

***“Global Flipped Classroom and Workshop 2017
on Global Health at the Human-Animal-Ecosystem Interface”***

Institute of Global Health, University of Geneva and Swiss TPH, University of Basel

10-14 July 2017

Final Report

I Advertisement

The event was advertised via different communication channels (e.g. panels, websites, presentations in courses etc.) and communities in our institutions, International Geneva (e.g. WHO) and internationally (e.g. global MOOC community, conferences etc.)

UNIGE website

<https://www.unige.ch/actualites/archives/2017/flipped-classroom-isg-stph/>

Faculty of medicine website

<http://www.unige.ch/medecine/fr/faculteetcite/media/quand-les-moocs-suscitent-les-rencontres-et-linnovation-autour-de-la-sante-globale/>

Institute of Global Health website

<http://www.unige.ch/medecine/isg/fr/nouvelles/gfp/>

II Organisation

The Workshop programme, list of participants, list of experts, and promotional materials are in annexe. Key steps of the event organisation are listed below. The event is detailed in the manuscript we have produced (see dissemination).

- 12 national and international learners were selected via our two MOOCs: (I) Global Health at the Human-Animal-Ecosystem Interface produced by University of Geneva and offered through Coursera; (II) One Health: Connecting Humans-Animals and the Environment produced by University of Basel and offered through Future Learn
- Learners were selected based on their performance in the MOOCs and based on their innovative One Health ideas and solutions to tackle real world problems at the human-animal-ecosystem interface
- Learners came from different regions of the world (e.g. Kenya, Bhutan, Nepal, USA, France, Spain and Switzerland) and had different background and expertise, which opened very interesting opportunities for collaborations among them during the event
- The event involved an active learning experience that gave the opportunity to learners to interact directly in meetings, lectures etc. with high level experts working in academic institutions (University

of Geneva, University of Basel, University of Montreal etc.), international organisations (e.g. WHO, FIND) and NGOs (e.g. MSF, Global Snakebite Initiative etc.) based in Geneva, Basel and beyond. This approach including interdisciplinary collaborations between learners and experts has accelerated the development and potential implementation of projects.

- During the 2 day Hackathon, participants worked collaboratively on 4 projects they selected among the 12 projects they had proposed:

- Monkey Business: A Global Mapping of Online Primate Trade and its Implications on Conservation and Public Health
- Say Yes to Use Less! One health communication campaign to decrease the use of antibiotics in Kenya
- Preventing snakebite in field workers in Nepal: Re-designing protective boots
- Using Urban Wildlife Photography to Indicate One Health Risks

III Dissemination

1) Scientific publication

We have produced a manuscript for a scientific publication evaluating the whole experience (In annexe):

First “Global Flipped Classroom in One Health”: From MOOCs to research on real world challenges” Ruiz de Castañeda, Rafael, Garrison, Amanda, Haerberli, Philippe, Crump, Lisa, Zinsstag, Jakob, Ravel, André, Flahault, Antoine, Bolon, Isabelle.

This manuscript includes methods and results from the Hackathon. In addition, we also included results from a short survey exploring the level of satisfaction by students, which helps identify limitations and future improvements. The manuscript of this publication is in annexe and we are exploring possible appropriate scientific journals for submission.

2) Video

Besides the scientific publication, which will ensure an international dissemination of the event, we already shared the workshop experience and success through a variety of media and settings.

We produced a short video on you tube:

[Global Flipped Classroom & Hackathon on One Health: From MOOCs to Real World Challenges! - YouTube](#)

The workshop experience and video are published on line on the UNIGE website (Cellule MOOC Project page): <http://moocs.unige.ch/projets1/global-flipped-classroom-hackaton/>

The video has been shared with the community of our MOOC “Global Health at the Human-Animal-Ecosystem Interface” on the Coursera Platform and is permanently displayed on the platform for future learners.

3) Meetings and Conferences

We have widely shared, and keep sharing, the workshop experience at the local, national and international level in different contexts, some examples below:

- July 2017 – Meeting with the Directive Team of Chinese MOOC Platform Xuetang-X (they very much liked the workshop and want to explore opportunities to replicate this type of activities with students from Tsinghua University) (Beijing, China).

- July 2017 – Meeting with Prof. Keiji Fukuda and his team - University of Hong Kong, School of Public Health (Hong Kong)
- 29-30 August 2017: Oral presentation “Snakes & Snakebite in the Digital Era: Neglected Opportunities for Innovation?” at the [Venoms 2017](#) Symposium, 29-30 August 2017, Oxford, UK
- 23-25 October 2017 - Oral presentation “Biodiversity & Global Health in the Digital Age: From MOOCs to Citizen Science & Crowdsourcing” at the [Regional capacity-building workshop on biodiversity and human health for the Europe Region](#), – Helsinki, Finland.
- 23 November 2017 - Seminar “MOOC, MOOR and innovative education in Global Health” for the students of the Master of Advanced Studies in Public Health (UNIGE)
- 29 November 2017 - Oral presentation “Global Health at the Human, Animal and Ecosystem Interface: From MOOCs to snakebite », Internal Seminar of the Department of Community Health and Medicine (HUG)

ANNEXES

- Programme
- List of participants
- List of experts
- Manuscript: First “Global Flipped Classroom in One Health”: From MOOCs to research on real world challenges” Ruiz de Castañeda, Rafael, Garrison, Amanda, Haeberli, Philippe, Crump, Lisa, Zinsstag, Jakob, Ravel, André, Flahault, Antoine, Bolon, Isabelle.
- Promotional material



**Global Flipped Classroom and Workshop 2017
on Global Health at the Human-Animal-Ecosystem Interface**
Institute of Global Health, University of Geneva and Swiss TPH, University of Basel
10-14 July 2017

Monday, July 10th 2017 - Geneva, [Campus Biotech](#)

09:00 - 09:30 Welcome Coffee

09:30 – 12:30

- Welcome by One Health Unit Team/Institute of Global Health (Dr. Rafael Ruiz de Castaneda, Dr. Isabelle Bolon) and Human and Animal Health Unit, Swiss TPH (Prof. Jakob Zinsstag, Dr. Lisa Crump)
- Introductory presentation
- Organisation of the week and expectations
- Project pitching “Global / Public Health issues at the human-animal-ecosystem interface”

12:30 – 13:30 Lunch

14:00 – 16:00

- Meeting WHO One Health Team and roundtable (at WHO)

16:00 – 18:00 Visit International Geneva

19:00 Evening Event

Tuesday, July 11th 2017 - Basel, [Swiss TPH](#)

07:42 – 13:00

- Travel to Basel
- Welcome coffee and tour of the Institute
- One Health principles discussion

13:00 – 13:45 Lunch in the garden of the Institute

13.45 – 19:45

- Continued discussion on One Health principles and application to the Workshop topics
- Walking tour to Munsterplatz and return (60 minutes)

- Apéro/supper in garden of Institute
- Travel back to Geneva

Wednesday, July 12th 2017 - Geneva, [Campus Biotech](#)

24 h

- 9:00 Selection of projects and teams, organization of the 2 day-team work
- Work in groups on “One Health solutions to Global / Public Health issues at the human-animal-ecosystem interface” – Interaction with expert mentors
- Contribution by online participants from the MOOC

Thursday, July 13th 2017 - Geneva, [Campus Biotech](#)

24 h

- Work in groups on One Health solutions (continued) - Interaction with expert mentors
- Contribution by online participants from the MOOC

Friday, July 14th 2017 - Geneva, [Campus Biotech](#)

09:00-13:00

- Welcome Jury members
- Group presentations “One Health solutions to Global / Public Health issues at the human-animal-ecosystem interface”
- Project evaluation, selection and feedback
- Concluding speech and closure of the Workshop
- Aperitive

Organizers: Dr. Rafael Ruiz de Castañeda, Dr. Isabelle Bolon, One Health Unit, Institute of Global Health, Faculty of Medicine, University of Geneva
 Prof. Jakob Zinsstag, Dr. Esther Schelling, Dr. Lisa Crump, Human and Animal Health Unit, Department of Epidemiology and Public Health, Swiss Tropical and Public Health Institute, Basel





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DE GENÈVE**

FACULTÉ DE MÉDECINE
Institut de santé globale

Swiss TPH



Swiss Tropical and Public Health Institute
Schweizerisches Tropen- und Public Health-Institut

**Global Flipped Classroom and Workshop 2017
on Global Health at the Human-Animal-Ecosystem Interface**

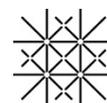
Institute of Global Health, University of Geneva and Swiss TPH, University of Basel
10-14 July 2017

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Global Flipped Classroom and Workshop 2017
on Global Health at the Human-Animal-Ecosystem Interface
Institute of Global Health, University of Geneva and Swiss TPH, University of Basel
10-14 July 2017

Wednesday 12th & Thursday 13th July

Experts Available On Site

Name	EMail	Affiliation	Area of Expertise
Prof. André Ravel	Andre.ravel@umontreal.ca	University of Montreal, Faculty of Veterinary Medicine	One Health – EcoHealth: Rabies, AMR, Foodborne diseases, ..
Dr. Barbara Bertisch	Barbara.Bertisch-Moellenhoff@unige.ch	UNIGE, Global Health Institute	Infectious diseases, Epidemiology
Dr. Christophe Gaudet-Blavignac	Christophe.Gaudet-Blavignac@hcuge.ch	University Hospitals of Geneva Division of Medical Information Sciences	Computer sciences and medical informatics: Web parsing, Data inter-operability, ..
Dr. Cyril Pervilhac	Cyril.Pervilhac@unige.ch	UNIGE, Global Health Institute	Social sciences, International Organizations, public health ...
Dr. Jan Hattendorf	Jan.hattendorf@unibas.ch	University of Basel, Swiss TPH	Epidemiology, Biostatistics, Environmental health and zoonotic diseases

Dr. José Fernandez	JoseLuis.Fernandez@unige.ch	UNIGE, Citizen Cyberlab	Computer sciences, Citizen science
Dr. Lachlan McIver	Lachlan.MCIVER@geneva.msf.org	Doctors Without Borders (MSF)	NTDs, ..
Maryam Sadeghimehr	Maryam.Sadeghimehr@unige.ch	UNIGE, Global Health Institute	Mathematical modelling of infectious disease
Dr. Matteo Brezzi	Matteo.brezzi@unige.ch	UNIGE, Global Health Institute	Statistics
Dr. Mohanty Sharada Prasanna	Sharada.mohanty@epfl.ch	EPFL	Computer sciences, Machine learning, ..
Dr. Nakul Chitnis	Nakul.chitnis@unibas.ch	University of Basel, Swiss TPH	Applied Mathematics, Dynamical Modelling, ..
Dr. Nicolas Ray	Nicolas.ray@unige.ch	UNIGE, Institute for Environmental Sciences / EnviroSPACE	GIS, geoprocessing, workflows, environmental modelling, ..
Dr. Pablo Medina	Pablo.Medina@unige.ch	UNIGE, Global Health Institute	Communication and Health
Pierre-Alexandre Fonta	Pierre.alexandre.fonta@gmail.com		Computer sciences: Text Mining, Data Science, Big Data Analytics
Dr. Sophie Siviere	Socotte@gmail.com		Computer sciences : Web site, Coding, ..
Dr. Sylvain Bieler	Sylvain.Bieler@finddx.org	FIND	NTDs, VBDs, ..
Dr. Whitney Bagge	Wbagge@stanford.edu	Stanford University	Disease ecology, spatial epidemiology

Experts Available Distantly

Name	Affiliation	Contact / Availability	Area of Expertise / Interest
Adhiambo Onyango	MOOC Participant	Skype: chiquedee Email: lauraonyango@yahoo.ca Availability TBC	AMR
Dr. Alena Kamenshchikova	Maastricht University, Faculty of Health Medicine and Life Sciences	Skype: allena_a Email :a.kamenshchikova@maastrichtuniversity.nl Online all the time	AMR, bioethics and medical sociology
Prof. David William	University of Melbourne, Australian Venom Research Unit	Skype: Toxicologist Email : david.williams@unimelb.edu.au Thurs 10:00-13:00 (Geneva)	Herpetology, Snakebite
Dr. Diana Barr	University of Melbourne, Australian Venom Research Unit	Skype: Toxicologist Email : diana.barr@unimelb.edu.au Thurs 10:00-13:00 (Geneva)	Herpetology, Snakebite
Guilaine Tchadieu Tchapy	MOOC Participant	Skype: tchadieu Guilaine Email: gtchadieu@gmail.com phone: (237) 696 75 75 22/ 662 620 630 Availability TBC	Food security and Nutrition
Dr. Johanna Gonçalves	Institute of Area and Global Studies, EPFL Institute of Global Health, UNIGE	Email: johanna.goncalvesmartin@epfl.ch Availability TBC	Anthropology

Kanika Koirala	MOOC Participant	Skype: kanikakoirala Email: kanikadeshpande@gmail.com Available: Wed & Thurs 14:00-17:00 (Geneva)	AMR
Dr. Krpasha Govindasamy	MOOC Participant	Skype: Krpasha.govindasamy Email: krpasha@gmail.com Available: Wed 9:00-22:00; Thurs 9-14:30 & 17:30-22:00 (Geneva)	Veterinary Science & Epidemiology
Shari Cho	MOOC Participant	Email: sharilivinb2017@hotmail.com	Disease Surveillance & Epidemiology

First “Global Flipped Classroom in One Health”: From MOOCs to research on real world challenges

Ruiz de Castañeda, Rafael¹, Garrison, Amanda¹, Haeberli, Philippe², Crump, Lisa³, Zinsstag, Jakob³, Ravel, André⁴, Flahault, Antoine¹, Bolon, Isabelle¹

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Abstract:

In 2016 and 2017 the first three MOOCs addressing One Health were released, two of them by University of Geneva and University of Basel (Switzerland). With the support of *Swiss School of Public Health* and using these two MOOCs, the first “Global Flipped Classroom in One Health” was organised in Geneva and Basel gathering Swiss and international MOOC learners to work on specific public/global health challenges at the human-animal-ecosystem interface in interdisciplinary teams supported by experts. This new learning and research model based on MOOCs opens opportunities for more tangible impacts on global education and research on real world challenges.

Massive Open Online Courses (MOOCs) and new educational technologies have changed teaching and learning by offering free high quality learning materials and the opportunity to join a global community of learners and experts (Liyaganawardena and Williams 2014). Although MOOCs in the public/global health domains are growing rapidly (Gooding et al. 2013), it was only in 2016 and 2017 when three MOOCs addressing One Health were released: 1) *One Health, One Medicine: A Global Health Approach* by St George’s University on its *SGU Online* platform; 2) *One health: Connecting humans, animals and the environment* by Swiss TPH and University of Basel (UniBasel) on *FutureLearn*; 3) *Global Health at the Human-Animal-Ecosystem Interface* by University of Geneva (UNIGE), Institute Pasteur, University of Montreal (UdeM) and Centre Virchow-Villermé on *Coursera*. These MOOCs provide a valuable platform for raising public awareness on the interlinkages between human, animal, and ecosystem health, and support scientists, health professionals and decision-makers with continued and specialized education.

MOOCs’ pedagogic value and cost-effectiveness is still under debate (Clow 2013). They provide online self-study models with some interaction mainly via discussion forums, generally relying on a more limited number of highly motivated learners (Milligan and Littlejohn 2016). New approaches based on blended-learning such as “flipped classrooms” promote more active learning through combining the online experience with face-to-face interactions with experts on campus. MOOC video-lectures introduce learners to specific topics preparing them for more advanced and practical activities with experts, which has already shown significant impact for learning in the health domain and others (Mehta et al. 2013).

UNIGE and UdeM cooperatively organized with UniBasel the first “Global Flipped Classroom on One Health” which gathered learners from their MOOCs (described above) in Switzerland, giving them an opportunity to learn from and work with interdisciplinary experts and peers on public/ global health challenges at the human-animal-ecosystem interface. We describe here this event and its impact to promote this new educative and research global model based on MOOCs and active learning.

Twelve learners were selected, from the MOOCs *Global health at the Human-Animal- Ecosystem Interface* (UNIGE and partners) and *One health: Connecting humans, animals and the environment* (UniBasel, described above), and awarded with a SSPH+ (Swiss School of Public Health) travel grant to Geneva and Basel (Switzerland) from the 10-14th July 2017. To be selected by UNIGE, students had

to complete the MOOC with a top performance and video-pitch, in 3 minutes, a relevant public/global health challenge and their innovative One Health solution. Guidelines for video-pitching were provided and videos were evaluated by two UNIGE experts and by one pedagogue, based on the relevance and clarity of presentation. For UniBasel, learners planned a dog rabies elimination campaign for their own country. They also reviewed other learner campaigns to evaluate technical, financial and community engagement aspects. The course educators selected top candidates considering the feasibility, applicability and description of community engagement for learner's campaigns, as well as quality of their peer reviews. Winners then submitted video-pitches with similar guidelines as for UNIGE learners. The final group of selected learners ranged from young students to senior researchers from a diversity of fields and interests (e.g. veterinary epidemiology, conservation, herpetology, human medicine and healthcare, public health), and origins (Bhutan, Canada, France, Kenya, Nepal, Romania, Spain, Switzerland, and United States).

The five-day programme (10-14th July 2017) in Geneva and Basel included:

1. Project pitching by the 12 learners and discussion on the interest of each project with peers and experts at the Institute of Global Health (UNIGE)
2. Visit to WHO and presentation of projects to Dr. S. de la Rocque (One Health Unit, Emergency Preparedness and Response Team)
3. Lecture by Dr. S. de la Rocque and discussion on the role of One Health in *WHO-International Health Regulations*
4. Vote by learners and selection of 4 out of 12 projects and team building. The projects selected addressed:
 - “A global map of online primate trade and its implications on conservation and public health”
 - “Re-inventing protective boots to prevent snakebite in field workers in Nepal”
 - “Using urban wildlife photographs from MOOC participants to indicate One health risks”
 - “One Health communication campaign for safe and responsible consumption of antimicrobials in Kenya”
5. Visit to Swiss TPH (UniBasel) including a lecture on One Health Economics by Prof. J. Zinsstag and discussion on selected projects
6. Collaborative research and development of projects by learners during a 2-day hands-on workshop involving onsite and online interactions with experts from academia (e.g. UNIGE, Swiss TPH, UdeM, EPFL, University of Melbourne) and international organisations and NGOs (e.g. WHO, FIND, Global Snakebite Initiative).
7. Final presentation of project results and feedback from an interdisciplinary panel of experts from academia and WHO

After the event, all 12 learners completed a short anonymous (7 questions) online satisfaction survey giving feedback on their experience. The overall level of satisfaction was positive (average rating = 4.58/5) with the majority of learners highlighting the benefits from working collaboratively in interdisciplinary teams of learners and experts. Contributions by experts were “helpful” and “very helpful” for 7 and 5 out of 12 learners, respectively. The role of invited computer scientists seemed key. MOOCs gave learners knowledge basis (5 out of 12) and/or inspired them for innovative and interdisciplinary approaches to their projects (2 out of 12). Eight out of 12 learners plan to keep working on their projects after this event. Organisation was “very good” according to 9 out of 12 learners but one learner would have preferred experts, rather than peers, to select the four projects, while three were concerned about limited pitching times.

To our knowledge, this is the first MOOC-based, blended-learning and research-oriented educative event on One Health bringing together an interdisciplinary group of learners and experts from a range of institutions and geographical origins. Although “flipping the classroom” is pedagogically not new and has been increasingly used with MOOCs (Lucas & Kinsman, 2016), we go one step further here by proposing an open and global approach through gathering in Switzerland 12 national and international MOOC learners to work collaboratively. This encourages us to re-think the application of MOOCs in general and particularly in One Health for a more direct and practical impact in research and problem-

solving using interdisciplinary collaborations and available expertise within potentially massive and global communities online.

According to the results from the survey and to our experience as organisers, learners benefited from this event in several ways. First, it allowed for reinforcement and extension of their One Health knowledge previously gained online through the MOOCs, as well as enhanced their capacity to perform innovative, collaborative, and interdisciplinary research as part of international and multi-cultural teams. The small number of learners made possible personalised interactions with experts in One Health and other areas. Computer scientists brought in innovative methods and approaches that learners applied to their projects (e.g. big data and social media analysis). The research outcomes were of considerable interest and opened promising opportunities for further research with subsequent potential for publication and/or product development. Most of the students plan to continue working on their projects and, as part of a scientific collaboration, we, as organising experts, will continue to guide and support learners. For instance, the project on protective boots against snakebite has been integrated in a course from UNIGE's Master in Global Health and students will further develop it during fall semester 2017.

More generally, we believe that learners developed useful skills through both their project selection and defence of their work in front of a panel of experts. They were exposed to notable time constraints (e.g. 3 minute pitch), which seemed to frustrate some, but also, we believe, pushed them to collaborate effectively. Given the international diversity of learners and experts and the compressed work over an intense, short, time period, the connections and possibility for professional networking was a tangible advantage. Some learners, particularly those whose original projects were selected, took a leading role and applied team management skills.

This event has reinforced inter-institutional links between Swiss research groups working on One Health and Global Health, as well as with international institutions such as UdeM, University of Tsinghua, and University of Melbourne. At the local level, it illustrates the positive interactions between the Institute of Global Health and organisations from *International Geneva*, particularly with WHO and their One Health Unit. This event shows an interesting model for MOOC application and implementation highlighting the need for universities to re-think their MOOC funding, currently focused only on production and not on implementation. With this, the impact of MOOCs becomes more tangible, potentially attracting more new learners. We plan to replicate this event in 2018, and over time, include alternative formats with a regional focus in terms of learners following the MOOCs and problems addressed.

Acknowledgments:

We thank experts from the Institute of Global Health and UNIGE, Medical Information Sciences - University Hospitals of Geneva, Digital Epidemiology Lab - EPFL, Swiss TPH - UniBasel, FIND, University of Melbourne, University of Maastricht, University of Pretoria and University of Stanford for their valuable mentoring and guidance of learners. We also thank the jury members Prof. J.D. Vassalli (UNIGE), Dr. E. Mumford (WHO), Dr. B. Stoll (UNIGE), and Dr. S. Dürr (University of Bern) for their constructive feedback on the projects. Prof. F. Grey, R. Mondardini and Dr. J.L. Fernandez from the Citizen Cyberlab and the *Geneva Tsinghua Initiative* kindly hosted the event in the *SDG Solution Space* (Campus Biotech) and gave guidance to learners on Citizen Science. Dr. C. Bozelle and colleagues from UNIGE's Cellule MOOC helped with the selection of MOOC learners through *Coursera*. We thank Swiss School of Public Health (SSPH+) for their financial support of the event

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Global Flipped Classroom & Workshop on One Health: From MOOCs to Real World Challenges!

What?

This event brings together 12 national and international learners selected from the MOOCs on “*Global Health at the Human-Animal-Ecosystem Interface*” (Coursera) and “*One Health: Connecting Humans, Animals and the Environment*” (Future Learn) to work collaboratively in small teams using One Health and innovation to tackle real world challenges:

emerging zoonosis and illegal bushmeat trading, elimination of rabies, snakebite crisis etc.

A diversity of experts from the UNIGE, Swiss TPH, EPFL, University of Montreal, WHO, MSF, FIND etc. have been invited to join the teams and support learners in the development of their ideas.

When and where?

10 -14th July 2017

Institute of Global Health (Geneva) and Swiss TPH (Basel)

This event is organised in close collaboration between the Institute of Global Health of the University of Geneva and the Swiss Tropical and Public Health Institute of the University of Basel, and with the support of the SSPH+.

GLOBAL HEALTH

at the Human- Animal- Ecosystem Interface



**New MOOC on Coursera for free,
join now!**

With an interdisciplinary and international approach and with more than 30 experts from 20 institutions including the University of Geneva, Institut Pasteur, University of Montreal, World Health Organization etc., this MOOC addresses some major current challenges and opportunities in Global Health at the Human-Animal-Ecosystem Interface: Zoonotic emerging infections, antimicrobial resistance, rabies, snakebite, biodiversity conservation and human health, etc.

It stresses on the importance of cross-sectoral approaches such as One Health, Eco-Health and Planetary Health in the SDGs era and sets an interesting ground for innovative thinking and discussions between learners and experts from very different fields. It is open and free to follow, and available in English, French and Chinese.

Join on Coursera:

<https://www.coursera.org/learn/global-health-human-animal-ecosystem>

