BORDEAUX POPULATION HEALTH | Centre de Recherche - U1219

UNDERSTAND
PREVENT
CARE

YEAR BOOK 2024

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

Inserm
La science pour la santé
From science to health

université de BORDEAUX

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ELEANOR Molecular epidemiology of vascular and brain disorders 24

HEALTHY Epidemiology, development and prevention of mental health problems using a life span perspective 26

LEHA Lifelong Exposures Health & Aging 28

SISTM Statistics in systems biology and translationnal medicine 30

ACTIVE Aging, chronic diseases, technology, disability, and environment 32

AHeaD Assessing Health in a Digitalizing Real-World Setting Pharmacoepi & beyond 34

EPICENE EPIdemiology of Cancer and EnviroNmental Exposures 36

GHiGS Global Health in the Global South 38

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Created in January 2016, under the direction of Prof. Christophe Tzourio, the Bordeaux Population Health Research Centre is a Mixed Research Unit (UMR) affiliated to the National Institute of Health and Medical Research INSERM and the University of Bordeaux. The Centre and its teams are evaluated for renewal every five to six years on the basis of the quality of their activity and the relevance of their scientific projects.

In January 2022, the centre began new 2022-2027 contract under the direction of Prof. Stéphanie Debette until april 2024 followed by Prof. Rodolphe Thiébaut.

FROM THE DIRECTION

Rodolphe Thiébaut

Director, Bordeaux
Population Health research center, 2024-2027

Rodolphe Thiebaut, MD PhD, is professor of Public Health and Biostatistics at the University of Bordeaux UBx. He serves as current director of the BPH, in which he has created the Inserm/Inria/UBx research team SISTM (Statistics in Systems Biology and Translational Medicine) devoted to the modelling and analysis of high-dimensional data mainly applied to immunology. Main research achievements are the development of innovative biostatistics approaches for the analysis of high-dimensional data including the development of statistical softwares (R packages). Prof Thiébaut has notably contributed to the development of various vaccines (HIV, Ebola, Covid-19) and immunotherapy (IL-7) through the design, the analysis and the modelling of the data. As the chair of the IMI2 EBOVAC2 consortium, he has contributed to the development of the Ebola vaccine (recognized as co-inventor) and received the "European star" award in 2021.
He is leading the Department of Medical Information of the Bordeaux Hospital in charge of the methodological support of the clinical research at the hospital as well as the management and the analysis of medical information including the Hospital Clinical Data Warehouse. Since 2018, he has led the Graduate's program Digital Public Health that includes a new Master program in Public Health data science, a dual degree program with McGill University (https://www.isped.u-bordeaux.fr/Graduate-Programs/Digital-Public-Health/About-us). He has been adjunct professor at the department of Epidemiology, Biostatistics and Occupational Health of McGill University since 2023.
He has created the Department of research in Public Health at the Bordeaux University in 2019, he has served as deputy director of the national institute of Public Health (IReSP) and he is currently member of the Inserm scientific committee.

Co-hosted by the University of Bordeaux and INSERM, the Bordeaux Population Health research center (BPH) brings together approximately 500 staff members with a common goal: to explore and address major public health challenges and priorities with a multidisciplinary perspective and robust methodological approaches.
Historically, an Inserm unit was created by Pr Roger Salamon in 1990 with 3 research teams: Biostatistics (led by D Commenges), Brain ageing (led by JF Dartigues) and HIV infection (led by R Salamon). In 2007, the unit grew to a research centre of 8 teams and Pr Christophe Tzourio led it from 2013 to 2021. Pr Thiébaut was deputy director between 2010 and 2021. Pr Stéphanie Debette was director of the BPH between 2022 and 2024 and then was the inaugural director of new Institute on Precision and Global Vascular Brain Health (VBHI). Since March 2024 Prof Thiébaut has been director of the BPH.

The center comprises of 10 research teams with expertise covering biostatistics, medical informatics and epidemiology. Topics of research are brain health across the lifecourse, infectious diseases and global health, aging and resilience, and environmental and social determinants of health, with research objects ranging from observational studies to interventions.

The BPH administrative team, directed by Isabelle Bely, has a fundamental role for the daily activities of the research centre. Lucie Bonnafous-Besse, who started with the coordination of large events and programs is involved with Isabelle Bely in the strategic reorganization of the centre to be adapted to its size. Christine Lopes-Monteiro, in charge of grant management, and Ludivine Christophe, in charge of human resources are playing a key role at the interface between research teams and our institutions. Valérie Garcia, in charge of the communication, has fully coordinated this new edition of the Year Book in collaboration with the scientific team leaders and the administrative team. The BPH central office is reinforced by Marie-Hélène Carere, Sandrine Darmigny and Nadine Simon insuring the coordination with the University Department and with Inserm. The BPH also benefits from an IT team of around 15 people, the CREDIM (Centre de Recherche et Développement en Informatique Médicale) and a center of documentation working on key aspects of the research life in research centre: informatics and publications.

Finally, I am proud to announce the creation of an Equity, Diversity and Inclusion (EDI) unit, demonstrating our commitment to promoting an inclusive and equitable working environment.

This year was marked by the launch of new Institute on Precision and Global Vascular Brain Health (VBHI), funded for 10 years by the France 2030 investment plan, involving over 150 research members from the BPH and beyond. The VBHI aims at setting up an ambitious precision public health program targeting vascular brain diseases, with the objective to implement next-generation prevention approaches for stroke and dementia in order to reduce the burden of this condition in France and worldwide. Co-founded by the university of Bordeaux, Bordeaux University Hospital, Inserm, Inria and Nouvelle-Aquitaine region, the VBHI builds on complementary expertise in public health, neuroscience and cardiovascular research in Bordeaux. Together with the installation of the new cohort B-Cube and the new Horizon-Europe EXPOSIGNALZ program, and the renewal of the Memento cohort, it places the BPH in a fantastic position for brain health research.

These are just some of the many research projects and innovative initiatives that illustrate the dynamism of the BPH in crucial areas such as global health (e.g. the French academic network FrOGH) and one health (e.g. Ecophyto), so browse through this new edition of the Yearbook to find out more!

Finally, I would like to particularly congratulate all these women from the BPH who have been recognized this year for their outstanding contributions: Stéphanie Debette (Grand Prix de l'Inserm), Hélène Amieva (Institut Universitaire de France), Melissa Macalli (L'Oréal- UNESCO Prize and new researcher), Geneviève Chêne (Officier e la légion d'honneur), Mélanie Prague (new team leader), Cécile Delcourt (first class research director), Karine Peres (upgraded researcher), Leslie Grasset (new researcher), Linda Wittkop (PU-PH). All these achievements and projects would not be possible without the involvement of the whole research community for/around Public Health, that I am honored to be a part of and to serve.

BPH General Meeting; april 2024

BPH IDENTITY

ORGANIZATION

Director: Prof. Rodolphe Thiébaut
Secretary General: Isabelle Bely

The BPH brings together over 477 staff members with a common goal: to explore and address major public health challenges and priorities with a multidisciplinary perspective and robust methodological approaches. As one of the largest public health research centers in France, the BPH is internationally recognized for its cutting-edge research, the unique, deeply phenotyped cohorts it has created and followed for up to 30 years, the seamless collaboration between data scientists, epidemiologists and clinicians, its leadership role in international consortia, and strong partnerships with the Global South.

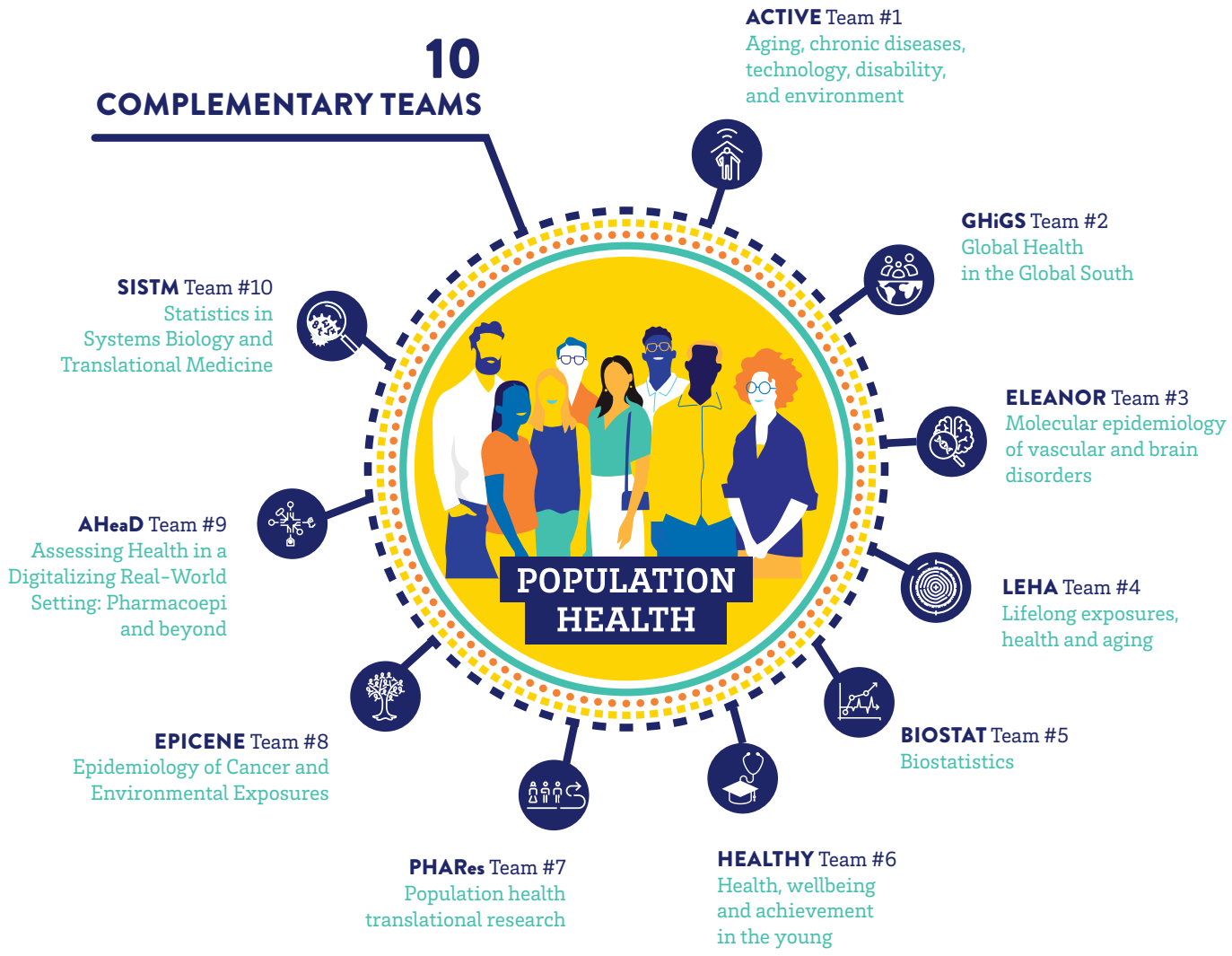
Mission and research organization

The BPH is devoted to producing innovative research based on robust methodology to address a wide range of public health challenges. The Center is composed of 10 complementary research teams gathering basic and clinician scientists, healthcare professionals, technicians and engineers, post-doctoral fellows, PhD and undergraduate students who work together towards a common goal.

DOMAINS OF RESEARCH

Areas of research and teams

The 10 BPH research teams cover a wide array of research domains. "Historical" topics covered since inception include biostatistics, neuroepidemiology, epidemiology of infectious diseases, cancer, aging, nutrition, and trauma prevention. Subsequently this focus was broadened to encompass public health data science with artificial intelligence dimensions, real world data in pharmacoepidemiology and beyond, genetic and molecular epidemiology, global health including for non-communicable diseases, social determinants of health, health economics, and methodological research in prevention.



H. Jacqmin-Gadda

Overall coordinator

Scientific coordination across research teams

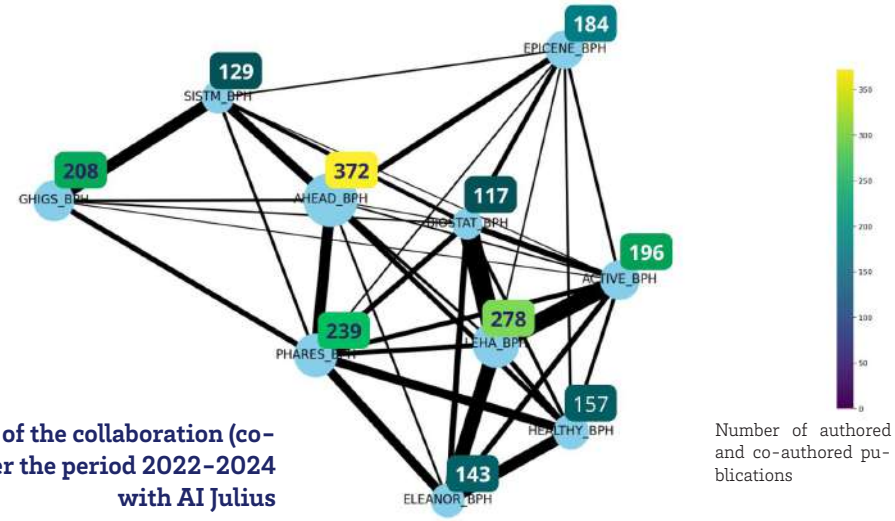
Scientific coordination across research teams is key for leveraging synergies between expertises, increasing visibility and funding opportunities. Weekly seminars have been organized under the coordination of Hélène Jacqmin-Gadda on the following

5 Major cross-sectional research themes

- Brain Health across the Lifecourse (Christophe Tzourio & Cécile Delcourt)
- Infectious Diseases and Global Health (Olivier Marcy)
- Environmental & Social Determinants of Health (Isabelle Baldi & Jérôme Wittwer)
- Ageing and Resilience (Hélène Amieva)
- Data science covering Methods on data science (Boris Hejblum), Omics (David-Alexandre Tregouët), Longitudinal data (Hélène Jacqmin-Gadda) and Health data research (Antoine Pariente)

During the retreat of the BPH (organized on 18 and 19th Novembre), several topics, shared by several teams, have been discussed to define strategic priorities: Global health (François Dabis, Renaud Becquet), Social and environmental exposome (Fleur Delva, Geneviève Chêne), high-dimensional multi-modal data (David Trégouët, Cécilia Samieri, Boris Hejblum), Digital Public Health (Gayo Diallo).

An analysis of the publications where teams are co-authoring shows how they are already highly connected. This visual indicates the degree of collaboration, based on the number of publications co-authored (the size of the bubble is proportional to the number) by the two teams. The thicker the network, the stronger the collaboration.



Data analysis and visualization of the collaboration (co-publications) between BPH teams over the period 2022-2024 with AI Julius


Hda DANSKA
Hdb NO
Tema

2024 KEY FIGURES

STAFF MEMBERS

479
staff
including...

106
Researcher or teacher clinician researchers

105
PhD students

31
Hospital practitioners

30
Post-docs

34
Permanent supporting staff (study & research engineers, technicians & administrative staff)

173
Non-permanent supporting staff

BIBLIOMETRIC INDICATORS

690
scientific papers yearly including **557 publications**
(from Scopus database)

15,1 %*
in top 10% most cited worldlwide

41,2 %*
in top 10% journals

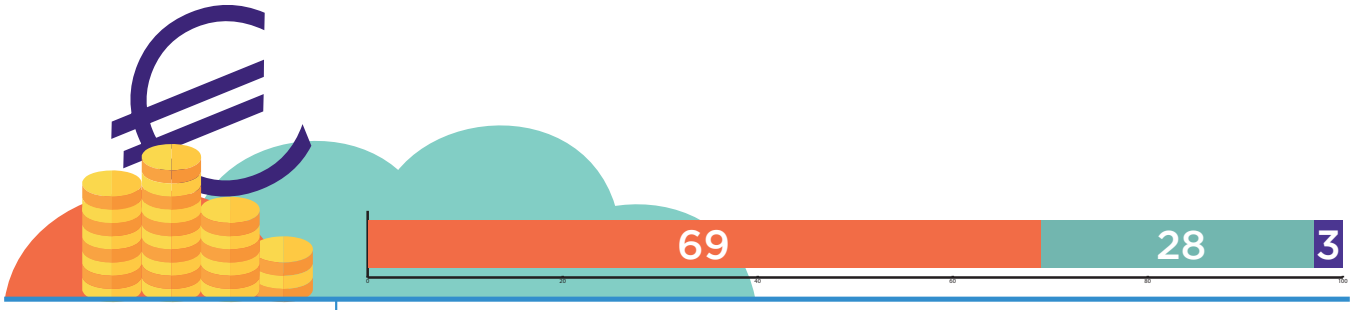
55,6 %*
in Open Access journals

54,6 %*
co-authored with institutions in other countries/regions

*SciVal indicators (source : Scopus)

2024 KEY FIGURES

GRANTS AND FUNDINGS



~28 M€
Yearly budget

69 % from research grants (20 M€/yr)
- 29% European or other international grants (NIH...)
- 15% investment for the future grants RHU, cohorts
- 55% other national grants
- <1% donation

28%
from salaries of permanent staff

3 %
state allocation

GRANTS AND FUNDINGS

186
Contracts including...

156
National public grants

13
European grants

9
International grants
(outside Europe)

8
Grants from foundations and charities or private entities
(ARC, FRM, etc...)

KEY FIGURES for past period (2016-2021)

2958
scientific papers

21 %
publications

3,04 %
normalised citation index for the 2013-19 period

300
others outcomes

>120
scientific books or monographs

42
software contributions

13
patents

3
start-ups

>120
general public communications

24
covid projects

> 25
Prizes and/or distinctions

157
National public grants which 102 in coordination

9
National invesment for the future initiative grants (PIA), among which 3 in coordination

42
Local grants (regional governement, among which 30 in coordination

28
European grants among which 7 in coordination

36
International grants (outside Europe), among which 15 in coordination

68
Grants from foundations and charities or private entities (ARC, FRM, etc...) among which 56 in coordination

THE BPH WITHIN THE COMMUNITY

The BPH is co-hosted by the Inserm and the University of Bordeaux. Two BPH research teams have a third host institution: the INRIA (SISTM team) and the IRD (GHiGS team). The centre is located within the campus of the University of Bordeaux (one of the largest in Europe), specifically the Carreire biomedical campus. The BPH is located within walking distance of the Bordeaux University Hospital, with which it has strong connections.

RESEARCH-BASED TEACHING

The University of Bordeaux was one of the first four universities in France to receive the Initiative of Excellence label from the Investments for the Future scheme (PIA). It is recognised as a world-class cluster of excellence in higher education and scientific research.

Public health teaching

We are located close to the teaching facilities of the Isped Bordeaux School of Public Health, directed by Prof. Simone Mathoulin-Pelissier, who is also a BPH researcher. Most Isped teachers conduct their research in a BPH team and 51 researchers from the BPH teach at the Isped on a regular basis. Isped delivers training courses in epidemiology, biostatistics, health promotion, occupational and environmental health, global health, management of medical and medico-social organisations, public health data science, and medical informatics.

Graduate programs and summer schools

BPH researchers have contributed in developing an international research-based teaching offer supported by PIA3 funding (EUR), including the Digital Public Health Graduate Program (DPH) and the EUR@AFRICA graduate program that respectively address current and future public health challenges related to digital methods and in Africa. BPH researchers also participate in the Isped summer school programs and co-lead several international summer school programs (e.g. Neurepiomics, Africa's populations by 2050: Challenges and potentials) and methodological seminars (e.g. Melodem)..

Health sciences and medical curriculum

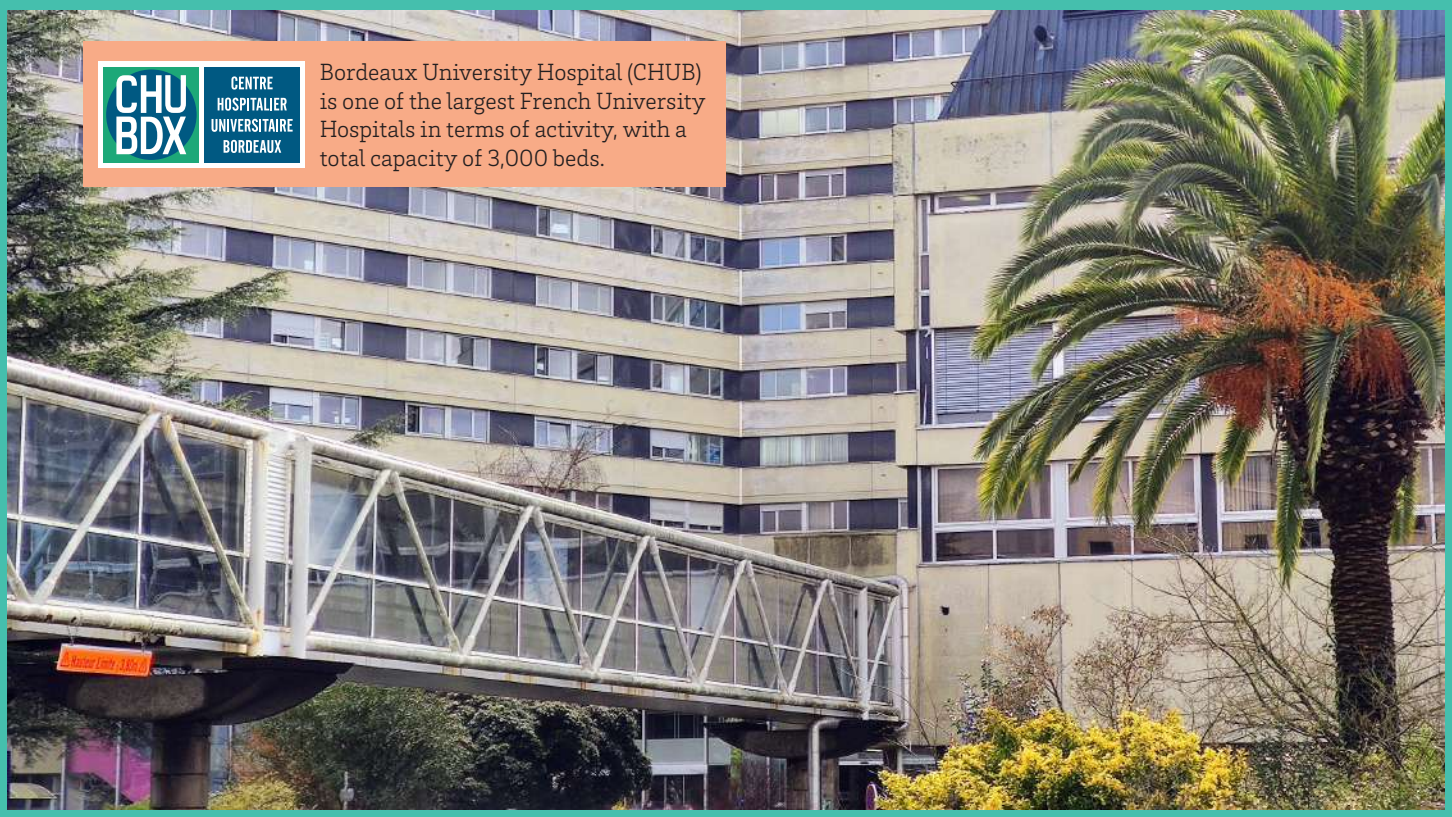
BPH researchers also make significant contributions to university curricula by teaching (research-based) courses in various disciplines: Health Sciences (Medical Science Faculty, Pharmaceutical Science Faculty) and Social Sciences (Psychology Faculty, Social sciences, Anthropology and Ethnology Faculty).

UB2030-CAP Digital Health

Funded by the Agence Nationale de la Recherche via the 'Compétences et Métiers d'Avernir' scheme, the CAP Santé Numérique project is being led by the Université de Bordeaux and a consortium comprising the GIP ESEA, SimforHealth and IQVIA. The aim is to offer innovative training courses in the field of digital health: acculturation training for health students and professionals, and more specialised training in data science for scientific profiles. The UB 2030 CAP Digital Health project was selected by the AMI CMA (call for expression of interest in future skills and professions) of the "France 2030" national plan.

Europubhealth+ - The European Public Health Master

In 2024 ISPED joined the Europubhealth+ consortium, a network of 8 renowned universities collaborating in this programme of excellence in public health (EHESP School of Public Health (France), University of Granada-Andalusian School of Public Health (Espagne), University College Dublin (Irlande), University of Liège (Belgique), University of Krakow (Pologne), University of Sheffield (Royaume Uni), University of Maastricht (Pays-Bas) et, à partir de 2024, Isped-Bordeaux (France). Europubhealth+ is a two-year joint Erasmus Mundus Masters course recognised as a Masters of Excellence by the European Commission since 2006, offering a transdisciplinary and professional approach to international public health challenges. This new collaboration for which Isped is working closely with the BPH with strong synergy between training, research and practice offers students an exceptional learning environment, benefiting from extensive teaching expertise and a network of leading international experts. Trainees are welcomed at the Bordeaux Population Health Research Centre to complement the Master's degree with research and practice to meet the new challenges of the sector.



Bordeaux University Hospital (CHUB) is one of the largest French University Hospitals in terms of activity, with a total capacity of 3,000 beds.

CLINICAL RESEARCH

The link with the clinical sector of the University Hospital of Bordeaux (CHUB) and the Regional Cancer Centre (CLCC) Institut Bergonie is reinforced by the strong involvement of many BPH researchers in the main methodological and operational structures for clinical and epidemiological research.
Many clinicians (neurologists, psychiatrists, infectious disease specialists, oncologists, emergency medicine specialists, ophtalmologists, etc.) are also involved in BPH research projects, some of them as directors or deputy directors of the research teams.

Hospital units led by BPH researchers

- Departments of Medical Informatics
- Occupational Health Unit for Research Organisations
- Hospital Unit for Innovation in Prevention.

Methodological structures

- CIC-EC (Centre for Clinical Investigations – Clinical Epidemiology)
- Population-based cancer registries
- Clinical trial units in various domains:
  - **EUCLID** (EUropean CLInical Trials Platform & Development) F-CRIN (French Clinical Research Infrastructure Network) platform for international trials
  - **USMR** (Methodological support unit for clinical and epidemiological research) for clinical research at Bordeaux University Hospital.
  - The **UMS 54 MART** Joint Service Unit (Inserm/University of Bordeaux) has taken over from the former CMG-EC (Centre de Méthodologie et de Gestion des Essais Cliniques Inserm/ANRS) for research on HIV and hepatitis.
  - **MEREVA** (Methodology and monitoring of clinical research on HIV and other infectious diseases in developing countries) for clinical research in low-income countries.

Health Data Warehouse EDS@NOVA

In 2022, the EDS@NOVA which brings together university hospitals in the Nouvelle-Aquitaine region (Bordeaux, Poitiers, Limoges) was a winner of the 1st national call for projects 'Support for the establishment of hospital EDSs as part of France's strategy to promote digital health'. The creation of health data warehouses (HDWs) is an opportunity for population health research and rises new challenges in data processing that embarked researchers from the BPH in medical informatics and data sciences. It is also an opportunity to go beyond clinical research as reflected by the projects TARPON (led by E Lagarde) and ORCHIDEE (WP2 led by G Chêne – see more information on the same page).

Orchidée project (Organization of a Network of Hospitals Involved in Epidemiological Surveillance and Emergency Response).

This initiative launched in October 2024 is a new hospital surveillance network funded by the European Commission by the EU4Health programme and involving Santé publique France, the Health Data Hub the BPH and EHESP - École des hautes études en santé publique. The BPH is involved in the scientific governance and this new system includes 25 University Hospital Centres (CHU). It requires the CHUs to produce epidemiological indicators from their health data warehouses (EDS) on a range of topics, including infectious diseases and, in particular, indicators relating to acute respiratory infections.
The aim of the Orchidée network is to strengthen the European Union's preparedness for future health threats by monitoring the epidemiological situation in near-real time using the hospitals, particularly in intensive care units, in order to strengthen our national, regional and European capacities.

LARGE-SCALE RESEARCH PROJECTS AND PARTNERSHIPS

BPH researchers are leading several ambitious research projects funded by:

the **French government's "Investissements d'avenir" program (PIA3) and France 2030**, including:

- **BCube** (Biobank and Brain Health in Bordeaux, a population-based study among young seniors for deep phenotyping of cerebral aging: https://cohorte-b-cube.fr/),
- **RHU SHIVA** ("Recherche Hospitalo-Universitaire en santé" on small cerebral vessel diseases)
- **IHU VBHI** awarded the IHU3 programme (France 2030). BPH researchers are closely involved in the VBHI Institute (Precision & Global Vascular Brain Health Institute), which aims to develop a new paradigm integrating population health and therapeutic innovation to fight against the major neurological diseases, particularly stroke and dementia, and to promote healthy ageing of the brain.

the **"Initiative d'Excellence" of the University of Bordeaux, including large research programs** (GPR "Grands Programmes de Recherche"), among which:

- **IPORA** (coord), Interdisciplinary Policy-Oriented Research on Africa (https://ipora.africa/en)
- **HOPE** (WP lead), Understanding Human Well-being and Behavior for better Policies & Societies (https://ecor.u-bordeaux.fr/gpr-hope/presentation-du-projet); Impulse program
- **PHDS** (coord), Public Health Data Science Bordeaux Network
- **The Interdisciplinary observatory on digital technologies for surveillance in democracy – OSD** (co coord) https://observatoire-surveillance-democratie.fr/

- **Drug-Safe®** renewed in 2023 (ANSM), focusing on the risks of medical drugs, https://drugssafer.fr/.

International and European programs including:

- **EHDS-FR-FIN** (co coord) health trajectories between France and the Nordic countries (Norway, Denmark and Finland) leading to cardio-metabolic diseases, to assess the interoperability of European health data

- **Decide-TB** 2023 HORIZON-EDCTP3, aiming to integrate an adaptive platform trial for the development of new interventions to fight Lassa fever in Africa (selected in the HORIZON-JU-GH-EDCTP3-2022-01 call), https://decide-tb.com/
- **NIH, International epidemiology Databases to Evaluate AIDS (IeDEA)** in Western Africa https://www.iedea.org/.

In 2024 BPH researchers developed new ambitious research projects with a coordinating role or as partner :

- **EXPOSIGNALZ** (partner): A new large translational research program on pollutant mixtures in brain aging and Alzheimer's disease funded under the "Horizon and Health" 2024 call https://cordis.europa.eu/project/id/101156353
- **Memento Cohort** (deterMinants and Evolution of AlzheiMer's disEase aNd relaTed disOrders) (coord) : renewal of the for 5 years with NIA funding from the international MELODEM consortium https://host.credim.u-bordeaux.fr/dnn-memento/Accueil.aspx
- **VITISAFE** (partner) : Ecophyto funding for a multidisciplinary projet "One Health" https://ecophytopic.fr/recherche-innovation/exposition-et-impacts/projet-vitisafe
- **PPR INNOVCARE** project (partner), interesting in technologies (in particular robots, AI, and digital technologies) supporting autonomy and care in France and in Japan, in an objective of overcoming existing limitations of use (design, disconnection with needs, ethical issues Funded by France 2030 call PPR Programme Prioritaire de Recherche https://ppr-autonomie.com/wp-content/uploads/2024/09/INNOVCARE-D.pdf
- **PARTAGES** (partner) supported by a consortium of around thirty partners, including BPH and others research laboratories (from the CNRS, INRIA and various universities), healthcare organisations and deep tech companies, is one of the winners of the France 2030 call for projects on generative AI. https://www.health-data-hub.fr/actualites/democratiser-lia-generative-en-sante-letat-travers-france-2030-selectionne-le-projet
- **EXPOSOME** (partner) Inserm booster program which combines multiple approaches to identify associations between components of the exposome and health events at multiple scales and to better define causal links between them.
- **PIEEC MEDITWIN (partner)**: MEDITWIN is a Projet Important d'Intérêt Européen Commun (PIEEC) part of the France 2030 strategy coordinated by Dassault Systems and Inria. The aim of the MEDITWIN project is to develop and validate digital twins to support personalised medical practices and strengthen the healthcare system in targeted therapeutic areas. These virtual twins will be multi-disciplinary and multi-physiological, and will be based on real clinical data, acquired prospectively and historically, at the molecular, genetic, cellular and tissue levels, right down to the organ, system, individual and population level.

- **MUSICC (partner)** has been selected for funding by CEPI (Coalition for Epidemic Preparedness Innovations). This project will develop and conduct Controlled Human Infection Models for beta-coronaviruses in order to assess vaccine effects.

Official launch of the VBHI new university hospital institute dedicated to cerebrovascular health (partner)

Prof. Igor Sibon

The VBHI is headed by Professor Igor Sibon, who is supported by a Scientific Director, three Deputy Directors and a referent as well as a collegiate body representing the scientific and medical expertise involved.

BPH researchers are closely involved in the Precision & Global Vascular Brain Health Institute (VBHI) launched in 2024 in Bordeaux in a number of ways:

- Leadership: with Stéphanie Debette, director of the BPH from 2022 to 2024 and Geneviève Chêne deputy director of the BPH PHARes team. They are members of the VBHI Executive Committee as Scientific Director and Deputy Director - Innovations and transfer in Public Health.
- Teams integration: The VBHI brings together the Bordeaux site's centres of excellence in public health, neurosciences and cardiovascular research, of which the BPH is an integral part.
- Collaborative research: BPH researchers are involved in various collaborative projects within the VBHI teams and with international partners. In particular, they work on the analysis of complex data (clinical, imaging, genomic and multi-omic) from existing cohorts and a new cohort/bioresource dedicated to cerebrovascular health.
- Training: BPH researchers will participate in VBHI training, in particular by strengthening the ISPED (Institut de Santé Publique, d'Épidémiologie et de Développement) masters programmes.

The MIHEALTHYDIET (partner)

Targeting underlying microbiome-related mechanisms of diet-brain communication offers a promising lever towards the development of more effective interventions and implementation of personalized preventive strategies. However, the field lacks a systematic development of nutrition strategies to modify the microbiota, modulate the inflammatory milieu, and prevent cognitive ageing.
The MIHEALTHYDIET proposal is to close this gap and develop a microbiome-healthy diet to improve brain health and cognition by joint analysis of unique, large-scale interventional and epidemiological human data, enabling novel synergies from a combination of nutrition, microbiome, neuroscience and cognitive ageing expertise.
To this end, the consortium will (1) test how microbiome-changing diets affect markers of neuroinflammation and brain ageing in interventional data (n~480) of culturally diverse European/Asian populations, (2) decipher targets and pathways of the diet-microbiota-neuroinflammation-brain axis across ageing in epidemiological cohort data (n~15,000), and (3) identify predispositions such as age, sex, cardiometabolic disease that affect the responsiveness to diets.
Combining unique data and (nutritional and neuro-) epidemiologists, trialists, and bioinformaticians, we hope to establish a better understanding on effective mechanisms and modifiers of diets on brain functions and cognitive health, paving the way to personalized nutrition.

RIE Recherche Interdisciplinaire et Exploratoire Cocreation and evaluation of an intervention promoting teachers' mental health literacy: the TEACH-MHE (coordination by Healthy team)

Children's mental health is a public health issue. Teachers play a key role in preventing and promoting pupils' mental health. However, they are not equipped to address this topic at school. The theory of mental health literacy refers to information, knowledge, and beliefs about the mental well-being of people, including children.
The dual objective of the TEACH-MHE project is to (1) develop and validate a scale that measures the mental health literacy of students in teacher training in schools, and (2) co-create, test, and evaluate the first online course aimed at improving mental health literacy in this population. We will collect and analyze data using mixed methods.
This is an interdisciplinary (communication sciences, education sciences, psychology and public health) and international (France, Australia) project funded by the University of Bordeaux.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RESEARCH

RESEARCH TEAMS HIGHLIGHTS 2024

BIOSTATISTICS

Team

BIOSTAT

MIXED RESEARCH TEAM

Inserm université de BORDEAUX

Dr. Hélène Jacqmin-Gadda

PhD, BIOSTAT Director

Hélène Jacqmin-Gadda obtained the "Habilitation à Diriger des Recherches" (HDR) in Biostatistics in 2002 at Bordeaux University (France). She is Director of Research at the French National Institute of Health and Medical Research (Inserm) and head of the Biostatistics team at the BPH since 2014. Her research focuses on statistical methods for the analysis of longitudinal data with complex observation schemes and especially, models for multivariate longitudinal data and joint models for longitudinal data and time-to-event, as well as evaluation of predictive abilities of these models. Her main motivation is the study of cognitive aging and dementia. Other fields of application are HIV and cancer. She has advised 23 master students and 10 PhD students. She has co-authored about 130 publications in peer-review journals and two books about biostatistical models in epidemiology published in 2015. She is currently associate editor of *Statistics in Medicine* and she was associate editor of Biometrics from 2003 to 2014.

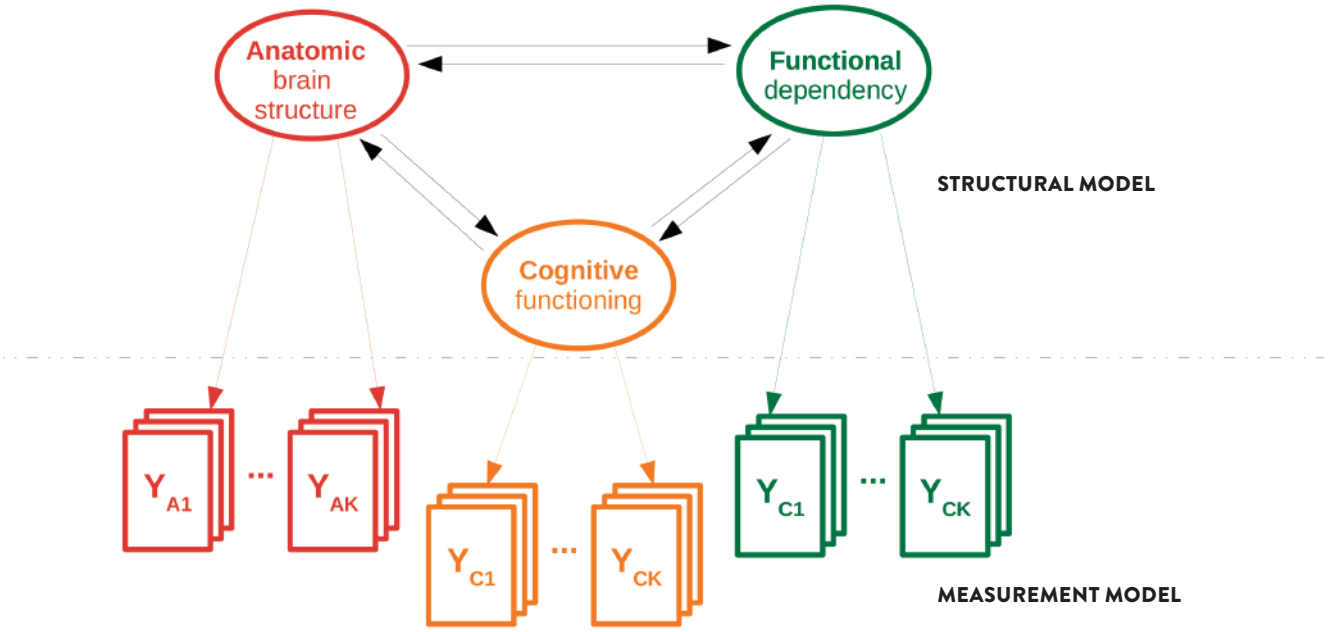
Dr. Cécile Proust-Lima

PhD, BIOSTAT Deputy Director

Cécile Proust-Lima is a Director of Research in Biostatistics at the French National Institute of Health and Medical Research (Inserm).
Her research mainly focuses on the development of longitudinal statistical methodologies to describe, explain and predict chronic disease progression. She has specialized over the years in latent class and latent process models for the joint analysis of correlated longitudinal markers and event time history with applications notably in cerebral aging and neurodegenerative diseases (Alzheimer's Disease and related dementias, Multiple System Atrophy). The works of her group, made available through open-source software (e.g., R packages lcmm, DynForest), are intended to address Public Health research questions through close collaborations with epidemiologists and clinicians and the analysis of large epidemiological cohort studies.

The main objective of the team is the development of statistical methods for time-dependent data coming from either observational cohort studies, clinical trials or casecontrol studies, with the aim of answering clinical and public health questions regarding chronic diseases: future burden, risk factors, individual prediction, underlying pathological mechanisms, and treatment effects.

Over recent years the team has worked on two main topics: multivariate models for time-dependent data and model-based estimation of public health indicators. Our main domain of research focuses on the development of multivariate dynamic models for the analysis of censored time-to-events and/or repeated measures of longitudinal data accounting for complex observation schemes. These works are motivated by the study of the natural history of chronic diseases such as Alzheimer's disease or Multi-System Atrophy, the investigation of the impact of time-dependent exposures, or the validation of surrogate markers for clinical trials in cancer research. Parametric and semiparametric estimation procedures for frailty models for correlated time-to-events, clustered data and/or recurrent events as well as joint models for event times and longitudinal markers were implemented in the R-package Frailtypack. Another field of research is the extension of mixed models using latent classes and/ or latent processes for the analysis of multiple longitudinal outcomes with non-standard distributions in heterogeneous populations. We proposed the R-package LCMM, which enables the estimation of latent class mixed models, joint latent class mixed models and mixed models for curvilinear univariate or multivariate longitudinal outcomes. These models were motivated by the analysis of cognitive decline in cohort studies. They account for population heterogeneity and issues raised by the metrologic properties of measurement tools of cognition and autonomy (high correlation between markers measuring one or several underlying processes, ordinal data, non-standard asymmetric distributions with floor and/or ceiling effects and unequal sensitivity to changes). We also designed methods for the estimation of Illness-Death model accounting for interval-censoring (Package SmoothHazard). Tools for computing individual prediction and evaluating predictive abilities of these models were also developed. Relying on multi-state methodology, we propose several approaches to forecast the future burden of neurologic and cardio-vascular diseases and



assess the expected impact of intervention scenarios, targeting their modifiable risk factors. Depending on the complexity of the investigated scenarios, the indicators for the future burden of the disease are computed analytically or using micro-simulations.

Our current projects particularly focus on causal questions and big-data issues in the framework of dynamic models. On the one hand, causal questions are related to our research about the mechanism underlying pathological processes in chronic diseases, the evaluation of surrogate markers, the role of long-term exposure and the impact of social inequalities in health. We investigate the causal interpretation of the multivariate models we developed and we propose new methods for studying causality for censored time-to-events, repeated measures of time-dependent outcome and/or time-dependent risk factors. On the other hand, as technological progress helps collect large amounts of data (genetics, biology, imaging, IoT data), we develop new approaches that tackle high-dimensionality issues with respect to the number of time-dependent predictors, markers and outcomes.

2024 Key publications

• Bercu A, Dufouil C, Debette S, Joliot M, Tsuchida A, Helmer C, Devaux A, Bouteloup V, Proust-Lima C, Jacqmin-Gadda H. Prediction of dementia risk from multimodal repeated measures: The added value of brain MRI biomarkers. Alzheimers Dement (Amst). 2024;16(2):e12578. https://doi.org/10.1002/dad2.12578

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*equal contribution

MOLECULAR EPIDEMIOLOGY OF VASCULAR AND BRAIN DISORDERS

Team

ELEANOR

MIXED RESEARCH TEAM

Inserm université de BORDEAUX

Dr. David-Alexandre Trégouët

PhD, ELEANOR director

Holder of a PhD in Public Health (1999), with strong emphasis on genetic epidemiology, his research career started with the development of statistical methods to analyze family data as well as genetic polymorphisms in the context of candidate association studies. He then turned to the development and application of statistical/ bioinformatics tools for the analysis of high-throughput microarray and next generation sequencing data. In parallel to these methodological developments, he is participating in the design and the analysis of several epidemiological studies aiming at identifying molecular determinants of cardiovascular diseases, his specialty being venous thrombosis (VT). He is joint coordinator of the French EOVT, FARIVE, MARTHA, MARFAST and PILGRIM studies, and joint convener of the International Network of Venous Thrombosis (INVENT) consortium, aimed at identifying genetic factors for VT. Within the F-CRIN supported INNVOTE network that brings together all French clinicians working in the field of VTE, he supervises the re search programs on VT genomics. Over recent years, his interests have extended to molecular epidemiology integrating epigenetics marks, microRNA and proteomic profiling in order to develop a research program on precision medicine in thrombotic disorders.

Pr. Stéphanie Debette

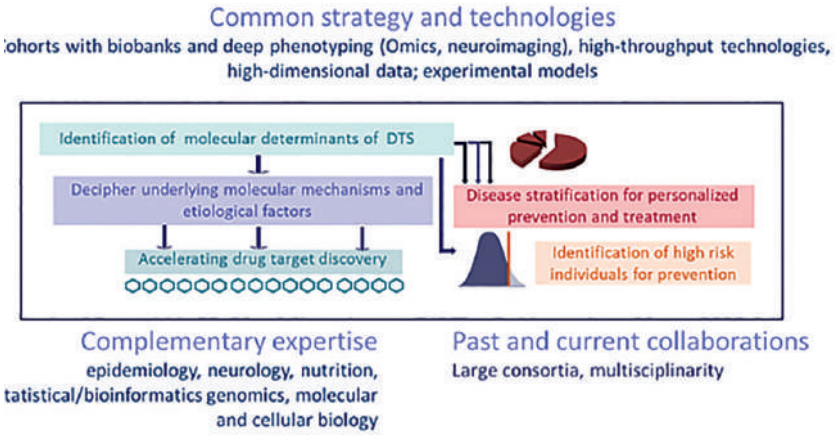
MD, PhD, BPH Director,
ELEANOR Deputy Director

The purpose of our research is to identify groups of individuals who are at high risk of developing three common and tightly linked neurological and vascular conditions: (dementia, stroke and venous thrombosis), to discover novel etiological factors and therapeutic targets, and to propose more personalized preventive strategies through improved risk stratification.

Our research program relies on major components:
1/ large-scale epidemiological and clinical cohorts coupled with biosamples;
2/ the deployment of cutting-edge high-throughput technologies for deep molecular phenotyping;
3/ the application of advanced statistical methodologies;
4/ a group of experts in molecular-clinical epidemiology and
5/ a widespread network of collaborators that enables us to contribute to the functional characterization of the identified biomarkers.
Our project is focusing on three inter-related clinical outcomes, cognitive impairment / dementia, stroke, and thrombosis and is organized around 4 themes:

Molecular epidemiology of vascular brain aging, (PI: Stéphanie Debette)
Using collaborative genome-wide association study meta-analyses and next generation sequencing data we are studying the genetic underpinnings of stroke and MRI-markers of covert cerebral small vessel disease (SVD). We have a growing interest in cross-ancestry studies, as these are crucial to enhance genomic discovery and make results more representative. Through the ERC SEGWAY we are taking a lifespan approach to explore early determinants of brain aging and the impact of genes predisposing to stroke, dementia and SVD on brain microstructure in young adults (i-Share cohort). In the RHU SHIVA project (national investment for the future funding), following up on efforts that we initiated in the EU-JPND BRIDGET program, we are now expanding our explorations to other omics approaches (epigenomics, transcriptomics, proteomics and metabolomics), focusing in particular on deciphering the molecular underpinnings of covert SVD and its contribution to stroke and dementia. Finally, we are engaged in leveraging these molecular epidemiology studies to accelerate drug discovery and improve risk prediction/stratification for targeted prevention. Our group is also involved in European therapeutic guideline coordination.

INTEGRATIVE RESEARCH:
MOLECULAR EPIDEMIOLOGY OF DEMENTIA, STROKE AND VENOUS THROMBOSIS



Exposome of brain aging and dementia (PI: Cécilia Samieri)
The network and dynamics of environmental factors leading to age-related brain diseases has yet to be elucidated, in order to identify the most impactful targets for prevention. This exposome research axis leverages molecular epidemiology, brain imaging and advanced statistical approaches deployed to population-based cohorts with biobanks in order to investigate: (1) the exposome of brain health at key ages, and (2) the underlying pathways and life-course dynamics. The general aims are to: refine assessment of already-known exposures (eg, diet biomarkers); explore novel exposures (eg, chemical mixtures); investigate beyond individual exposures (eg, microbiome interactions); and eventually model the global exposome network, to improve etiological modeling of age-related brain diseases. We will capitalize on existing data (e.g. the 3C cohort) and target younger populations, building a new population-based cohort of 2000 participants aged 55-80 years from the community living in Bordeaux metropole, the B cube (Biobank and Brain Health in Bordeaux) study.

Precision Medicine for better prophylaxis & better knowledge on venous thrombosis (PI:David-Alexandre Trégouët)
After spending several years to identify common genetic factors for venous thrombosis (VT) in the general population, we are now embarking into a more integrative analysis of various molecular determinants (genes; epigenetic marks, proteins,...) on specific subgroups of individuals at higher risk of VT including women under oral contraceptives, patients with a previous history of VT and patients with viral infections.
In parallel, building on our recent successes, we will continue our genetic investigations of rare forms of unexplained inherited VT through the application of whole exome/genome sequencing in familial cases.

Integrative approach for vascular and brain disorders (all PIs)
The deep characterization and understanding of the biology of a complex disease requires to integrate results/data from others diseases as they very often share common risk factors and pathophysiological mechanisms. By capitalizing on the existence of complementary and synergistic expertise and bioresources brought by ELEANOR's PIs in different but interrelated diseases, we are implementing an integrative research strategy to optimize the identification and the characterization of molecular determinants associated with some of the most common age-related diseases.

2024 Key publications

• Bercu A, Dufouil C, Debette S, Joliot M, Tsuchida A, Helmer C, Devaux A, Bouteloup V, Proust-Lima C, Jacqmin-Gadda H. Prediction of dementia risk from multimodal repeated measures: The added value of brain MRI biomarkers. Alzheimers Dement (Amst). 2024;16(2):e12578. https://doi.org/10.1002/dad2.12578

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HEALTH, WELLBEING AND ACHIEVEMENT IN THE YOUNG

HEALTHY

MIXED RESEARCH TEAM

Inserm université de BORDEAUX

Pr. Cédric Galera

MD, PhD, HEALTHY Director

Cédric Galera is a pediatric psychiatrist and epidemiologist. He was resident in child psychiatry at the University of Bordeaux between 2000 and 2004. He did a research fellowship in Montreal (Canada) in 2003 and a clinical fellowship in Montevideo (Uruguay) in 2005. He is professor of Child and Adolescent Psychiatry at the University of Bordeaux and hospital practitioner at Charles Perrens hospital and at Bordeaux University Hospital. He has been a researcher at the BPH since 2008 and an associate researcher at the Research Unit on Children's Psychosocial Maladjustment (Cana da) since 2017.

Pr. Christophe Tzourio

MD, PhD, HEALTHY Deputy Director

Christophe Tzourio is a neurologist and epidemiologist. He is the immediate past director of the BPH. Prof. Tzourio trained as a resident at the Paris Hospitals and Chief of Clinic in Neurology at the Lariboisière Hospital. He joined INSERM in 1994 as a Research Associate and was promoted to Research Director in 2000. In 2005, he became Director of a new INSERM U708 research unit at the Pitié-Salpêtrière Hospital in Paris. In 2013, he was appointed Professor of Epidemiology at the University of Bordeaux and hospital practitioner at the Bordeaux University Hospital. From 2013 until 2021 he was director of the Bordeaux Population Health research center, Inserm U1219, at the University of Bordeaux.

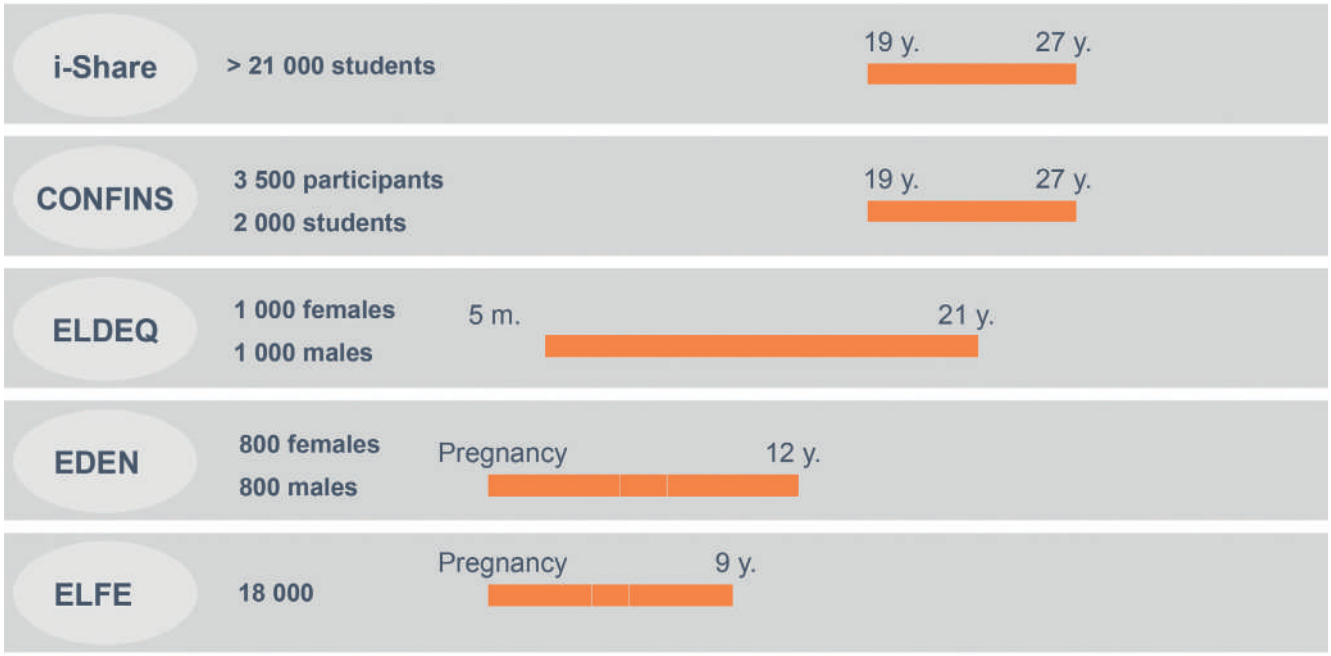
The research focus of our team is to understand and prevent mental health problems in youths.
We aim to:

1. **Investigate the risk and protective factors of Mental, Neurological and Substance use (MNS) problems in young people using a lifespan perspective**
2. **Test the efficacy of strategies to prevent Mental, Neurological and Substance use problems and build resilience to stressors in youths / parents**

Over the past five years, our team has provided relevant evidence on the early contribution of social environment and biological factors on youth mental health (cognition, externalizing behaviors, internalizing problems, ADHD and risk for suicide). Team members have studied the modulation of biological factors by the social environment in relation to externalizing problems and ADHD and the relative contributions of genes and environment on the developmental course of the ADHD phenotype and suicide risk, from the peri-conceptional period to adolescence. Team members have also found that cytokine patterns in the cord blood are associated with childhood anxiety/depression symptoms. Regarding interventions aiming at improving mental health, cognitive development and social outcomes, the team has shown the benefits of early non-parental care and evidenced the moderate efficacy of a multicomponent early intervention program on behavior, cognition and health, in an Irish sample. Team members have developed eHealth tools to be used for MNS in youths, particularly in students. These findings provide key elements to inform public policies and tailor our experimental interventions. Research of our team members takes advantages of various cohorts, including birth cohorts (ex: ELFE and ELDEQ) and young adult cohorts (iShare and CONFINS).

Our future research will rely on 3 axes:
Axis 1 Mental health epidemiology in the youths: understanding the risk and protective factors underlying MNS problems (Cédric Galera)
The HEALTHY team is particularly interested in quantifying (1) the putatively protective role that psychosocial services play on the prevention of MNS problems; (2) the impact of MNS problems on individual functioning, including educational and professional achievement; and (3) the biological and social

COHORTS USED TO INVESTIGATE MECHANISMS UNDERLYING MNS AND THEIR SEQUELAE



mechanisms underlying specific mental health disorders and problems like ADHD, depression, suicidality, pathological low levels of self-esteem, etc.

Axis 2 Exploring social and behavioral features of mental health in the youths (Ilaria Montagni, Christophe Tzourio)
This axis will aim at describing and analyzing health behaviors/lifestyle, health representations, and health literacy of young people, relying on sociological and communication approaches (Humanities and Social Sciences) and mixed-methods studies.

Axis 3 Designing, testing and evaluating interventions preventing MNS problems and promoting mental health in the youths (Cédric Galera, Ilaria Montagni, Christophe Tzourio)
We will conduct (1) specific interventions focusing on a defined mental health problem or disorder (selective and indicated interventions); and (2) general-population interventions targeting health behaviours, e.g., health literacy, healthy lifestyles, life-skills training, psycho-education (universal interventions).

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LIFELONG EXPOSURES, HEALTH AND AGING

Team

LEHA

MIXED RESEARCH TEAM

Inserm université de BORDEAUX

Dr Cécile Delcourt

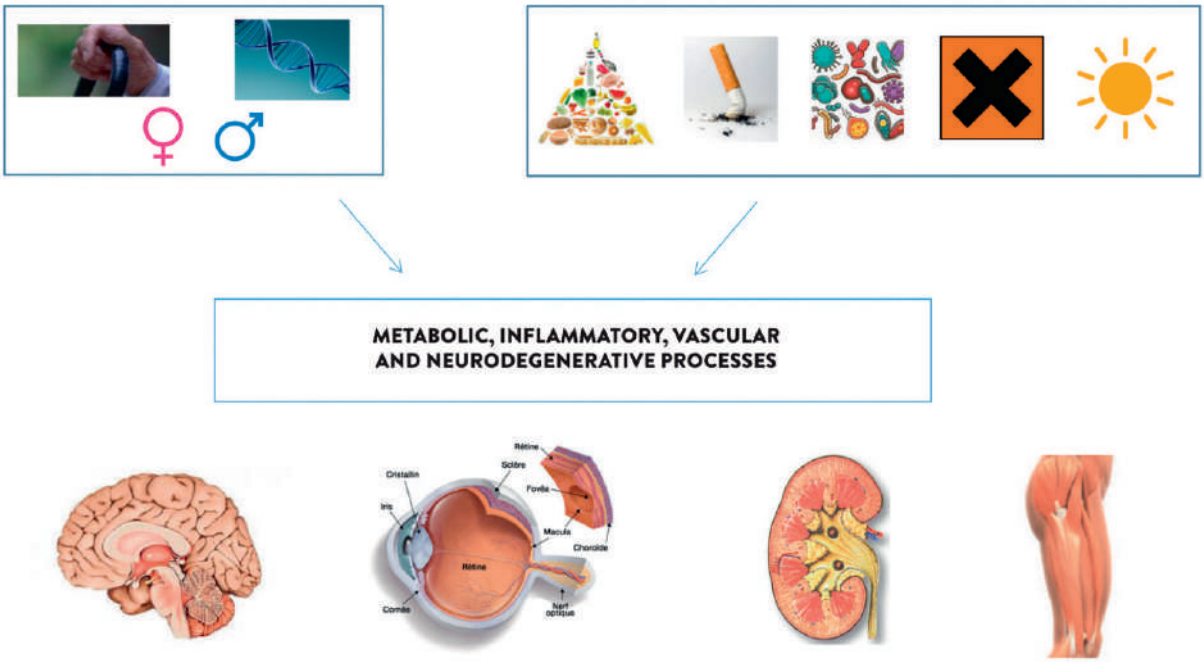
PhD, LEHA Director

Cécile Delcourt has a PhD in statistics and public health and is a senior researcher at Inserm U1219-Bordeaux Population Health Research Centre, where she leads the LEHA (Lifelong Exposures, Health and Aging) research group. She has a strong expertise in the epidemiology of eye diseases (in particular AMD, cataract and glaucoma). She is internationally renowned in the identification of risk factors for major eye diseases (in particular smoking, light exposure and nutrition). She has led two major population-based epidemiological studies in the field, since 1995 (POLA and Alienor studies). She has founded and led from 2011 to 2018 the "European Eye Epidemiology" consortium, gathering 32 teams from 12 European countries, and has been workpackage leader in two European projects (Eye-Risk and Sense-Cog), granted in the Horizon 2020 framework. She has published more than 200 scientific articles, with a Factor H of 41. She received the Achievement Award of the American Academy of Ophthalmology in 2019.

The objective of team LEHA is to study age-related diseases, in particular those of the brain (dementia, Alzheimer's disease) and of the eye (age-related macular degeneration, glaucoma), using a lifelong approach and focusing on shared mechanisms and exposures, in order to define strategies for the prevention of age-related functional loss and the promotion of healthy aging

We study populations of different ages (elderly, middle-aged, young) in prospective designs allowing for the study of slow long-term processes, using early biomarkers (in particular eye and brain imaging) allowing for the early detection of health related effects of exposures. As age-related diseases share common mechanisms and consequences and interact with each other, aging is considered as a global state promoting the occurrence of diseases. Models of aging are mainly neurological diseases (cognitive decline and dementia/ Alzheimer's) and eye diseases (mainly age-related macular degeneration (AMD) and glaucoma), but also extend to other health endpoints, such as diabetes, kidney disease or physical performance.
Our research is based on population-based cohorts that we have been conducting in elderly populations for more than 30 years: the PAQUID cohort (n=3777, followed since 1988) and the 3C Study (n=9294 including 2104 in Bordeaux, followed since 1999), and its ancillary ophthalmological study in Bordeaux Alienor (n=963, followed since 2006). We also participate in population-based cohort studies (i-Share, 20,000 students, PI C. Tzourio), Constances (220,000 adults aged 18-69 years, followed since 2012, PI M. Zins, Inserm U1018, Villejuif) and B cube (planned 2000 aged 55-80 years in Bordeaux, PI C Samieri), in particular by generating cutting edge ophthalmological phenotypic information and several ranges of biomarkers. Finally, we collaborate with European and American cohorts, individually or within collaborative projects. Overall, these studies collect information on many aspects of aging (functions, chronic and degenerative diseases, disability) and their determinants (clinical factors, nutrition, environmental exposures, genetics), which allow a very comprehensive study of the epidemiology of health and aging in older adults, but also offer a scope for a broader lifelong approach, thanks to the epidemiological and clinical studies conducted in younger individuals.

EXPOSOME AND AGE-RELATED DISEASES



Our research activity is divided in 3 axes:

- Burden of age-related and chronic disorders, which aims at documenting the frequency of age-related and chronic diseases and characterize their burden, in terms of loss of autonomy, impaired quality of life, as well as medical and non-medical costs.
- Mechanisms and processes of age-related diseases, which aims at finely characterizing aging processes, by collecting detailed clinical, imaging and functional data over long periods of time, with major interest in degenerative and vascular processes as well as inflammatory mechanisms.
- Determinants of healthy aging, which focuses mainly on the role of nutrition and lifestyle, as well as environmental exposures (sunlight exposure, air pollution…). With regard to nutrition, our approach combines interest in specific dietary intakes and patterns with the use of innovative measurements (lipidomics, metabolomics, gut microbiota…).

2024 Key publications

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*equal contribution

STATISTICS IN SYSTEMS BIOLOGY AND TRANSLATIONAL MEDICINE

Team

SISTM

MIXED RESEARCH TEAM

Inserm Inria université de BORDEAUX

Dr. Mélanie Prague

PhD, SISTM Director

Currently Inria Research Fellow she is leading the SISTM team from both Bordeaux Inria Centre and Inserm BPH research centre U1219. She obtained her H.D.R. in 2024. Her research primarily involves developing statistical methods for infectious diseases. She specializes in analyzing longitudinal repeated data, with a particular focus on mechanistic models. She develops methods for inference on non-linear mixed effects models, working on both within-host and between-host models to accelerate the development of treatments and vaccines. Her research projects predominantly focus on HIV, Ebola, Nipah, and COVID-19.
Since 2016, she is tenured faculty. Before that she did a postdoc at the Harvard T.H. Chan School of Public Health in Boston, after obtaining her Ph.D. in Public Health - Biostatistics at ISPED from the University of Bordeaux in 2013. She graduated from the ENSAI (National School for Statistics and Information Analysis) in 2010, where she majored in Biostatistics.

Dr. Boris HEJBLUM

PhD, SISTM Deputy Director

Currently Research Faculty (*Chargé de Recherche*) at Inserm, his main focus is on the development of new statistical methods for the longitudinal analysis of high-dimensional biomedical data in vaccine research. His latest works include approaches for heterogeneous gene set analysis of longitudinal gene expression data, leveraging Bayesian nonparametric modeling and optimal transport for clustering single-cell data, probabilistic matching and forecasting with Electronic Health Records, and identifying and evaluating surrogate markers from high-dimensional data in vaccine trials. He obtained his Accreditation to Supervise Research (*Habilitation à Diriger des Recherches*) in 2024 and have been a tenured associate professor at the Bordeaux School of Public Health until 2021, after a postdoc at Harvard University that followed his Ph.D. obtained in 2015 from the University of Bordeaux. He also holds an engineering degree in Statistics from ENSAI (French National School for Statistics and Information Analysis).

The two main objectives of the SISTM team are: 1) to accelerate the development of vaccines by analysing all the information available in early clinical trials and optimizing new trials ; 2) to develop new statistical methods to analyse and model large high-throughput data.

The relevant information is extracted from large omics data, and this signal is then incorporated into mechanistic models, thanks to prior biological knowledge, to estimate their parameters. Those models can then inform the optimal vaccine strategies to be evaluated in the next clinical trials, through in silico trials, allowing for optimized clinical trial designs and personalized strategies.

The team is structured around three research axes focused on these shared objectives.
The axis on "High-dimensional statistical learning" aims to

- Unlock the analysis of high-dimensional longitudinal data by developing suitable statistical approaches, in particular for applications to longitudinal high-throughput data (e.g. microbiome, transcriptome, cytomics) generated in vaccine trials.
- Leverage prior biological knowledge and formally incorporate it into statistical models to tackle the small n large p setting, one of the characteristics of early phase vaccine trials.
- Advance adaptive clustering methods of high-dimensional data in both supervised and unsupervised settings, especially to infer the proportions of cellular population from gene expression measurements and also to identify gene whose expression is key in segmenting transcriptomic measurements across vaccine arms or disease severity for instance.
- Perform feature selection and dimension reduction of high-dimensional molecular and cellular data based on surrogacy potential and prior biological knowledge, as a first step to feed such information into mechanistic models.

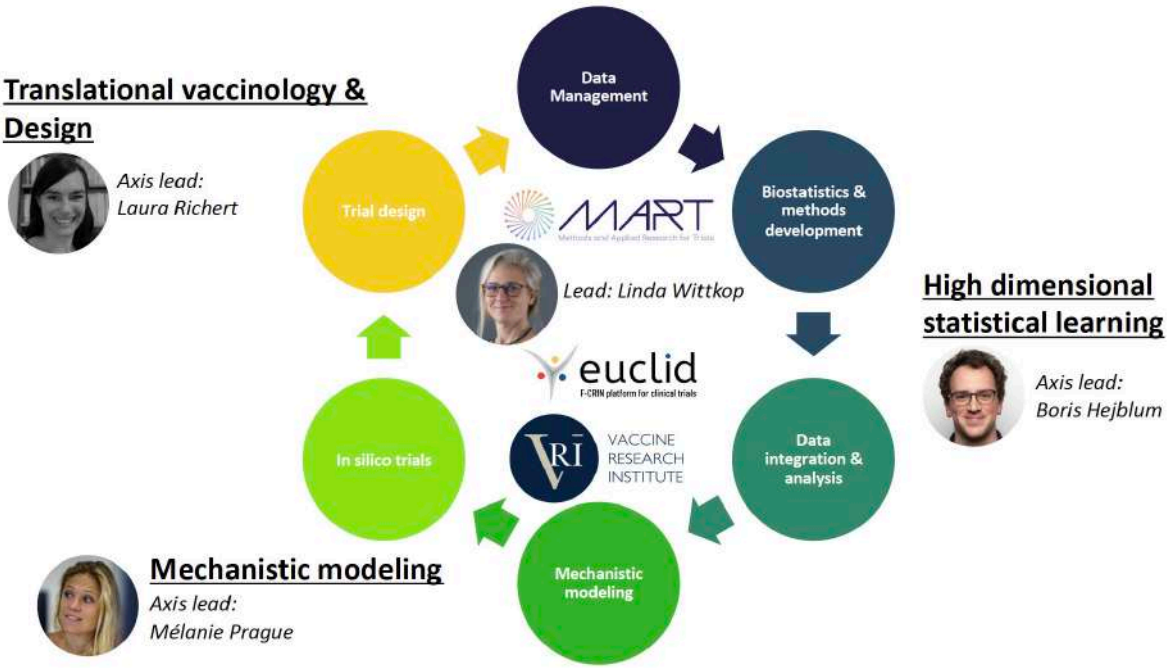
The axis on "Mechanistic modelling" aims to

- Develop methods for statistical inference of differential equations model parameters in population framework.
- Use Artificial intelligence for hybrid modelling and infer unknown mechanisms
- Model within-host immunological and virological dynamics in samples of individuals.
- Model between-host dynamics of epidemics in populations.
- Use mechanistic model as in silico platform for exploration of counterfactual scenarios with application in implementing control strategies toward personalized medicine.

The axis on "Translational vaccinology and design" aims to

- Facilitate secure data sharing, integration, and analysis in collaborative clinical vaccine research projects.
- Accelerate the vaccine development by in depth analysis of data generated in early clinical trials
- Design the next trials with development of new adaptative designs in collaboration with immunologists and clinicians

All this work is done in collaboration with our partners from the Vaccine Research Institute, EUCLID/ANRS-MIE CMG platfor, the UMS MART and the Bordeaux Hospital. The research conducted by the SISTM team is funded through a combination of national, European, and international programs, as well as public-private partnerships. SISTM is involved in two axis of the PEPR Santé Numérique programme (SMATCH ; AI4scMed). The team also secures major European funding as partners through programs such as Horizon Europe (SOLVE ; IP-CURE-B), IMI2 (CARE), and EDCTP2 (PREVAC-UP, ASCENT), which support statistical modelling and data analysis for vaccine research. International collaborations, including with CEPI (MUSICC), UT Austin (RISE), Rand corporation (DESTRIER), and Latin American partners (MATH AmSud), further enhance methodological innovation. The team also engages with industry partners like Johnson & Johnson, Gilead, and Ipsen for clinical trial design and analysis.



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AGING, CHRONIC DISEASES, TECHNOLOGY, DISABILITY, AND ENVIRONMENT

Team

ACTIVE

MIXED RESEARCH TEAM

Inserm université de BORDEAUX

Pr. Hélène Amieva

PhD, ACTIVE Director

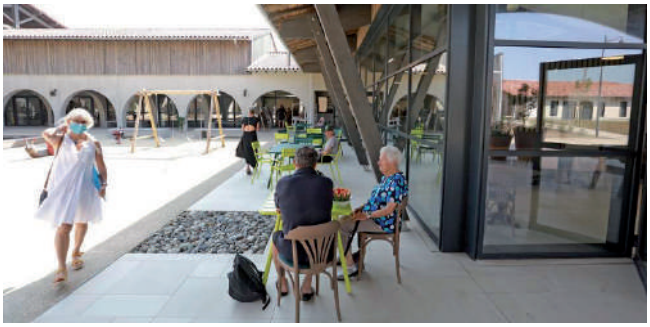
Hélène Amieva has a PhD in neurosciences. After one year of post-doctoral fellowship at the Psychology Department of Aberdeen University (UK), she has been working at the CNRS as a permanent researcher for nine years. She is currently Professor of psychogerontology at Bordeaux University.
Her main expertise is in the field of epidemiology and neuropsychology of aging, dementia and Alzheimer's disease, in particular psychosocial factors modulating clinical trajectories and cognitive decline in aging. She has also been involved in clinical studies assessing non-drug treatments. She has conducted the ETNA3 study, a national trial assessing the efficacy of non-pharmacological therapies in Alzheimer's disease, involving 653 patients followed up for three years in 40 French hospital centers. Currently, she is the principal investigator of the study assessing the impact of the French Alzheimer Village in South-western France, an innovative experiment for people suffering from Alzheimer's disease. She is the author or co-author of about 190 articles published in international journals.
She is co-director of the Master of "Psychogerontology and Public Health" at Bordeaux University. Since 2021, she is the general secretary of the French speaking society of Neuropsychology relying on a community of physicians, psychologists, speech therapists and researchers working in French-speaking countries and actively involved in the field of neuropsychology.

Most of the researches conducted within the ACTIVE team aim at studying: (1) intrinsic capacities of individuals and environmental factors contributing to develop / maintain/ reduce functional capacity in the context of acute/chronic disease, disability, and/or old age; and (2) innovative strategies based on the optimization of such factors. The team is composed of epidemiologists, psychologists, cognitive scientists, geriatricians, physical therapists, neurologists and a psychiatrist.

The first research axis is coordinated by Karine Pérès. It investigates to what extent intrinsic capacity and environments contribute to develop / maintain / reduce functional ability. Functional trajectories associated with aging process are studied through a continuum distinguishing robustness, pre-frailty, frailty, and activity limitation. We examine their determinants through a multidimensional approach considering intrinsic capacities (cognition, depression, sensory impairments, personality traits…) and environmental factors (family support, social network, (un) adapted home, professional assistance, digital technologies) that may influence the sequence and speed of functional deterioration. The heterogeneity of these trajectories is explored in several prospective population-based and clinical studies (PAQUID, AMI, 3C, CONSTANCES, COGLOC…). More recently, taking advantage of the ongoing cohort studies, the PA-COVID survey, set up very shortly after the first COVID-19 lockdown in France, aims at providing valuable knowledge on older adults' social and psychological experiences of the COVID-19 crisis and its impact on cognitive, mental and functional health.

The second research axis coordinated by Hélène Sauzéon focuses on innovative strategies based on the optimization of individuals' intrinsic capacity and/or environments. As an example of strategies based on optimized environments, the French Alzheimer village is an experimental accommodation facility for older adults with Alzheimer's disease built like a traditional village. The team is currently conducting an ambitious multidimensional research program evaluating whether this innovative model is relevant compared to traditional nursing homes (see below). Other researches involve interventions relying on digital technologies. They generally address two main health issues: rehabilitation access and patient agentivity (i.e., active role of the patient). A research

Le village Alzheimer de Dax



project is being conducted on patients with vascular aphasia to evaluate the benefits of tele-rehabilitation compared to a conventional face-to-face rehabilitation. Another research stresses the role of self-determination in cognitive rehabilitation by leveraging recent technological advances. The program includes a large panel of individuals of various ages and with various disability conditions. The goal is to study the impact of the technology properties of adaptability (self-configuration of objectives/ contents of the intervention by the care recipient) and/or adaptivity (self-configuration of intervention by machine learning algorithms) on rehabilitation results.

2024 Key publications

• Boucaud-Maitre D, Letenneur L, Dartigues JF, Amieva H, Tabue-Teguo M. Letter to the Editor: The French Model of Senior Housing to Tackle Housing Inequalities. J Frailty Aging. 2024;13(1):73. https://doi.org/10.14283/jfa.2024.7

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*equal contribution

ASSESSING HEALTH IN A DIGITALIZING REAL-WORLD SETTING PHARMACOEPI & BEYOND

AHeaD

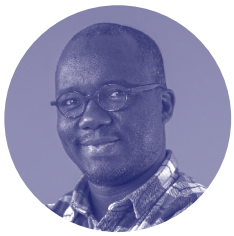
MIXED RESEARCH TEAM

Inserm université de BORDEAUX

Pr. Antoine Pariente

MD, PhD, AHeaD Director

Professor Antoine Pariente, a renowned expert in pharmacoepidemiology, headed the Bordeaux Pharmacovigilance Centre from 2016 to 2021 and chaired the European Medicines Agency's PRAC interest group on the Impact of Regulatory Measures. Coordinator of the DRUGS-SAFE platform from 2015 to 2019, he transformed this initiative into the DRUGS-SAFER Centre, designated by the authorities to provide real-world evidence on the use and safety of medicines. Currently, as director of the BPH AHeaD team, a merger of the Pharmacoépi, ERIAS, and IETO teams, he continues to play a key role in population health research.



Pr. Gayo Diallo

PhD, AHeaD Deputy Director

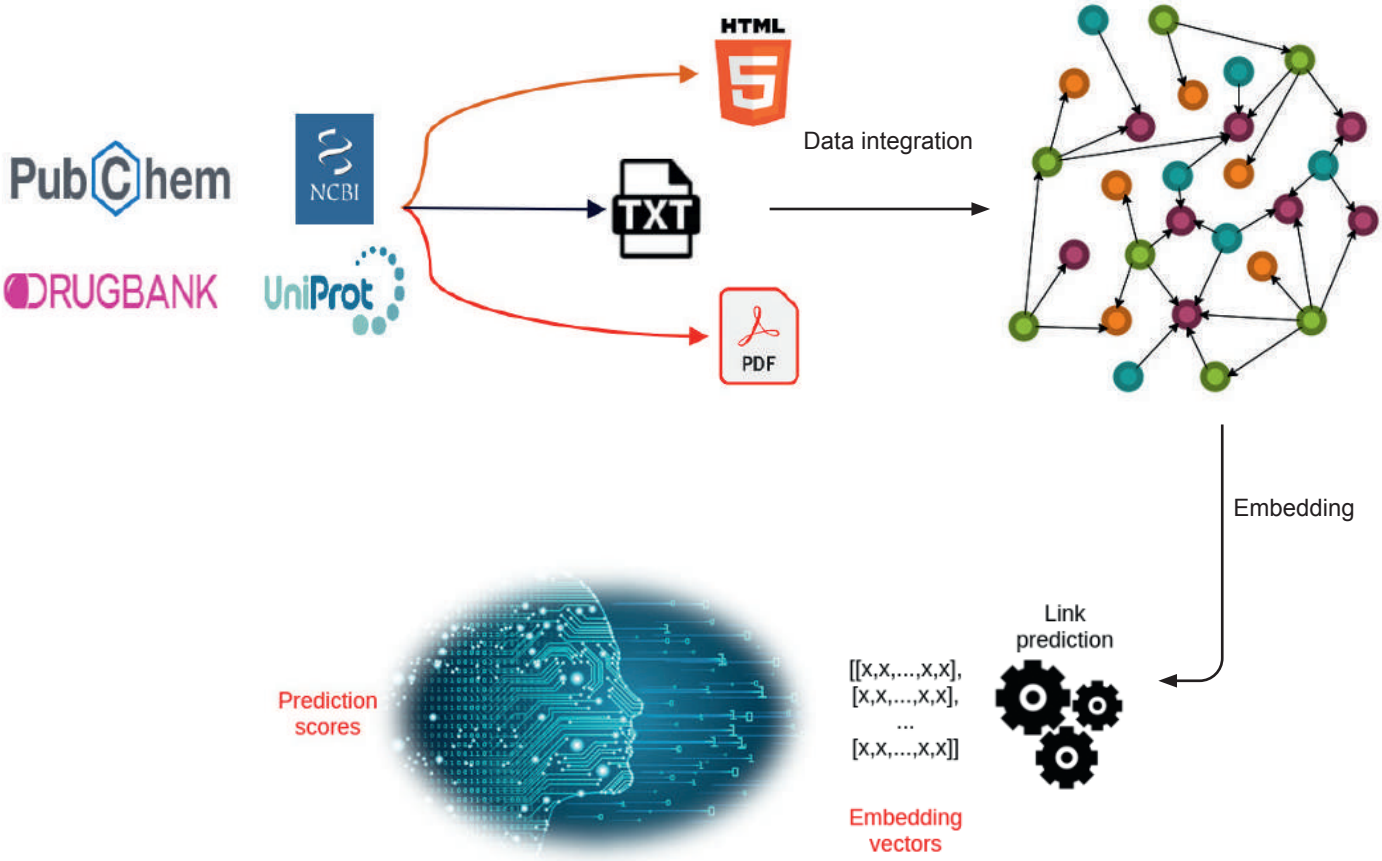
Professor Gayo Diallo is full professor in computer science at Bordeaux University and is based at ISPED. He is deputy director of the AHeaD (Assessing Health in a Digitalizing Real-World Setting Pharmacoepi & beyond) research team at the BPH Inserm-1219 and previously, he was the group leader of ERIAS an emerging team of BPH. He holds an Habilitation to Supervise Research from the University of Bordeaux and a PhD in Computer Science from the University of Grenoble Joseph Fourier (Grenoble Alpes). He joined the University of Bordeaux in 2009 after working at City University London and the Laboratoire d'Informatique Appliquée du Futuroscope in Poitiers. He was a Visiting Professor at the University of Minnesota (USA) in 2022. His research focuses on symbolic AI approaches for health data management and ICT for societal development.

We are interested in better understanding healthcare real-world setting and better assessing medicines in this observational environment. In particular, we aim to investigate trajectories of care and their determinants, with a specific interest into emergency care use from one side, and trajectories of care for patients with chronic diseases relating to cardiovascular health or mental health from the other.

AHeaD results from the merging of three different teams ("Pharmacoepidemiology-Pharmacoepi"; "Injuries-IETO"; "Informatics in Health-ERIAS"). The collaborations we developed over the years ultimately concentrated most of our teams' research efforts around the secondary use of electronic databases for the study of health and medicines in a real-world setting. In anticipation of the research challenges that will emerge from the multiplication, diversification, and complexification of digital health data, we decided to join forces with the AHeaD team project. This will combine our originating teams' expertise in electronic health records databases (HERs), hospital data warehouses, ontologies, data visualization, knowledge representation, machine learning and natural language processing for health research, thus constituting a tremendous research opportunity. The way to answer the questions regarding health assessment in real-world settings is likely to change dramatically. In the coming years, the use of electronic health databases, that developed tremendously over the past 30 years, will need to be complemented using information from other sources that will help strengthen and substantiate the real-world evidence provided. Building bridges between applied health research, already widely using EHRs, and informatics appears as a necessity when envisioning the future development of health assessment in real-world settings.
The research will divide into three axes corresponding to different objectives and methods. The research will divide into three axes corresponding to different objectives and methods:
1. Data & Signals: Structuring and bridging data for hypothesis generating in real-world assessment
Safety signal or repurposing hypotheses are mostly presented or generated from the results obtained from one data source/ type of information analysis. We intend to go further by developing approaches that will combine various types/sources of information for hypothesis-generating research from realworld data.

2. Use & Effectiveness: Stay focused, remain global Medicine & health determinants assessment is better performed when closely focusing on one type of medicine or care.
The downside is to risk losing sight of the overall care environment (therapeutic alternatives; healthcare trajectories). We intend to develop research that will contextualize and characterize overall healthcare surrounding targeted research regarding the use or effectiveness of a given type of medicine or care.

3. Policies & Impact: Assessing the public health impact of regulatory actions
The hypotheses generated/confirmed within the two first research axes can result in official recommendations or regulatory actions aiming to optimize healthcare strategies. Here, our research will assess to what extent these strategies are successfully adopted and beneficial to health, thereby completing our research path from generating a hypothesis to applying it in society



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EPIDEMIOLOGY OF CANCERS AND ENVIRONMENTAL EXPOSURES

EPICENE

MIXED RESEARCH TEAM

Inserm université de BORDEAUX

Pr. Isabelle Baldi

MD, PhD, EPICENE Director

Isabelle Baldi is a Professor in Occupational Health at Bordeaux University, and a member of the Environmental and Occupational Health department at Bordeaux University Hospital. Her research aims at assessing long-term effects of occupational & environmental pesticide exposure through epidemiological studies (especially on cancer and neurological outcomes). She has developed new tools for pesticide exposure assessment, such as crop exposure matrices (PESTIMAT, PESTIPOP) and algorithms (PESTEX-PO, CANEPA) based on field observations, using several epidemiological projects. She is co-leader of the AGRICAN cohort (https://www.agrican.fr/) and responsible for the neurological subgroup of the AGRICOH international consortium (https:// agricoh.iarc.fr/). She is involved in the European SPRINT program (https://sprint-h2020.eu/). She also heads the Registry of Central nervous system tumors, implemented in Gironde in 1999.

Dr. Fleur Delva

MD, PhD, EPICENE Deputy Director

Fleur Delva is a medical doctor specialized in public health and hospital practitioner at the Bordeaux University Hospital and co-director of the INSERM EPICENE "Cancer environment" team. She obtained a PhD in epidemiology in 2014 and obtained an accreditation to supervise PhD research in 2019. Today, her activity is divided between hospital activity where she coordinates the ARTEMIS Centre, an environmental health prevention platform for patients with reproductive disorders, and a research activity on the environment and reproduction themes, with significant research and leadership experiences within global organizations in cancer surveillance, epidemiology and public health.

EPICENE's research is focused on cancers and environmental and occupational determinants of health. Our projects address methodological challenges in a multidisciplinary approach with the aim of expanding knowledge on cancer survival and its determinants, developing new approaches to estimate life-long environmental exposures (Exposome concept), understanding the role of the environment and the occurrence of certain cancers.

Theme 1: Cancer survival: improving knowledge, detecting frail individuals, identifying surrogate endpoints

Although survival rates have improved for the main cancers over the past decades, they remain highly variable depending on the cancer site and on many more individual parameters. We strive to further understand the factors associated with better survival for cancer patients. Thanks to our involvement in population based cancer registries, we generate new data on cancer survival and its determinants (treatments, comorbidities, care practices, palliative care) for several cancer types (hematological cancers, breast cancer…). We pay particular attention to frail people, for whom efforts of detection and prevention are strongly needed, including elderly people whose number will rapidly increase in the coming decades. We develop new tools for detection programs and we investigate cancer literacy in elderly cancer patients.
Our efforts also focus on improving cancer screening strategies (including organized mass screening). We also develop new biostatistical approaches to assess treatment efficacy and patient survival in randomized controlled trials and in real-life settings

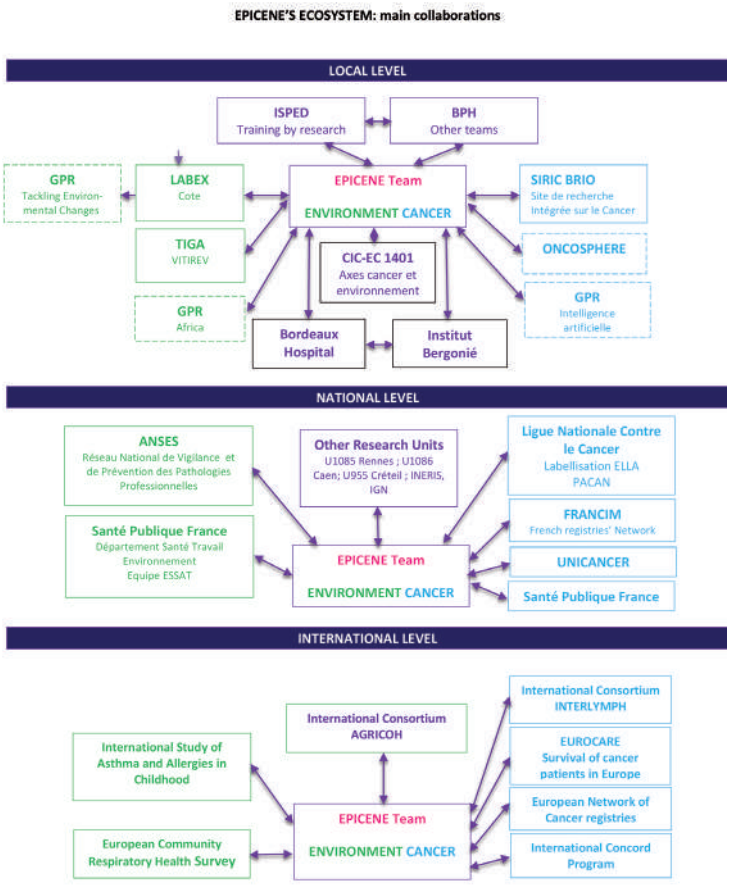
Theme 2: Methods in environmental and occupational exposures: the exposome knowledge

Our research aims to improve the knowledge of levels and determinants of exposure to major contaminants with field measurements in order to identify the main determinants of exposure (usable in retrospective questionnaires and in large population cohorts). Our research on pesticide exposures started 25 years ago and continues to provide many original data through the PESTEXPO program. We now aim to document baseline levels for "everyday" contamination on a farm and explore pesticide exposures in non-farming jobs (i.e., gardening, wood industry…). We also explore the exposures of the general population living near treated fields. We combine field measurements and ergonomic observations. Levels and

determinants of exposures to other pollutants are also studied, such as nanoparticles in the occupational and environmental settings, antineoplastic drugs in healthcare workers, electromagnetic fields... We also develop indirect exposure assessment tools, such as Job Exposure Matrices (PESTIMAT, MATPUF) and spatial modeling. Usable retrospectively in large populations with minimal collection of data (job or residential calendars), they are very useful to our epidemiological studies.

Theme 3: Environmental Etiology of Cancer

For more than 20 years, we have studied the etiology of CNS tumors, hematological malignancies and mesothelioma thanks to registries that we set up in this domain and our collaborations at both national and international levels. Recently, we also developed studies on sarcomas. As etiological research, including the role of the environment, remains scarce for most rare cancers, we intend to analyze the role of environmental determinants in the occurrence of these cancers, for which the role of environmental factors is suspected. Our efforts rely on cohorts (AGRICAN, LUCSO, REALYSA), case-control studies (CERENAT, ETIOSARC), and data from international consortia (AGRICOH, INTERLYMPH). We attempt to better understand cancer risks in specific populations, suspected to be more vulnerable because of individual conditions or comorbidities (e.g., allergies, immunological disorders), genetic characteristics (polymorphisms of detoxification genes,...) or specific exposures (women, smokers...



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GLOBAL HEALTH IN THE GLOBAL SOUTH

GHiGS
MIXED RESEARCH TEAM

Inserm IRD Institut de Recherche pour le Développement FRANCE université de BORDEAUX

Dr Olivier Marcy

MD, PhD, GHiGS Director

Olivier Marcy is a clinical epidemiologist and researcher at the University of Bordeaux and research director at the IRD (French Institute for Research and Sustainable Development). He worked for more than 10 years as a clinician and public health program manager in sub-Saharan Africa (Republic of Congo) and South East-Asia (Cambodia). His research focuses on diagnosis of tuberculosis (TB) in children and TB-HIV co-infection in adults and children. He is the project leader of the Unitaid-funded TB-Speed project on childhood TB diagnosis with research ranging from decentra lisation and implementation challenges to accuracy of diagnostic algorithms for vulnerable children. He is the current chair of the NIAID-funded TB-SRN international cohort on pulmonary TB in adults. He is also involved in the IPORA interdisciplinary and policy-oriented research platform where he is developing research on impact of air-pollution on respiratory health in urban settings in Africa.

Dr Renaud Becquet

PhD, GhiGS Deputy director

Renaud Becquet, senior scientist at Inserm, has a PhD and a HDR in epidemiology (University of Bordeaux). After his PhD in Abidjan, Côte d'Ivoire, and a two-year post-doctoral fellowship at the University of KwaZulu Natal, South Africa, he was recruited in 2008 as senior scientist at the Bordeaux Population Health Research Centre. His early research focused on the prevention of mother-to-child transmission of HIV in Africa. He later created a research platform with humanitarian organisation ALIMA to develop innovative and transformative research in sub-Saharan Africa, focusing on improving maternal and child health outcomes in complex situations. He authored and co-authored about 100 articles published in internatio nal journals. He has served as an expert in various committees and guideline development groups (WHO, UNICEF, UNAIDS). He is currently the coordinator of the Master Global Health in the Global South at the Bordeaux School of Public Health.

The objectives of the GHiGS team are:

- **to produce data on diseases affecting the Global South, their epidemiology, risk factors and consequences;**
- **to use these findings to design and evaluate innovative interventions at both individual and population levels, which are effective, equitable and sustainable, and contribute to the advancement of global health.**

Per the definition of Koplan et al. (The Lancet 2009; 373(9679): 1993-5), global health is an area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide. Global health emphasizes transnational health issues, determinants, and solutions; it involves many disciplines within and beyond health sciences and promotes interdisciplinary collaboration; and it is a synthesis of population-based prevention with individual-level clinical care.

Per the definition of the World Bank, the Global South is made up of Africa, Latin America and the Caribbean, Pacific Islands, and the developing countries in Asia, including the Middle East.

Scientific orientations of the research team

The GHiGS team aims to contribute to improving health at both individual and population levels in countries from the Global South and to contribute to reducing health inequities between and within countries. Low-and middle-income countries, particularly in Sub-Saharan Africa, are going through major changes including epidemiologic, sociodemographic, economic, agronomic, technological and climatic transitions. At the same time, they are carrying the triple burden of:
1/ infectious disease (including HIV), tuberculosis, malaria, hepatitis and a number of other emerging infectious disease threats (including hemorrhagic fevers and other epidemics);
2/ growingly prevalent non-communicable diseases (NCDs; diabetes, cancers, hypertension, obesity),
and 3/ unprecedented outdoor pollutions and environmental threats. The GHiGS team aims to respond to these major transitions and new challenges through integrated, multi-level and inter-disciplinary research approaches in the context of the Global South.
Among the key highlights of the past five years, the GHiGS team contributed to a major revision in the international HIV treatment guidelines issued by the World Health Organisation and was among the rare research teams worldwide to have conducted a treatment trial to reduce mortality during the Ebola epidemic in West Africa.
In the coming years, the GHiGS team will strengthen and expand two key research themes, i.e., infectious diseases and mother and child health issues, to address new challenges in the field of diagnosis, care, and treatment. NCD research, previously addressed by the team in relation with infectious diseases (HPV-and HBV-related cancers, cardiovascular and metabolic HIV-comorbidities), will become a standalone research theme. Major challenges in implementing evidence-based interventions will be addressed within a cross-sectional and structural research axis on "Models of care, implementation and health systems". Finally, beyond the

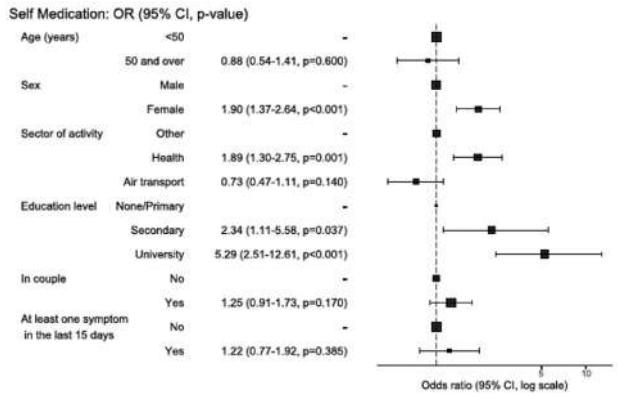

FIGURE 1 shows factors associated with self-medication to prevent the infection to SARS-CoV-2 in high-risk populations, Lomé, Togo in a binary logistic multivariable model. These associations were expressed as adjusted odds ratios.
Self-medication was coded as a binary variable (=1 if intake of at least one product and = 0 if not)

Source: Sadio AJ et al. BMC Public Health (2021) 21:58.
A study including around 1,000 participants from five sectors (healthcare, air transport, police, road transport and informal sectors) who were invited to provide information about their self-medication practices to prevent COVID-19. Health professionals, women and people with a high level of education were the most likely to practice self-medication.

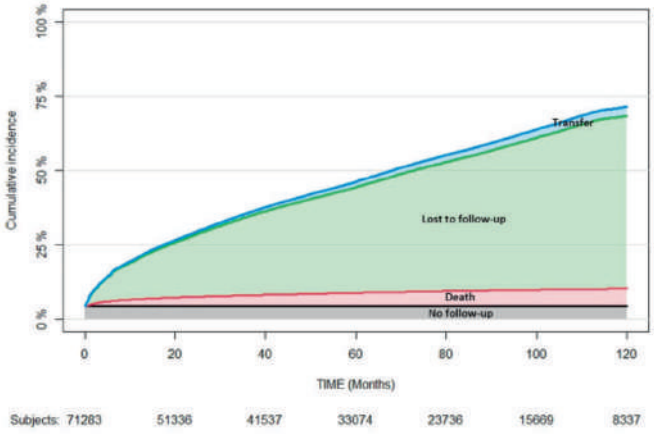

FIGURE 2. Ten-year stacked plot of cumulative incidence function of attrition by attrition types. IeDEA West Africa Collaboration, 2002to.

Source: Tiendrebeogo T et al. J Int AIDS Soc. 2021;24(5):e25723.
A cohort analysis of more than 70,000 patients initiated on Antiretroviral Treatment (ART) followed for 10 years in 8 West-African countries showed that overall attrition was as high as 21%, 45% and 71% at 12, 60 and 120 months following ART initiation, respectively. Overall, patients lost to follow-up accounted for 85% of patients lost to care.

individual and health system levels, the GHiGS team will explore the impact on health (NCDs, emerging epidemics,...) of global forces and environmental changes (climate change, bacterial ecosystem, resistance to antimicrobials, pollution...), as part of the "People in their environment" axis. Research by the GHiGS team will be built on equal partnership and co-construction with scientific partners, clinicians, policy-makers from the Global South countries. Through its expanded research program and strengthened collaborations and partnerships, the ambition of the GHiGS team is to contribute to the achievement of the Sustainable Development Goal #3 on Health and Well-Being.
Structuration of the research team The GHiGS activities will be organised around 3 research themes (infectious diseases; maternal and child health; non-communicable diseases) which correspond to major global health challenges; and 3 cross-sectional axes (Prevention, diagnosis and treatment; models of care, implementation, and health systems; people in their environment) that will structure research efforts, collaborations, and development of methods and scientific engineering capacities.

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POPULATION HEALTH TRANSLATIONAL RESEARCH

PHARes

MIXED RESEARCH TEAM

Inserm université de BORDEAUX

Dr. Carole Dufouil

PhD, PHARes director

Carole Dufouil PhD is a research director at Inserm and lead the PHARes team. She is also deputy director for international and overseas relations at Bordeaux School of Public Health (ISPED). She has received training in biostatistics and public health. Her early publications were on methods to handle missing data in longitudinal studies. More recently, her research has focused on the determinants of neurological diseases, including Alzheimer's disease. She is particularly interested in the role of vascular risk factor exposure and cognitive stimulating activities, and imaging markers (PET, MRI) of brain aging and disease. She is co-PI of the 3C-Dijon study and co-PI of the MEMENTO study, a national clinical cohort, which was set up in the context of the French Alzheimer Plan 2008-2013, and aims to improve the understanding of the natural course of Alzheimer's disease and related disorders. She is also strongly involved in international scientific programs such as the Framingham Heart study, or co-leading of the Melodem initiative which aims at harmonizing analytical approaches in longitudinal studies on dementia (www. melodem.org).

Pr Geneviève Chêne

MD-PhD, PHARes Deputy director

Geneviève Chêne, MD, PhD, is a professor of medicine in public health at the University of Bordeaux and Bordeaux University Hospital. She is co-PI of the Memento cohort, aimed at improving our understanding of the progression from cognitive complaints or disorders to Alzheimer's dementia. Her interests also extend to leveraging health or environmental and social data for public decision-making. As the deputy director of the Vascular and Brain Health Institute (IHU VBHI, France 2030), she actively contributes to its strategic development. During the Covid-19 pandemic, she held the position of Director General of Public Health France. Previously, she led the School of Public Health (ISPED) at the University of Bordeaux, as well as the Public Health Department of Bordeaux University Hospital. She also contributed to the development of the 2013-2017 national health strategy and served as director of the Inserm Public Health Institute.

The PHARes Team aims to improve our understanding of and act upon the greatest risks and threats to population health, representing a large share of morbidity and mortality as well as social determinants of health and healthcare expenditure. Through this translational approach, We seek to reduce, the impact of these risks and treats (taking into account social and environmental inequalities, including inequalities in access to healthcare) by

- **improving risks factors and inequalities measurement with real-world data and methods developed for and applied to observational studies and thus providing the evidence based for a critical building block for action,**
- **developing innovative methods (observational and experimental) for the development and evaluation of complex population health interventions,**
- **analysing of social and political processes underlying the unequal distribution of risks and health inequities in order to influence decision-making.**

The team works on five principal research axes:

1. Methods for population health intervention research.

This axis involves conducting research on research (meta-research), on concepts and methods for the evaluation of prevention and health promotion interventions. The questions cover all stages of the approach, from the development to the scaling-up of interventions

2. Social determinants, migration dynamics, environment & health.

This research axis relies on a strong interdisciplinary convergence on the cross-cutting themes of social inequalities, deprived populations, environmental risks and their relation to population health and health inequalities. Our research addresses the following issues:

- Social determinants of maternal, child, sexual & reproductive health among vulnerable populations
- Health status and healthcare access of vulnerable populations.
- Innovative approaches to improve health and health equity in decision-making processes at the territorial level.

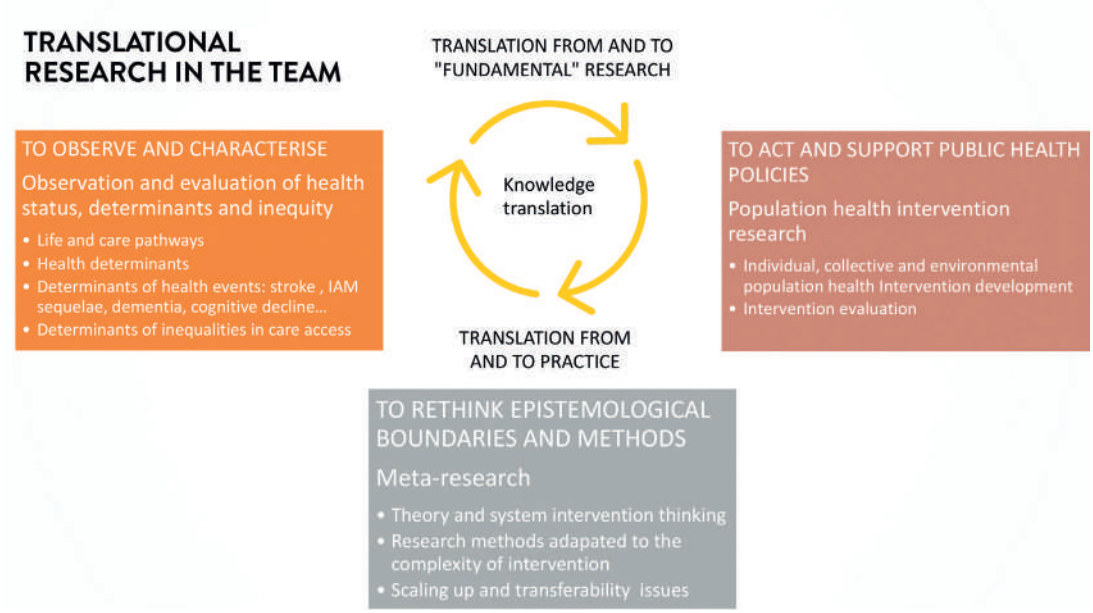
3. Pathways and determinants of health.

The concept of pathway has been developed to respond to the need to make our health system and society evolve in the face of increased life expectancy, chronic illnesses and the complexity of managements. The identification of interventions to improve pathways and reduce inequalities in access to care is another major issue, leading to significant improvements in population health and focusing on three main goals :

- Characterization of pathways
- Identification of determinants of health
- Optimisation of care pathways and reduction of health inequalities,

4. Innovations for prevention in the healthcare system.

The growing prevalence of chronic diseases is a major challenge for the sustainability of health systems. There is a need to transform health systems by increasing prevention and by implementing innovative organisations in the management of these diseases. This transformation will require the development and the analysis of research-and field-based



interventions. Transforming the health system also requires transferring innovative models into public decisions and practice. The objective of this theme is to identify, develop and/or evaluate technological (such as mobile health in prevention strategies) and organisational innovations (such as interprofessional collaboration to improve professional practice and health-care outcomes) in terms of prevention (or "preventive clinical practices "), at the hospital or in outpatient healthcare. Research covers all stages of innovation, from development to scale-up.

5. Economics and management of healthcare organizations. The aim of this axis is to conduct research projects that evaluate health policies and interventions using an applied and multidisciplinary approach, involving economists, management researchers, health professionals (doctors and nurses and other social science researchers with expertise in health services. This research relies on a variety of perspectives, depending on the object studied (healthcare utilisation, healthcare pathways, technological or organisational innovations ...), the relevant evaluation outcome (take-up of public programs, efficiency, healthcare access inequalities, staff turnover, rehospitalisation...), the available data and the appropriate methods (econometrics using administrative data, experimental studies, medico-economic modelling of clinical data and registry data, qualitative interviews...).

Our team conducts research that takes into account:

• the characteristics of surveillance of health determinants (including social, environmental and cultural factors),

• the system in which the interventions are implemented, whether they are in or out of the health care environment (public domain: media, opinions, policies, professional practices, etc.),

• the complex nature of population health interventions (individual, ecological, collective, regulatory). Within this framework, our team focuses on 3 research objects that we believe to be at the heart of translational population health research:

1. Health status, health determinants and social inequalities (Research object "TO OBSERVE AND CHARACTERISE")
2. Population health interventions, whether they be policy, outreach, or organisations within and outside the healthcare setting (Research object "TO ACT ON AND SUPPORT PUBLIC HEALTH POLICIES")
3. Methodological research to better apprehend the complexity of the two first objects (Research object "TO RETHINK EPISTEMOLOGICAL BOUNDARIES AND METHODS") The association of these three research objects (observational, interventional and meta-research) is fundamental to the development of translational research and mobilizes the principles of knowledge transfer between disciplines and between researchers and decision-makers to make it work.

2024 Key publications

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2024 RESEARCH HIGHLIGHTS

2024 RESEARCH HIGHLIGHTS

Stéphanie Debette awarded the Inserm Grand Prize

Awards - Contribution to public health - Large scale partnership

ELEANOR / Molecular Epidemiology Of Vascular And Brain Disorders

Stéphanie Debette, a leading woman scientist, neurologist, epidemiologist, co-director and researcher of the BPH ELEANOR team, director of the BPH from 2021 to 2024, architect of the VBHI IHU and director since 2024, has just been honoured with the prestigious Inserm Grand Prix on 11 December 2024. This distinction, one of the highest scientific awards in France, highlights the remarkable impact of her work and her significant contributions in the field of neuroscience, significantly improving public health in this area

Major contributions:

Her work has considerably enriched our understanding of neurovascular diseases, which are very common and affect several million people aged 60 and over in France. Her work has made it possible to identify susceptibility genes and understand the molecular mechanisms underlying these diseases linked to cerebral ageing. Stéphanie Debette has also opened the way for large-scale collaborative and international studies by actively participating in the creation of new international consortia in her field. This has led to a change of scale in the research being carried out, and has enriched it by bringing together a wide range of expertise, opening up major prospects for the prevention and treatment of stroke and dementia.

Stéphanie Debette, director of the Vascular Brain Health University-Hospital Institute (VBHI) during the launch, July 11th 2024
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EXPOSIGNALZ : A new large translational research program on pollutant mixtures in brain aging and Alzheimer's disease

New project - Large scale partnership

ELEANOR / Molecular Epidemiology Of Vascular And Brain Disorders

EXPOSIGNALZ is a new Horizon Europe project funded under the "Horizon and Health" 2024 call (coordinator V. Perrier, INSERM and Institute of Neurosciences Montpellier). Through interdisciplinary approaches, integrating experimental and epidemiological studies, the project aims to delineate the impact of a selection of environmental pollutants on brain health throughout life and their role in dementia, especially Alzheimer's disease (AD), representing about 70% of dementia cases.

Cécilia Samieri was funded 1.4 M€ with this program to lead with her group in ELEANOR the human research part dedicated to discovering novel pollutant mixtures associated with brain aging. They will leverage several French/EU cohorts, including two BPH cohorts, the Three-City and B cube studies, to characterize pollutant signatures associated with brain aging and AD in biological matrices of 4 European population-based cohorts of various age groups. The mechanisms of action of the pollutant signatures identified will be subsequently deciphered from neurodevelopment to neurodegeneration in various preclinical models

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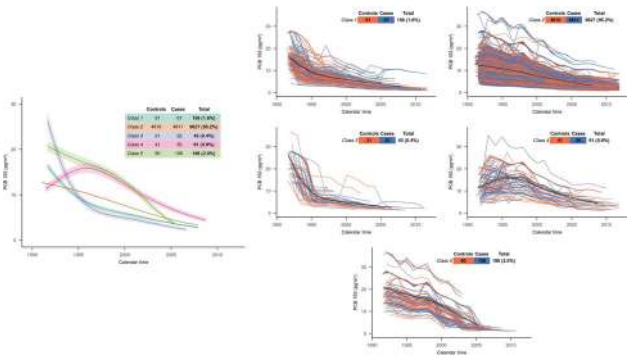
A lifelong approach to studying the association between exposure to air pollution and the risk of developing breast cancer. Major publication

Biostatistics

Air pollution, classified as carcinogenic to humans by the International Agency for Research on Cancer, has emerged as a potential contributor to breast cancer risk. However, to date, the epidemiologic evidence has been inconsistent, partially because most previous studies relied on short term exposure data and thus could not account for long term trajectory of exposure. Thanks to the XENAIR case-control data nested within the E3N cohort, we have individual exposure trajectories to air pollution in 1990-2011, thus up to 22 years before diagnosis of breast cancer. In this paper, we specifically investigated trajectories of concentrations around residential addresses of an atmospheric pollutant with endocrine-disrupting properties, polychlorinated biphenyl (PCB)153. Using a statistical approach that accounted for all individual trajectories of exposure, we found that women living in area with the highest concentrations of PCB153 over the whole follow-up had a higher risk of breast cancer compared to women living in areas with the lowest concentrations. The biostatistics research team has received funding from INCA and ANSES in 2024 to further explore trajectories of exposure to air pollution over lifetime, using geographical indicators from birth



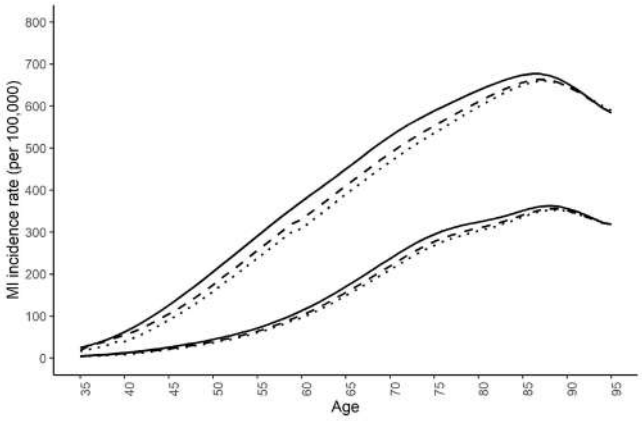
Contact: karen.leffondre@u-bordeaux.fr

Impact of Smoking Reduction Scenarios on the Burden of Myocardial Infarction in the French Population Until 2035

Major publication

Biostatistics

In France, myocardial infarction (MI) was the second leading cause of years of life lost in 2019. Estimating the burden of MI in future years could help anticipate care and prevention needs and guide them in public health decision-making. Tobacco is one of the primary risk factors for MI and is notable for its immediate cardiovascular impact on smokers. In this study, we modeled four smoking reduction scenarios focusing on the proportion of smokers aged 18–75 in the French population from 2024 to 2035, including a theoretical scenario of complete smoking cessation in France in 2024 to estimate the maximum potential benefit. This scenario would prevent 103,000 cases of myocardial infarction, 12,800 deaths from myocardial infarction, and 653,000 all-cause deaths by 2035. Beyond the impact on the number of cases and mortality, reducing the prevalence of smoking in the population would delay the average age of disease onset by 2.8 to 4.1 years in men and 1.1 to 2.0 years in women. These results confirm the relevance of setting ambitious targets for reducing smoking prevalence.



Estimated Myocardial Infarction incidence rate in the French population by age in 2035 for males (top curves) and females (bottom curves) according to the prevention scenarios: 1% of smokers quit per year in France (solid line), around 9.9% of smokers quitting annually (dashed line), and no smokers from 2024 (dotted line).

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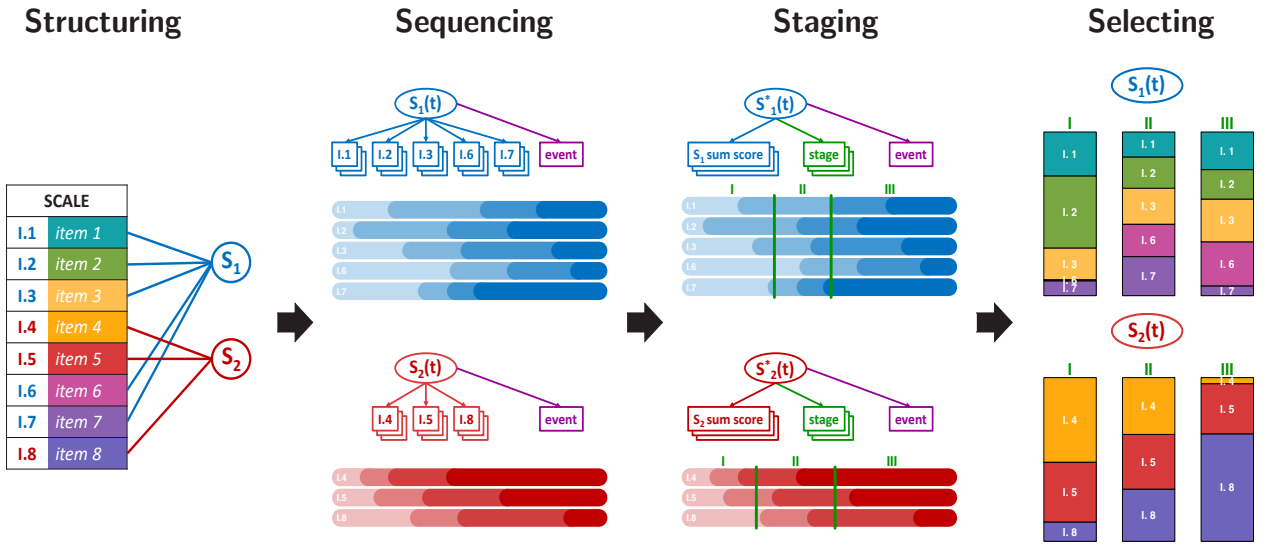
Comprehensive Statistical Methodology for the analysis of repeated measurement scale data

Major publication

Biostatistics



Measurement scales are often used to report disease-related manifestations from clinician and/or patient perspectives. Their analysis can help identify the most critical symptoms or manifestations throughout the disease course, enhancing knowledge of disease progression and guiding clinicians in providing appropriate care.

The Biostat Team and the National Reference Center for Multiple System Atrophy (MSA) has developed a comprehensive strategy, called 4S, to leverage repeated data from multidimensional measurement scales. The 4S method successively (i) structures the scale into subdimensions, (ii) describes each subdimension progression along with clinical endpoints of interest, (iii) aligns each subdimension's progression with disease stages, and (iv) identifies the most informative items at each disease stage.

The 4S method provides an effective and complete analytical strategy for any measurement scale repeatedly collected in health studies.

The method has been exemplified in MSA to fully describe the clinical progression from both the clinician-perspective through the MSA scale of functional impairments [1] and the patient-perspective through a Health-Related Quality of Life scale leading to a mind map to help clinicians in their care management [2].

[1] Saulnier T, Meissner WG, Fabbri M, Foubert-Samier A, Proust-Lima C. Structuring, Sequencing, Staging, Selecting: the 4S method for the longitudinal analysis of multidimensional measurement scales in chronic diseases. Pre-print ArXiv 2024.

[2] Saulnier T, Fabbri M, Le Goff M, Helmer C, Pavy-Le Traon A, Meissner WG, et al. Patient-perceived progression in multiple system atrophy: natural history of quality of life. J Neurol Neurosurg Psychiatry 2024; 95(9):804 11;

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Cécile Proust-Lima becomes co-editor of Biometrics

Nomination

Biostatistics

Biometrics

International Biometric Society

The official journal of the International Biometric Society (IBS), Biometrics, is a leading journal in Biostatistics founded in 1945. Biometrics publishes methodological developments motivated by applications in the life sciences. Cécile Proust-Lima has been appointed co-editor by IBS, effective January 1, 2025. She joins the team of 3 co-editors with Erica Moodie (Canada) and Matthew Schoffield (Australia), and Executive Editor Geert Molenberghs. This is the second time a researcher from the Inserm Research Center of Bordeaux has been appointed to this position. Daniel Commenges was editor from 2000 to 2003

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End of inclusions in the ETIOSARC population study and new funding from the National Cancer Institute for an initial data valorization. End of inclusions and first analysis

EPICENE / Epidemiology of cancer and environmental exposures

Sarcomas are rare cancers that develop in the connective tissue of organs and can occur in many parts of the body. We believe that environmental factors may contribute to their development, although our understanding of these factors is currently very limited.
To better understand the origins of sarcomas, a research platform called ETIOSARC was launched in 2019 with the support of institutional partners (INCA, INSERM and Fondation ARC). From 2019 to 2024, this platform will accurately record data from around 780 sarcoma patients and 1,480 randomly selected individuals (without sarcoma) from the general population.
Using the ETIOSARC platform, we will be able to compare occupations, occupational exposures (such as pesticides) and lifestyle habits between a group of people with sarcomas and a group of healthy people. These comparisons will provide robust insights into the origins of sarcomas and their potential links to environmental exposures and lifestyle habits.
The new INCA funding is to initiate the analysis of the data collected in ETIOSARC, focusing on the relationship between occupational factors, specific lifestyle habits (tobacco and alcohol) and the occurrence of sarcomas.

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The National League Against Cancer renews her label of the research team: Epidemiology of Adult Leukemia and Lymphoma (ELLA). New Accreditation

EPICENE / Epidemiology of cancer and environmental exposures

Our labeled team for the next three years is called "Epidemiology of hematological malignancies according to their subtype: Risk factors, survival and determinants of management". Our objectives are to increase the knowledge of the epidemiology of Hematopoietic tumours according to their histiotypes in two specific areas: i) by carrying out geographical studies on the incidence of hematological malignancies in relation to selected environmental factors: pesticides, electromagnetic fields or air pollution, ii) by analyzing various prognostic factors such as work stress, professional reintegration, the prognostic impact of body mass index or exposure to ionizing radiation from a real-life cohort (REALYSA - 6,000 subjects with long follow-up). The results obtained will make it possible to better characterize environmental and occupational risks, to better assess the quality of the care pathway, to better organize care and vulnerable populations, and to identify new prognostic factors to prepare new therapeutic strategies in the era of targeted therapies.

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Presentation award – Data driven approaches to study maternal occupational multi-exposures during pregnancy and intrauterine growth: analysis of the ELFE study. Award

EPICENE / Epidemiology of cancer and environmental exposures

This study analyzed maternal occupational multi-exposures during pregnancy and their link with intrauterine growth using data-driven approaches based on the ELFE cohort. Among the 47 occupational exposures studied, mothers were classified as "non-exposed" (0-50%) and "exposed" (>50%). Three statistical methods (EWAS, LASSO, and random forest) were used to select the most important exposures. The five main exposures were included in a regression model, incorporating significant second-degree interactions.

For small for gestational age, no significant association was found. To use a computer screen reduced birthweight by 22.95 g, while leaning forward or sideways increased it by 38 g among women not exposed to airborne germs. Repetition of tasks and working outdoors decreased head circumference by 0.09 and 0.13 cm, respectively. Among women exposed to airborne germs, oxygenated solvents further reduced head circumference by 0.13 cm.

These results suggest a potential role of chemical, biological, and postural exposures in intrauterine growth, highlighting the importance of tailored preventive strategies in occupational settings.

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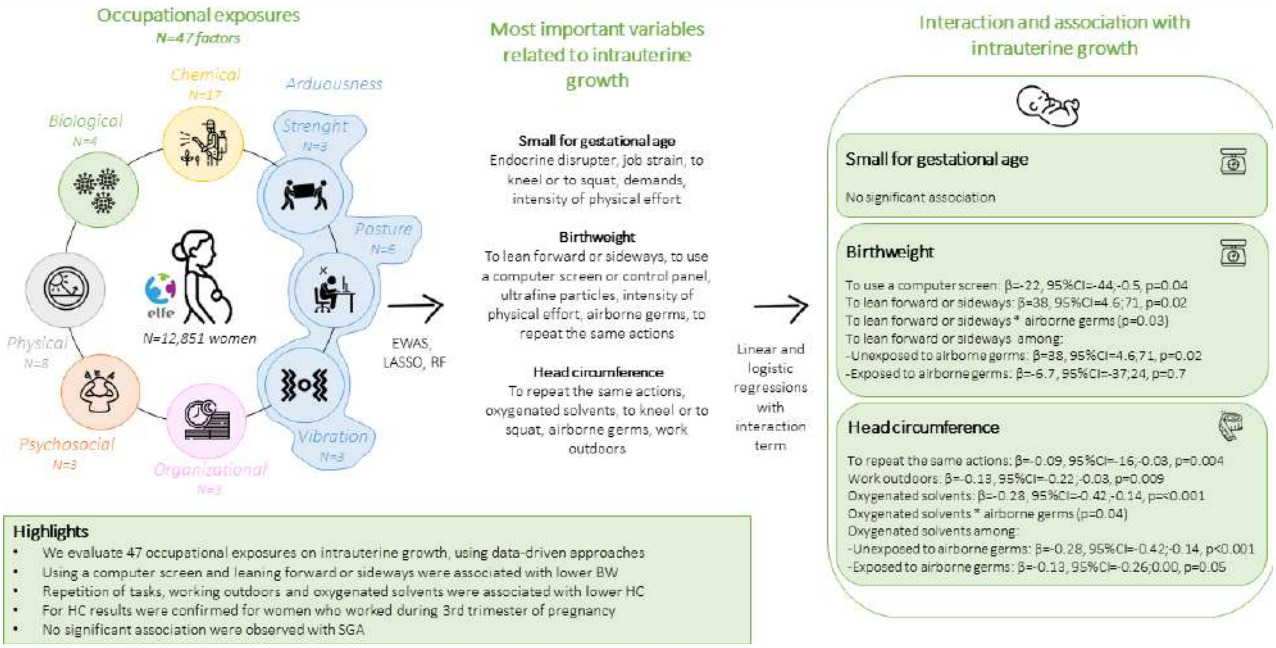
Digital Public Health Graduate Program / université de BORDEAUX — Réseau doctoral en santé publique — FRNL réseau franco | néerlandais

Maternal occupational multi-exposures during pregnancy and intrauterine growth: analysis of the French Longitudinal Study of Children – ELFE study, using data-driven approaches



Highlights

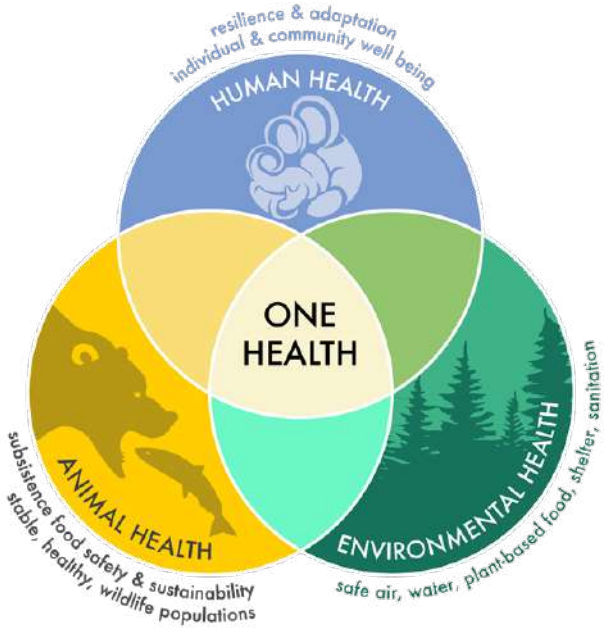
- We evaluate 47 occupational exposures on intrauterine growth, using data-driven approaches
- Using a computer screen and leaning forward or sideways were associated with lower BW
- Repetition of tasks, working outdoors and oxygenated solvents were associated with lower HC
- For HC results were confirmed for women who worked during 3rd trimester of pregnancy
- No significant association were observed with SGA

Ecophyto funding for a multidisciplinary projet "One Health"

Project launch

EPICENE / Epidemiology of cancer and environmental exposures

The VITISAFE project is based on several hypotheses: (i) the landscape context and the wine-growing history of the landscapes determine the level of pesticide contamination of different environments; (ii) there are correlations between the levels of contamination of sentinel species and humans as well as between the health of wildlife and human health; (iii) the impact of pesticides is modulated by the heterogeneity of the landscape and particularly by the quantity of semi-natural habitats which limit the impacts on wildlife and human health; (iv) the development of alternative practices on a large scale benefits the health of wildlife, biodiversity, the functioning of agrosystems and human health.
On these bases, the objective of the VITISAFE project is to analyze the impact of pesticides in 4 complementary aspects: 1) evaluation of environmental contamination levels, 2) analysis of the state of health of sentinel species, 3) description of the structure and functioning of different communities of organisms, 4) analyze of certain dimensions of human health. This research enables to build a multidisciplinary consortium of researchers in New Aquitaine and is based on a unique long-term research system (the BACCHUS workshop site: www.siteatelier-bacchus.com), in a territory dominated by wine-growing.



The issues of pesticide reduction will be crucial on the project to inform public decision-making.
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Appointement to the Institut Universitaire de France

Nomination

ACTIVE / Aging, Chronic diseases, Technology, disability, and Environment

Hélène Amieva has been appointed senior member of the Fundamental Chair of the l'Institut universitaire de France (IUF) for the next 5 years. The installation ceremony for the new members of the French University Institute took place on October 18 in the Grand Amphitheater of the Sorbonne, in the presence of Mr. Patrick Hetzel, Minister of Higher Education and Research.

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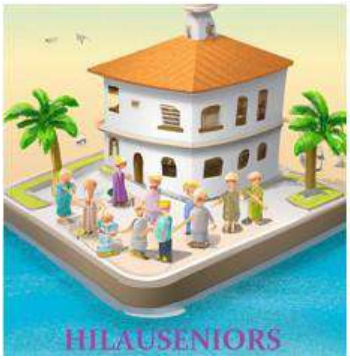
Annual days of the PPR Autonomie

Event - Launch project

ACTIVE / Aging, Chronic diseases, Technology, disability, and Environment



PPR AUTONOMIE

anr agence nationale de la recherche

InnovCare
(2024-28)
— PPR Autonomie

October 10 and 11 took place the Annual Days of the Priority Research Program (PPR) Autonomie. These days aimed to reinforce the community of researchers and stakeholders working on autonomy, and to present the winning projects of the PPR. The ACTIVE team is involved in 2 consortia:
The HILAUSENIOR project, studying the impact of housing on older adults' autonomy, through the prism of different disciplines (architecture, sociology, epidemiology) and by the creation of a cohort of older adults living in different housing ;

The INNOVCARE project, interesting in technologies (in particular robots, AI, and digital technologies) supporting autonomy and care in France and in Japan, in an objective of overcoming existing limitations of use (design, disconnection with needs, ethical issues)

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Research stay of Helen Maria Vasiliadis from the University of Sherbrooke: Epidemiological Approach of mental health across different life stages

Visiting scholars

ACTIVE / Aging, Chronic diseases, Technology, disability, and Environment

As part of the "Visiting Scholars" program, Helen Maria Vasiliadis, Professor of epidemiology at the University of Sherbrooke (Canada), got support from the University of Bordeaux for a two-month research stay. She gave lectures within the ACTIVE team, the BPH center, and the Faculty of Psychology, on epidemiological approach of mental health among community-dwelling individuals in Canada. During her stay, Helen Maria Vasiliadis collaborated with several researchers, in particular Mathilde Husky, on a project investigating mental health across different life stages using data from the Santé Publique France "Health Barometer" survey.
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Launch of the NUMPHIS project: Digital intra-oral protection to measure and reduce sports-related cranial impacts

Launch project

ACTIVE / Aging, Chronic diseases, Technology, disability, and Environment

The NUMPHIS project, aimed at evaluating a digital intra-oral protection to measure and reduce sports-related cranial impacts, led by Hélène Cassoudesalle in collaboration with Philippe Poisson, has been selected by the ANR as part of the 2024 Young Researchers Call for Projects.
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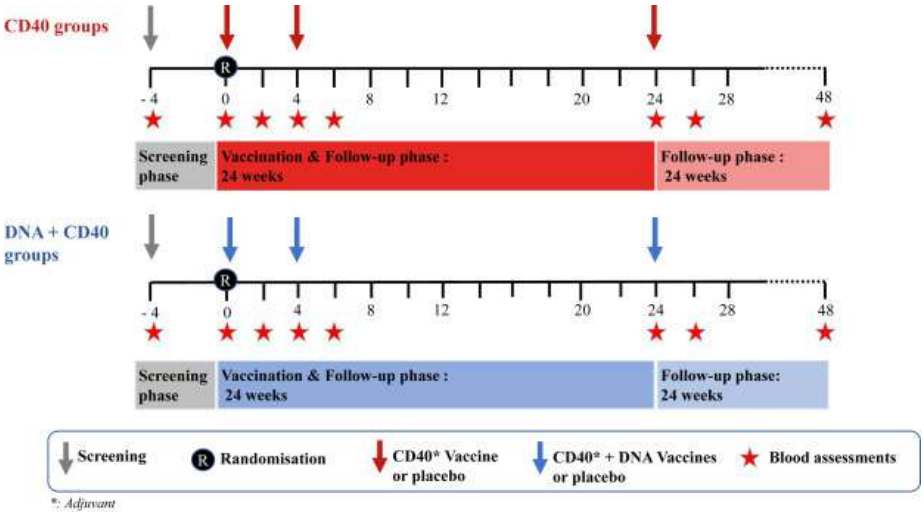
Safety and immunogenicity of CD40.HIVRI.Env, a dendritic cell-based HIV vaccine, in healthy HIV-uninfected adults: a first-in-human randomized, placebo-controlled, dose-escalation study (ANRS VRI06)

Major publication

SISTM / Statistics in Systems biology and Translational Medicine

The VRI06 phase 1 trial, conducted in France and Switzerland from May 2021 to October 2022, assessed the safety and immunogenicity of the CD40.HIVRI.Env vaccine, targeting the gp140 Env from HIV Clade C 96ZM651, in 72 HIV-negative volunteers. The trial, randomized at a 5:1 ratio between active and placebo groups, tested different doses of the CD40.HIVRI.Env vaccine, adjuvanted with Hiltonol®, alone or in combination with the DNA-HIV-PT123 vaccine. Participants were monitored for safety and immune responses until week 48. The study concludes that the CD40.HIVRI.Env vaccine, with or without DNA-HIV-PT123, is safe and effectively induces sustained cellular and humoral immune responses, suggesting its potential usefulness in prime-boost vaccine strategies targeting HIV.



Contact: laura.richert@u-bordeaux.fr

Estimating the population effectiveness of interventions against COVID-19 in France: A modelling study, Ganser et al.

Major publication

SISTM / Statistics in Systems biology and Translational Medicine

We constructed a dynamic model of SARS-CoV-2 to assess interventions against COVID-19. Lockdowns and curfews significantly curbed the spread of COVID-19 in France. The deployment of vaccines prevented 160,000 deaths in France by the end of the study period. Had vaccines been available 100 days earlier, an additional 70,000 lives could have been saved in France.

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Organisation of 'journées de la statistique' Annual conference of Société Francaise de Statistiques

Event

SISTM / Statistics in Systems biology and Translational Medicine

The Journées de la Statistique organized each year by the French Statistical Society (Société Française de Statistique SFDS), are a major event for French-speaking statisticians and beyond. This annual conference brings together professionals, researchers, and students to discuss the latest advancements and applications in statistics. Gathering about 550 people, it was co-organized by Bordeaux Population Health and the Bordeaux Institute of Mathematics from May 27 to May 31, 2024.

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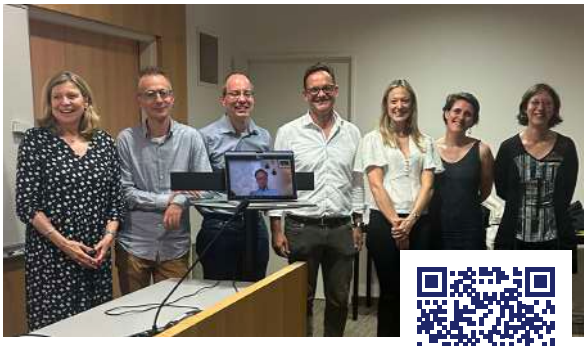
Boris Hejblum and Mélanie Prague obtained their habilitation to direct research

New scientific degree

SISTM / Statistics in Systems biology and Translational Medicine



Mélanie Prague

Mechanistic and Statistical Models for Treatment and Control of Infectious Diseases
This work details the development of mechanistic models, their application to intra-host viral dynamics, and population-level interventions against epidemics, targeting diseases such as HIV, Ebola, and SARS-CoV-2.

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Boris Hejblum

Statistical methods for leveraging high-dimensional data from high-throughput measurements in vaccine clinical development
The focus is on the methodological challenges and advancements in handling complex data sets typical in vaccine trials, which include not only gene expression studies but also flow-cytometry data for cellular phenotyping, ultimately aiming to enhance our understanding of immune responses and improve vaccine design and efficacy.

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Neglecting normalization impact in semi-synthetic RNA-seq data simulation generates artificial false positives

Major Publication

SISTM / Statistics in Systems biology and Translational Medicine

This article critically re-evaluates the simulation framework used by Li et al. to benchmark RNA-seq differential expression methods. The authors demonstrate that Li et al.'s data generation scheme—specifically the order of permutation and normalization—produces artificial false positives. They propose an amended simulation strategy and show that the method dearseq achieves better FDR control and statistical power, especially in large-sample settings. Dearseq is one of the many R package released by the SISTM team for disseminating data analysis methods.

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Cocreation and evaluation of an intervention promoting teachers' mental health literacy: the TEACH-MHE project

Contribution to public health

HEALTHY / Health, Well-Being and Achievement in the Young

Children's mental health is a public health issue. Teachers play a key role in preventing and promoting pupils' mental health. However, they are not equipped to address this topic at school. The theory of mental health literacy refers to information, knowledge, and beliefs about the mental well-being of people, including children. The dual objective of the TEACH-MHE project is to (1) develop and validate a scale that measures the mental health literacy of students in teacher training in schools, and (2) co-create, test, and evaluate the first online course aimed at improving mental health literacy in this population. We will collect and analyze data using mixed methods. This is an interdisciplinary (communication sciences, education sciences, psychology and public health) and international (France, Australia) project funded by the University of Bordeaux.

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Recruitment of Mélissa Macalli awarded through the INSERM CRCN competition (CSS6) and nomination for the 2024 L'Oréal-UNESCO Prize for women and science

Nomination - award

HEALTHY / Health, Well-Being and Achievement in the Young

Mélissa Macalli is one of the 35 winners of the prestigious Prix Jeunes Talents France 2024 'Pour les Femmes et la Science' (For Women and Science) in 2024, out of 700 candidates who applied. She is continuing her post-doctoral work in the HEALTHY team at the BPH and already has a track record of excellence in her field of research on the health of students and young adults. She will complete her PhD in Public Health and Epidemiology at the University of Bordeaux in 2021 and has already won several awards for her thesis work on the analysis and modelling of suicidal behaviour among students using data from the i-Share cohort under the supervision of Christophe Tzourio and Sylvana Côté. She has received several awards, including the Prix de thèse 2022 'Prix Spécial du Jury International' from the University of Bordeaux. On this occasion, 4 young doctors from the University, including Mélissa, were rewarded by an international jury for the excellence of their work, to be defended in 2021. She was also awarded the 2nd National Prize for Public Health Thesis 'Public Health Policies and Interventions' by the General Directorate of Health in 2023. She was also awarded the prize for the best oral presentation at the BPH Young Researchers' Day in 2022! Through this recognition, Mélissa is helping to strengthen the place of women in the world of research, overcome gender inequalities, shatter the glass ceiling and contribute to scientific progress by inspiring the next generation of female researchers at the BPH and elsewhere.

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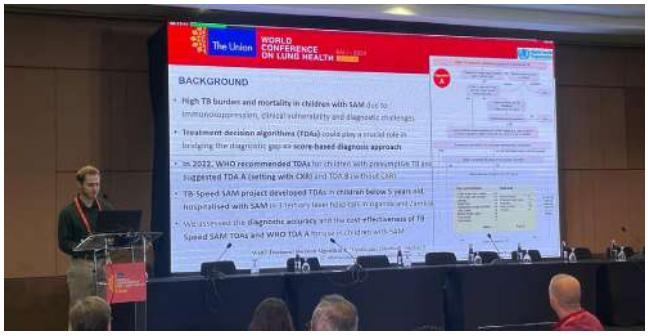
Improving the management of children with Severe Acute Malnutrition: increasing access and quality of the diagnosis of tuberculosis

Major publication - Contribution to public health

GHiGS / Global Health in the Global South

In 2024, the GHiGS team, with partners from University of Zambia (UNZA) and others, published the main findings of the Unitaid-funded TB-Speed SAM diagnostic cohort study. In children with severe cute malnutrition (SAM), tuberculosis (TB) is common, challenging to diagnose, and often fatal. We developed treatment decision algorithms (TDAs) to improve TB detection in children with SAM aged below 5 years, a highly vulnerable group in front of the disease. Marc d'Elbée (post-doctoral fellow in health economics, GHiGS) led a cost-effectiveness modelling analysis of these TDA-based approaches, showing that they were highly cost-effective in children hospitalised with SAM, compared to current practice. Study findings were presented at the Union World conference on Lung Health in Indonesia in November 2024 . Lessons learned and prospects for capitalising were discussed during the meeting of the Union working group on Child malnutrition and tuberculosis co-chaired by Olivier Marcy (GHiGS), Chishala Chabala (UNZA), Bryan Vonasek (Michigan State University) and Anthony



Garcia-Prats (University of Wisconsin), highlighting the needs for strengthening TB screening in children with SAM throughout sub-Saharan African settings. The TB-Speed SAM TDA is currently deployed and evaluated alongside other WHO-recommended TDAs in Mozambique and Zambia in the Decide-TB trial.

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TB-Speed Unitaid Innovation in Global Health

A newly formed French academic network in global and one-health (FrOGH). Large scale partnership - Research network

GHiGS / Global Health in the Global South

There is a great deal of expertise concerning global health and one-health in France, particularly in the academic world, but it is currently scattered and difficult to grasp. For several years now, France has developed and promoted an international policy on these issues, relying on its institutions (ministries, agencies, etc.), the civil society and academic organizations (universities, institutes, schools, joint research units or teams, foundations, ….). At the initiative of GHiGS/ISPED (Bordeaux), VetAgro Sud (Lyon) and EHESP (Renne), a network of 31 French academic organizations from a dozen cities in metropolitan France and overseas territories, including eight research teams affiliated to IRD, was created on 16 December 2024. The aim of the FrOGH network is to give visibility and synergy to the training, research and expertise capacity offered by the participating members, acting as a comprehensive task force for advocacy, proposalsl development and interaction with the national authorities and other French, French-speaking and international partners. The FrOGH network's 2025 program aims to increase the visibility and optimize the activities of French professors and researchers in the field of global health and One-Health. GHiGS is also involved in the development of the IRD's global health roadmap under the leadership of Renaud Becquet, DR Inserm, member of Inserm's Scientific Council.

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Renaud Becquet was appointed President of the IRD Sectoral Scientific Commission 'Biological and Medical Sciences' (CSS2) – Nomination

AHeaD / Assessing Health in a Digitalizing Real-World Setting

The Sectoral Scientific Commissions (CSS) evaluate the scientific staff and activities of the Institute and organise recruitment competitions for researchers in their field. CSS2 is responsible for human health, nutrition and life sciences (animal, plant, viral, microbiological) from a genetic and physiological point of view. The overall common objective of the disciplines covered by CSS2 is to improve human and plant health, to characterise and enhance the biodiversity of living organisms and to contribute to food and energy security in developing countries.

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Herpes virus and biomarkers of Alzheimer's disease – HerpBioMA project. New project

LEHA / Lifelong exposures, health and aging

Alzheimer's disease (AD) is a progressive illness in which brain damage develops many years before clinical symptoms appear. A growing body of evidence suggests a link between herpes viruses - in particular Herpes Simplex Virus 1 (HSV-1) - and AD. These viruses, which have the particularity of establishing a latency period in the body and then reactivating periodically, particularly when there is a drop in immunity, could migrate into the central nervous system and trigger or contribute to the development of AD lesions. The HerpBioMA project, developed from the B cube cohort, aims to study the impact of HSV-1 infection on the major lesions of AD (ß-amyloid protein, hyperphosphorylated Tau protein, markers of neuroinflammation), taking into account the various susceptibility factors that may influence the development of these lesions in infected individuals, in particular genetic factors and markers of immune and inflammatory status. The ultimate aim of this project is to understand the early pathophysiological mechanisms affected by HSV-1 infection, so that early action can be taken before clinical signs appear.

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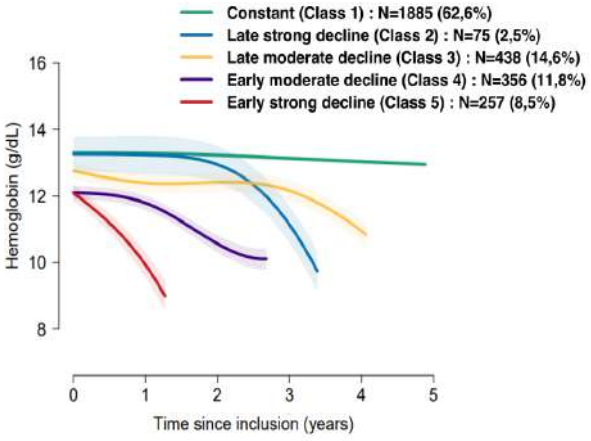
Hemoglobin trajectories in Chronic Kidney Disease
Major publication

LEHA / Lifelong exposures, health and aging



In chronic kidney disease (CKD), anemia is a common condition and has been repeatedly associated with poor clinical outcomes and quality of life in observational studies. The description of hemoglobin trajectories over time in the population of CKD has been poorly explored.
This study described distinct easily recognizable profiles of hemoglobin trajectory among patients with moderate to severe CKD under nephrology care from French multicentric CKD-REIN cohort study. It highlighted that almost two-thirds of the population belong to a profile with a stable trajectory of hemoglobin over time with very low risks of cardiovascular event, kidney failure or non-cardiovascular death, while about one-third belong to a profile with nonlinear declining trajectories of hemoglobin and an increased risk of these clinical events. We conclude that better attention should be paid to dynamic changes of hemoglobin in CKD. This article the result of a collaboration with the Biostat team.

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Nutrition and ocular pathology, what role for the dietician?" World Sight day 2024 : conference

Event

LEHA / Lifelong exposures, health and aging

As part of World Sight Day 2024, we organized a conference on the role of nutrition in ocular health, in collaboration with AFDN (Association Française des Diététiciens Nutritionnistes). This open conference, entitled "Nutrition and ocular pathology, what role for the dietician?" was held on October 10, 2024 at the CHU Haut-Lévêque in Pessac.
The conference highlighted the research of the LEHA team on this topic, with the aim of developing communication on the subject and creating connections with those involved in nutrition.
The conference was followed by a workshop initiated two dietetics students who had completed their internship with the LEHA team. These two students produced a booklet for nutrition professionals on "age-related macular degeneration and nutrition", summarizing the content of the conference, as well as a recipe booklet. For the workshop, they produced two recipes from the booklet, which participants were asked to taste while wearing glasses simulating the vision of a person with AMD.
This initiative was very well received, with some sixty people in attendance, and a 2025 edition is planned!

Contact: benedicte.merle@u-bordeaux.fr

Relocation of the team to the BPH

AHeaD / Assessing Health in a Digitalizing Real-World Setting

Since October 2024, the team has been housed in unique premises in the BPH building. This is a major event for AHeaD, which is the result of the merger of three research teams working in real-world evidence (Pharmacoepidemiology & Pharmacovigilance, Epidemiology of Emergencies and Trauma, and Applied Health Research Informatics)'.

Contact: antoine.pariente@u-bordeaux.fr

Gayo Diallo was appointed to the National Board of Universities (CNU 17 computer science) for 2024-2027

Nomination

AHeaD / Assessing Health in a Digitalizing Real-World Setting

The National University Council (CNU) is a national advisory and decision-making body. It decides on measures relating to the careers of teacher-researchers in institutions under the authority of the Ministry of Higher Education and Research (MESR).

Contact: gayo.diallo@u-bordeaux.fr

Fluoroquinolones and spontaneous pneumothorax: an association, no risk

Publication

AHeaD / Assessing Health in a Digitalizing Real-World Setting

In October 2024, the AHeaD team published on the "Association of fluoroquinolones with the risk of spontaneous pneumothorax: nationwide case-time-control study" (DOI: 10.1136/thorax-2024-221779), in the BMJ group review Thorax.
The study revealed an excess of recent fluoroquinolone exposure among patients experiencing spontaneous pneumothorax. However, this excess was not greater than that observed with amoxicillin, either alone or in combination. The specific strength of the methods used thus allowed specifically highlighting the importance of using active comparator for the conduct of quantitative bias analyses in case-only designs.
With this new publication, AHeaD confirms its position as a leading pharmacoepidemiology team in the performing of studies using case-only design. The work exemplifies the AHeaD team's commitment to refining pharmacoepidemiological practices and improving the reliability of drug safety assessments in real-world evidence research.

Contact: antoine.pariente@u-bordeaux.fr

Evaluation by an international ANR jury and renewal of funding for the MEMENTO cohort for the period 2025-2029

PHARES / Population Health Translational Research

Contribution to public health

The national cohort Memento (DeterMinants and Evolution of AlzheiMer's disEase aNd relaTed disOrders) has been renewed for the period 2025-2029 following a positive evaluation by an international jury of the Agence Nationale de la Recherche (ANR) in 2024. This renewal is part of the France 2030 programme "Research programmes in the humanities and social sciences" and will allow this longitudinal study to continue. Launched in 2012, the Memento cohort brings together 2,300 people in Memory Resource and Research Centres (CMRR) across France. These participants, who were initially seen for mild memory problems without a diagnosis of disease, undergo rigorous medical monitoring every six months, including clinical assessments, neuropsychological tests, brain imaging and biological samples. These data represent a unique resource for the study of Alzheimer's disease, providing a deeper understanding of the processes by which the disease develops and evolves over time, and offering new perspectives for the development of treatments and prevention strategies for Alzheimer's disease.

Contact: carole.dufouil@u-bordeaux.fr

Launch of Orchidée project funded by EU4HEALTH programme

PHARES / Population Health Translational Research

Contribution to public health - new project

Coordinated by Santé publique France, the Orchidée ("Organisation d'un Réseau de Centres Hospitaliers Impliqués Dans la surveillance Epidémiologique et la réponse aux Emergences") project marks a key step in the digital transformation of France's health surveillance system, through the development of a near real-time hospital-based monitoring network.

Launched in October 2024, Orchidée brings together a multidisciplinary consortium of 25 national university hospital centres, the Health Data Hub, the Bordeaux Population Health Research Centre, and the École des Hautes Études en Santé Publique. It will draw on clinical data warehouses to enhance data efficiency, reduce reporting burdens, and support timely public health responses. Initially focused on severe acute respiratory infections (SARI), it will expand to include other infectious and non-communicable diseases.

By 2028, the system aim to delivering continuously updated indicators—such as hospital admissions, ICU activity, and in-hospital mortality—stratified by age, gender, geography, pathogen, and co-morbidities. A sustainable digital infrastructure, underpinned by strong governance and long-term funding, will support its continued operation.

Contact: genevieve.chene@u-bordeaux.fr

Recruitment of Leslie Grasset through the inserm CRCN competition (CSS6)

PHARES / Population Health Translational Research

Nomination

Leslie Grasset, a young researcher specialising in the epidemiology of ageing, has been recruited as a Chargée de Recherche de Classe Normale (CRCN) at the Institut National de la Santé et de la Recherche Médicale (Inserm) in the Commission Scientifique Spécialisée 6 (CSS6). After defending her PhD in epidemiology on temporal trends in the incidence of dementia and its associated determinants in 2017, Leslie spent a year as a postdoctoral fellow in Dr Zeki Al Hazzouri's team at the University of Miami, before returning to the BPH in 2019 to continue her postdoctoral work. In particular, she has worked on ways to prevent Alzheimer's disease, for which she was awarded the Prix Jeune Chercheur 2023 'Spécial du Jury' by the Fondation Thérèse et René Planiol. Leslie is developing a research programme aimed at investigating modifiable risk factors for cognitive and cerebral pathological ageing and improving our understanding of their mechanisms of action. She has received ANR funding to study the impact of environmental and social exposures on dementia. Her recruitment strengthens the position of the BPH and PHAres team in research on ageing and neurodegenerative diseases, and her work will undoubtedly help to advance our understanding of risk factors and strategies for preventing dementia, a major public health issue in the context of an ageing population.

Contact: leslie.grasset@u-bordeaux.fr


Cérémonie
des DOCTEURS
Graduation Ceremony
universite

PHD THESES DEFENDED

PHD THESES DEFENDED IN 2024

ALLOUCHERY MARION
Patterns of use and safety of ibrutinib in real-life practice in onco-hematology
Pharmacology specialising in pharmacoepidemiology, pharmacovigilance option
supervised by SALVO Francesco

ABDELGHANI RANIA
Guiding the Minds of Tomorrow: Conversational Agents to Train Curiosity and Metacognition in Young Learners
Cognitive sciences and ergonomics specialising in cognitive sciences
supervised by SAUZEON Hélène

ADOLPHE MAXIME
Development and evaluation of AI-based personalization algorithms for attention training.
Cognitive sciences and ergonomics specialising in cognitive sciences
supervised by SAUZEON Hélène

BARDINET JEANNE
Dietary and nutritional determinants of depressive symptomatology in older adults from general population
Public health specialising in epidemiology
supervised by FEART-COURET Catherine

BEN FARHAT JIHANE
Impact of the COVID-19 pandemic on HIV care in different healthcare settings
Public health specialising in epidemiology
supervised by BONNET Fabrice

CARO ILANA
Deciphering the molecular signature of covert cerebral small vessel disease (cSVD) with a focus on multi-omics biomarkers
Public health specialising in epidemiology
supervised by DEBETTE Stéphanie

COLOMBANI FRANÇOISE
Modelling and taxonomy of cancer care interventions delivered by hospital-based care coordination nurses: from conceptual analysis to transfer to decision-makers.
Public health specialising in epidemiology
supervised by SAILLOUR-GLENISSON Florence

COURCOUL LÉONIE
Joint models with heteroscedastic residual variance: application to the study of the impact of blood pressure variability on competitive health events.
Public health specialising in biostatistics
supervised by JACQMIN-GADDA Hélène

DAURES MAGUY
Evaluation of a simplified management strategy for acute malnutrition in children aged 6-59 months in sub-Saharan Africa, as part of a research programme developed jointly by humanitarian workers and researchers.
Public health specialising in epidemiology
supervised by BECQUET Renaud

DECROIX CHARLOTTE
From the development of a complex population health intervention to its scaling up: conceptual and methodological aspects of viability studies, application in the field of early childhood
Public health specialising in health interventions and health economics
supervised by ALLA François

DRANCÉ MARTIN
Knowledge graphs and explainable artificial intelligence: application to drugrepositioning
Public health specialising in computer science and health
supervised by DIALLO Gayo

DUGA ALEMAYEHU
Patterns of Adverse Drug Reactions in Patients with Drug-Resistant Tuberculosis in Eswatini and comparison of AE Reports characteristics with a worldwide database: A Prospective and Retrospective Studies
Pharmacology specialising in pharmacoepidemiology, pharmacovigilance
supervised by SALVO Francesco

FANG PETRA
Exposure to lipopolysaccharide-type endotoxins and the aging retina
Public health specialising in epidemiology
supervised by DELCOURT Cécile

GALLICE THOMAS
Optimization of the swallowing function, rehabilitation and tracheotomy weaning in brain-injured patients
Cognitive sciences and ergonomics specialising in cognitive sciences
supervised by DEHAIL Patrick

GANSER IRIS
Insights from mathematical models into COVID-19: Analyzing public health interventions and immunity dynamics
Public health specialising in epidemiology
supervised by THIEBAUT Rodolphe

GAYRAUD LAURE
Air pollution exposure and age-related eye diseases : an epidemiological approach
Public health specialising in epidemiology
supervised by DELCOURT Cécile

GENDRE BLANDINE
Agnostic search for non-additive genetic effects from pan-genomic genetic data: application to coagulation factors.
Public health specialising in epidemiology
supervised by TRÉGOUËT David-Alexandre

GRES EMELYNE
Use and misuse of antibiotics among

children under 5 years old at primary health centers in West and Central Africa
Public health specialising in epidemiology
supervised by BECQUET Renaud

GRIFFIER ROMAIN
Integration and secondary use of heterogeneous hospital health data: from local uses to federated analysis
Public health specialising in computer science and health
supervised by MOUGIN Fleur

HIVERT BENJAMIN
Clustering et analyse différentielle de données d'expression génique Clustering and differential analysis of gene expression data
Public health specialising in biostatistics
supervised by THIEBAUT Rodolphe

JANOTA MATHILDE
First uses of alcohol, tobacco, e-cigarette, and cannabis: Issues related to social media use among middle school students and romantic relationships among college students
Psychology
supervised by HUSKY Mathilde

KONU YAO
Resilience of healthcare systems to major epidemics in africa: the impact of covid-19 on the control of priority diseases in togo
Public health specialising in epidemiology
supervised by EKOUEVI Didier Koumavi

KRIER DAMIEN
Cost-effectiveness evaluation of a model of social inclusion and personalised care for people with Alzheimer's disease and related disorders: the "Village Landais Henri Emmanuelli" as an alternative model to nursing homes
Public health specialising in health interventions and health economics
supervised by WITTWER Jérôme

LARONZE FLORIAN
Distance learning and gamified learning: identifying factors for success at university
Cognitive sciences and ergonomics specialising in cognitive sciences
supervised by N'KAOUA Bernard

LE BOURDONNEC KATELINE
Statistical methods for causal inference in cohort studies with longitudinal data: applications to aging
Public health specialising in biostatistics
supervised by PROUST-LIMA Cécile

LEFEBURE ANNE-FLEUR
Dietary diversity of older adults: validation of a dietary diversity score andevaluation of its impact on the promotion of healthy ageing
Public health specialising in epidemiology
supervised by FEART-COURET Catherine

MORELOT SARAH
Development of a method for designing a virtual reality training tool for intervention training on high-risk industrial fires: taking into account the needs of trainers and trainees
https://theses.fr/s346280
Cognitive sciences and ergonomics specialising in ergonomics
supervised by GARRIGOU Alain

OUEDRAOGO ISMAILA
Mobile Technology and Artificial Intelligence for improving health literacy among underserved communities.
Public health specialising in computer science and health
supervised by DIALLO Gayo

PERRIER JULIA
Pharmacoepidemiologic evaluation of drugs for the secondary prevention of stroke
Pharmacology specialising in pharmacoepidemiology, pharmacovigilance
supervised by BEZIN Julien

SABA YASAMAN
Genetic determinants of mri-markers of vascular brain aging
Public health specialising in epidemiology
supervised by DEBETTE Stéphanie

SAULNIER TIPHAINE
Study of Multiple System Atrophy progression in the French cohort of the national reference centre: Longitudinal and multidimensional statistical approach
Public health specialising in biostatistics
supervised by PROUST-LIMA Cécile and FOUBERT-SAMIER Alexandra

SENDRA MARIE
Social support and social participation in older adults with and without cognitive disorders
Psychology
supervised by AMIEVA Hélène

STEVENS NOLWENN
Scaling up complex public health interventions - conceptual and methodological aspects
Public health specialising in health interventions and health economics
supervised by ALLA François

YOUSSEF DALAL
Revolutionizing road safety in Lebanon: A multidimensional journey from a comprehensive analysis of challenges to data integration and driver behavior enhancement
Public health specialising in epidemiology
supervised by SALMI Louis-Rachid

EVENTS 2024

Workshop of the International Stroke Genetics Consortium, September 2022, Bordeaux, France


Centre René LARIVIERE

JOINT PUBLIC HEALTH SEMINARS 2024

Grand rounds jointly organized with Bordeaux School of Public Health ISPED and Public Health Department of university of Bordeaux

JANUARY

• Clinical trial designs and strategies to enable precision medicine in oncology

Pr Christophe LE TOURNEAU, professor and hospital doctor Department of Drug Development and Innovation (D3i), Institut Curie, Paris, Inserm U900 Research Unit, Institut Curie, Saint-Cloud, Paris-Saclay University, Paris

FEBRUARY

• Webinar "Qu'est-ce que la Promotion de la santé ?"

organised by the students of the Master 2 in Health Proms at Isped, in partnership with the Department of Public Health, the BPH, Bordeaux Population Health - UMR 1219 and ISPED - Institut de Santé Publique, d'Épidémiologie et de Développement.

Speakers :

Sarah CHAPUT Director of the Réseau Francophone International pour la Promotion de la Santé (REFIPS)

Cloé BATY , Project manager at the Cellule d'Animation Régionale des Soins Palliatifs Nouvelle-Aquitaine (CAPalliatif),

Florence ROSTAN, Nutritionist, Public Health Officer at Santé Publique France

• The iceberg of dementia risk: empirical and conceptual arguments in favor of structural interventions for brain health

Timothy DALY, philosopher, Philosophy Department, Sorbonne University, Paris

MARCH

• Sciences ouvertes : pourquoi, comment, jusqu'où ?

Marin DACOS, national coordinator for open science, reporting to the Director General for Research and Innovation at the Ministry of Higher Education and Research

• Dynamiques urbaines et santé des populations: Concepts et méthodes

Yan KESTENS, PhD, Associate professor, School of Public Health of the University of Montréal (ESPUM) Sphere Lab, Research Laboratory, Urban Interventions and Population Health

APRIL

• Functional data analysis, biomarkers and omics data: un pont à Bordeaux

Dr. Andrew SIMPKIN, Associate Professor, School of Mathematical and Statistical Sciences, University of Galway, Ireland, Visiting scholar BPH

MAY

• Informer sur la performance du système de santé concernant les besoins de santé mentale des personnes âgées vivants en communauté

Helen-Maria VASILIADIS, Professor, Faculty of Medicine and Health Sciences, FMSS Department of Community Health Sciences, University ofvSherbrooke, Québec, Canada, Visiting scholar BPH

JUNE

• Prévention et réduction des risques : Pratiques efficaces et innovations en intervention et en recherche auprès des jeunes en difficulté

Pr Jean-Sébastien FALLU, Ph.D. psychology, Associate Professor, School of Psychoeducation, Faculty of Arts and Science, University of Montréal; Editor-in-Chief and Director of the journal Drogues, santé et société. University of Montreal, Canada

• Réponse aux pandémies : quelle gouvernance internationale en 2024 ?

Anne-Claire AMPROU, Ambassador for Global Health, Ministry of Europe and Foreign Affairs as part of ISPED's international summer school

SÉMINAIRES DE SANTÉ PUBLIQUE

• Perspectives modernes de la réutilisation de données de santé

Joint webinar organised as part of their respective international summer school, ISSPAM - Institute of Public Health Sciences and the Institute of Public Health, Epidemiology and Development (ISPED)

Présentations des données de santé en France
Julien Bezin, BPH AHead team
Réutilisation de données d'antibiogramme hospitaliers pour prédire la résistance aux antibiotiques à partir de technique d'IA
Laurent Vouriot (SESSTIM, ISSPAM) ;
Réutilisation des données de santé pour la surveillance des médicaments du diabète
Antoine Pariente BPH AHeaD team

JULY

• Time-series modeling to evaluate the impact of the COVID-19 pandemic on future mortality trends and identify potential mechanisms
Andrew C. STOKES, Associate Professor, Boston University School of Public Health, Boston, Massachusetts, USA

BU School of Public Health

SEPTEMBER

• Garde d'enfants, travail et bien-être au Burkina Faso
Fiona Gedeon ACHI, Ph.D., Senior lecturer at Institut de Santé Publique (ISPED) & Bordeaux Population Health, University of Bordeaux

OCTOBER

• Past, Present, and Future of Stroke Registry: A 15-Year Experience in Korea
Hee-Joon BAE, Professor of Neurology, Seoul National University College of Medicine - Attending Neurologist, Seoul National University Bundang Hospital - Head of the Gyeonggi Regional Cardiocerebrovascular Center, Seoul, South Korea

SNU MEDICINE
Seoul National University College of Medicine

• Quasi-experimental methods in the IeDEA Cohort Collaboration: Estimating the Causal Effects of Extreme Weather Events on HIV Care Outcomes
Pr Denis NASH, Distinguished Professor of Epidemiology, Executive Director, CUNY Institute for Implementation Science in Population Health, City University of New York, USA

CUNY THE CITY UNIVERSITY OF NEW YORK

NOVEMBER

• Long term effects of preterm birth and low birth weight on ocular health – lifelong alterations caused by prematurity and its associated factors.
Alexander SCHUSTER, MD, MSc, Professor of Ophthalmic Healthcare Research, Department of Ophthalmology, University Medical Center Mainz, Johannes-Gutenberg University Mainz, Allemagne

JGU JOHANNES GUTENBERG UNIVERSITÄT MAINZ

DECEMBER

• Conference/debate on Open data et open research with
Open data à Santé publique France : enjeux et perspectives
Yann Le STRAT, Director of Data Support, Processing and Analysis, Santé publique France

Data-sharing appliqué aux essais cliniques : objectifs, modalités, freins et leviers.
Clara LOCHER, PharmD, PhD, Hospital Practitioner, Clinical Pharmacology Department - CIC Inserm 1414, Research and Innovation Department, Rennes University Hospital

• Prenatal plastic chemical exposure, molecular programming and offspring neurodevelopment
Pr Anne-Louise PONSONBY, Florey Institute for Neuroscience and mental health – Melbourne, Australia

The Florey Advancing Brain Research

BPH THEMATIC RESEARCH SEMINARS 2024

The BPH organizes 4 seminars per month to give the opportunity to understand the issues in our on the major strategic research themes, to take stock of the progress of projects in the teams and to identify new synergies at the Centre level.

AXE AGEING AND RESILIENCE

JANUARY

- **Digital technology to support healthy aging: Researches on smart home and computerized cognitive training**
  Hélène SAUZEON, BPH ACTIVE team

- **Representations of cancer among older adults**
  Hermine PELLAY, BPH AHeaD team

- **The WHO ICOPE program, a public health program of integrated care for the elderly**
  Neda TAVASSOLI, IHU HealthAge, Coordinator of the Regional Team for Ageing and Prevention of Dependency, Toulouse University Hospital

FEBRUARY

- **Restoring freedom of action by rethinking living spaces of long-term care facilities for older adults**
  Manon LABARCHÈDE, architect and sociologist, post-doctoral researcher, UMR CNRS PASSAGES, Bordeaux Montaigne University

AXE BRAIN HEALTH ACROSS THE LIFECOURSE

MAY

- **Impact of interventions scenarios targeting three main vascular risk factors on the future burden of dementia in France**
  Hélène JACQMIN-GADDA, BPH BIOSTAT team

- **The B cube cohort: A new epidemiological research platform to study the brain aging exposome**
  Cécilia SAMIERI, BPH ELEANOR team

- **The B cube-PUF project: Exposure to ultrafine particles from ambient and indoor air pollution and brain ageing**
  Sabyne AUDYGNON, BPH EPICENE team

- **The VirAlz project: Viral Infections in Alzheimer's disease**
  Catherine HELMER, BPH LEHA team

- **Longueur des télomères : de la sénescence cellulaire aux trajectoires du vieillissement humain**
  Pr Athanase BENETOS, Department of Geriatrics, CHRU of Nancy, INSERM U1116, FHU CARTAGE Director, University of Lorraine

- **Nutrient patterns and risk of depressive symptomatology in older adults**
  Jeanne BARDINET, BPH LEHA team

- **Children's mental health literacy: measurement and intervention**
  Ilaria MONTAGNI, BPH HEALTHY team

AXE

INFECTIOUS DISEASES & GLOBAL HEALTH

MARCH

• Methodological insights and lessons learned from coverage france platform trial. The French national platform trial for outpatient treatment against COVID-19
Edouard LHOMME, BPH SISTM team

• Safety and immunogenicity of CD40.HIVRI.Env, a dendritic cell-based HIV vaccine, in healthy HIV-uninfected adults: a first-in-human randomized, placebo-controlled, dose-escalation study (ANRS VRI06)
Laura RICHERT, BPH SISTM team

• HIV-1 drug resistance on dolutegravir-based antiretroviral therapy: prospective and retrospective studies
Pr Mathias EGGER, Institute of Social and Preventive Medicine (ISPM), Univerity of Bern

• Effects of the Covid-19 pandemic on ART initiation and access to HIV viral load monitoring in adults living with HIV in West Africa
Jihane Ben FARHAT, BPH GHiGS team

• How did the COVID-19 pandemic affect HIV, tuberculosis and malaria indicators in Togo? An interrupted time series analysis
Rodion KONU, BPH GHiGS team

35 years of research on HIV: review and prospects
Pr. Jean-Michel MOLINA, AP-HP Saint Louis-Lariboisière Hospital Group, Paris

BIOSTATISTICS SEMINARS 2024

These events are intended for researchers in statistics interested in recent developments and their methodological aspects as well as for practitioners using statistical methods in the health field.

FEBRUARY

- **Making sense of sensor data**
  Andrew Simpkin (University of Galway)

MARCH

- **Molecular Motors: Stochastic Modeling and Statistical Inference**
  John Fricks (Arizona State University)

- **Estimation of a two-part mixed effects model for longitudinal compositional data using the SAEM algorithm**
  Cristian Meza (Universitad de Valparaíso)

APRIL

- **Weighted analyses of nested case control studies : which variables have to be considered in the computation of weights?**
  Vivian Viallon (Université Claude Bernard de Lyon)

- **Non-linear effect of shared components in joint longitudinal-survival modeling**
  Denis Rustand (King Abdullah University of Science and Technology (KAUST))

MAY

- **Hands-on tutorial on Functional Data Analysis**
  John Fricks (Arizona State University)

- **Introduction to Functional Data Analysis**
  John Fricks (Arizona State University)

NOVEMBER

- **Tuberculous meningitis: understanding and improving diagnosis and prognosis using novel tools and approaches**
  Trinh Dong, Postdoctoral Researcher, BPH BIOSTAT Team

- **Intérêt de la modélisation mathématique pour les épidémies du VIH, Covid, Mpox et syphilis**
  Dr Mathieu Maheu-Giroux (McGill University)

DECEMBER

- **Meta-clustering of Gene Expression Data**
  Dr Yingying Wei (The Chinese University of Hong-Kong)

YOUNG RESEARCHERS' SEMINARS

Association of Young researchers BBPH Blooming members of Bordeaux Population Healthoffers a range of activities aimed at strengthening cohesion and encouraging scientific exchanges. Every week, the "Young Researchers' Wednesdays" (MJC) seminars allow young researchers to present their work and discuss topics of common interest in a supportive environment.

JANUARY

- **Can the combined approach of perceived health and functional health better identify older people at risk of adverse events?**
  Yvanna Simon (BPH ACTIVE Team)

- **Data splitting for post-clustering differential analysis: from theory to practice**
  Benjamin Hivert (BPH SISTM Team)

- **Exposure to air pollution and the risk of cataracts**
  Laure Gayraud (BPH LEHA team)

FEBRUARY

- **Potentially inappropriate prescriptions for elderly dialysis patients**
  Léa Faure (BIOSTAT / LEHA teams)

- **Genomics of Residual Pulmonary Vascular Obstruction**
  Floriane Samaria (ELEANOR team)

- **Building mechanistic models in high dimension: application in immunology for vaccine development**
  Auriane Gabaut (SISTM team)

MARCH

- **Embrace the bias? Is extrinsic variability informative in scRNA-seq clustering analysis**
  Yanis Asloudj (AHEAD team / LABRI)

- **Detecting circulating microbiota from Human blood sequencing data**
  Antonin Colajanni (SISTM team)

- **Study of gene-environment interactions in pathological cerebral ageing – from the end of the thesis to the post-doc project**
  Jeanne Neuffer (ELEANOR team)

- **Correction of time to diagnosis in cancer screening studies**
  Marius Robert (BIOSTAT team)

APRIL

- **Measuring perceived social support in people with dementia living in institutions? Presentation of the validation of a scale**
  Marie Sendra (ACTIVE team)

- **Signaling lipids and MRI-markers of neurodegeneration & vascular brain aging**
  Constance Bordes (ELEANOR team)

MAY

- **Complementary themes and mutual support during their theses**
  Marie Sendra, Amélie Bouche (ACTIVE team)

- **Association between sleep and suicidal thoughts among students in the i-Share cohort**
  Ornela Adjahou (HEALTHY team)

- **Temporal modelling of exposure to atmospheric pollutants and breast cancer risk: A lifetime analysis of critical exposure windows**
  Blandine Le Provost (BIOSTAT team)

JUNE

- **Lifestyle, cardiovascular health and dementia in the 3C cohort: is inflammation a mediating factor?**
  Audrey Pimenta (LEHA team)

- **Impact of the time of vaccination on the immune response to the Ebola vaccine, based on the PREVAC randomised clinical tria**
  Daniela Gouna (SISTM team)

- **Towards human and digital emergencies: building a flow and process modelling tool to explore and validate innovative initiatives**
  Dylan Russon (AHEAD team)

- **Implementation of different machine-learning approaches to predict a dependency indicator (IADL) of cognitive decline**
  Mathéo Le Floch (SISTM team)

- **Feedback on international mobility**
  Marie Tartaglia (EPICENE team)

OCTOBER

- **Optimizing Reservoir Computing with Genetic Algorithm for High-Dimensional SARS-CoV-2 Hospitalization Forecasting: Impacts of Genetic Algorithm Hyperparameters on Feature Selection and Reservoir Computing Hyperparameter Tuning**
  Thomas Ferté (SISTM team)

- **Identification of genetic factors predictive of late side effects after cure of acute childhood leukaemia**
  Mathilde Veneziano Broccia (ELEANOR team)

- **Distribution of mortality rates and causes of death in France: Investigating territorial disparities with regard to environmental and social inequalities in health**
  Tom Fischer (PHARES team)

NOVEMBER

- **Adapt variable selection methods using regularization (LASSO, Elastic Net, ...) to the illness death model for interval censored data**
  Ariane Bercu (BIOSTAT / PHARES teams)

- **Modelling and analysis of the determinants of immunogenicity and post-vaccination tolerance, based on clinical vaccine studies**
  Daniela Gouna (SISTM team)

- **Loneliness in the elderly: getting to know and understand it better to prevent and combat it more effectively**
  Virginie Faidherbe (ACTIVE team)

- **Social support and participation for older people with and without cognitive impairment**
  Marie Sendra (ACTIVE team)

DECEMBER

- **A look back at a 3-month international mobility trip to Toronto**
  Floriane Samaria (ELEANOR team)

SUMMER SCHOOLS AND OTHER EVENTS 2024

JANUARY

• 8th edition of the #MOOC PoP-Health 'Investigating health: how does it work?'
Co organized by Isped - Institut de Santé Publique d'Epidémiologie et de Développement and the Bordeaux Population Health Research Centre (UMR1219 Inserm).

This MOOC is aimed at students, teachers, researchers, healthcare professionals or simply the curious who want to understand how health surveys are constructed. It is run.

MARCH

• Kyoto University & University of Bordeaux Strategic Partnership Symposium 2024 'Health program' Isped | Bordeaux population health - March 5, 2024

Event as part of the strategic partnership signed between our universities in 2019, which aims to perpetuate close academic collaboration. This year, the event will focus on four themes: Health, Energy, Materials Science, Neuroscience.

APRIL

• Public health Bristol-Bordeaux SYMPOSIUM 2024 - 11-12 April
Isped, the Graduate Program Digital Public Health, the University of Bordeaux, the BPH and the Health Department organised a major symposium on public health with the **University of Bristol** with two days of presentations and networking sessions for knowledge sharing groups, sharing results, and discussing potential collaborations for research and teaching in the field of public health, interspersed with a dinner to foster a friendly and positive atmosphere for participants to connect.

MAY

• 10th European Stroke Organisation Conference – ESOC 2024, 15–17 May 2024, Basel, Switzerland
Professor Stéphanie Debette - Co-chair of the Program Committee

OTHER EVENTS 2024

• **Neuropsychology of aging in the digital age, from brain mechanisms to clinical and social innovation: A critical look. 29 to 31 May 2024, Montreal, Canada**

Société de Neuropsychologie de Langue Française (SNLF) & Centre de Recherche de l'Institut Universitaire de Gériatrie de Montréal (CRIUGM) Organised by : Ouri Montchi (Directeur du CRIUGM, Montréal) - Ana Ines Ansaldo (Directrice adjointe du CRIUGM, Montréal) - Marc Cuesta (Directeur adjoint du CRIUGM, Montréal) - Sven Joubert (Chercheur CRIUGM, Montréal) - Philippe Allain (Directeur Laboratoire LPPL Université d'Angers, Président de la SNLF) - Hélène Amieva (Inserm BPH ACTIVE Team, Bordeaux, Secrétaire Exécutive de la SNLF)

• **12th Bordeaux PharmacoEpi Festival**

• **Annual symposium and 3rd Datathon of the RRI Public Health Data science**

At the annual meeting on July 3, the RRI consortium discussed current and upcoming projects of the RRI and welcomed two keynote speakers : Harald Binder (Medical Center University of Freiburg) and Agathe Guilloux (HeKA INRIA/Inserm in Paris). For the 3rd edition of the Datathon which took place at campus Bastide November 14-15, 42 participants from different institutes of Univ. Bordeaux (BPH, Inria center, LaBRI, IMB) predicted cognitive functioning using high-dimensional metabolomics data in the BCube cohort.

• **Annual conference of French Statistical Society (Société Française de Statistique SFDS**

co-organized by Bordeaux Population Health and the Bordeaux Institute of Mathematics

JUNE

• **Bordeaux Summer School – Africa's populations by 2050 – June 28th, 2024 Challenges and potentials: interdisciplinary insights**

Research oriented course content with thos online summer school designed for graduate and doctoral students as well as post-doctoral fellows involved and interested in the unique challenges and opportunities facing populations in Africa in the coming decades.

• Ceremony of Doctor Honoris Causa for Sudha Seshadri (University of Texas Health Science Center at San Antonio) – University of Bordeaux – 24th June 2024.

The DHC for Prof. Sudha Seshadri was proposed by Stéphanie Debette and Carole Dufouil from Bordeaux Population Health Research Centre (University of Bordeaux - Inserm unit), Precision and Global Vascular Brain Health Institute (VBHI) and Bordeaux School of Public Health, University of Bordeaux. Sudha Seshadri - Founding Director of the Glenn Biggs Institute for Alzheimer's & neurodegenerative diseases and Director of the South Texas Alzheimer Disease Research Center and Bordeaux School of Public Health, University of Bordeaux. Sudha Seshadri - Founding Director of the Glenn Biggs Institute for Alzheimer's & neurodegenerative diseases and Director of the South Texas Alzheimer Disease Research Center.

JULY

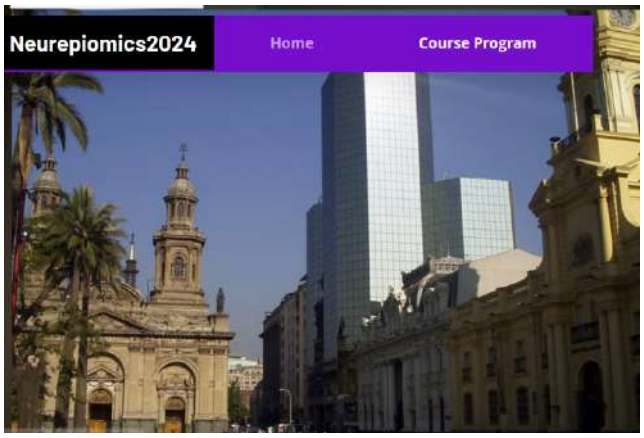
• Official launch of the VBHI (Vascular Brain Health Institute) university hospital institute - Centre Broca Nouvelle-Aquitaine – University of Bordeaux - 11 July

Launch in the presence of the scientific teams involved, founding member institutions and partners. This will be an opportunity to present the VBHI, its environment and the direction of its scientific programme. The VBHI (Vascular Brain Health Institute) university hospital institute founded by the university of Bordeaux, Bordeaux University Hospital, Inserm, Inria and the Nouvelle-Aquitaine Region and supported by a foundation housed within the Bordeaux University Foundation, is one of the winners of the France2030 investment plan's national IHU3 programme.

OCTOBER

• Neuroepiomics 2024, 21-23 October 2024, Santiago, Chile

Professor Stéphanie Debette - Co-organizer



• Conference Nutrition and ocular pathology, what role for the dietician? CHU Haut-Lévêque, Pessac 10 october 2024

On the occasion of World Sight Day, we are organizing, in partnership with the AFDN (French Association of Dietitians and Nutritionists), a conference on the importance of nutrition in eye diseases.

OTHER EVENTS 2024

• Third edition of the Young Researchers Day 2024 October 3 in Talence

With a mobility prize awarded to the best presentation in each category (long presentation, 180-second thesis, poster) by an internal jury.

• Annual day PPR Autonomie

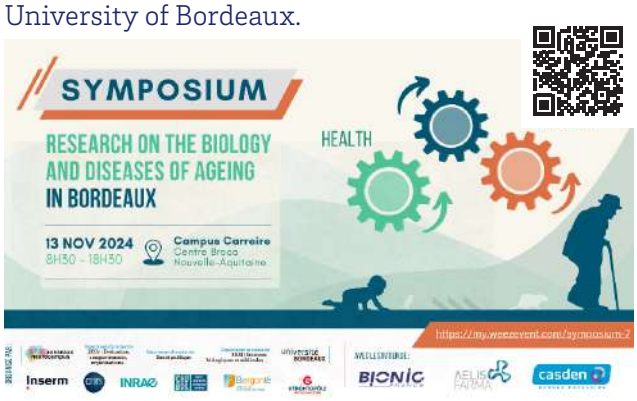
NOVEMBER

• Seminar on the 5 year scientific ambitions of the BPH research teams

Scientific retreat with several representatives of 10 teams of the BPH center

• Research on the Biology and Diseases of Ageing in Bordeaux

Co organised by a group of Bordeaux researchers involved in the study of ageing, including the BPH active team. The aim is to explore the many facets of the biology and diseases of ageing, highlighting recent advances and ongoing research at the University of Bordeaux.



• Seminar BBPH: Society and researchers: Co-constructing the science of tomorrow

A time to discuss the challenges, solutions and opportunities for building a more inclusive science of the future.

SOCIETAL IMPACTS

SOCIETAL IMPACTS

The BPH is strongly committed to contributing to the **United Nations' Sustainable Development Goals** and to improving population health both locally and globally, embracing a comprehensive precision and global health approach targeting major health challenges, with a special focus on brain, vascular and infectious diseases, as well as cancer.
The research conducted at the BPH addresses sustainable development goals, mostly **SDG3** (good health) and **SDG4** (quality education), but also **SDG10** (reduced inequalities), and **SDG11** (sustainable cities & communities). The BPH is also involved in strong partnerships established between UBx research centres, graduate and doctoral degrees in various fields (public health and epidemiology, economics, political science, geography and anthropology) and several African universities and research institutions to increase knowledge and improve methodological and interdisciplinary skills in terms of **research and action in Africa**. In this context, the **Bordeaux online Summer School** The summer school Africa's populations by 2050 : Challenges and potentials organised in 2024 by the BPH GHiGS team allowed participants to provide a critical and complementary analysis of the evolution of populations in Africa over the last 20 years, and to discuss the challenges and opportunities for the next 30 years in the context of the Sustainable Development Goals agenda.

The BPH centre has seized its responsibility in major **transition challenges** through its research-related activities: **quality and integrity, equity, diversity and inclusion and environmental and societal transitions**. Since 2019, some BPH members and researchers have been committed to **climate action (SDG13)** by founding a committee the "Action Climat Environnement" (ACE) collective, which aimed to carry out an inventory of the actions implemented in various research and teaching units on the UBx university hospital campus, and to develop joint strategies for transition challenges. Some of them have joined the UBx active network of student and staff ambassadors for the environmental and societal transition ('Référents Transitions') to contribute to the reflection on the university's strategy and implement concrete awareness and integration actions. Within the Bordeaux public health community a **Public Health Transitions Committee** has been created in 2023 working in focus groups on various themes to reflect on new strategies for reducing our carbon footprint (**waste management, purchasing policies, neutral mobility and the impact of digital technology**). In addition, **social and societal concerns** have become more prominent, with new themes such as equality, diversity and inclusion. In this context, main actions in 2024 focused on raising awareness communication and posters to progress towards sustainable mobility. The action plan also included waste reduction with valorizing shared compost sites (plant exchanges, seed sharing, and the distribution of compost) and carbon footprint evaluations for higher education and research activities, particularly in clinical research.

In 2024 the BPH centre has drawn up and implemented an **Equity, Diversity and Inclusion (EDI) Charter** based on values such as equality, transparency and mutual respect, addressing crucial issues such as preventing discrimination, harassment and bias, while encouraging inclusive communication and work-life balance.

In the field of quality and integrity (Q&I) a management process was initiated in 2018 to increase awareness and promote scientific integrity in research. In 2024, the Quality and Integrity committee held meetings and after a theorical training on Open Science organized in 2023, a practice exercise with Card Game and information aiming at learning how to Publish in Open Access has been proposed.

The training on bibliography has been reconducted and a draft of protocol of research for the Centre has been edited and diffused. The Guide of Publication of an article has been updated and will be diffused in the beginning of 2025.

In March 2024, the committee conducted a survey of BPH members to identify their wishes in term of training, files or other actions. The survey received 39 responses from 7 research teams and services with cross-functional or administrative activities. They have specified that short duration webinar was the best manner for theorical training and when a practical activity was proposed, the training on site could be a good solution to increase interactivity.

The BPH is regularly informed of activities, webinars, files or other information on integrity.

QI committee members: AMIEVA Hélène, BEUSCART Aurélie, BONNAFOUS BESSE Lucie, BOUCHE Amélie, COUGNARD-GREGOIRE Audrey, DELCOURT Cécile, FAGARD-SULTAN Catherine, FAVREAU Véronique, FLAMERIE Frédérique, LACHAIZE Morgane.

Finally, although it is a less prominent tradition in public health than in other disciplines, BPH researchers are increasingly involved in innovation and technological transfer activities. In the past five years, BPH researchers have produced over **15 patent invention disclosures**. They have obtained **15 Cifre fellowships** (joint academic-industry fellowships) and have concluded **25 industrial and R&D contracts**, both with SMEs and large multinational pharmaceutical companies, particularly in the context of vaccine trials.
Since 2016, **four start-ups** have emerged from BPH teams including Synapse, UT4H, Tricky and RetiNet in 2022, which offers a personalised medical service for the prevention of AMD via a digital platform. This new BPH spin-off has been selected by Microsoft to join the Microsoft for Startups Founders Hub, which aims to accelerate the development and growth of startups.

BPH researchers are involved in a range of outreach activities to bring the world of science closer to a large public. These initiatives include presentations and interviews that enable the public to discover research projects and develop education on health-related issues. Scientists also take part in events to inspire young people and raise interest in science (Bordeaux Research Night). They also use networks to share the results of their research and engage in dialogue with the public, ensuring that scientific knowledge is accessible and understandable to all. These efforts not only promote scientific literacy, but also strengthen trust and cooperation between researchers and the wider community.

Publication director:
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First graphic design:
Service Imprimerie – université de Bordeaux / Campus Carreire

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Date of issue:
April, 2025

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