Workshop

EPONGE

Epidemiology meets POpulatioN GEnetics

Date: 2 -6th September, 2019
Venue: Universidad Nacional de San Agustín de Arequipa
Campus Biomédicas, Faculty of Medicine
Av. Virgen del Pilar 1713
Arequipa, Peru

Workshop organizing team:

- Global Health Institute-**University of Antwerp** (Belgium)
- **Universidad Nacional de San Agustín de Arequipa** (Peru)
- Malaria Laboratory/Instituto de Medina Tropical Alexander von Humboldt-**Universidad Peruana Cayetano Heredia** (Peru)
- **Universidad Nacional de Amazonia Peruana** (Peru)

Expenses

Attendance to the EPONGE has no cost for selected participants. Travel costs or accommodation are not covered.

EPONGE is organized within the VLIR Joint project "Improved infectious diseases control in Peru through sustainable capacity building for bioinformatics and genome sequencing".

Sponsors

VLIR-UOS (JOINT project PE2019JOI018A102, Belgium) and Fogarty (2D43TW007120-11A1, NIH-USA)

Website: www.uantwerp.be/eponge
twitter.com/EPONGE_2019

Epidemiology meets population genetics

Within the framework of infectious diseases, the interface between epidemiology and population genetics allows scientists to uncover relevant parameters that influence the dynamics of a disease. Currently this interface is exploited to:

- Identify routes of transmission of infectious agents and their vectors.
- Model the risk, origin and spread of drug resistance.
- Assess the efficacy of drug treatments, diagnostics or vaccines.
- Assess the impact of prevention, control and elimination programs.

EPONGE workshop

The EPONGE□ workshop will provide a series of theoretical and practical lectures directed to shed light into the interface between epidemiology and population genetics and its relevance for the better understanding of the dynamics and evolution of infectious diseases.

Basic and advanced concepts on epidemiology and population genetics will be delivered and complemented by hands-on practices on genetic multivariate analyses. Population genetics

Open-source computer packages will be used to provide the basis on population genetics analysis (GenAlEx, LIAN, Structure, PHYLOViZ and Bottleneck) by exploring genetic diversity, differentiation and population structure. Moreover, an introduction to phylogenetics and Linux for bioinformatics will be provided by Dr. Conor Meehan (University of Bradford, UK).
Noteworthy, the formulation and Bayesian inference of migration models (gene flow patterns) will be taught by Prof. Peter Beerli (FSU, USA), developer of the program MIGRATE-N, through lectures and hands-on tutorials.

Within the EPONGE workshop experts from different international research institutions have been invited to present through teleconferences how they approach population genetics within the scope of the epidemiology of infectious diseases.

All the lectures and talks will be taught in English.

□*EPONGE is translated from French to sponge. We anticipate that you will become a sponge during the workshop and 'absorb' as much as possible!*

EPONGE lecturers

- [Jean-Pierre Van Geertruyden](#), MD PhD (University of Antwerp, Belgium)
- [Dionicia Gamboa Vilela](#), PhD (Universidad Peruana Cayetano Heredia, Peru)
- [Christopher Delgado-Ratto](#), PhD (University of Antwerp, Belgium)
- [Peter Beerli](#), PhD (Florida State University, USA.)
- [Conor Meehan](#), PhD (University of Bradford, UK)
- [Anna Rosanas-Urgell, PhD](#) (Institute of Tropical Medicine, Antwerp, Belgium)
- [Tim Downing](#), PhD (Dublin City University, Ireland)
- [Arun Decano, PhDc](#) (Dublin City University, Ireland)
- [Jan Conn, PhD](#) (State University of New York)
- [Kirstyn Brunker](#), PhD (University of Glasgow, Scotland)
- [Alexander Berry](#), PhD (University of Pennsylvania, USA)

How to apply

The EPONGE workshop is aimed to graduate students, postdoctoral researchers and faculty members at Universities and academic institutions from Peru.

All lectures/talks will be given in English therefore good knowledge of English is compulsory.

Register online at www.uantwerp.be/eponge filling the online application form and submitting a CV resume and support letter of your supervisor.

Deadline to submit applications: 26 July 2019

Contact: eponge@uantwerp.be

Tentative schedule (2-6 September 2019)

Venue: Campus Biomédicas, Faculty of Medicine - UNSA, Arequipa-Peru

Time	Topic	Lecturer	Location
Monday 02/09	(coffee break at 10.30 and 15:00)		
8:00-08:15	Registration		Paraninfo
8:15-9:00	Welcome and intro to the EPONGE workshop	UNSA authorities, Christopher Delgado-Ratto, Renzo Salazar	Paraninfo
9:00-12.00	Introduction to Epidemiology/study design	JP Van geertruyden	Paraninfo
13:00-15:00	Molecular epidemiology of infectious diseases: examples, molecular markers and current genotyping techniques	Dionicia Gamboa	Paraninfo
15:15-17:00	Epidemiology meets population genetics	Christopher Delgado-Ratto	Paraninfo
Tuesday 03/09	(coffee break at 10.30 and 16:00)		
8:30-12:00	Intro to population genetics analysis	Christopher Delgado-Ratto	Computer room
13:00-16:00	Intro to Phylogenetics	Conor Meehan	Paraninfo
16:00-18:00	Bioinformatics in Linux	Conor Meehan	Computer room
Wednesday 04/09	(coffee break at 10.00 and 16:00)		
8:00-9:00	Human population genetics for malaria research	Anna Rosanas-Urgell	Paraninfo
9:00-10:00	TB	Conor Meehan	Paraninfo
10:15-13:00	Coalescence theory	Peter Beerli	Paraninfo
14:00-18:00	Tutorial and discussion of improving estimates	Peter Beerli	Computer room
Thursday 05/09	(coffee break at 11.00 and 16:00)		
9:00-13:00	Bayes factors (assessing gene flow models)	Peter Beerli	Paraninfo
14:00-18:00	Tutorial in Bayes factors and model selection	Peter Beerli	Computer room
Friday 06/09	(coffee break at 10:50 and 16.30)		
Population genetics/genomics for infectious diseases research (teleconferences & oral presentations)		45-min presentations + 10-min questions	
9:00-9:50	Population genetics, evolutionary pangenomics and genomic epidemiology for Leishmania parasites	Tim Downing	
10:00-10:50	*Escherichia coli* ST131	Arun Decano	
11:15-12:10	Chagas	Alexander Berry	Paraninfo
12:10-13:00	Lunch		
13:00-13:50	Malaria parasite	Anna Rosanas-Urgell	
14:00-14:50	Malaria vector	Jan Conn	
15:00-15:50	Rabies	Kirstyn Brunker	
16:00-17:00	Closure - Certificates	Christopher Delgado, Renzo Salazar, UNSA authority	

Organizing committee

- Christopher Delgado Ratto (UAntwerp)
- Renzo Salazar Sanchez (UNSA)
- Jorge Andres Ballón Echegaray (UNSA)
- Dionicia Gamboa Vilela (UPCH)
- Oscar Nolasco Cárdenas (UPCH)
- Carlos Fernández Miñope (UPCH)
- Berónica Infante García (UPCH)