THE ARISING

HEALTH INTELLIGENCE / ARISING HEALTH

THE FRONTIER SERIES / OVERVIEW

Can We Reprogram Human Biology?

Seven frontiers, one standard: what changed, in whom, and what remains unproven.



Alive. Awake. Aware.

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How to read this companion

Focused synthesis of seven chosen Frontier topics, revised October 25, 2026. Primary records/abstracts and the ER-100 announcement/registry were checked; this is not full-text or systematic appraisal of the entire fields.

Evidence is attached to the question it answers. Human clinical effects, observational associations, animal experiments, cellular measurements and computational proposals are kept distinct. This reading copy is not individual medical advice.

In this booklet

01 An invitation to ask better questions

02 ER-100: a cellular program becomes a human question

03 SRSF1: the RNA-processing route

04 Klotho: the dose result matters

05 mRNA: an individualized cancer strategy

06 CRISPR: a disease outcome, not a universal reset

07 Virtual cells: make prediction answerable to experiment

08 Stem cells: restore a particular function

09 A reader’s evidence compass

Follow the evidence

Each chapter identifies the sources supporting its factual claims. Direct primary-source links and review limitations appear in the reference section. Study dates are retained even when older work provides context for a newer story.

01 / An invitation to ask better questions

Medicine is gaining new ways to interrogate the processes that maintain a living body. Some approaches alter gene-expression programs. Some edit a specific DNA sequence. Others replace a missing cell function or use computation to make an experiment more informative.

These developments can share an optimistic horizon without sharing an evidence tier. A therapy that has changed a clinical disease outcome in people, a small animal lifespan experiment and a framework for an AI model are not equivalent achievements.

This collection revisits seven topics selected for The Arising: ER-100, SRSF1, Klotho, mRNA therapeutics, CRISPR, virtual cells and stem cells. It is a focused reader’s guide, not a systematic review of all seven fields. The source dates range from 2023 to October 2026, and the dates are retained so older foundational work is not presented as breaking news.

The recurring question is simple enough to carry from one story to another: what was actually tested, and what changed for the subject of the experiment? That question makes the possibility more useful, not less extraordinary.

02 / ER-100: a cellular program becomes a human question

Evidence for this chapter: 1, 2. Source details and direct links appear at the end.

An October 8, 2026 sponsor announcement described early observations in three participants with glaucoma. The registered ER-100 study is an open-label, nonrandomized phase 1 investigation of safety in optic neuropathies. It uses regulated expression of OSK factors as an attempt to alter cellular state.

The company’s early safety and visual-field observations do not establish durable efficacy, whole-person rejuvenation or long-term

safety. The valuable milestone is the opportunity to test the mechanism in people under a clinical protocol. More participants, follow-up and eventually stronger efficacy comparisons are needed.

03 / SRSF1: the RNA-processing route

Evidence for this chapter: 3. Source details and direct links appear at the end.

The 2026 SRSF1 study used a screen in human fibroblasts and experiments in aged mice. The abstract reports 44% less frailty progression and a 14% extension of median lifespan in groups of nine to ten mice.

This is preclinical research. The small animal groups and the distinction between a cellular signature and human function belong beside the percentages. The next challenge is not to market a youthful transcriptome, but to establish reproducibility, control and a credible safety path.

04 / Klotho: the dose result matters

Evidence for this chapter: 4. Source details and direct links appear at the end.

A 2023 experiment reported that a single low dose of klotho enhanced memory in aged nonhuman primates, whereas higher doses did not. The result supports investigation, not a human dosing regimen.

The finding is also a reminder that a longevity-associated molecule is not necessarily more helpful when increased without limit. Controlled human outcomes would be required before claiming cognitive enhancement or dementia prevention in people.

05 / mRNA: an individualized cancer strategy

Evidence for this chapter: 5, 6. Source details and direct links appear at the end.

KEYNOTE-942 randomized 157 patients with resected high-risk melanoma to an individualized mRNA neoantigen therapy plus pembrolizumab or pembrolizumab alone. The initial report and the 2026 five-year update provide a more clinically mature type of evidence than a molecular prediction.

The five-year recurrence-free survival estimate favored combination treatment, but the analysis was descriptive and the overall-survival interval still included no benefit. The combination's adverse events, the exact patient population and the need for confirmatory evidence remain central. It is not a general vaccine against all cancer.

06 / CRISPR: a disease outcome, not a universal reset

Evidence for this chapter: 7. Source details and direct links appear at the end.

In a 2024 single-group exa-cel study, 29 of 30 evaluable participants with severe sickle cell disease were free from severe vaso-occlusive crises for at least 12 consecutive months. Forty-four received treatment overall.

The outcome is important, and so is the complete intervention: collected blood-forming cells were edited outside the body, and participants underwent busulfan conditioning before infusion. This is a specific disease strategy with substantial clinical requirements, not proof that gene editing can reverse aging throughout a person.

07 / Virtual cells: make prediction answerable to experiment

Evidence for this chapter: 8. Source details and direct links appear at the end.

A 2024 Cell Perspective sets out a vision for AI models that represent and simulate biology across molecules, cells and tissues. It is a framework for development, not evidence that every cellular response is already predictable.

A useful model should earn trust on a defined task with appropriate held-out data, strong comparators and experimental confirmation. Those evaluation priorities are editorial recommendations. A persuasive output on a screen is not a substitute for a successful experiment or a patient outcome.

08 / Stem cells: restore a particular function

Evidence for this chapter: 9. Source details and direct links appear at the end.

In the small 2025 zimislecel study, ten of 12 full-dose participants with type 1 diabetes were insulin-independent at one year. All received immunosuppression. The report also included serious neutropenia and two deaths in the 14-person analyzed cohort.

The gain in function and the burden of treatment must be read together. The findings do not validate unrelated commercial cell products or establish a universal rejuvenation strategy. Cell identity, manufacturing, delivery and long-term behavior all remain part of the clinical question.

09 / A reader’s evidence compass

Start with the setting: human clinical study, human observational analysis, cells, animals, computational evaluation, or a sponsor announcement. Then identify the comparator and the denominator. “Ten of twelve” is more informative than a percentage detached from the people who could be evaluated.

Next identify the endpoint. A biomarker, a test score, a symptom, a disease complication and survival do not carry the same meaning. An intervention may improve one without establishing another. Ask whether the absolute difference is available and whether it was measured over a stated period.

Finally retain the harm and the uncertainty. Small groups, missing data, exploratory analyses, limited follow-up and sponsorship do not

automatically erase a result. They determine how confidently it can be used.

The Arising’s editorial position is to remain open to the scale of the possibility while refusing to enlarge an observation beyond its design. The future is worth investigating carefully.

Sources & review scope

1. Life Biosciences: interim ER-100 Phase 1 observations
October 8, 2026
Sponsor announcement; three participants
Original sponsor announcement
Original announcement or registry read October 25, 2026; not independent adjudication of outcomes.

2. ER-100 registered Phase 1 study, NCT07290244
Registry last update May 19, 2026; checked October 25
Sponsor-submitted trial registration; no posted results
ClinicalTrials.gov · NCT07290244
Original announcement or registry read October 25, 2026; not independent adjudication of outcomes.

3. Transcriptomic reprogramming screen identifies SRSF1 as a regulator of aging
October 2026 journal issue
Human cells and small mouse experiments
PubMed · PMID 42875585
Primary record and complete abstract checked October 25, 2026; full-text/supplement appraisal not completed in this pass.

4. Longevity factor klotho enhances cognition in aged nonhuman primates
August 2023 journal issue; background evidence
Animal experiment, not a human treatment trial
PubMed · PMID 37400721
Primary record and complete abstract checked October 25, 2026; full-text/supplement appraisal not completed in this pass.

5. Individualised neoantigen therapy mRNA-4157 (V940) plus pembrolizumab versus pembrolizumab monotherapy: KEYNOTE-942
February 17, 2024 journal issue
Open-label randomized phase 2b trial
PubMed · PMID 38246194
Primary record and complete abstract checked October 25, 2026; full-text/supplement appraisal not completed in this pass.

6. Intismeran Autogene Plus Pembrolizumab Versus Pembrolizumab Alone in High-Risk Resected Melanoma: 5-Year Update of KEYNOTE-942
September 10, 2026 journal issue
Descriptive long-term follow-up of randomized phase 2b trial
PubMed · PMID 42223134
Primary record and complete abstract checked October 25, 2026; full-text/supplement appraisal not completed in this pass.

7. Exagamglogene Autotemcel for Severe Sickle Cell Disease
May 9, 2024 journal issue; background evidence
Single-group, open-label phase 3 clinical study
PubMed · PMID 38661449
Primary record and complete abstract checked October 25, 2026; full-text/supplement appraisal not completed in this pass.

8. How to build the virtual cell with artificial intelligence: Priorities and opportunities
December 12, 2024; background framework
Scientific perspective, not a validated universal simulator
PubMed · PMID 39672099
Primary record and complete abstract checked October 25, 2026; full-text/supplement appraisal not completed in this pass.

9. Stem Cell-Derived, Fully Differentiated Islets for Type 1 Diabetes
September 4, 2025 journal issue; background evidence
Small phase 1–2 single-arm interim clinical study
PubMed · PMID 40544428
Primary record and complete abstract checked October 25, 2026; full-text/supplement appraisal not completed in this pass.

Illustrations are conceptual editorial art, not photographs of study results or anatomical diagrams. The Horizon and supporting celestial themes are reused from the approved Arising visual collection.