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Aging as a mechanism for type 2 diabetes mellitus

Aging is the major risk for type 2 diabetes mellitus and also for cancer, Alzheimer's and cardiovascular disease. We hypothesize that a progress in preventing these diseases will occur only if we can understand the reason people age at different rates and develop strategy to delay aging. We are intrigued as to why centenarians chronological age does not seem to match their biological age. Studying centenarians taught us that they carry genomic changes compared with people who do not survive so long. For example, they have a mutation that changes the function of the protein involved in cholesterol metabolism. Further, centenarians are also over-represented with genes that do not allow the full function of growth hormones and targeting these pathways in mice increased their health and longevity. Several of these findings have led pharmaceuticals to develop some drugs that can target specific diseases and exemplify an approach of delaying aging and several of its disease, rather than focus on one organ-specific drug at a time. To have proof of concept in humans, we chose metformin, one drug that targets the biology of aging and extends life- and health-span in animals. It is used for the treatment and to delay type 2 diabetes mellitus (T2DM), with over 60 years outstanding safety record. Metformin use is also associated with lower rates of cancer, CVD, all-cause mortality and possibly less cognitive decline. We designed the TAME (Targeting Aging with Metformin) trial, a placebo controlled, multi-center study in ~3000 elderly with a novel primary outcome of delaying the incidence of a composite of multiple age-related diseases. The study was developed in consultation with the FDA to obtain indication that would allow industry to justify the development of next-generation drugs to target aging and will further extend healthy life span in the next decade.

Biography

Nir Barzilai is a Chaired Professor of Medicine and Genetics and the director of the Institute for Aging Research at the Albert Einstein College of Medicine, which is currently the biggest center in the world to study the Biology of Aging, and home to 2 Centers of Excellence in the Biology of Aging. He studies healthy life span in rodents by biological interventions, and also families of centenarians and several drugs are developed based, in part, on these studies. He is a recipient of Irving S Wright Award of distinction in aging research and the IPSEN Longevity award. He is the Founder of CohBar Inc. and leading the TAME (Targeting/Taming Aging with Metformin) study multi central study to prove that concept that multi morbidities of aging can be delayed in humans and change the FDA indications to allow for next generation interventions.

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