

SME Partner Search for EIC Pathfinder Challenge 2026 call on Biotechnology for Healthy Ageing: ECHO Project - Functional longitudinal measurement for human healthy ageing research

Summary

Profile type

Research & Development Request Türkiye

Company's country

POD reference

RDRTR20260928016

Profile status

PUBLISHED

Type of partnership

**Research and development
cooperation agreement**

Targeted countries

• All countries

Contact Person

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Term of validity

28 Sep 2026**28 Sep 2027**

Last update

28 Sep 2026

General Information

Short summary

ECHO Project, coordinated by Yıldız Technical University (Türkiye), is developing a new approach methodology for healthy-ageing research that enables longitudinal, label-free assessment of functional mechanical changes in living human musculoskeletal cells. By combining controlled mechanical stimulation, non-destructive optical measurement and ageing biology, ECHO aims to detect functional ageing trajectories before conventional endpoint biomarkers become evident.

Full description

Ageing is associated with progressive changes in the functional properties of cells and tissues, yet many existing experimental approaches rely on destructive molecular assays, staining, or endpoint measurements. These methods provide valuable biological information but often capture only individual snapshots and make it difficult to follow functional changes in the same living biological system over time.

ECHO is a research and innovation project being developed for the EIC Pathfinder Challenges 2026 call on Biotechnology for Healthy Ageing. The project aims to establish a new approach methodology (NAM) for investigating functional ageing in human musculoskeletal cell systems through longitudinal, label-free and non-destructive assessment.

The central concept is to study how living cells respond functionally over time rather than relying exclusively on conventional endpoint biomarkers. The proposed methodology combines controlled physical stimulation, non-invasive optical assessment and biological validation within an integrated experimental framework. This will enable repeated observations of the same biological systems throughout an ageing trajectory while preserving them for subsequent measurements and complementary biological analyses.

The project will investigate age-related functional changes using relevant human musculoskeletal cell models representing different age groups and biological states. Longitudinal measurements will be compared with established biological indicators of ageing and cellular senescence to determine whether measurable functional changes emerge during ageing and how they relate temporally to conventional biological markers.

A major scientific question is whether functional alterations can be detected before changes become evident through commonly used endpoint measurements. Establishing such a relationship could provide researchers with a new way to investigate ageing dynamics, evaluate biological interventions and study the transition from healthy cellular function toward age-associated decline.

The project brings together expertise in advanced optical measurement, engineering, mechanobiology and ageing research. The methodology is intended to complement rather than replace established biological assays, providing an additional functional dimension to ageing studies.

ECHO is currently building a multidisciplinary European consortium and is particularly interested in organisations with complementary expertise and access to relevant biological models, translational research environments, advanced experimental technologies, or capabilities supporting validation and future exploitation.

The collaboration is intended to advance the methodology from controlled laboratory research toward a validated research platform with potential longer-term applications in healthy-ageing research, regenerative medicine, intervention assessment and related biomedical fields.

Specific technical configurations, measurement principles, processing methods, experimental parameters and proprietary implementation details are intentionally excluded from this public partner-search description and would be discussed with suitable potential partners at a later stage.

Advantages and innovations

Current ageing studies largely depend on destructive molecular assays or endpoint measurements, providing only snapshots of biological state. ECHO introduces a fundamentally different approach: repeated, non-destructive measurement of functional mechanical properties in the same living human cells over extended periods.

The innovation lies in integrating three complementary components into one methodology: controlled mechanical stimulation, label-free optical measurement of cellular mechanical response, and longitudinal ageing biology. Rather than treating these as separate technologies, ECHO creates a closed experimental framework in which cells are challenged, their functional response is measured without destroying them, and the resulting trajectories are linked

to established ageing and senescence endpoints.

This enables each cell population to serve as its own longitudinal reference, allowing researchers to investigate when functional deterioration emerges, how it progresses, and whether early mechanical changes precede conventional ageing markers.

Key advantages include:

- label-free and non-destructive assessment of living cells;
- repeated measurements of the same biological system over time;
- functional rather than exclusively molecular characterisation of ageing;
- integration of controlled stimulation with quantitative optical readout;
- validation using age-stratified human musculoskeletal cells and established ageing markers;
- potential application for evaluating interventions designed to preserve or restore cellular function.

ECHO therefore aims to move ageing research from static endpoint characterisation toward dynamic, longitudinal measurement of functional biological ageing, providing a new experimental tool for healthy-ageing research and intervention development.

Technical specification or expertise sought

The consortium is seeking a biotechnology, regenerative medicine, cell biology or related SME to join the project as a full beneficiary and contribute to the biological development and validation activities.

The SME should ideally demonstrate:

- Access to age-stratified human primary musculoskeletal cells and/or ethically sourced human tissue, particularly bone-marrow-derived mesenchymal stromal/stem cells (BM-MSCs) and articular chondrocytes from younger and older donors.
- Established expertise in primary human cell isolation, expansion and characterisation, including appropriate ethical approvals and/or established clinical or tissue-provider collaborations.
- Experience with cellular ageing and senescence models, including induction and characterisation of senescent states and use of validated ageing/senescence marker panels.
- Capability for long-term culture and longitudinal observation of living cells, preferably including live-cell imaging and repeated monitoring of the same biological samples over extended periods.
- Expertise in musculoskeletal biology, regenerative medicine, mechanobiology, osteoarthritis, cartilage biology or related fields would be particularly relevant.
- Ability to establish reproducible biological controls and reference conditions required for validation of a new research methodology.

The selected SME is expected to participate scientifically in the project rather than act solely as a service provider. It should have the capacity to contribute to experimental design, biological validation, interpretation of results and relevant project deliverables, and preferably to lead or co-lead biological activities within the consortium.

Previous participation in Horizon Europe or other international collaborative R&D projects is advantageous but not mandatory.

Detailed technical specifications of the measurement platform and experimental methodology will be shared with suitable candidates during subsequent confidential discussions.

Stage of development

Under development

IPR Status

Secret know-how

IPR Notes

Sustainable Development goals

• **Goal 3: Good Health and Well-being**

Partner Sought

Expected role of the partner

The sought SME is expected to join the proposed ECHO project as an active R&D partner and contribute primarily to the biological development and validation of the methodology. The partner will provide expertise in human musculoskeletal cell biology, cellular ageing and/or regenerative medicine and contribute to the establishment of biologically relevant experimental models. Particular interest is placed on SMEs with access to age-stratified human primary cells, especially bone-marrow-derived mesenchymal stromal/stem cells (BM-MSCs) and articular chondrocytes, either directly or through established clinical or tissue-provider collaborations. The partner is expected to contribute to the design and implementation of biological experiments, including appropriate control and reference conditions, long-term cell culture, ageing/senescence models and biological characterisation. The SME should support validation of the project's functional measurements against established biological indicators of ageing and senescence. The partner will work closely with the engineering, measurement and mechanobiology partners to ensure that the developed methodology is tested under biologically meaningful and reproducible conditions. It is also expected to contribute to interpretation of experimental results and assessment of the biological relevance of observed functional changes. Depending on its expertise and capacity, the SME may take responsibility for or co-lead biological tasks or work packages and contribute to project deliverables, dissemination, exploitation and translation planning. The sought organisation should therefore participate as a genuine research and innovation partner rather than solely supplying biological material or providing a commercial service. Detailed experimental protocols, technical specifications and confidential aspects of the methodology will be discussed only with suitable candidates during subsequent discussions.

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **SME 11-49**
- **SME <=10**
- **SME 50 - 249**

Call Details

Framework program

Horizon Europe

Call title and identifier

EIC Pathfinder Challenge 2026 Biotechnology for Healthy Ageing

Submission and evaluation scheme

Biotechnology for Healthy AgeingHORIZON-EIC-2026-PATHFINDERCHALLENGES-01-02

Anticipated project budget

Coordinator required

No

Deadline for EoI

28 Oct 2026

Deadline of the call

28 Oct 2026

Project duration in weeks

Web link to the call

Project title and acronym

ECHO Functional longitudinal measurement for human healthy ageing research

Dissemination

Technology keywords

• 01004001 - Applications for Health

Market keywords

• 05007007 - Other medical/health related (not elsewhere classified)

Targeted countries

• All countries

Sector groups involved

• Health