

'Factor X' -- Have we finally found the fountain of youth?

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Since the time of the ancient Greeks, humans have searched for the fountain of youth; the eternal spring that restores life and brings us back from the brink of death. That search has now taken us to the most unexpected of places, the laboratories of the University of Pittsburgh School of Medicine.

Known for its collaborations and genetic research, this medical school has brought together Dr. Johnny Huard, director of their stem cell research center, and Dr. Laura Niedernhofer, a molecular geneticist who has famously focused on the DNA disruptions that lead to aging and the diseases of aging.

Together, they have now managed to regenerate failing organs and dramatically slow the aging process in prematurely aging mice, doubling and in some cases tripling their life and good health spans. Utilizing immature muscle cells that haven't fully developed, they have rejuvenated the mice. This dramatic research has just been published in the prestigious journal Nature Communications.

I flew to Pittsburgh last week to interview this dynamic duo for Fox News, and found that they have come to three original and major conclusions about aging and potential treatments:

1. Adult stem cells deteriorate as part of aging. The DNA doesn't repair itself as well, and the immature cell is less capable of performing its function. This stem cell failure is a signature for aging itself, and the diseases that define and accompany aging, including dementia, osteoporosis, and diabetes.
2. Using stem cells from younger mice is a way to counter aging. When prematurely aged mice were injected in the abdomen with immature muscle cells from younger healthy mice, they renewed their vigor, they became healthier, and they lived two to three times as long.
3. The fountain of youth is to be found in a secretion. The muscle stem cells released a substance, called Factor X, which worked its rejuvenating magic all over the mouse's body.

Both scientists eagerly anticipate the next phase in their research when they try the young cells out on normally aging mice, and attempt to synthesize Factor X (which contains growth factors and immune stimulants) and try it out as a separate treatment.

"If I had the opportunity to go back," Niedernhofer says, "I certainly would have banked stem cells from my youth...my hope is that the work we have conducted in mice can someday be translated to humans so we can use adult stem cells, isolated from young individuals, to help them live healthier, happier lives when they are older."

Within ten years, Huard anticipates that treatments emanating from their research may well be developed for humans. He says, "as a scientist I like to dream, and yes I think that one day... when we understand what is being secreted then maybe we can provide this Factor X and use this in a pill to delay the signs of aging."

Have you ever seen the movie "Star Trek IV," where Dr. McCoy gives a pill to a woman waiting on a stretcher for dialysis and five minutes later she hops off and proclaims "I've grown a kidney." What about the movie "Cocoon," where an alien race has the power to restore the youth of aging humans?

Well, we may not be nearly as far away from these science-fiction futures as I once thought we were.

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