Repairing the Extracellular Matrix: Request for Proposal

Background. Our bodies are comprised not only of cells, but of long-lived proteins that physically support those cells, create ordered tissue structures of them, and participate in their function. Such extracellular matrix (ECM) proteins are responsible for the elasticity of the artery wall, the transparency of the lens of the eye, and the high tensile strength of the ligaments, for example, as well as sustaining the function of our tissue stem cells and preventing cancerous cells from escaping their local environment to spread into other tissues.

Thus, for our tissues to function healthily, these ECM proteins must themselves maintain their proper structure over time. But many of these structural proteins are only recycled over the course of many decades, and others not at all. Over time, they become damaged — by abnormal cross-links; by mechanical wear and tear; by abnormal mineral deposits; and by other damage caused by the metabolic and physical forces they sustain in fulfilling their duties as part of a complex living organism.

One of the most well-understood ways that ECM damage drives age-related disease, debility, and death is the stiffening of the large arteries. Several kinds of damage to the aging arterial ECM cause the arteries to lose their elasticity over time, making them less able to cushion end-target organs like the kidneys and the brain from the cyclical hydraulic battering ram of the pulsing of the blood. Without this cushion, every heartbeat damages the structures that filter our blood, threatens the integrity of vessels in the brain, and threatens the eruption of a clotting eruption from atherosclerotic plaques, leaving us at increasing risk of strokes, kidney disease, and loss of regional connectivity in the brain. Targeting these various ECM lesions for removal, remediation, or repair thus holds enormous promise to prevent, delay, and begin to reverse a sweeping range of downstream dysfunction and ill-health.

Request. The SENS Research Foundation is seeking proposals for innovative approaches to repairing age-related extracellular damage. Proposals should include a comprehensive description of the proposed approach and any supporting evidence, as well as a detailed budget and timeline for completion.

The proposal should address the following areas:

• An overview of the proposed approach and any supporting evidence
• A plan for testing and validating the proposed approach
• A description of the proposed budget, including personnel and materials, and requested years of funding
• A timeline for completion
• A description of any expected outcomes and/or implications

Proposals should be submitted via Proposal Central by September 1st, 2023, using the link on SRF's website. All proposals will be evaluated on the basis of scientific merit, practicality, translatability and budget.

We look forward to receiving your proposals and thank you in advance for your interest in this important research.

About SENS Research Foundation. We fund innovative research at universities across the world, at our own Research Center in Mountain View, CA, and through investments in early-stage companies.

Our research emphasizes the application of regenerative medicine to age-related disease, with the intent of repairing underlying damage to the body's tissues, cells, and molecules. Our goal is to help build the industry that will cure the diseases of aging.

Our outreach efforts include speaking engagements, conferences, and summits while providing general advocacy through newsletters, videos, educational programs, and social media. We strive to inform world policymakers, health professionals, and the general public about our damage-repair approach to treating, and curing, age-related disease.

Finally, SRF engages in educational work through our student program, SRF Education. SRF Education operates an undergraduate summer internship program, as well as a 10-month post-baccalaureate program, both of which place students and new researchers at the SRF Research Center and world-class institutions. The programs provide participants with guidance, mentorship, and materials grants for SENS-related research projects.