Aging Theories and the Zero-Sum Game

Rejuvenation Research Guest Editorial

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Abstract: For generations programmed mammal aging was widely thought to be theoretically impossible. However, new evolutionary mechanics concepts have led to renewed interest in programmed aging resulting in a schism between programmed and non-programmed proponents. This article argues that this lack of consensus is damaging medical research and therefore steps should be taken to pro-actively resolve the programmed/ non-programmed controversy.

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There are three main theories of human senescence (pardon the gross simplification):

- We age because of fundamental limitations such as laws of physics or chemistry.

- Modern non-programmed aging theories: We age because our bodies do not try harder not to age.

- Modern programmed aging theories: We age because we possess what amounts to a suicide mechanism.

Most gerontologists and medical researchers believe in one of the last two theories.

Some dedicated proponents of non-programmed aging feel that it is impossible that their theory could be wrong. They therefore feel that any fair discussion of the programmed/ non-programmed controversy is adverse to medicine because it will lead to directing at least some effort and funding toward the wrong theory. Because of the "zero-sum game" that generally applies to medical research, any resources directed toward the wrong theory will inevitably subtract from the efforts directed at the right theory thus in their view delaying medical progress. They therefore use their considerable influence on gerontology publications and other research and educational venues in efforts to prevent publication of articles favorable to programmed aging and consider that doing so benefits medical research. Obviously they oppose any activity that entails admitting that programmed aging has any validity whatsoever such as participating in symposia or workshops specifically directed at discussing the programmed/ non-programmed issue. They also oppose fairly funding experiments or activities specifically directed at distinguishing between programmed and non-programmed theories. They fervently hope that if only they hold fast, eventually the programmed/ non-programmed issue will simply go away and they can return to the earlier happier times when everybody who was anybody believed in non-programmed mammal aging.

This approach is short-sighted for three reasons: First, it is now rather obvious that the programmed/ non-programmed controversy is not going to simply go away. As someone once said, once the toothpaste is out of the tube it is very difficult to get it back in. New evolutionary mechanics concepts have eliminated the main objection to programmed aging. Journals are increasingly willing to publish pro-programmed aging articles. There is now even a journal that is oriented towards programmed aging research (*Biochemistry (Moscow) Phenoptosis*). Programmed aging books and papers keep appearing. The popularity of programmed aging is increasing.

Second, attempts to suppress dialog on this subject only delay the development of a consensus. For more or less 150 years science has been unable to arrive at a strong consensus on what certainly seems to be an issue of monumental importance: Why do we age? There is now not only a programmed/ non-programmed controversy but various non-programmed theories still attack each other.

Third, the lack of consensus poisons research funding. Funding sources can look at the current situation (there is no scientific agreement regarding even the fundamental nature of aging), and reasonably conclude that significantly funding research in this area is premature at best and possibly even foolish. Even worse, lack of any scientific consensus tends to lend credence to the fundamental limitation theories. If science is unclear, why not believe in the fundamental limitation theories, which suggest that aging is unalterable and therefore that aging research is strictly "academic" and has little practical value? After all, the fundamental limitation theories provide the best fit with evolution theory as understood by most of the science-oriented public. Trying to understand cancer, heart disease, or other massively age-related disease without agreement on even the fundamental nature of aging seems at least faintly ridiculous so lack of consensus negatively affects attitudes about age-related disease research.

When the programmed/ non-programmed issue formally surfaced in 1882 we did not have the bioscience tools to resolve this issue. Now we have the tools, but to find we must look. To look we must stop pretending the issue does not exist and work on producing funds, resources, and methodology for solving the problem.

If a strong consensus is obtained the current zero-sum-game no longer applies to aging research. If there was a strong consensus based on non-programmed aging, that aging, per se, is an alterable condition, does anybody really believe there would not be a dramatic increase in the aging research budget? If the eventual consensus is that aging is programmed, this picture is even more favorable because programmed aging theories suggest additional paths toward interfering with aging mechanisms and thereby age-related disease mechanisms. Such previously unexplored paths offer the possibility of "low-hanging fruit" and potentially rapid progress in regard to delaying age-related conditions, an aspect that should certainly appeal to fund sources.

Consider how the aging demographics of developed countries and the relatively glacial progress in treating and preventing age-related diseases might affect funding. Funding of aging research is obviously not limited by the availability of money: The current U.S. aging research budget compares unfavorably with the U.S. chewing gum budget! The main limitation results from absence of a plausible success scenario. Resolution of the programmed/ non-programmed aging controversy and consequent strong consensus is essential to providing that scenario.