

Anti-Aging Medicine in 2016

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Anti-aging medicine refers to treatment protocols and pharmaceutical agents that generally delay human aging.

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The Biological Aging Theories

There are two modern scientific concepts of human aging:

Non-programmed aging theories suggest that in general symptoms of aging are independent of each other. We can find treatments for highly age-related conditions like cancer, different treatments for heart disease, yet different treatments for Alzheimer's, and so forth, but aging is itself an untreatable condition. "Anti-aging medicine" is confined to cosmetically delaying the *appearance* of aging as in face lifts and Botox treatments. We age because the human species did not evolve better ways to combat each of the many deteriorative processes that lead to age-related diseases and conditions. Species did not evolve better ways because each species only had an *evolutionary need* for a certain internally determined lifespan.

Programmed aging theories suggest that aging is the result of a biological program that purposely causes or allows deterioration and death because limiting *individual* lifespan beyond a species-specific age produced an evolutionary advantage for a *population* of those individuals. Programmed theories (also known as adaptive aging or biological clock theories) suggest that aging is itself a treatable condition. We age because we possess a biological suicide mechanism and we can find ways to interfere with that mechanism.

Note that *both* concepts are based on post-1950 *modifications* to Darwin's survival of the fittest idea as generally understood. For much more detail on modern aging theories see:

[*An Introduction to Biological Aging Theories.*](#)

History and Current Status of Programmed Aging and Anti-Aging Medicine

Although it was originally proposed in 1882, until recently programmed aging was almost universally thought to be theoretically impossible because of the mechanics of the evolution process and medical research on age-related conditions was consequently based on non-programmed theories. However, recently multiple programmed aging theories with broad theoretical support have appeared and there is currently substantial medical research (\$billions) underway based on programmed aging theories. This is an exciting development because programmed theories suggest a second path toward preventing and treating age-related conditions that can be applied in addition to and in parallel with traditional approaches. Because this is a new approach we can reasonably expect rapid initial progress or "low hanging fruit." For more see: [*Anti-Aging Research.*](#)

Anti-aging or "longevity" medical practices now exist that can advise patients on anti-aging protocols and agents. The *American Academy of Anti-Aging Medicine* claims 26,000 physician and researcher members.

Anti-aging medicine and programmed aging theories are still controversial. Some physicians and biologists still consider anti-aging medicine to be equivalent to “quackery” especially if their training is more than about ten years old or mainly not concerned with conditions of aging. Some highly hyped anti-aging agents have little or no clinical basis.

Anti-Aging Behavioral (Lifestyle) Regimens

Exercise may be the most important anti-aging regimen. Because aging causes wide muscle, skeletal, and cardio-pulmonary weakness and exercise strengthens these systems it is to be expected that exercise acts to counter these aspects of aging. However, it is becoming increasingly clear that exercise has a much wider anti-aging effect and some programmed aging theories suggest that exercise has an evolutionary basis as a general anti-aging protocol. There is a “use it or lose it” principle here. Even mental exercises are seen as effective in maintaining mental capabilities.

Diet. Experiments on many organisms reveal that dietary limitations (caloric restriction) significantly increase lifespan. Some programmed aging theories suggest that this lifespan extension is an evolutionary response to famine that can be exploited in developing anti-aging agents and protocols.

Lifestyle protocols are not very controversial. Most physicians favor more exercise, less obesity, adequate sleep, less emotional stress, mentally challenging activities, and avoiding dangerous behaviors like smoking, alcoholism, and drug abuse.

Anti-Aging Agents

Anti-aging agents remain controversial.

Extensive experiments are now underway in efforts to find anti-aging agents and mouse experiments have already found some agents that appear to produce significant extension of maximum lifespan and sometimes an even greater effect on median lifespan. Some agents being investigated for anti-aging properties include resveratrol, rapamycin, metformin, and vitamin D.

For reasons described elsewhere [1] it is unlikely that a clinically-demonstrated FDA-approved anti-aging prescription drug will appear in the near future. However, vitamin and health food stores sell thousands of over-the-counter products that are thought to be of value in connection with some condition and we can expect that such products with claimed anti-aging properties will appear. In addition, existing prescription drugs may be found to have anti-aging properties. A physician can prescribe most drugs for “off-book” applications such as an anti-aging treatment.

If aging is indeed purposely caused by a biological mechanism it is essentially a foregone conclusion that we can find pharmaceutical agents that interfere with that mechanism because pharmaceuticals are generally for the purpose of enhancing or inhibiting some biological process. If aging is programmed similarly to other life-cycle events such as growth or reproduction it is very likely to be controlled in a similar manner involving hormones and other signaling processes. Many human hormones vary as a function of age and longevity specialists often suggest some type of hormone therapy.

However, hormone therapy in the past (such as “steroids” and estrogen replacement) has been associated with significant adverse side-effects. Some anti-aging physicians claim that their

“bioidentical” versions of various human hormones produce beneficial effects without significant side-effects but this is a controversial claim.

An anti-aging regimen should not be attempted without consulting a physician.

[1] [*New Truth to the Fountain of Youth*](#), T. C. Goldsmith ISBN 0978870948, 2014

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