PhD funding opportunities in Epidemiology and Geo-informatics:

Advancing the epidemiological context of emerging infectious disease threats detected by the Global Public Health Intelligence Network (GPHIN)

(Expected start date: January 2019, may be earlier)

*The Public Health Risk Sciences Division, National Microbiology Laboratory of the Public Health Agency of Canada is offering funding for **two** **three-year PhD positions** for PhD candidates enrolled (or expecting to enrol) at universities in Québec or Ontario*

Funding background and project scope: The Public Health Agency of Canada (PHAC) has been awarded funding from the Canadian Safety and Security Program (CSSP) to begin immediately. The project is focused on developing a suite of advanced analytical tools and incorporating them into GPHIN to enhance its current functionality as a health intelligence surveillance system for Canada and the international community. GPHIN was set up as a global network to detect, identify, assess, prevent and mitigate emerging human health threats. It is the world's first web-based all-hazard, 24/7 event-based surveillance system using natural language processing and machine learning techniques to scan the internet for open source data. GPHIN successfully provided advanced warning and prospective monitoring of SARS in 2003, H1N1 in 2009, MERS-CoV in 2012-13 and Ebola in 2014-15. The project will focus on enhancing current features and incorporating additional analytical tools into GPHIN.

We require two motivated doctoral researchers with interest and experience in epidemiology, biostatistics and geoanalytics to join a multi-disciplinary team. Our team offers a rich and stimulating work environment. PHAC is the lead organisation with partnership from the Natural Resources Canada, McGill University, Université du Québec à Montréal, and the Canadian Cooperative Wildlife Health Centre.

PhD student 1 (to be based in either Toronto or Guelph, Ontario)

This student will focus on: (i) exploring mathematical models capable of estimating and forecasting the intensity of a range of infectious diseases at the start of an outbreak or event; (ii) developing and validating identified models using retrospective GPHIN data; (iii) exploring models capable of estimating the international spread (importation) of diseases; and (iv) developing and validating importation models using retrospective GPHIN data.

*Requirements***:**
- MSc in a relevant field including Epidemiology, Mathematics, Biostatistics or other Health Science fields (minimum GPA of 3.5)
- Strong background in quantitative epidemiology; preference will be given to candidates with experience in infectious disease modelling

PhD student 2 (to be based in Quebec)

This student will focus on developing models to identify populations vulnerable to infectious disease threats. Project outcomes include developing tools that can be used by GPHIN to communicate the potential of detected threats to spread, globally and domestically. Statistical models will be developed to assess for associations between emerging threat event/case data and high-resolution data for the environment (climate, landcover, weather or meteorological conditions), human and vector/reservoir populations. Model outcomes will provide an ecologically-informed filter to validate GPHIN-detected events. Data visualisation tools will developed to dynamically communicate model outputs through the GPHIN epidemiological dashboard.

*Requirements***:**
- MSc in a relevant field include Geo-informatics, Geomatics, Statistics, Ecology, Epidemiology (minimum GPA of 3.5)
- Strong background in biostatistics and GIS; preference will be given to candidates with experience in geomatic applications, Bayesian disease mapping and/or ecological niche modelling

Terms for both positions:

- Experience and interest in the field of public health and surveillance systems
- Proficiency in coding and model development (e.g. R, python)
- Ability to take initiative, work independently and as part of a multi-disciplinary team
- Strong analytical skills, good oral and written communication skills
- Project management skills
- Both PhD researchers will work with GPHIN and McGill researchers to incorporate models and outputs as a tool to be incorporated into the GPHIN development environment

Directors: Drs. Erin Rees and Victoria Ng, PHAC

Eligibility: These positions are enacted through the Federal Student Work Experience Program (FSWEP). The candidate must be enrolled in FSWEP to be eligible.

Funding & Salary: This position is funded for three years with a salary beginning at $25,000. Additional funds are available for training, software licenses and conference/meeting attendance.

To apply:

Please send a cover letter (one page), CV, latest university transcript, and a list of two references (name and contact details) to: erin.rees@canada.ca and victoria.ng@canada.ca.

Closing date: Position open until filled.

For further details about this opportunity, please contact

Drs. Erin Rees (erin.rees@canada.ca) and Victoria Ng (victoria.ng@canada.ca)