See below for English version.

Doctorant(e) à temps plein

École de Santé Publique

Date limite de candidature : 22/06/2026
Date de début prévue : 01/10/2026

Description du poste

Dans le cadre du 'Brussels Environmental Exposome Project' (projet BEE), les centres de recherche 'Épidémiologie, Biostatistique et Recherche Clinique' et 'Santé Environnementale' recrutent un(e) doctorant(e) à temps plein. L'objectif global du projet transdisciplinaire et interuniversitaire BEE est d'appliquer une approche exposomique pour appréhender les maladies non transmissibles dans la Région de Bruxelles-Capitale. Dans ce projet, le/la doctorant(e) se concentrera sur l'étude des effets causaux de l'exposome urbain sur les maladies cardiovasculaires et neurovasculaires. Il/elle appliquera des méthodes quantitatives développées dans le domaine de l'inférence causale (p. ex. graphes acycliques dirigés, émulation d'essais cibles et g-computation). Le/la doctorant(e) participera aux interactions régulières avec le consortium du projet et assurera une communication efficace avec les parties prenantes locales. Il/elle collaborera étroitement avec les chercheurs de l'Unité d'Évaluation de l'Impact sur la Santé de Sciensano et préparera une thèse de doctorat. Un financement est prévu pour une durée de trois ans, la recherche de financement est en cours pour une quatrième année.

Qualifications

- Master en santé publique, épidémiologie, biostatistique, santé environnementale ou domaine connexe (moyenne générale minimale de 14/20)
- Compétences avancées en recherche quantitative et expérience avec des logiciels statistiques tels que R, Stata® ou SAS®
- Connaissance et expérience des méthodes d'inférence causale (atout)
- Fort intérêt pour la santé environnementale et motivation à mener des recherches de haute qualité dans ce domaine
- Excellentes compétences en anglais écrit et oral
- Pour la communication avec les parties prenantes locales : maîtrise du français ou du néerlandais ; bilinguisme apprécié
- Aptitudes solides en collaboration et communication
- Sens élevé de l'intégrité, de la transparence et de la responsabilité

Responsabilités

- Contribuer au développement d'une base de données incluant des informations environnementales, sanitaires et socio-économiques
- Développer et préenregistrer des protocoles de recherche
- Appliquer des analyses statistiques avancées aux données
- Rédiger et publier des articles scientifiques dans des revues internationales à comité de lecture
- Communiquer et collaborer avec les partenaires du consortium et les parties prenantes locales

Intéressé(e)?

Envoyez votre dossier de candidature par e-mail à jelle.van.cauwenberg@ulb.be avant le 22/06/2026 avec l'objet suivant : « BEE project causal effects – NOM DU CANDIDAT ». Le dossier doit inclure :

- Une lettre de motivation (1 page)
- Un curriculum vitae
- Une proposition de recherche pour un projet de doctorat de 4 ans. Votre proposition doit :
    - Être basée sur la description du projet BEE global, sur les sous-objectifs de ce poste de doctorat spécifique et sur les bases de données disponibles (voir ci-dessous). Veuillez noter que, bien que la description ci-dessous inclue le résumé du projet BEE dans son ensemble à titre de contexte général, votre proposition doit se concentrer spécifiquement sur les sous-objectifs pertinents pour ce poste de doctorat (c'est-à-dire les effets causaux de l'exposome urbain sur la santé cardio- et neurovasculaire).
    - Être rédigée en anglais.
    - Compter au maximum 4 pages, hors références.

Les candidats présélectionnés seront invités à un entretien le 29 juin 2026 (matin). Lors de cet entretien, les candidats présenteront leur proposition de recherche en anglais pendant un maximum de 10 minutes, suivi d'une discussion.

Le ou la candidat·e sélectionné·e sera engagé·e en tant que doctorant·e boursier·e. Si vous devez introduire une demande de visa pour séjourner en Belgique, veuillez vérifier les implications de ce type d'engagement. Des informations complémentaires peuvent être obtenues auprès du Prof. Jelle Van Cauwenberg (jelle.van.cauwenberg@ulb.be).

Description of the overall BEE project

The BEE project addresses the high burden of non-communicable diseases (NCD) in the Brussels Capital Region (BCR), with in a first phase a dedicated focus on cardiovascular disease (CVD) and neurovascular disease (NVD) and in a second phase expansion to other NCD such as cancer, immune, metabolic and mental health disorders. The situation in the BCR mirrors national statistics with NCD representing almost 60% of the morbi-mortality and health costs associated with pollution. CVD in particular, accounts for approximately 21% of deaths in the BCR and is a leading cause of mortality[1]. This underscores the need for improved risk prediction, insights into causal effects and effective prevention strategies. Furthermore, the BCR faces major environmental challenges, including high air and noise pollution levels. The high density of roads, the number of cars, the built environment, and the vicinity of Brussels Airport significantly contribute to these exposures. Noise pollution, particularly from airport operations, contributes to stress and sleep disturbances, known CVD risk factors. Exposure to air pollution, particularly PM2.5 and NO2, is also linked

to increased CVD risk. The BCR, with an annual average PM2.5 level of around 15 µg/m³, often exceeds WHO air quality standards, highlighting the need to address environmental determinants of health.

Notwithstanding these environmental challenges, green areas around and within the BCR provide critical health benefits, including stress reduction, opportunities for physical activity, and improved air quality. However, these green spaces are not evenly distributed, with some urban areas needing more green infrastructure. Previous studies on exosomes risk and CVD often overlooked the beneficial effects of green spaces on health, leading to an incomplete understanding of environmental risk factors.

In addition to the high prevalence of NCD in relation to major significant environmental challenges, the BCR is characterized by staggering socioeconomic disparities that, in turn, translate into health disparities. Residents with a low socioeconomic status often experience higher environmental risk exposure and have less access to healthcare resources. As such, incidences of CVD, NVD, and other NCDs struggle with inequalities, which should be addressed if we were ever to develop a comprehensive approach to public health.

With BEE, we recognize the significant impact of environmental exposures such as air and noise pollution, green spaces on health, and the role of socioeconomic disparities. We aim to leverage a holistic exposomic approach to integrating comprehensive environmental, medical, and socioeconomic data to research the possibility of applying (1) an innovative AI-driven model for predicting acute CVD and NVD risks and (2) applying causal inference methods to examine the causal effects of the urban exposome on chronic CVD and NVD risks, eventually extending to other non-communicable diseases (NCDs).

As part of the BEE-project, a data infrastructure will be developed enabling the linkage of hospitalization, socio-economic, environmental and mortality databases as well as data from the Health Interview Survey from Sciensano.

Sub-objectives of this specific PhD position

For this specific PhD position, the following sub-objectives were formulated:

1. To develop a causal loop diagram to map the complex systems linking environmental risk factors and individual health outcomes/mortality in the BCR.

2. To examine the causal effects of the urban exposome on cardio- and neurovascular morbidity and mortality.

3. To evaluate the effects of hypothetical policy interventions.

Available datasets

Dataset	Availability
Belgian Health Interview Survey (BHIS Sciensano)	Available (2008, 2013, 2018); 2024 wave available but environmental linkage pending
Environmental exposures at residential geocode	Available; additional environmental exposures to be assembled
Cause-of-death mortality register	Expected within the coming months
Healthcare reimbursement data (InterMutualistic Agency)	To be requested during PhD project

À propos de l'École de Santé Publique

L'École de Santé Publique de l'ULB est une institution de recherche et d'enseignement multidisciplinaire de premier plan, dédiée à l'amélioration de la santé des populations. Nos cinq centres de recherche rassemblent plus d'une centaine de chercheurs engagés dans l'avancement des connaissances en :

- Économie de la santé, gestion des institutions de soins et sciences infirmières
- Épidémiologie, biostatistique et recherche clinique
- Politiques et systèmes de santé – santé internationale
- Santé environnementale et santé au travail
- Approches sociales de la santé

Depuis plus de 60 ans, nos enseignants forment des professionnels et chercheurs de haut niveau à travers divers programmes de master, formation continue et doctorat. Nos formations favorisent les approches globales et intersectorielles, essentielles pour améliorer la santé et le bien-être des populations.

À propos de l'Unité d'Évaluation de l'Impact sur la Santé de Sciensano

Sciensano unit santé, science et société. Sciensano, ce sont plus de 900 collaborateurs qui s'engagent chaque jour au service de la santé humaine et animale. Comme notre nom l'indique, la science et la santé sont au cœur de notre mission. Sciensano puise sa force et sa spécificité dans une approche holistique et multidisciplinaire de la santé. Plus spécifiquement, nos activités sont guidées par l'interconnexion indissociable de la santé de l'homme, de l'animal et de leur environnement (le concept « One health » ou « Une seule santé »). Dans cette optique, en combinant plusieurs angles de recherche, Sciensano contribue d'une manière unique à la santé de tous. Issu de la fusion entre l'ancien Centre d'Étude et de Recherches Vétérinaires et Agrochimiques (CERVA) et l'ex-Institut scientifique de Santé publique (ISP), Sciensano s'appuie sur plus de 100 ans d'expertise scientifique.

Au sein de l'unité HIA, Nous étudions l'impact des expositions environnementales sur la santé humaine. Nous nous concentrons sur divers facteurs chimiques, physiques, biologiques non infectieux tels que la pollution de l'air, les radiations non-ionisantes, l'urbanisation ou la chaleur urbaine. L'équipe de recherche se compose d'experts en biologie, bioingénierie, épidémiologie ou en sciences géographiques, lui permettant de suivre les approches « One health ». Les méthodes d'étude s'appuient sur 1) le couplage de bases de données de santé et environnementales existantes et 2) le recueil de nouvelles données sur le terrain par le biais de questionnaires, d'entretiens et/ou la collecte d'échantillons biologiques humains. Nos conclusions sont communiquées aux décideurs et fournissent des preuves scientifiques pour la mise en place d'actions pertinentes dans les domaines de la santé publique et de la gestion de l'environnement.

Politique d'égalité des chances

La politique de gestion du personnel de l'ULB est axée sur la diversité et l'égalité des chances. Nous recrutons les candidat·es en fonction de leurs compétences, indépendamment de leur âge, leur genre, leur orientation sexuelle, leur origine, leur nationalité, leurs convictions, leur handicap, etc. Vous souhaitez bénéficier d'aménagements raisonnables dans le cadre de la procédure de sélection en raison d'un handicap, d'un trouble ou d'une maladie ? N'hésitez pas à prendre contact avec Marie Botty (marie.botty@ulb.be) notre personne de contact en charge des aspects de diversité pour le personnel enseignant et scientifique. Soyez assuré·e de la confidentialité de cette information.

Plus de détails sur les politiques de genre et de diversité sont disponibles sur https://www.ulb.be/fr/lulb-s-engage/diversites.

Vous trouverez l'ensemble des dispositions relatives aux carrières à l'ULB sur notre site à l'adresse :

https://www.ulb.be/fr/travailler-et-collaborer/vacances-d-emplois-academiques-et-scientifiques

Full-time doctoral student

School of Public Health

Deadline for submitting applications: 22/06/2026
Expected start date: 01/10/2026

Job description

In the context of the 'Brussels Environmental Exposome Project' (BEE-project), the research centers on 'Epidemiology, Biostatistics and Clinical Research' and 'Environmental Health' are recruiting a full-time doctoral student. The overall objective of the transdisciplinary and interuniversity BEE-project is to apply an exposomic approach to examine non-communicable diseases in the Brussels Capital Region. Within this project, the appointed doctoral student will focus on studying the causal effects of the urban exposome on cardiovascular and neurovascular disease. The doctoral student will apply quantitative research methods developed within the domain of 'causal inference' (e.g., directed acyclic graphs, target trial emulation and g-computation). As part of the role, the doctoral student will participate in regular interactions with the project consortium and maintain effective communication with local stakeholders. The doctoral student will collaborate closely with researchers from the Unit for Health Impact Assessment of Sciensano and will prepare a PhD thesis. Within the BEE-project, funding is currently foreseen to appoint a doctoral student for a period of three years. Search for funding for a 4th year is ongoing.

Qualifications

- Master's degree in public health, epidemiology, biostatistics, environmental health or a related field (with a minimum overall average of 14/20)
- Advanced quantitative research skills and experience with statistical software packages such as R, Stata®, or SAS®
- Knowledge of and experience with causal inference methods is an asset
- Strong interest in Environmental Health and motivation to conduct high-quality research in this domain
- Excellent written and spoken English skills
- For communication with local stakeholders: fluency in French or Dutch; bilingualism is an asset
- Strong collaborative and communication skills
- Strong sense of integrity, transparency and responsibility

Responsibilities

- Contribute to the development of a comprehensive dataset including environmental, health and socio-economic information
- Develop and preregister research protocols
- Apply advanced statistical analysis to the data
- Prepare and publish scientific articles in international peer-reviewed scientific journals
- Communicate and collaborate with the consortium partners and local stakeholders

Interested?

Application files should be sent by email to jelle.van.cauwenberg@ulb.be by 22/06/2026 using the following email title: 'BEE project causal effects – NAME OF APPLICANT'. Application files should include:

- A motivation letter (1 page)
- A curriculum vitae
- A research proposal for a 4-year PhD project. Your proposal should:
  - Be based on the description of the overall BEE project, the sub-objectives of this specific PhD position and the available datasets (see below). Please note that while the description below includes the abstract of the full BEE project for general context, your proposal should focus specifically on the sub-objectives relevant to this PhD position (i.e. the causal effects of the urban exposome on cardio- and neurovascular health).
  - Be written in English.
  - Be a maximum of 4 pages, plus references.

Shortlisted candidates will be invited to an interview on 29 June 2026 (morning). During the interview, candidates will present their research proposal in English during a maximum of 10 minutes, followed by a discussion.

The selected candidate will be appointed as a bursary PhD student. If you are required to apply for a visa to reside in Belgium, please verify the implications of this type of appointment. Additional information can be obtained from Prof. Jelle Van Cauwenberg (jelle.van.cauwenberg@ulb.be).

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About the School of Public Health

The ULB - School of Public Health is a leading multidisciplinary research and teaching institution dedicated to improving the health of populations. Our five Research Centers unite over a hundred researchers dedicated to advancing knowledge in:

- Health Economics, Healthcare Management, and Nursing Sciences
- Epidemiology, Biostatistics, and Clinical Research
- Health Policy and Systems – Global Health
- Environmental and Occupational Health
- Social Dimensions of Health

The School of Public Health is deeply committed to these areas, striving to provide the scientific knowledge needed to better understand complex health challenges and to identify the most effective strategies for action and care.

For over 60 years, the faculty members of the School of Public Health have been training high-level professionals and researchers through different graduate, continuing education and doctoral programs. Our programs enhance professional practices and foster interest and engagement in public health policies and initiatives. Our students come from diverse academic and professional backgrounds, and our training emphasizes the importance of global and cross-sectoral approaches—the only way forward to improve population health and well-being.

About Sciensano's Unit for Health Impact Assessment

Sciensano connects health, science and society and can count on more than 900 staff members who are committed to human and animal health every day. As the name suggests, science and health are central to our mission. Sciensano's strength and uniqueness lie within the holistic and multidisciplinary approach to health. More particularly we focus on the close and indissoluble interconnection between human and animal health and their environment (the "One health" concept). By combining different research perspectives within this framework, Sciensano contributes in its unique way to everybody's health. For this, Sciensano builds on the more than 100 years of scientific expertise of the former Veterinary and Agrochemical Research Centre (CODA-CERVA) and the ex-Scientific Institute of Public Health (WIV-ISP).

Within the HIA unit, we investigate the effect and impact of environmental exposure on human health. We explicitly focus on chemical, physical and biological non-infectious aspects such as exposure to air pollution, chemicals, non-ionizing radiation or urban heat in the living environment. Our research group includes experts in biological, bio-engineering, epidemiological and geographical sciences, which enables us to follow the "One Health" approach. Our study methods rely on 1) the coupling of existing health and environmental databases and 2) the collection of new data by means of questionnaires, interviews and/or collection of human samples. The outcomes of our research permit to inform decision makers and lay the foundation for evidence-based actions towards public health and the management of the environment.

Equal opportunities policy

ULB's personnel management policy is geared towards diversity and equal opportunities. We recruit candidates on the basis of their skills, irrespective of age, gender, sexual orientation, origin, nationality, beliefs, disability, etc. Would you like to be provided with reasonable accommodation in the selection procedure because of a disability, disorder, or illness? Please contact Marie Botty, the person in charge of diversity aspects for the academic and scientific staff (marie.botty@ulb.be). Be assured of the confidentiality of this information.
More details on the ULB gender and diversity policy are available at
https://www.ulb.be/en/aboutulb/gender-equality-at-ulb.
You will find all the regulations relating to research careers on our site at
http://www.ulb.ac.be/emploi/academique.html.