

[HORIZON-HLTH-2025] Interdisciplinary centre at the University of Luxembourg specialised in advanced bioinformatics solutions, machine learning & data-driven approaches for healthcare, biomedicine and digital health, looking for Horizon consortia partners

Summary

Profile type	Company's country	POD reference
Research & Development Request	Luxembourg	RDRLU20250619006
Profile status	Type of partnership	Targeted countries
PUBLISHED	Research and development cooperation agreement	• World
Contact Person	Term of validity	Last update
Marcin MERCHEL	20 Jun 2025 20 Jun 2026	20 Jun 2025

General Information

Short summary

The University of Luxembourg, offers expertise in statistical and interpretable AI analysis of molecular, clinical, and imaging data, data processing and web-based visualization, meta-analyses and integrative analyses, and biomedical text-mining using NLP methods and large language models (LLMs). The group looks to join Horizon Europe consortia, contributing advanced bioinformatics solutions, machine learning expertise, and data-driven approaches for healthcare, biomedicine, and digital health.

Full description

The Biomedical Data Science Group belongs to the Luxembourg Centre for Systems Biomedicine (LCSB) at the University of Luxembourg, focusing on research and development activities in computational biology and bioinformatics for complex diseases. The group specializes in integrative analyses of biological data using statistical methods, artificial intelligence, pathway/network analysis, and text-mining approaches. Their expertise addresses the growing need for interpretable, high-performing, and application-specific AI solutions in healthcare and biomedical

research, particularly for neurodegenerative disorders such as Parkinson's and Alzheimer's disease.

The research group is specifically interested in participating in the following Horizon Europe calls (listed in order of preference):

Primary Interest (Highest Priority):

- HORIZON-HLTH-2025-01-TOOL-03: Leveraging multimodal data to advance Generative Artificial Intelligence applicability in biomedical research (GenAI4EU)
- HORIZON-EIC-2025-PATHFINDERCHALLENGES-01-02: Generative-AI based Agents to Revolutionize Medical Diagnosis and Treatment of Cancer
- HORIZON-HLTH-2025-01-CARE-01: End user-driven application of Generative Artificial Intelligence models in healthcare (GenAI4EU)
- HORIZON-HLTH-2025-03-DISEASE-02-two-stage: Advancing innovative interventions for mental, behavioural, and neurodevelopmental disorders
- HORIZON-HLTH-2025-02-DISEASE-01: European Partnership for Brain Health
- HORIZON-HLTH-2025-03-ENVHLTH-01-two-stage: The impact of pollution on the development and progression of brain diseases and disorders
- HORIZON-CL4-INDUSTRY-2025-01-DIGITAL-61: AI Foundation models in science (GenAI4EU) (RIA)
- HORIZON-INFRA-2025-01-TECH-04: AI-generated digital twins for science
- HORIZON-MSCA-2025-PF-01-01: Marie Skłodowska-Curie Postdoctoral Fellowships

Secondary Interest:

- HORIZON-CL4-2025-04-DIGITAL-EMERGING-04: Assessment methodologies for General Purpose AI capabilities and risks (RIA) (AI/Data/Robotics Partnership)
- HORIZON-HLTH-2025-01-DISEASE-04: Leveraging artificial intelligence for pandemic preparedness and response
- HORIZON-HLTH-2025-01-DISEASE-07: Tackling high-burden for patients and under-researched medical conditions
- HORIZON-HLTH-2025-01-TOOL-05: Boosting the translation of biotech research into innovative health therapies
- HORIZON-CL4-2025-04-HUMAN-08: GenAI for Africa

Additional Areas of Interest:

- HORIZON-HLTH-2025-01-TOOL-02: Advancing cell secretome-based therapies
- HORIZON-MISS-2025-02-CANCER-02: Understanding the effects of environmental exposure on the risk of paediatric, adolescent and young adult cancers
- HORIZON-JU-IHI-2024-08-02-two-stage: Novel Endpoints for Osteoarthritis (OA) by applying Big Data Analytics
- HORIZON-HLTH-2025-03-ENVHLTH-02-two-stage: Advancing knowledge on the impacts of micro- and nanoplastics on human health
- HORIZON-HLTH-2025-01-TOOL-01: Enhancing cell therapies with genomic techniques
- HORIZON-HLTH-2025-01-DISEASE-06: Implementation research addressing strategies to strengthen health systems for equitable high-quality care and health outcomes in the context of non-communicable diseases (GACD)

Their main technological features include advanced statistical learning algorithms for omics data analysis, interpretable machine learning models for biomarker discovery, integrative multi-omics data analysis pipelines, pathway and network-based analysis methods, and natural language processing tools for biomedical literature mining. Their solutions focus on biological interpretability, translational applications, particularly for precision medicine and clinical decision support systems.

Potential applications of their technology span healthcare (diagnostic biomarker development, clinical decision support), biomedicine (drug target identification, pathway analysis), digital health (data integration platforms, AI-driven health monitoring), and research infrastructure (bioinformatics tools, data management solutions).

Advantages and innovations

The group's integrative approach to multi-omics data analysis provides comprehensive insights into disease mechanisms by combining genomics, transcriptomics, proteomics, and metabolomics data with clinical information. Their statistical and machine learning methods are specifically designed for biological interpretability, ensuring that AI models provide actionable insights for researchers and clinicians. The group's expertise in network-based analysis allows for the identification of disease-associated molecular pathways, candidate drug targets, and multivariate biomarker signatures, offering advantages over standard single-biomarker approaches.

Their text-mining capabilities using advanced NLP methods and large language models enable automated extraction and synthesis of knowledge from the biomedical literature, accelerating research and facilitating evidence-based decision making. The group's experience with neurodegenerative diseases provides specialized knowledge in handling complex, multi-dimensional datasets typical of brain disorders, which can be transferred to other disease areas.

Compared to conventional bioinformatics approaches, their methods offer integration of heterogeneous data types, enhanced biological interpretation, and causal / mechanistic analyses, which are important for reliable biomedical AI applications and regulatory compliance in healthcare settings.

Technical specification or expertise sought

Type of partners sought:

- Academic institutions and research organizations
- Healthcare providers and clinical research centers
- Biotechnology and pharmaceutical companies
- Medical device manufacturers
- Digital health technology companies
- Government agencies and public health organizations

Specific areas of activity:

- Clinical researchers and healthcare professionals
- Biomedical data providers and biobanks
- AI/ML technology developers
- Medical device and diagnostic companies
- Pharmaceutical and biotechnology companies
- Digital health platform developers

Stage of development

Available for demonstration

IPR Status

Sustainable Development goals

- **Goal 4: Quality Education**
- **Goal 17: Partnerships to achieve the Goal**
- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 3: Good Health and Well-being**

IPR Notes

Partner Sought

Expected role of the partner

- Clinical data and expertise providers
- Use case definition and validation partners
- Technology integration and deployment partners
- End-user testing and feedback providers
- Complementary research and development partners
- Regulatory and ethics expertise providers

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **SME 11-49**
- **Big company**
- **SME 50 - 249**
- **University**
- **R&D Institution**
- **SME <=10**

Call Details

Framework program

Health

Call title and identifier

HORIZON-HLTH-2025-01-TOOL-03: Leveraging multimodal data to advance Generative Artificial Intelligence applicability in biomedical research (GenAI4EU)

Submission and evaluation scheme



Anticipated project budget

Coordinator required

Yes

Deadline for EoI

9 Jul 2025

Deadline of the call

16 Sep 2025

Project duration in weeks

Web link to the call

Project title and acronym

Dissemination

Technology keywords

Market keywords

• **02007012 - Medical/health software**

Targeted countries

• **World**

Sector groups involved

