad Sci U S A* **103**:10696-701. [Note: The view presented in this publication represents a plagiarism on my earlier paper sent to Woese, see Note in the next reference].
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* I welcome any criticism to any mistake or misrepresentation in my above description. Any challenge to my claims will be published objectively in an appropriate journal in the Truthfinding publishing system.