



ISAMB

Instituto de Saúde Ambiental



FACULDADE DE
MEDICINA
LISBOA

ISAMB

Instituto de Saúde Ambiental
Environmental Health Institute



director's intro



INSTITUTO DE SAÚDE AMBIENTAL
Faculdade de Medicina da Universidade de Lisboa
Av. Professor Egas Moniz, Ed. Egas Moniz
1649-028 Lisboa | Portugal

Phone +351 217 999 489

E-mail isamb-coord@medicina.ulisboa.pt

Director

António Vaz Carneiro

Editorial team

Ricardo R. Santos, Joana Costa, Rodrigo Santos,
Ana Virgolino, Osvaldo Santos e António Vaz Carneiro

Concept and design

Ricardo R. Santos

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director's intro

ISAMB is a young research institute embedded in the Faculty of Medicine of the University of Lisbon. It was created in 2013 and it took only one year to be recognized by FCT as a R&D unit of the Portuguese Research and Innovation System. I was honoured to be appointed Director of **ISAMB** in July 2017.

The scientific backgrounds of **ISAMB** create the opportunity for synergies between research areas: environmental health, public health, preventive medicine, human biomonitoring and epidemiology. **ISAMB** has a wide perspective of environments, going further than those traditionally considered (physical, chemical and biological), entailing also psychosocial (including economical and policy-driven environments) and artificially built environments, with a special focus on the interactions between urban and digital environments and health.

Although centred in human health, our scientific and training activities follow a Planetary Health approach, considering several environmental contexts: from studies at community level, focusing on active ageing, to healthcare contexts (e.g., patient safety, therapeutic negotiation), from school to labour or institutional settings.

We recognize the need to endorse human behavioural change in order to achieve sustainable environments associated with health and quality of life – this is the most distinctive feature of **ISAMB** as an Environmental Health research and training unit. We acknowledge the need to take action through adaptation and mitigation of modified and human life-threatening environments (e.g., climate change, air pollution, obesogenic contexts), but we are also strongly invested in behavioural change at individual and community levels, as means to achieve environmental health promotion at a global scale.

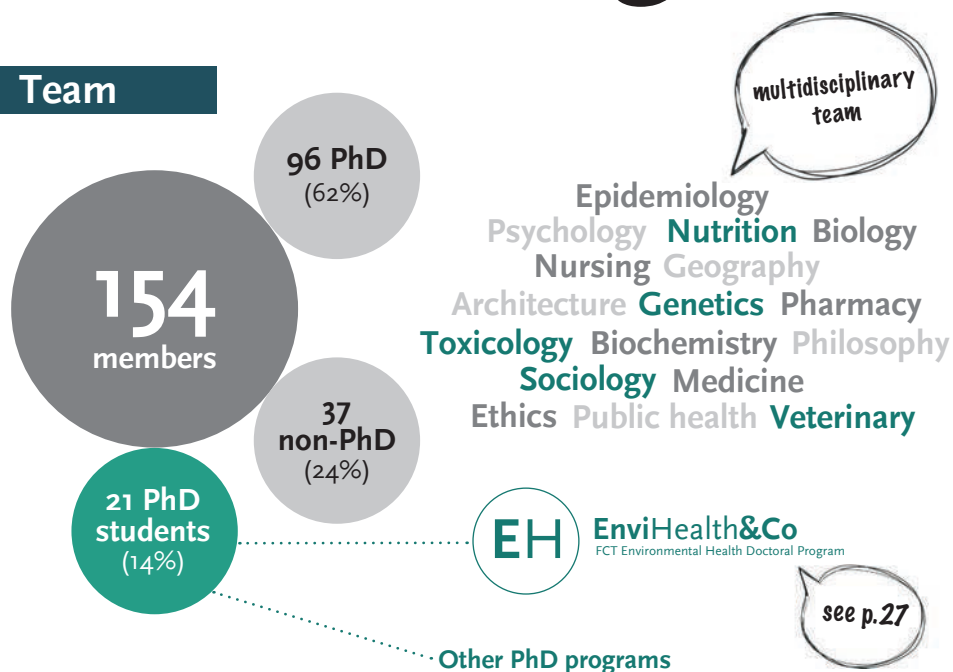
Our Institute has a short history. But we are strongly committed to produce, integrate and share knowledge that, ultimately, might contribute to both human and Earth prosperity.

António Vaz Carneiro MD PhD FACP FESC
Director



isamb at a glance

Team



Research

Research is developed within five research groups, each with several convergent research lines encompassing its members specialization areas, skills and competences.

- Environment, Family Health and Society
- Supportive Environments
- Environment and Non-Communicable Diseases
- Environment and Infectious Diseases
- Ecogenetics and Human Health

Additionally, one lab applies research competences into specific strategic R&I areas.

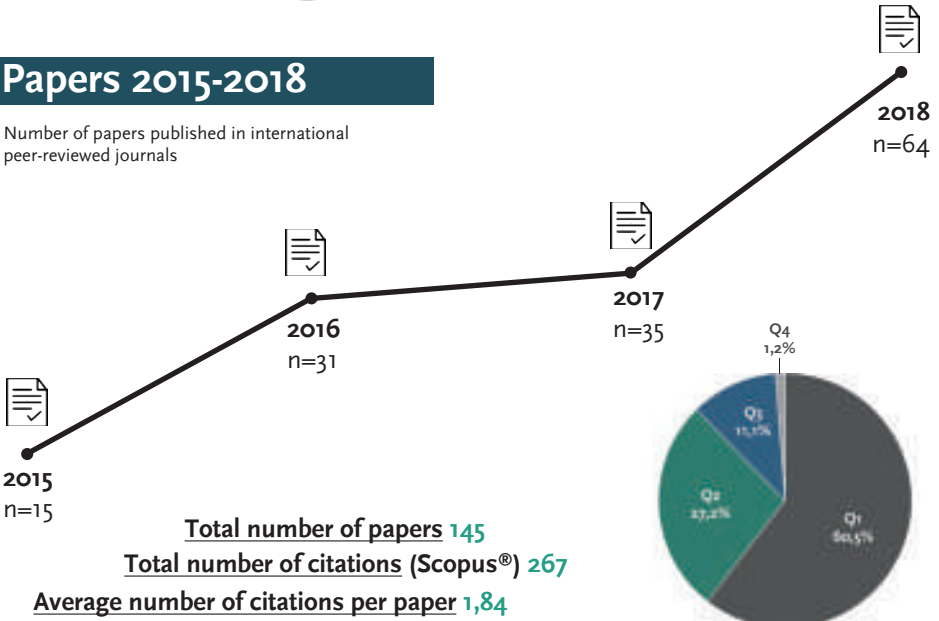
- Environmental Health Behaviour Lab (EnviHeB Lab)

ISAMB research is supported by national and international partners from academia, scientific research and innovation sector, business sectors or policymakers, and funded by competitive funding programs (H2o2o, EEA Grants, FCT, etc.).

Impact at a glance

Papers 2015-2018

Number of papers published in international peer-reviewed journals



Distribution (%) of papers (n=145) published in the period 2015-2018 by quartile (source: SCImago)

Permanent External Committee for Scientific Advisory



Philippe Grandjean

Environmental Medicine Research Unit at the University of Southern Denmark

Environmental Health at the Harvard T.H. Chan School of Public Health, USA



Lora Fleming

European Centre for Environment and Human Health & Oceans

Epidemiology and Human Health at the University of Exeter Medical School, United Kingdom



Marco Martuzzi

Environment and Health Impact Assessment, WHO (World Health Organization) European Centre for Environment and Health, Germany

our identity

ISAMB was established by the Faculty of Medicine of the University of Lisbon (FMUL), in 2013 and recognized by FCT for funding as a R&I unit in 2014.

ISAMB aims:

- to become an international reference for Environmental Health (EH) research, innovation, education-training and outreach, and
- to contribute to national/global EH improvement, by preventing/reducing environmental-related burden of disease and protecting/promoting health and well-being.

Since its establishment, **ISAMB** has been expanding its scientific contributions on the understanding of the health impact of natural and artificial environments (including physical, interpersonal, social and digital dimensions).

mission

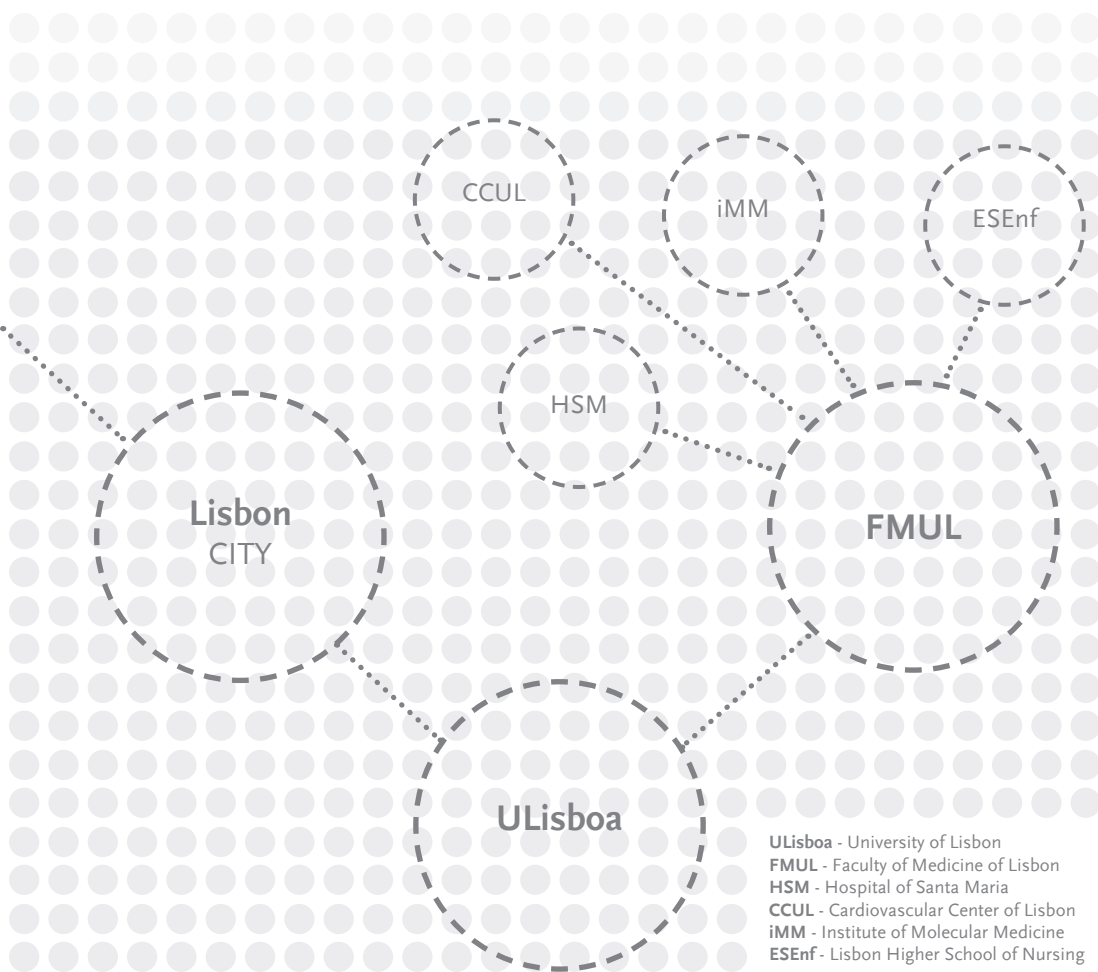
Our mission is to conduct high-level clinical, epidemiological and translational research for a better understanding of the environmental determinants and their effects on human behaviour, as well as of human behaviour on the environments, at the individual and community levels. We assume a Planetary Health approach, and this is expected to contribute to increase productivity and reduce the demand on health services and the inequalities in exposure to environmental determinants and health. Ultimately, **ISAMB**'s mission is to address current and future Societal Challenges, specifically in Environmental Health and by assuming a Planetary Health approach.





our environment

ISAMB is a structural unit of FMUL, devoted to scientific research and training in the realm of EH. The institute has a privileged association with the country's largest hospital (Hospital of Santa Maria), as well as with several partner institutions, including public and private organizations from the health sector, but not exclusively. These synergies give **ISAMB** the competitive advantage of a team encompassing a wide array of renowned academics, researchers from both academia and industries, and health professionals involved in higher education.



our habitat

ISAMB is located within the Faculty of Medicine of the University of Lisbon, contiguously to the Hospital of Santa Marial. Its facilities are composed by open-space work rooms, one meeting room, two conference rooms, and one laboratory.



our strenghts

ISAMB is a scientific research unit that is embedded in the oldest and largest Portuguese medical school – the Faculty of Medicine of the University of Lisbon –, which in turn shares its facilities with the largest Portuguese general hospital (Hospital of Santa Maria), both located in the country's capital – Lisbon. This provides a unique setting for conducting multidisciplinary and translational research in Environmental Health (EH) and related areas. **ISAMB** researchers have access to equipment, facilities and services that allow them to create and integrate knowledge from basic to clinical research, from epidemiological to public health, from health to disease-specific applied research, in both hospital and community contexts.

ISAMB hosts five research groups that altogether cover different dimensions of EH and focus multiple environments: physical, chemical, biological, psychosocial, built environment (namely, digital environments) in a lifespan perspective. Our approach is multidisciplinary and based on a Planetary Health perspective.

The Faculty of Medicine of the University of Lisbon has a long history of training in epidemiology, public health and preventive medicine. In fact, it was at the interception of these three areas that **ISAMB** was created, and this guides our research towards the usage of combined high-quality methodological approaches. Taking into account the multidisciplinary nature of EH research, **ISAMB** researchers are trained in mixed-methods approaches, combining qualitative with quantitative designs, which undoubtedly constitutes added-value to the research being conducted at **ISAMB**. Also, **ISAMB** is a natural environment for cross-feeding between different scientific fields, from both academic and non-academic partners. Specific relevant areas of methodological expertise range from systematic literature reviews and meta-analysis to clinical trials, health impact assessment, big data analysis, geographic information systems, classic and modern psychometry, Delphi method, grounded theory, interpretative phenomenological analysis, among others.

In Portugal, 45% of respondents say that people's actions and behaviour will have a positive impact 15 years from now on health and medical care.

—Special Eurobarometer 419, 2014

EnviHealth&Co Phd Programme, co-funded by Fundação para a Ciência e a Tecnologia (FCT) and private companies, is a flagship of **ISAMB**'s commitment to research and high education in EH. This PhD programme covers different areas of EH research and integrates students with different scientific backgrounds: biology, biochemistry, medicine, nutrition, physiology, geography, architecture, among others. Its main focus is to conduct applied and translational research and aims to provide solutions to specific issues raised by private companies. This is an outstanding context for outreaching of academic activities and, ultimately, for networking.



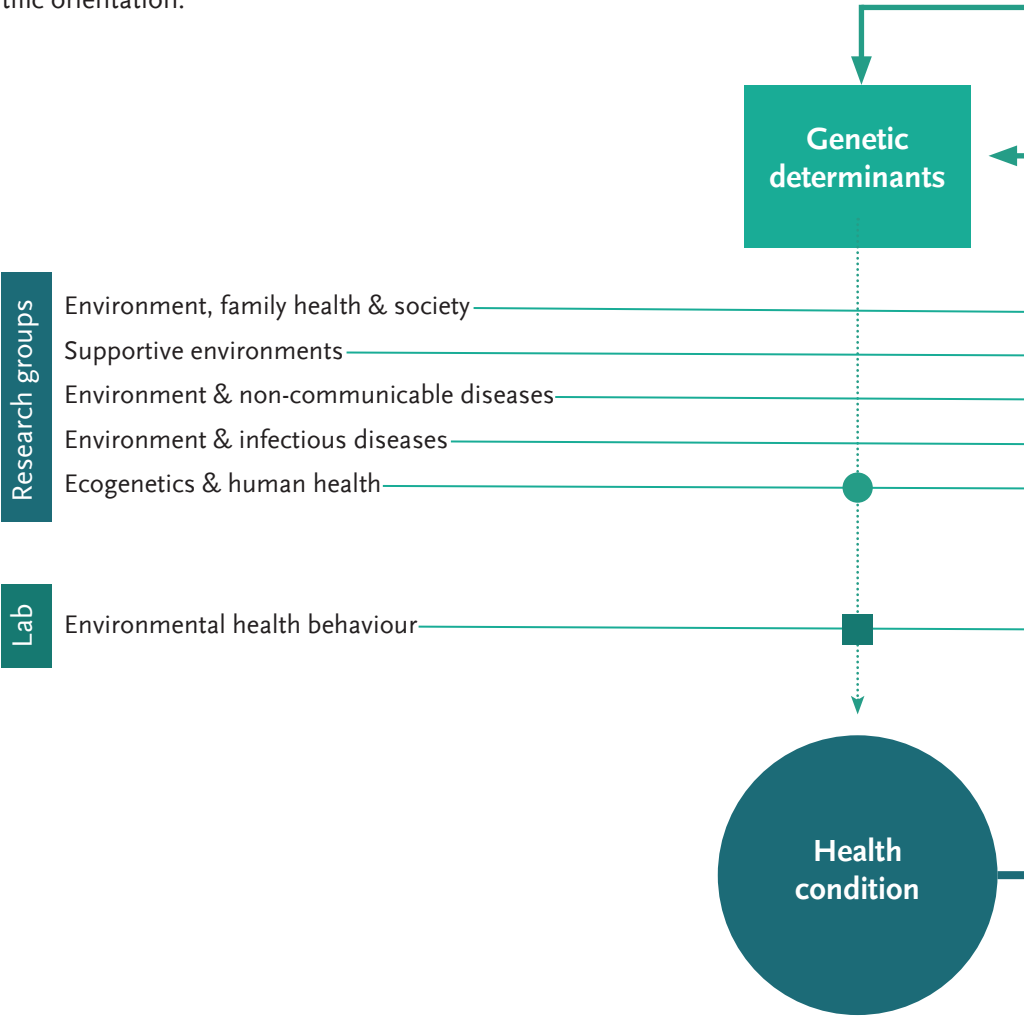


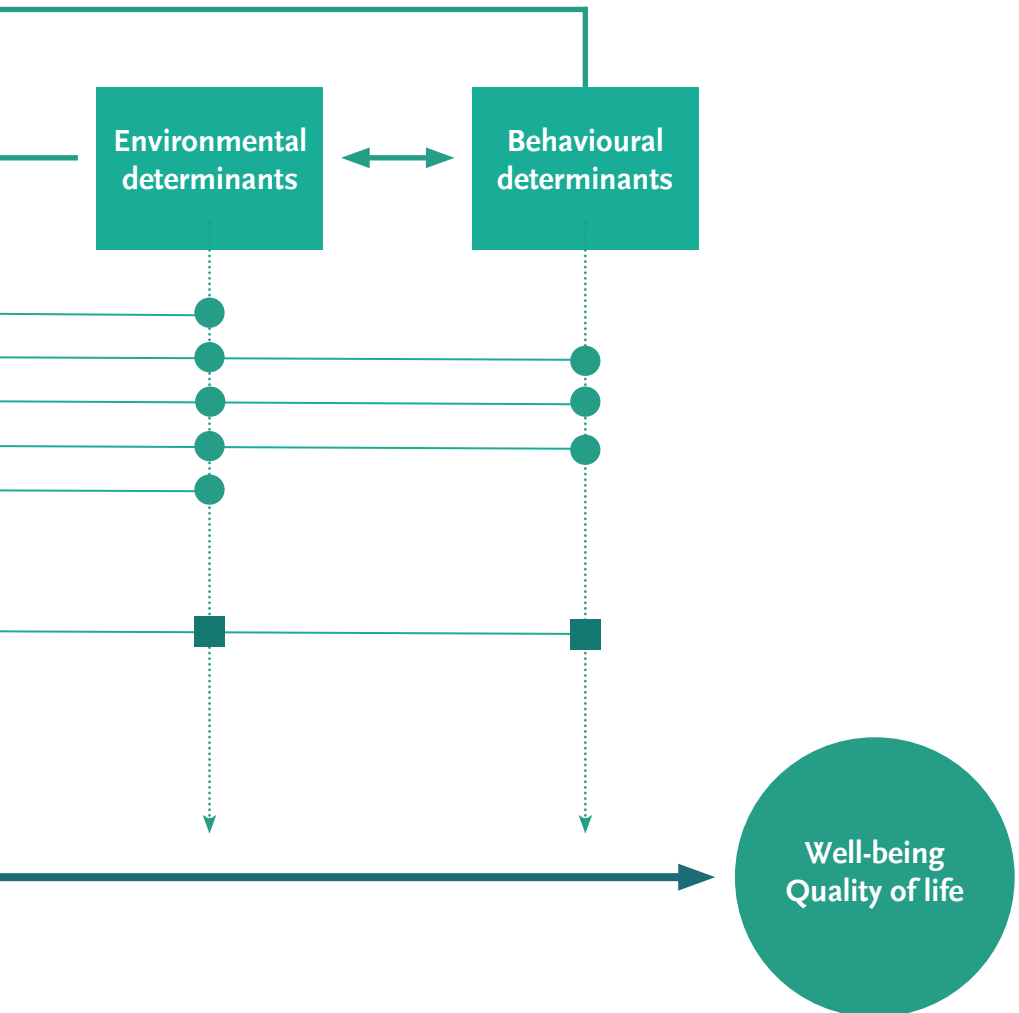
research

research

ISAMB is led by Professor António Vaz Carneiro, a medical doctor with extensive experience in leading renowned scientific institutions (namely, Centre for Evidence Based Medicine & Cochrane Portugal).

Five Integrated Members lead the five Research Groups and one Research Coordinator leads the Environmental Health Behaviour Lab (EnviHeB Lab). **ISAMB**'s Advisory Committee provides support and strategic scientific orientation.







Environment, family health & society

We are interested in how physical and social environmental factors affect the health of individuals, families and community. Environment largely determines whether we are healthy or not and, thus, the development of timely and cost-effective health-promotion and disease-preventive approaches strongly benefits from a deeper understanding on the intricate links between environmental determinants and health.

We work with different community actors, including municipality authorities and primary healthcare units, involving stakeholders from different sectors: health professionals, health and environmental policy-makers, patients and their families and, ultimately, the community. We are strongly committed with health promotion and disease prevention through health literacy actions targeting both individuals and community groups.

We value networking among national and international partners, which is reflected by the collaboration with several strategic partners in the academia, including other research institutions, health units, and governmental organizations.



Environment

Society

Family health

Community

Ageing

Climate change



Group leader

Andreia Jorge Silva
PhD in Nursing

We tackle environmental challenges to the health of the communities by actively involving stakeholders in the research process, which ultimately will lead to effectively promote health and prevent disease.

Supportive environments



Disease prevention and health promotion go beyond individual behaviours. Our research group aims at exploring, with a multidisciplinary approach, the relation between supportive environments and human health throughout life, with a special focus on youth.

We investigate the intricate links between environmental factors and people's health and well-being in their life contexts, because the environments in which people are embedded play a key role in determining their health status. We assume a translational research perspective and our findings aim to contribute to policy development and to the creation of guidelines for professionals in two main intertwined areas: health and education. The ultimate goal of our research group is to create opportunities for communities to make healthy choices in a life span perspective and across life contexts.



Group leader

Margarida Gaspar de Matos

PhD in Human Kinetics

Supportive environments

Life contexts

Public policies

Sustainability

Environmental health determinants

Health and well-being promotion

Life cycle

We address supportive environments in a multi-disciplinary way and across people's life span. Our ultimate goal is to create the opportunity for all stakeholders in the communities to make healthy choices, thus actively contributing for disease prevention and health promotion.

Environment & non-communicable diseases

We are interested in the interaction between environmental factors and how these influence health and well-being, with a special focus on the four major types of non-communicable diseases (NCDs): cardiovascular diseases, cancer, diabetes and respiratory diseases. We aim at distinguishing between protection (healthy ageing-related determinants) and risk profiles (premature death and disability-related determinants) by addressing quality of life and healthy ageing patterns of the Portuguese population, which ultimately will contribute to reduce premature mortality.

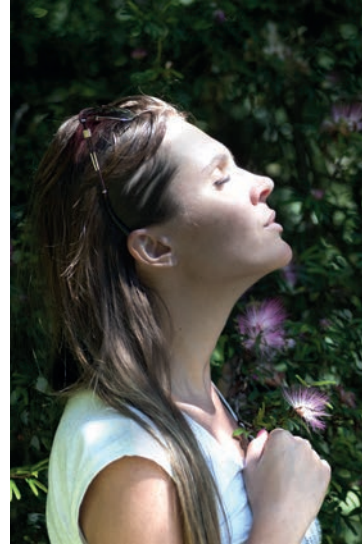
Our findings on the aetiology of disease allow the development of new diagnostic and therapeutic techniques, in particular those involving telerehabilitation and the ones at the intersection between artificial intelligence and big data.

We are a multidisciplinary research group with established collaborations from outside and inside the academia, namely with the General Health Directorate and Instituto Superior Técnico (University of Lisbon).

Artificial intelligence

Telerehabilitation

Non-communicable disease prevention and control



Group leader

Cristina Bárbara
PhD in Medicine

We are strongly committed to the development and implementation of a prioritized national research agenda for environmental determinants of NCDs.

Environment & infectious diseases



We are a multidisciplinary research group composed of medical doctors and researchers from biomedical-related areas (e.g., biologists and pharmacists), strongly connected to the community (e.g., patients' organizations, associations of health-related enterprises, and pharmaceutical industry). We are interested in the environmental determinants of infectious diseases in their broadest sense, with a special focus on vector borne diseases and airborne infectious diseases.

We recognize the importance of addressing vector borne diseases in their broadest sense, by considering the entire chain of infection (from agent to diagnosis and treatment) in an integrated approach and, thus, we invest in creating a Research Center for Global Health. In the particular case of airborne infectious diseases and infections associated with risk behaviours, we are conducting research on (1) infections by *Candida auris* in the hospital setting, (2) infection by hepatitis C among injecting drug users, and (3) micro-elimination of hepatitis C in an addiction unit located in the Lisbon Metropolitan Area. We also collaborate with colleagues from Portuguese-speaking African countries in the study of HIV, tuberculosis and hepatitis.



Group leader
Francisco Antunes
PhD in Medicine

Vector borne diseases

Elimination of Hepatitis C

Injecting drug users

Air borne infectious diseases

Risk behaviours for HIV and hepC

The One Health approach considers the interconnection between environmental factors and the health of living beings. We should move towards One Health approach in environmental health research and focus “all external conditions and influences affecting life and development of an organism”.

Ecogenetics & human health

Our research group uses modern techniques of genetic analysis to study how environment interacts with the genetic background, modulating the expression of intermediate and distant phenotypes and disease risk.

Following Mendelian randomization, if allelic variants alter the biological effects of an environmental exposure modifying the disease risk, then these genetic variants must be related to the disease risk predicted by its influence on the exposure to the risk factor. Thus, an allelic variant can be used as a surrogate biomarker to study the effect of a suspected environmental exposure on disease risk, reducing the bias of the influence of behavioural, social and physiological factors.



Biochemistry

Environment

Nutrition

Behaviour

Genotyping

Epigenetics

Our main objective is to conduct discriminant analysis of intermediate and distant phenotypes according to Mendelian randomization in interaction with the physical, nutritional, microbiological and social environments.

**Group leader****Manuel Bicho**

PhD in Biochemistry and Physiology



Environmental Health Behaviour

We are a multidisciplinary team composed of psychologists, nutritionists, biologists, science communication experts, bioinformaticians and statisticians. We are interested in the promotion of human behaviour and habits that enhance health, including healthy lifestyles for disease prevention, adequate chronic disease self-management, and/or that protect/promote sustainable physical, chemical, biological, psychosocial and/or built environments. Our Lab assumes a Planetary Health approach, which means that our research goes further and includes human-animals and human-multilayer-environment interconnections with a strong focus on sustainable health-promoting environments.

Our main goals are (1) to create and systematize evidence about prevalence, determinants and effects of health- and environmental-related behaviours/habits, (2) to identify determinants of behavioural/habitual transition(s) from pathogenic to salutogenic behaviours/habits and vice-versa, and (3) to develop and assess the impact of environmental contexts on health-related behaviours.

We are particularly interested in digital environments and health care environments, and we have been conducting research on patient safety, patient-clinician relationship/communication and therapeutic adherence as key players in health-promoting environments.

Health-related behaviours

Digital environments

Planetary health

Sustainable health-promoting environments



Lab leader

Osvaldo Santos

MSc in Clinical and Health Psychology

At the EnviHeB Lab we are committed to identify triggers of behavioural transitions supporting health, well-being, and sustainable environments. We devote our research efforts to five behavioural thematic areas: eating habits, physical activity, waste management, patient-centered relationships and climate change.

education



education



EnviHealth&Co
Environmental Health Doctoral Program

The **EnviHealth&Co** offers a tailor-made curricular plan that brings students to a high level of academic competence. This PhD program currently involves 12 students awarded with a FCT scholarship and co-funded by private companies. PhD projects are defined in strict collaboration with the companies and besides their supervisors from academia students are also supported by tutor from the company.

Other educational programs

Besides the EnviHealth&Co, **ISAMB** collaborates in other post-graduated PhD/Master programmes of the University of Lisbon. **ISAMB** is also involved in the coordination of two optional courses of the MD curriculum (Mestrado Integrado em Medicina, MIM): Occupational Health (2nd year of the MIM) and Environmental Health (3rd year of the MIM). On the other hand, ISAMB periodically organizes post-graduation courses on different areas (e.g., Workshop on the health impact of climate change to be launched in 2019).





translation



translation

Observatory for Health Promotion in Cascais

OPS Cascais is coordinated by the Environmental Health Behaviour Lab and its mission is to monitor and provide mentorship to the actions undertaken by the Council Forum for the Promotion of Health in Cascais. Moreover, it aims to contribute to the continuous improvement in public health of the municipality of Cascais. The assessment of the effectiveness of these actions is essential to understand the relevance of their continuity.

GamInMind – Gaming against obesity

The high prevalence of obesity requires novel strategies, other than conventional nutritional and physical activity approaches. Current research indicates that apart from literacy and motivation, weight control also requires the capacity for taking right decisions at the right moments (e.g., choosing between chocolate and fruit). This entails the adequate functioning of cognitive executive functions (such as attention, working memory, inhibitory capacity). The GamInMind project aims at developing and evaluating the effectiveness of a free-to-play video game web-based platform, which assesses cognitive functions and automatically tailors a moment-by-moment cognitive training program (with a dynamic game difficulty-balancing system based on artificial intelligence).

CENSOR

The heuristic potential of retrospective (backward-looking) and prospective (forward-looking) cohorts lies on the identification of risk and protective factors related to health outcomes as well as the assessment of intra-individual change when exposed to specific environments. Currently, there are many cohort studies worldwide, which have been and are being established with multiple objectives. The need to integrate and share the knowledge derived from the cohorts triggered the development of CENSOR.

society



science & society

Communication within a society that is facing a communication crisis is for sure a global obligation. It is precisely because of this that **ISAMB**'s communication strategy assumes a bottom-up approach and, up to a certain extent, disintermediated. This strategy is essentially based on three distinct although complementary lines of action: (1) study of the different publics and their relations with science; (2) strategic planning of initiatives targeting the academic and non-academic society; and (3) science communication and media training of our researchers. We strongly believe that by assuming a strategy along these three lines of action, communication between **ISAMB** and the society will be truly effective and impactful and, most important, will meet society's expectations and needs in these topics.

risk communication

Risk communication is a very important issue in public health, and in environmental health as well. Citizens' engagement and the inclusion of all or, at least, the most important environmental factors in risk assessment studies are critical steps in a participatory and open decision-making process. However, the most appropriate tools to ensure effective actions of environmental health promotion, risk communication included, are often missing, which may compromise the whole process of risk management, whatever it may be. On the other hand, risk evaluation by scientists is often incongruent with the public perception of the same risk factor, precisely because the context and public concerns and perceptions are not considered in all steps of the risk management process. **ISAMB** is strongly committed to get expertise in these two fundamental components of risk management – perception and risk communication – of risk management in the context of environmental health decisions.

environmental health and bioethics

More than ever, the interaction between human health and environment raises complex ethical questions, namely concerned with (1) national and international

environmental regulations, (2) health policy decisions, (3) scientific and technological developments aimed at mitigating and adapting humans to a changing and somehow unpredictable environment, and (4) the sustainability of the human life as we all know it in this blue planet. World population is increasing, new and challenging environmental health risk factors are posed, global warming is undeniable and already affecting life on Earth, human lifespan is increasing, but our planet resources and, eventually, its natural resilience is decreasing. What should we do? What must we do? **ISAMB** is strongly committed to actively contribute to find avenues to meet a healthy environment as a whole and in all its dimensions. This is achieved not only by an internal and occasional reflection on this issue, but also by the development of a structured research program that somehow recovers the initial principle of bioethics proposed by Van Rensselaer Potter (i.e. bioethics as a science of survival and a bridge for the future) by questioning, thinking and discussing before acting.





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Av. Professor Egas Moniz
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<http://isamb.medicina.ulisboa.pt>
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