



UNIVERSITY OF  
**SURREY**

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**GENERATING A SYSTEMS  
THINKING PROCESS  
FRAMEWORK FOR  
EQUITABLE AND  
SUSTAINABLE ONE HEALTH**

WORKSHOP PROGRAMME

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4 April 2025

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## INTRODUCTION

The One Health approach aspires to sustainably balance and optimize the health of people, animals, plants, and ecosystems. It has been used successfully to strengthen communication and collaboration between the animal health and human health sectors in addressing zoonotic diseases and other health challenges at the human-animal interface. Now, we are increasingly recognizing the complex interlinkages between global and local health, climate, ecological, social, and economic crises. To ensure One Health can be effectively applied to health challenges in these complex socio-ecologic systems, there is an urgent need to evolve and expand its scope and methodologies.

With the support of the University of Surrey Institute for Sustainability's programme 'Sustainable development in neglected communities', our one-day workshop will bring together experts with diverse perspectives, expertise, and experience across a broad scope of methodologies and topics to build

systems thinking and other qualitative and participatory methods into applied One Health contexts. This will be an opportunity to open new collaborative avenues for One Health research and programmatic implementation in real world contexts in the UK and internationally.

### **Workshop Organiser:**

**Elizabeth Mumford and Gianni Lo Iacono**  
(School of Veterinary Medicine)

### **University of Surrey Admin Support and FHMS staff:**

**Francesca Marie Contadini, Hannah Davies, Abel Bulamu Ekiri, Catherine Finnegan and Hannah Kenway** (School of Veterinary Medicine).

**Damie Emmanuel-Yusuf, Nathalie Hinds, Amy Pye and Pina Stamp** (Institute for Sustainability).

**Louise Jones, Institute of Advanced Studies. Danny Maupin, School of Health Sciences. Monique Raats, School of Psychology. Laura Theurich, Faculty Research & Innovation Office.**

**Yuni Kim, Research, Innovation & Impact.**

# PROGRAMME

## FRIDAY 4 APRIL

### Treetops, Wates House

(BST)

08.45 – 09.00	Arrival and Registration with Coffee	11.00 – 12.00	'Flash Talks:' Examples of Diverse Methods and Approaches that Might be Useful in this Context
09.00 – 09.30	Opening and Welcome Monique Raats  Introductions  Overview of Meeting Format and Intended Outputs Elizabeth Mumford	12.00 – 12.30	Introducing the Scenarios and Afternoon Work Elizabeth Mumford
09.30 – 10.30	Getting on the Same Page: What do we Mean by One Health? James Wood  What do we Mean by Systems Thinking? Alexandra Penn  Putting it Together: Why is Systems Thinking Needed in One Health Elizabeth Mumford  Q&A & Clarifications	12.30 – 13.30	Lunch Break
10.30 – 11.00	Coffee Break	13.30 – 16.30	Scenarios Group Work  Feedback & Discussion in Plenary Steered by Alexandra Penn, Catherine Grant and Elizabeth Mumford
		16.30 – 17.30	Aspirations and Next Steps  Final Points  Closing
		From 17.45	Social Event: Drinks and Nibbles at The Britannia, Guildford

# PARTICIPANTS

**Sayed Abbas**



***Institute of Development Studies, United Kingdom***

Abbas's primary research interest is the study of politics and governance of multisector One Health partnerships. Abbas is interested in studying how technical experts and program managers at different levels of administration employ scientific evidence for decision-making in dynamic social and political environments. He uses a range of methods in his work, including policy analysis, programme evaluation, participatory methods, ethnographic approaches and economic evaluations. Abbas has studied policy responses to multiple zoonotic diseases, including, zoonotic influenzas, mpox, rabies, anthrax, brucellosis leptospirosis and Japanese Encephalitis across multiple countries in South and South East Asia and in West Africa.

**Tim Bates**



***University of Surrey, United Kingdom***

GP, Senior Partner, Fort House Surgery, Walton On Thames, Surrey. Senior Clinical Lecturer, School of Medicine, Clinical skills. Research experience, nil, though currently supporting Martha Betson and colleagues on soil transmitted helminth research in SE Asia. Interests in Global Health and Sustainability. Diploma Tropical Medicine and Hygiene, passed membership exams for Royal Colleges of Physicians and General Practice (Distinction).

**Martha Betson**



***University of Surrey, United Kingdom***

Martha is a parasitologist with over 20 years of experience as a research scientist. Her research integrates laboratory work, fieldwork and epidemiology to understand the transmission dynamics of parasitic diseases of humans and animals. She has a particular interest in neglected tropical diseases and parasitic diseases at the wildlife-domestic animal-human interface and apply a One Health approach to her research. Martha has experience of leading, and participating in, multidisciplinary research projects involving international partners and is keen to learn from colleagues in different disciplines. Methods: Parasitology, molecular biology and diagnostics, epidemiology, bioinformatics (some!)

**Nai Rui Chng**



***University of Glasgow, United Kingdom***

Nai Rui is a political scientist researching and teaching in the field of evaluation science and practice. His research and practice are informed by Systems Thinking and Complexity. He works at the interface of human, animal and environmental health (One Health) and seeks to understand how complex interventions can be designed, implemented, and evaluated to achieve impact for the health and wellbeing of our planet. Expertise: Evaluation Science and Practice; Complex Interventions Research; Qualitative Methods Tools, methods. & frameworks: Theory of Change; Rich Pictures; Process Mapping, Developmental Evaluation, Process Evaluation.



## Sarah Cleaveland



### University of Glasgow, United Kingdom

Sarah trained as a zoologist and subsequently as a veterinarian, and is currently Professor of Comparative Epidemiology at the University of Glasgow. Together with Tanzanian collaborators and partner institutions, she has established an interdisciplinary One Health research program, working in diverse agro-ecological systems of northern Tanzania to address several diseases affecting human, domestic animal and wildlife health and which have wide-ranging implications for food security, livelihoods and land use. She is involved in several graduate training programs and capacity-strengthening initiatives with partner institutions across East and West Africa. She is currently a member of the Lancet Commission for Preventing Pandemic Threats at Source and the International Commission for Certification of the Eradication of Dracunculiasis. She is a Fellow of the Royal Society, Academy of Medical Sciences and US National Academy of Medicine.

## Alasdair Cook



### Mujika Ltd, United Kingdom

As a vet and epidemiologist, Alex's One Health interests arose through 10 years' experience in less developed countries, seeing at first hand the interactions between livestock, people and the environment. Alex continued to apply One Health thinking in leading multidisciplinary research and surveillance projects in Government and academia roles. He has experience in quantitative epidemiology, participatory and qualitative approaches and is eager to engage further with systems thinking approaches. At Surrey Vet School, Alex established vHive, promoting innovative approaches including use of AI/ML and social media listening. Now, he provides consultancy services via his company Mujika and associate network.

## Nitish Debnath



### One Health Bangladesh, Bangladesh

Nitish Debnath is a retired professor and founding Vice Chancellor of Chittagong Veterinary and Animal Sciences University. He holds PhD in Virology from the University of Surrey, MSc in Tropical Veterinary Medicine from the University of Edinburgh, DVM from the Bangladesh Agricultural University and had his postdoctoral training on nonspecific immunity in Japan. In his early career, he worked in the government veterinary services and Bangladesh Livestock Research Institute. In his mid-career, he moved to academia as Principal of the newly established Chittagong Government Veterinary College which was later transformed into Chittagong Veterinary and Animal Sciences University, and he was appointed as a founding Vice Chancellor. He has been involved with many national and international research projects on animal health and veterinary education and served in many research and academic committees nationally and internationally. He also worked for FAO and Global Health Development as senior technical advisor. Fund Country Grant to Bangladesh and

now works in USAID's One Health Activity DAI Global. LLC as Chief of Party. Author of more than 100 publications he served as President of the Bangladesh Veterinary Council and Agriculturists (Krishibid) Institution Bangladesh, member of the board of Governors of International Association of Ecology and Health, Associate Fellow of Chatham House Global Health and core member of the board of Governors of the Council on International Veterinary Medical Education (CIVME). He served as the alternate member of the Board of Governors of Pandemic Fund, World Bank at its inception. He organized the first International One Health Conference in Chittagong in March 2008 and launched a membership based professional organization called One Health Bangladesh (OHB). Since inception he has been chairing the National Coordination Committee of OHB and organized eleven One Health conferences. He has been selected as one of the members of One Health High Level Expert panel (OHHLEP) of FAO, WOAH, WHO and UNEP quadripartite One Health platform. He has been serving as one of the members of the Nature4Health Technical Advisory Group of UNEP and member of the PREZODE Steering Committee.

## Ayako Ebata



**Institute of Development Studies, United Kingdom**

Ayako Ebata is a Research Fellow and agricultural economist, who has worked on social, economic and political determinants of One Health over the last 9 years. Her work focuses on understanding the power relationships – social, economic and political – influence people's livelihoods linked to livestock production, trade and consumption, and how concerns of livelihoods and socio-economic wellbeing influence behaviours linked to One Health (e.g. biosecurity, slaughtering practices, production, trade and retail scales, food safety, antimicrobial resistance). She uses both quantitative (basic statistics and econometric methods) as well as qualitative (analysis of discourses, narratives, policies, perceptions, etc.) methods.

## Catherine Grant



**Institute of Development Studies, United Kingdom**

Catherine has been a Researcher at the Institute of Development Studies for the last 14 years. She specialises in the role of transdisciplinarity, social science, and community involvement in epidemic and pandemic preparedness and response in sub-Saharan Africa. She has worked on several large consortium projects in this area and her current research is focused on Sierra Leone. Current projects include: Transdisciplinary approaches to pandemic preparedness in Sierra Leone (TAPP-SL), Zoonotic influenza preparedness: a transdisciplinary One Health approach (ZIP) and AI-Assisted Interviewing for Pandemic Preparedness and Response in Sierra Leone. Methodological innovation is a defining characteristic of her research, particularly in applying transdisciplinary approaches to epidemic and pandemic preparedness and response. She has worked on adapting methods for pandemics including interdisciplinary modelling techniques, participatory modelling and methods, social media

analysis, rapid response research for crises and is currently leading a project working on the benefits of AI-assisted interviewing for pandemics and crises.

## Barbara Haesler



**Royal Veterinary College, United Kingdom**

Barbara is a veterinary researcher and lecturer with expertise and experience in livestock food systems, One Health, economics, disease surveillance and control, and development. She is a Professor in Agrihealth at the Royal Veterinary College with research focusing on sustainable and healthy food systems and One Health using mixed methods and systems approaches as appropriate for the context and needs. She also works part time for the FAO as a One Health Science and Evidence lead supporting One Health evidence generation and the mainstreaming of One Health. Methods: Value chain analyses, economic evaluations, qualitative and quantitative risk assessments, soft systems methods, systems mapping, CLDs, participatory approaches, network analysis

## Thomas-Julian Irabor



**University of Liège, Belgium**

Thomas-Julian Irabor is a veterinarian and assistant professor at the University of Liège, currently pursuing a PhD in public health. His research explores how learning environments can be designed to help people engage with complexity and apply systems thinking. He uses participatory methods such as serious games and facilitation tools to support reflection and decision-making in public and One Health. His work bridges research and practice by applying these methods in real-world complex situations.

Melissa Leach



**Cambridge Conservation Initiative,  
United Kingdom**

Melissa Leach is Executive Director of the Cambridge Conservation initiative (CCI) and Professor of Social Anthropology, University of Cambridge. From 2014 – 2024 she was Director of the Institute of Development Studies (IDS), and earlier co-founded and co-directed the ESRC STEPS Centre; she remains an IDS Emeritus Fellow. She is an environmental/medical anthropologist and interdisciplinary social scientist who has led policy-engaged programmes and consortia across the fields of sustainability transformations; forests and agriculture; global health, pandemics and vaccines, and one health and zoonoses, including the Dynamic Drivers of Disease in Africa Consortium. Her research generally prioritises ethnographic, participatory and narrative interview methods, often triangulated with quantitative methods and modelling, and multi-scale systems analysis.

Lirong Liu



**University of Surrey, United Kingdom**

Lirong Liu is a Senior Lecturer within the Centre for Environment and Sustainability. Her current research focuses on the development and application of systematic models for supporting sustainability. She has recognized expertise in innovatively integrating methodologies at different scales to address scientific issues with consideration of conflicting environmental, economic and social objectives. The methods used in her research include optimisation model, environmentally-extended input-output analysis, and computable general equilibrium model.

Gianni Lo Iacono



**University of Surrey, United Kingdom**

Gianni Lo Iacono is a Senior Lecturer in Biostatistics and Epidemiology at the University of Surrey. His research focuses on formulating and applying mechanistic and statistical models to investigate the environmental and climatic drivers of infectious diseases, with a strong One Health perspective. His research covers diseases like Lassa fever, Rift Valley fever, foodborne pathogens like *Campylobacter* and *Salmonella*, as well as antimicrobial resistance and microbial community dynamics. His interdisciplinary expertise spans mathematics, physics, ecology, and epidemiology enabling innovative disease modelling. His work has contributed to policy reports, including the UKHSA Health Effects of Climate Change, and informed assessments by WHO, CDC, and the IPCC.

Dominic Mahon



**University of Surrey, United Kingdom**

Dominic is originally from London but has moved around a lot. In the UK he has worked at Brunel University and Coventry University before coming to Surrey. He spent three years at the Royal Melbourne Institute of Technology in Vietnam, two years at Bilkent University in Turkey and seven years for firstly University College London and subsequently Nazarbayev University in Kazakhstan. His PhD is from the University of Nottingham where he investigated how students develop graduate attributes and how universities measure that development. He is interested in how educational strategies and assessments can be reimagined to be more practical, developmental and inclusive and how universities can work with communities to co-create solutions to problems.



## Steven Morse



### University of Surrey, United Kingdom

Stephen Morse has a background in applied ecology and the environment, and his research and teaching interests are broad spanning both the natural and social sciences. These interests include methods for the assessment of sustainability (e.g. indicators and indices), including the use of data from satellites, along with the development and application of frameworks such as the Sustainable Livelihood Approach to help guide interventions. He has also helped pioneer participatory methodologies based on Soft Systems Analysis for the development of sustainability indicators. He has been involved in research and sustainable development projects across Europe, the Mediterranean, Africa and Asia.

## Sotiris Moschoyiannis



### University of Surrey, United Kingdom

Sotiris Moschoyiannis is a Reader in Complex Systems at the University of Surrey. His research is at the intersection of AI and network science, with a focus on learning, prediction and control, using machine learning over graphs. This includes (rule-based, deep) reinforcement learning, with adversarial loss (GANs) in reward shaping. SotHe has experience from several projects with industry and government on developing novel AI techniques to work with real-world, noisy data. His work on executing large-scale AI workloads in resource-constrained environments led to a patent ([filing info](#)). Sotiris has over 90 peer-reviewed publications, including 1 book, 8 book chapters, 5 best paper awards, and over £4.5M in research funding as PI & CI since 2018. His research expertise on where and when to intervene in complex networks finds application in a range of domains from Health to Cyber Security to Transport. He was Programme Chair of the DeclarativeAI Int'l Conference in 2021 and RuleML in 2020. He is in the organisation

committee of the Complex Networks series of Int'l conferences for the last 4 years. Sotiris serves in the Executive Committee of IEEE Cloud Computing and IEEE Industrial Informatics, and an Associate Editor of Cloud Computing (Springer).

## Elizabeth Mumford



### University of Surrey, United Kingdom

Liz is a veterinarian with over 30 years experience in animal health, international public health, and One Health policy and practice. Her current activities at the University of Surrey School of Veterinary Medicine focus on building systems thinking, qualitative methods, and participatory approaches into One Health to better address equity, complexity, and sustainability of outcomes and impact. Methods: Liz is experienced in applied epidemiology and qualitative risk assessment methods and has a basic (but growing!) understanding of participatory approaches and systems mapping methods.

## Jane Noyes



### Bangor University, United Kingdom

Jane Noyes is a health services researcher and methodologist specialising in complex intervention development and evaluation using novel as well as traditional methods.



Joaquin Prada



**University of Surrey, United Kingdom**

Joaquin is a mathematical modeller with a background in Industrial Engineering and over a decade experience developing mathematical and statistical models to support One Health policy development. He is Co-director of the Surrey Institute for People-Centred Artificial Intelligence and Senior Lecturer in Epidemiology at the School of Veterinary Medicine, University of Surrey. His research group focuses on the integration of human and veterinary medical sciences, statistical and mathematical modelling, AI, Health economics and Social sciences to generate sustainable One Health policy. Methods: Joaquin is experienced in various quantitative data analysis tools (both statistical and mathematical), as well as some health economics approaches and stakeholder elicitation methods.

Peter Rabinowitz



**University of Washington, United States of America**

Peter is a physician and professor at the University of Washington, with appointments in Environmental and Occupational and Environmental Medicine, Global Health, and Family Medicine, and is Adjunct Professor in the UW Department of Medicine, Division of Allergy and Infectious Disease. He is a board-certified physician and a Professor at the University of Washington (UW), with a research and clinical focus in zoonotic diseases. He has over 20 years of research experience with a current focus on zoonotic diseases, and more than 100 publications and 20 book chapters on zoonotic and emerging infectious diseases, One Health, and Occupational medicine.

Olivier Restif



**University of Cambridge, United Kingdom**

Olivier is a disease modeller with 25 years of experience at the interface of ecology, epidemiology and microbiology. He currently is Associate Professor in Epidemiology at the Department of Veterinary Medicine in Cambridge where he created a teaching module in One Health for biologists and pre-clinical veterinary and medical students. His research covers diverse host-pathogen systems, including zoonotic viruses in bats, antibiotic resistance in livestock, and dog rabies, with collaborations spanning five continents. Methods: Mathematical models for population dynamics and infection dynamics, stochastic simulations, statistical inference.

Maganga Sambo



**University of Cambridge, United Kingdom**

Maganga is a field epidemiologist with over 17 years of experience in rabies research. Maganga's expertise spans rapid outbreak response, One Health collaboration, and translating evidence into scalable solutions for rabies control. His work at the Ifakara Health Institute in Tanzania focuses on improving mass dog vaccination strategies to support rabies elimination efforts in Africa. Methods: Using human-centered (participatory) approaches, he co-identifies barriers to dog vaccination and collaborates with communities to co-design solutions that enhance coverage and campaign effectiveness.

**Jonathan Sleeman**



***USGS, United States of America***

Jonathan Sleeman is a Science Advisor for Wildlife Health for the US Geological Survey. He received his master's degree in zoology and his veterinary degree from the University of Cambridge, and completed an internship and residency in zoological medicine at the University of Tennessee. He is a Diplomate of the American College of Zoological Medicine. He has published widely on topics related to emerging diseases of wildlife and One Health. He holds a variety of leadership positions including a member of the World Organisation of Animal Health's Working Group on Wildlife and the National Academy of Sciences Forum on Microbial Threats. Jonathan's training is in wildlife health and veterinary epidemiology, and he has extensive experience in wildlife health program development and One Health collaborations.

**Emma Snary**



***Animal & Plant Health Agency, United Kingdom***

Emma is the Head of Epidemiological Sciences at the Animal & Plant Health Agency. She has worked in the field of risk assessment as applied to animal health and veterinary public health for over 25 years and has extensive experience of leading international and national research projects, providing scientific evidence for UK/EU policy formulation and outbreak response. Emma is an Honorary Professor in Risk Analysis at the RVC and APHA lead for the RVC/APHA WOAHC Collaborating Centre for Risk Analysis & Modelling. Methods: Experienced in qualitative and quantitative risk assessment. Knowledge of mathematical modelling approaches. New to the area of systems analysis but keen to learn more!

**Eri Togami**



***Johns Hopkins Bloomberg School of Public Health, United States of America***

Eri is a veterinary epidemiologist with a focus on One Health and social sciences. Her PhD dissertation at Johns Hopkins Bloomberg School of Public Health aims to integrate social and behavioral factors, such as community risk perception and vaccine acceptability, into the prevention and control of *Taenia solium* cysticercosis and other zoonoses in Rwanda. Methods: Key informant interviews, participatory approaches, implementation science.

**Elizabeth Warham**



***The Royal Botanic Gardens, Kew, United Kingdom***

Elizabeth is a plant scientist by background with experience in evidence and advice for policy on food and water security, management of research and development programmes in agri-food systems, and technology development more broadly. Her current role is Head of the Global Centre on Biodiversity for Climate team at the Royal Botanic Gardens, Kew providing strategic science direction to the programme focused on scalable approaches to the conservation and sustainable use of biodiversity that delivers climate resilience and improves livelihoods. One health is an area of interest in providing a more holistic (systems) approach to understanding the interlinkages of development research /interventions and their impact on the health of the environment and human wellbeing. Methods: Elizabeth has experience in development of inter- and transdisciplinary partnerships, logical frameworks to set strategic direction and theories of change and is developing expertise in systems mapping.

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Louise Whatford



**Royal Veterinary College, United Kingdom**

Louise is interested in the interconnections and nexus between non-human animals, people and the environment. She specialises in using systems thinking and interdisciplinary approaches to tackle and research the complex questions around sustainable and welfare-conscious livestock and fish food systems. Currently her research explores inter- and transdisciplinary methods to understand more about sustainability, particularly, in the beef and sheep food and marketing systems in Great Britain. With a particular interest in exploring how to better integrate non-human animal welfare, ethical considerations, and the One Welfare concept into One Health and the wider, more holistic and wicked problems we face today.

James Wood



**University of Cambridge, United Kingdom**

James Wood is Alborada Professor of Equine and Farm Animal Science. He is an infectious disease epidemiologist in the Disease Dynamics Unit at the University of Cambridge; he is also co-chair of Cambridge Infectious Diseases Interdisciplinary Research Centre and his research focuses on One Health approaches to the investigation of disease emergence, especially from wildlife and its control. He is involved in collaborative multidisciplinary studies of the ecology and emergence of RNA viruses from fruit bats in Ghana and control of bovine tuberculosis in Ethiopia, India and UK. He has published widely on infectious disease emergence and its drivers, especially considering zoonoses in sub-Saharan Africa and on bovine TB transmission and its control in cattle. He chairs the Cambridge Africa Strategic Advisory Group.

Dan Horton

**Animal and Plant Health Agency, United Kingdom**

John Parrish-Sprowl

**Indiana University Indianapolis, United States of America**

Alexandra Penn

**University of Sussex, United Kingdom**

Valentine Seymour

**University of Surrey, United Kingdom**





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