OUR PROFILE

HUMAN TECHNOPOLE FOUNDATION

Human Technopole is **a research institute for Life Sciences** based in the heart of MIND (Milan Innovation District).

Human Technopole is a research infrastructure on a national scale that, since its foundation in 2018, has grown from a small team of administrative staff to over 390 people, including **more than 260 among researchers and support staff,** of **32 different nationalities**, with an average age of 37 years old. **60% of the research staff comes from abroad**: these include both foreigners and Italians who for the most part will work in their country of origin for the first time.

Once fully operational Human Technopole will employ up to **1,000 scientists**, in different fields, including biology, bioinformatics, chemistry, engineering, physics, mathematics, health science and computational and data science, **to work together on research topics of biomedical relevance**.

After careful refurbishment works, the campus currently covers a surface of 30,000 square metres. It includes three existing buildings (**Palazzo Italia, North and South Pavilion**), the **Incubator Labs** plus an entirely new **South building** (to be completed by 2028).

In June 2023, Human Technopole has already obtained **external funding worth 11,6 million euros** assigned to the institute's researchers through grants and scholarships from European and international institutes.

Human Technopole Campus with Palazzo Italia and incubator labs

THE MISSION

HT's mission is **to improve human health and well-being, including a focus on healthy aging.** This mission will be achieved by:

- Carrying **out frontier research in the life sciences**, aimed at developing innovative approaches for personalized and preventive medicine.

- **Setting up and operating scientific services and facilities** to be made available to external scientists, responding to the needs of the national and international life sciences research communities.

- Driving **innovation and progress** by promoting technology transfer and by engaging in relations with industry, to foster the transformation of scientific discoveries into tangible applications for the benefit of patients and society.

- Disseminating **scientific activities and achievements** to reinforce the message that science is a public good.

ADVANCING THE NATIONAL SYSTEM

As a **research centre of excellence and large-scale research infrastructure**, HT will play a major role in scientific capacity building in the life sciences. By combining the missions above, Human Technopole will enrich and contribute to advancing the national system, acting as a reference point for the Italian academic life science community. At the same time, its high standards will make HT an ideal partner for excellent European and international institutes and collaborative initiatives. By forging scientific connections with relevant international partners and networks, HT will gain further visibility for and help raise the profile of Italian biomedical research.

The following **core principles** will be the bedrock of and drive of all HT's activities:

- Scientific Excellence
- Interdisciplinarity
- Internationality and Diversity
- Openness and Collaboration
- Service to the Research Community.

SCIENTIFIC PARTNERSHIPS AND COLLABORATIONS

Since its early days of activity, Human Technopole have been engaging with universities, research centres and other scientific organisations to explore synergies and promote joint collaborative initiatives.

In addition to being partner of international projects such as LifeTime, the pan-European research initiative that aims to revolutionize healthcare through the understanding and monitoring of human diseases with single cell resolution, over the years HT has signed a Memorandum of Understanding with important Italian institutes: *IRCCS Oasi Maria SS, Fondazione Regionale per la Ricerca Biomedica, Scuola Internazionale Superiore di Studi Avanzati (SISSA), Eurac, Turin University (UniTo), Cluster CLAN & Alisei* and *Università degli studi di Milano.*

HT collaborates with many research partners for the development of specific projects, in particular with the University of Padua (departments of molecular medicine and biomedical sciences) for the multiomic analysis and population stratification for Covid-19 epidemiological study in the municipalities of Vò and Padua and with IRCCS Neuromed as part of the "Moli-sani" study. The updated list of agreements is available on our website, under *Collaborations*.

CENTRES AND FACILITIES

Research at Human Technopole will take a **comprehensive and interdisciplinary approach to the study of human biology**, aimed at understanding basic mechanisms that regulate physiology and disease. It will pursue a **unique mix of experimental and computational research**, ranging from fundamental "blue skies" research to translational research with a more direct application to human health.

Research in **five initial, complementary and highly relevant areas** for biomedical and health-related research will be set up in the first phase of HT development:

Genomics
It pursues research aimed at uncovering the complex mechanisms governing gene expression and how heritable genetic information translates into phenotypic traits. It is composed of two complementary programmes in Population and Medical Genomics and Functional Genomics.

Neurogenomics
It exploits and integrates genetics, multi-omics, disease modelling and advanced imaging approaches using different systems to investigate nervous system structure-function and neuronal development, with particular attention to molecular mechanisms underlying neuropsychiatric and neurological disorders.

Structural Biology
It aims at gaining precise knowledge of the structure of macromolecules and macromolecular complexes involved in a variety of human disease conditions, which is essential to understand how they function and as a first step in the design of novel drugs.

Computational Biology
It closely supports and integrates with research pursued by the other HT Research Centres, by using statistical, computational and bioinformatics approaches to develop solutions for (big) data analysis, management and integration.

Health Data Science
A joint project with the Politecnico di Milano, it uses use advanced data science methods to analyse and integrate large-scale data from different sources on treatment effectiveness, economic and social behaviour, mainly in the areas of precision medicine, healthcare and health economics.

In May 2023, the Consiglio di Sorveglianza of the Human Technopole Foundation resolved to set up **five National Facilities**, meant as infrastructural facilities with a high technological impact,

available to the national research community. The five National Facilities thus replaced the pre-existing research facilities in HT.

National Facility for Genomics
Its main mission is to develop experimental and analytical workflows to study all major domains of genomic exploration, including, but not limited to, the analysis of DNA, RNA, chromatin and other markers of epigenetic and regulatory activity. These techniques can be applied to different areas of biology, with a resolution that extends to whole organisms, tissues or individual cells.

National Facility for Genome Engineering
Provides a broad portfolio of genomic editing services. Genomic editing methodologies are integrated into a series of technological workflows that allow for modular construction of the editing process. The service offering will be expanded over time to include the subsequent validation of the edited model through the cultivation of cell cultures in two or three dimensions.

National Facility for Structural Biology
It provides a comprehensive platform for structural characterisation on different scales, from tissues to amino acid side chains. It will be staffed by highly qualified personnel with expertise in all aspects of sample preparation, characterisation and imaging. The facility aims to support the national scientific community in successfully investigating biological actors of interest, both in isolation and in their cellular compartments. It is also equipped with five cryo-microscopes, among the most advanced in the world, which enable the study of biological molecules down to the atomic scale.

National Facility for Light Microscopy
It offers access to state-of-the-art optical microscopes, such as wide-field, confocal, rotating disk, super-resolution and light-sheet microscopes. The National Platform staff will supervise external users, taking care of image acquisition under optimal conditions. At full capacity, additional services such as basic and advanced training, microscopy courses, sample preparation and customised opto-mechanical hardware design will be offered.

National Facility for Data Handling & Analysis
Supports the national research community by providing an initial state-of-the-art analysis of data generated by the other National Platforms and delivers the data to the external user. The main objective of this Platform is to provide bioinformatics and bio-image analysis expertise for the evaluation of large-scale, complex biomedical datasets.

THE GOVERNANCE

The Italian Ministry of Economy and Finance, the Italian Ministry of Health and the Italian Ministry for Education, University and Research are the founding members of the Foundation. The Foundation has a dual structure granting operational autonomy to its bodies: the Supervisory Board exerts a role of direction and control, while the Management Committee carries out scientific and administrative affairs.

The President

The **President** is the legal representative of the Foundation. He chairs the Consiglio di Sorveglianza and manages Institutional and Public relations; he promotes training and dissemination of activities concerning the social and economic impact of the Foundation's scientific research and public engagement.

The President of Human Technopole Foundation is **Gianmario Verona.**

Consiglio di Sorveglianza

The **Consiglio di Sorveglianza** (CdS) guarantees the excellence of the Foundation, supervises the use of resources, and the compliance with the rules regarding the appointment of the Foundation bodies. It carries out general activities of direction and control over the Foundation.

The members of the Consiglio di Sorveglianza include the President and are appointed by the Italian Government via PM decree.

Maura Francese, Deputy Head of Economic Structure Service, Department of Economics and Statistics, Bank of Italy;
Giovanna Iannantuoni, Rector Milano-Bicocca University;
Massimo Inguscio, full Professor of Physics at Campus Biomedico University in Rome;
Giuseppe Ippolito, Director general for research and innovation in healthcare, Health Ministry;
Biagio Mazzotta, State's Accountant General;
Marcella Panucci, Chief of Staff Minister for Universities and Research;
Francesca Pasinelli, Director General Fondazione Telethon;
Maria Grazia Roncarolo, Director Centre for Definitive and Curative Medicine and professor Pediatrics and Medicine at Stanford University;
Serena Sileoni, Associate professor of Constitutional law at Università Suor Orsola Benincasa in Naples;
Gianluca Vago, President Fondazione CNAO;
Alessandro Vespignani, Professor of Physics at Northeastern University, founding director of Northeastern Network Science Institute in Boston.

The Director

The **Director** is responsible for the implementation of the multiyear strategic plan and chairs the Management Committee. The designated Director of Human Technopole Foundation is **Marino Zerial**.

Management Committee

The **Management Committee** (MC) guarantees the orderly progress and achievements of the Foundation. It manages scientific and administrative activity to allow the Foundation to reach its objectives and implements the strategic plan.

The members of the Management Committee include the Director and are professionals with proven managerial skills in important national institutions. They are chosen by the Supervisory Board.

Irene Bozzoni, Full Professor of Molecular Biology and Dean of "Scuola superiore di studi avanzati" at “La Sapienza” University, Rome
Nando Minnella, Economist, former Head of Technical Department of Ministry of Education, Universities and Research (MIUR)
Stefano Piccolo, Full Professor of Molecular Biology at University of Padova.
Fabio Terragni, partner and Director, Alchema

Scientific Committee

The Scientific Committee is an advisory body of the Human Technopole Foundation. The members of the Scientific Committee, nominated by the Supervisory Board among eminent scientists, are

external to the Institute and have an important advisory role under the Foundation's Statute: they are responsible for assessing the protocols of the scientific activities in terms of both quality and consistency with Human Technopole's multi-year plans.

The members of the Scientific Committee are:

Walter Ricciardi, Chair of the Scientific Committee of Human Technopole Foundation. Professor of Hygiene and Public Health, Università Cattolica del Sacro Cuore, Italy;
Geneviève Almouzni, Director of Research Exceptional Class at CNRS, Institut Curie, France;
Andrea Ballabio, Director of the Telethon Institute of Genetics and Medicine (TIGEM), Italy;
Pietro De Camilli, Director of the Program in Cellular Neuroscience, Neurodegeneration and Repair (CNNR), Yale School of Medicine, USA;
Kristian Helin, CEO and President of the Institute of Cancer Research, UK;
Alberto Mantovani, Scientific Director of Istituto Clinico Humanitas, Italy;
Margaret McMahon, Global Head Data Science, Roche Information Solutions Data & Analytics, Switzerland;
Gennaro Melino, Professor of Biochemistry and Director of the Torvergata Oncoscience Research Centre (TOR) at the University of Rome Tor Vergata, Italy;
Andrea Musacchio, Director, Max-Planck Institute of Molecular Physiology – Dept. of Mechanistic Cell Biology;
Luca Pani, Professor of Clinical Psychiatry at the University of Miami and Professor of Pharmacology and Clinical Pharmacology at the University of Modena and Reggio Emilia, USA & Italy;
Alfio Quarteroni, Professor Politecnico di Milano, Italy and Professor emeritus at EPFL, Lausanne, Switzerland;
Nadia Rosenthal, Scientific Director of The Jackson Laboratory, USA;
Michael Snyder, Director of the Center for Genomics and Personalized Medicine, Stanford University School of Medicine, USA;
Giulio Superti-Furga, Scientific Director of the CeMM Research Centre on Molecular Medicine, Austria;
Fiona Watt, Director of the European Molecular Biology Organization, Germany.

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