



APPLIED
HOLOGENOMICS
CONFERENCE

1st Applied HoloGenomics Conference

**HoloGenomic Solutions
for 21st century challenges**

Bilbao, Spain 13th-15th September 2022

A HoloFood Innovation Action conference

AHC Organising committee

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Welcome to Bilbao!



Welcome to the 1st Applied Hologenomics Conference!

Understanding host-microbiota interactions is increasingly recognised as an essential step to improve the efficacy and efficiency of applied biological processes within medicine, agriculture and nature conservation. As such, the joint study of eukaryotic hosts and their associated microbial communities using molecular tools, namely hologenomics, holds the promise to contribute to addressing some of the global challenges in the 21st Century.

The objective of the 1st Applied HoloGenomics conference, organised by the HoloFood Innovation Action, is to highlight key discoveries and novel approaches that aim at understanding the interactions of plant and animal hosts with their associated microbial communities, which could be directly or potentially applied into management and practice.

The program has been designed to cover both a wide range of fundamental and applied themes within hologenomics research, and incorporate panel discussions about the future possibilities and needs of industry and society. We aim at connecting researchers and industrial stakeholders of the still nascent field of hologenomics, and hope to inspire all participants to recognise hologenomics as an opportunity for their current scientific practices. We are pleased to welcome guest speakers at the forefront of their fields, working within human health, agri- and food sciences, biodiversity and conservation.

Besides the scientific program, we invite you to take part in our social program to connect and have fun with researchers from other institutions and countries. On the first day (13/09) we will enjoy Basque pintxos and reception during the afternoon poster session, and on Wednesday (14/09) afternoon we will go on a guided and panoramic tour of San Juan de Gaztelugatxe and Bermeo followed by the conference dinner.

The First Applied Hologenomics conference is hosted by the University of the Basque Country and takes place in the center of beautiful Bilbao with many cultural highlights, including among other the Guggenheim museum (must-see), Bilbao's medieval town Casco Viejo, La Ribera market, Museo Bellas Artes (Museum of fine arts) or the hanging bridge Puente de Bizkaia. The Basque Country is known for its rich culinary scene, and it is very typical to have a selection of pintxos (Basque elaborated tapas) for lunch or dinner.

We wish you an exciting and enriching experience in Bilbao and at the conference! It is our great pleasure to host you! Enjoy, learn, connect !

The AHC organizing committee:

- **Dr. Melanie Parejo (UPV/EHU)**
- **Prof. Andone Estonba (UPV/EHU)**
- **Dr. Anna Fotaki (UCPH)**

Key themes

Human Health



Gut microbial communities interact with humans in a complex way. The joint study of human genomic and microbial metagenomic interactions in light of disease can contribute to a better understanding of these bi-directional relationships and establish causal connections. In this session, we will depart from an evolutionary perspective to navigate through multiple areas in which human genomics and microbial metagenomics intersect to understand development and treatment of disease from a hologenomic perspective.

Agriculture, Aquaculture and Food production



Food production processes are largely conditioned by microorganisms associated with the animals and plants that are produced, and modulating such host-associated microbial communities is devised as a strategic approach to improve quality, quantity and sustainability of food production. Microbial communities do not passively lay in or on their hosts' tissues, but continuously interact with their host. Understanding how environmental and host genetic factors affect composition and dynamics of microbial communities, and how these interact with hosts to shape the final host phenotypes is therefore essential to optimise production processes. In this session, we will deepen into the use of hologenomic approaches to identify the most relevant host-microbiota interactions with impact on food production.

Biodiversity and Conservation



There is no doubt that conservation of biodiversity of our surrounding environments is essential to ensure sustainable development of human societies. While understanding of genetic features of animals and plants has been long recognised as essential for biodiversity management, knowledge on the microbial communities associated with them is increasingly recognised as a relevant complement. In this session, we will explore how animal/plant-microbiota interactions are linked to species decays, and how hologenomic knowledge can be used to improve conservation measures, including identification of threatened populations and achieving optimal ex-situ breeding programmes.

Technical/ methodological Perspectives



The joint study of animal/plant genomic and microbial metagenomic features holds a large degree of inherent complexity. As new technologies are developed and implemented, new mathematical challenges are created to properly analyse the ocean of available data. In this session, we will first introduce the most advanced approaches to generate and process molecular data to understand host-microbiota interactions, to then identify the main hurdles and propose strategies to overcome them for advancing the nascent field of hologenomics.

Agenda

13th September 2022

12:00 Registration Opens Coffee & Welcome
Poster setup opens

CONFERENCE OPENING

14:00 Welcome by local organisers **Dr. Iratxe Zarragonandia** and **Dr. Melanie Parejo** (University of the Basque Country EHU/UPV, Spain)

14:10 Welcome by **Prof. Tom Gilbert** (University of Copenhagen, Denmark)

14:20 Welcome by Research Vice Director of the University of the Basque Country **Dr. Inmaculada Arostegui**

SESSION 1 - INTRODUCTORY AND KEYNOTE SESSIONS

14:30 The extended human hologenome, the next hundred years
Prof. Rob Dunn, NC State University, USA

15:00 A Symbiotic Dialogue
Discussion hosted by moderator **Assoc. Prof. Antton Alberdi** (UCPH,DK) with **Prof. Seth Bordenstein** (Penn State University, USA) & Senior Scientist **Henna-Maria Kailanto** (IFF Health, Finland)

16:00 Multi-omics techniques applied to investigate the global human microbiome
Assist. Prof. Mathilde Poyet (University of Kiel, Germany)

16:45 Group Photograph

17:00-20:00 - POSTER SESSION WITH LOCAL PINTXOS AND WINE RECEPTION

A combined wine and poster session! Poster presenters to stand next to their posters according to the following groups.

17:00-17:45 Group 1: Posters with numbers 1-28

17:45-18:30 Group 2: Posters with numbers 29-46

18:30-19:15 Group 3: Posters with numbers 47-65

14th September 2022

07:30-08:15 Exercise your holobiont! Morning run and see the local sights!

Various paces available. Total distance 5.1km

Meeting & end point: in front of conference venue

SESSION 2 - HUMAN HEALTH

Moderator: **Prof. Tom Gilbert** (UCPH, DK)

09:00 Food for thought: hologenomic adaptations to amylose and lactose in the evolving human diet

Assoc. Prof. Christina Warinner, Harvard University USA, MPI Germany

09:25 Evolution and function of host-microbiome systems

Assistant Prof. Mathieu Groussin, University of Kiel, Germany

09:50 The gut microbiota and mental disease – approaching a hologenomics view.

Prof. Karsten Kristiansen, University of Copenhagen, Denmark

10:15 Distinctive Streptococcus clades characterise oral niches regardless of industrialisation status and oral pathology

Irina M. Velsco, Max Planck Institute for Evolutionary Anthropology, Germany

10:30 Why are there different microbial community types?

Karoline Faust, KU Leuven, Belgium

10:45 Ancient oral microbiome reveals gradual adaptation of Italian prehistoric communities to Neolithic dietary shifts towards agriculture

Andrea Quagliariello, University of Padua, Italy

11:00-11:30 - COFFEE BREAK (30')

SESSION 3 - AGRICULTURE, AQUACULTURE AND FOOD PRODUCTION #1

Moderator: **Assoc. Prof. Morten Limborg**, University of Copenhagen, Denmark

11:30 Research and Innovation for microbiomes

Magdalena Gajdzinska, Directorate General for Research and Innovation of the European Commission, Brussels

11:55 Engineering algal microbiomes for sustainable food and feed production

Prof. Lone Gram, DTU, Denmark

12:20 Leveraging microbiota services through hologenomic analyses to improve gut health in farmed salmon

Dr. Jaelle C. Brealey, NTNU, Norway

12:35 A hologenomic approach to the management of infectious diseases affecting the American oyster, *Crassostrea virginica*

Marta Gomez-Chiarri, University of Rhode Island, USA

12:50 Microbiota-mediated protection against *Flavobacterium* infection in gnotobiotic zebrafish

Rebecca J. Stevick and **David Pérez Pascua**, Institute Pasteur, France

13:15-14:15 - LUNCH BREAK

SESSION 3 - AGRICULTURE, AQUACULTURE AND FOOD PRODUCTION #2

Moderator: Research Associate **Dr. Iratxe Zarraonaindia** (UPV/EHU)

14:15 What if the unit of selection in breeding is the holobiont instead of the plant?

Assistant Researcher **Dr. Amaia Nogales**, Instituto Superior de Agronomia, Universidade de Lisboa, Portugal

14:40 Plant microbes and bacteriophages; the smallest, most abundant entities of plant microbiomes

Prof. Lars Hestbjerg, University of Copenhagen, Denmark

15:30 Copy number variation on ABCC2-DNMBP loci impacts the diversity and functions of the gut microbiota in pigs.

Yulixaxis Ramayo Caldas, Institute of Agrifood Research and Technology, Spain

15:45 Elucidating host genetic effects on the microbiota using zebrafish and CRISPR/Cas- a hologenomic approach

Eiríkur Andri Thormar, University of Copenhagen, Denmark

16:00 Supplemented diets with quercetin and epicatechin enhance the growth performance of *Totoaba macdonaldi* related to the improvement of gut microbiota metagenomic analysis and liver transcriptome: a hologenomic approach

María Fernanda Barragán-Longoria, ITESM, Mexico

16:15 - SESSION ENDS

17:00 Bus departure in front of the conference venue for conference tour and dinner

Bus return to Bilbao around 23:00 pm.

15th September 2022

SESSION 4 - BIODIVERSITY AND CONSERVATION

Moderator: **Prof. Mike Martin** (NTNU, Norway)

09:00 Global hologenomics to reveal the impact of wild animal-microbiota interactions on ecological and evolutionary processes

Dr. Aoife Leonard, University of Copenhagen, Denmark

09:25 Metagenomic shifts in mucus, tissue and skeleton of the coral *Balanophyllia europaea* living along a natural CO₂ gradient

Research Fellow **Giorgia Palladino**, University of Bologna, Italy

09:50 The gut microbiota affects the social network of honeybees

Prof. Philipp Engel, University of Lausanne, Switzerland

10:15 Host-microbiota responses to a series of perturbations in two case-studies

Adam Koziol, University of Copenhagen, Denmark

10:30 Hologenomic analysis of hundreds of herbarium specimens reveals the genomic basis of a plant invasion

Dr. Vanessa Bieker, NTNU, Norway

10:45-11:15 - COFFEE BREAK

SESSION 5 - TECHNICAL / METHODOLOGICAL PERSPECTIVES

Moderator: **Lorna Richardson**, EMBL-EBI, UK

11:15 Network analysis of host-microbiome omics data

Prof. Torgeir Hvidsten, NMBU, Norway

11:35 Connecting structure and function from organs to molecules in host-microbe interaction.

Dr. Manuel Liebeke- Max Planck, Institute for Marine Microbiology, Germany

11:55 New data, same challenges: Case study of DNA-methylation associated with tenacibaculosis and microbiome composition in Atlantic Salmon (*salmo salar*)

Søren Blikdal Hansen, University of Copenhagen, Denmark

12:10 A Microbial Genome Atlas enables novel insights into bacteria-host interactions via functional mapping

Arturo Vera-Ponce de León, NMBU, Norway

12:30-13:15 - SHORT LUNCH

SESSION 6 - HOLO-OMICS AND THE INDUSTRY ACADEMIA PARTNERSHIP

13:15-14:15 Moderator: **Dr. Ana Verissimo**, University of Copenhagen, Denmark with a round table of:

Dorthe Sandvang (Chr. Hansen A/S, Denmark), **Harald Sveier** (Lerøy, Norway), **Itziar Tueros** (ATZI, Spain), **Magdalena Gajdzinska** (Directorate General for Research and Innovation of the European Commission, Brussels), **Rob Dunn** (NC State University, USA)

SESSION 7 - CLOSING CEREMONY AND POSTER AWARD

14:20 Concluding Remarks by **Prof. Seth Bordenstein** (Penn State University, USA)

14:45 Student poster award and closing of the conference

Prof. Tom Gilbert and **Associate Prof. Morten Limborg** (University of Copenhagen, Denmark)

15:00 Conference ends – thank you for joining us!

POSTERS SESSION HUMAN HEALTH

ID	Title	Authors	University / Institution or Company
21	Paleofeces reveal recent loss of diversity and microbial symbionts in the Western gut microbiome	ALEXANDER HÜBNER Courtney Hofman, Irina Velsko, Zandra Fagernäs, Allison E. Mann, Nicole Boenke, Abigail Bouwman, Choongwon Jeong, Tanvi Honap, Richard Hagan, Marsha Wibowo, Aleksandar Kostic, Karl Reinhard, Abolfazl Aali, Cecil M. Lewis, Jr., Thomas Stöllner, Frank Rühli, Krithivasan Sankaranarayanan, Christina Warinner	Max Planck Institute For Evolutionary Anthropology, Leipzig, Germany
28	The Parasite microbiome: a novel resource for therapeutic and diagnostic development	DHELLY NOLWENN	Anses Umr Virology
48	Gut-on-a-chip in vitro models for a more accurate understanding of the action of probiotics in human health	OSTAIZKA AIZPURUA Catharina Blijleven, Urvis Trivedi, Carlotta Pietroni, Antton Alberdi	University Of Copenhagen
57	Bidirectional causality between gut microbiota and HLA DQ2 celiac patients: a Two-sample Mendelian Randomization approach	BARBARA GONZÁLEZ GARCÍA, I. García Santisteban, S. Marí, A. Cilleros Portet, A. Hernangomez Laderas, N. Fernandez Jimenez, I. García Santisteban, And Jr. Ramon Bilbao	Department Of Genetics, Physical Anthropology And Animal Physiology, University Of The Basque Country (Upv/Ehu) And Biocruces-Bizkaia Health Research Institute, Leioa, Basque Country, Spain

POSTERS SESSION AGRICULTURE, AQUACULTURE AND FOOD PRODUCTION

ID	Title	Authors	University / Institution or Company
4	Impact of feed additives and host-related factors on bacterial metabolic activity, and immunological traits in the ileum of broilers	YADA DUANGNUMSAWANG Farshad Goodarzi Borojoni, Wilfried Vahjen, Joan Tarradas, Enric Esteve-Garcia, Antton Alberdi, Sofia Marcos, Jürgen Zentek	Institut Für Tierernährung/ Freie Universität Berlin
5	Impact of feed additives and host-related factors on bacterial metabolic activity, and immunological traits in the caecum of broilers	YADA DUANGNUMSAWANG Farshad Goodarzi Borojoni, Wilfried Vahjen, Joan Tarradas, Enric Esteve-Garcia, Antton Alberdi, Sofia Marcos, Jürgen Zentek	Institut Für Tierernährung/Freie Universität Berlin
7	Comparative analysis of metagenomics and metataxonomics for the characterization of vermicompost microbiomes	KEITH A. CRANDALL Marcos Pérez-Losada, Ignacio Ramos-Tapia, Eduardo Castro-Nallar, Jorge Domínguez	George Washington University
12	Recovering ancient fermented beverages from trans-Himalayan trade routes along the Tibetan plateau	MAXIME BORRY Mark Aldenderfer, Christina Warinner	Max Planck Institute For Evolutionary Anthropology
18	Drivers of ecological assembly in the hindgut microbiome of juvenile farmed Atlantic cod (<i>Gadus morhua</i>) fed a macroalgal supplemented diet	CIARA KEATING M. Bolton-Warberg, J. Hinchcliffe, R. Davies, S. Whelan, A H.I. Wan, R D. Fitzgerald, S. J. Davies, C. J. Smith And U. Z. Ijaz	University Of Glasgow
19	Microbiome composition and distribution of major endosymbionts in <i>Scaphoideus titanus</i> Ball, 1932 across northern Italy.	JUAN SEBASTIAN ENCISO Abdelhameed Moussa, Erika Corretto, Lilyia Serbina & Hannes Schuler	Free University Of Bolzano Bozen
22	Specific microbial fingerprints are associated with low levels of LT toxin-carrying enterotoxigenic <i>Escherichia coli</i> in the gut	ALESSANDRA TANCREDI Evy Goossens, Eric Cox, Filip Van Immerseel	Ugent

ID	Title	Authors	University / Institution or Company
23	Engineering microbiomes to improve insect production and performance	MUURMANN, A. Gilbert, T., Rasmussen J., Limborg, M., Tomberlin, J., Bahrndorff, S.	Aalborg University
29	Role of the microbiota in alimentary tick-borne encephalitis virus infection	DHELLY NOLWENN Phillipine Toneatti, Rayane Amaral-Moraes, Maxime Fusade-Boyer, Marine Dumarest, Camille Migné, Sandra Martin-Latil, Gaëlle Gonzalez,	Anses Umr Virology
30	Large intestine Caco2-cell adhesion of probiotic microbiota when exposed to spice/herb extracts and Thai curry under in-vitro digestion model	JUTAMAT KLINSODA Kanokwan Yodin, Khemmapas Treesuwan	Institute Of Food Research And Product Development, Kasetsart University, Bangkok 10900, Thailand
31	Temporal development of the intestinal microbiota and tissue gene expression in broiler chickens	SOFIA MARCOS Ostaizka Aizpurua, Eray Shain, Raphael Eisenhofer, Jorge Langa, Iñaki Odriozola, Antton Alberdi	University Of The Basque Country - Ehu
39	Koji-based fermented foods as a model system for understanding fungal-bacteria interactions and their potential effects on host-associated metabolism	TIFFANY MAK Nabila Rodriguez, Leonie Jahn, Juan Carlos Arboleya, Pia Sorensen, Morten Sommer	Novo Nordisk Foundation Center For Biosustainability (Dtu Biosustain)
41	Improving the characterisation of the chicken gut microbiome: a multi-kingdom genomic approach	GERMANA BALDI, VARSHA KALE Holofood Consortium, Lorna Richardson, Robert D. Finn	Embl-Ebi
42	A paired metagenomic and metatranscriptomic analysis of the salmon gut microbiome to assess the performance of sustainable feed additives	VARSHA KALE, GERMANA BALDI Holofood Consortium, Lorna Richardson, Robert D. Finn	Embl-Ebi
43	Berberrubine, a berberine-derived metabolite, is produced by the gut microbiota and improves gut health	TESSA DEHAU Michiel Van De Vliet, Marc Cherlet, Siska Croubels, Filip Van Immerseel, Evy Goossens	Ghent University

ID	Title	Authors	University / Institution or Company
45	Microbiome of pigs treated with different antimicrobials during an outbreak of post-weaning diarrhoea	JUDITH GUITART-MATAS Maria Ballester, Lorenzo Fraile, Lourdes Migura-García, Yulixais Ramayo-Caldas	Institut De Recerca I Tecnologia Agroalimentàries (Irta)
46	Viromes of Atlantic salmon correlate with gut microbiota and disease infection status – potential for modulating microbiome dysbiosis	CAROLINE SOPHIE WOLTERS PETERSEN Jacob Agerbo Rasmussen, Thomas Sicheritz-Pontén, Guillermo Andres Rangel Piñeros, Ling Deng, Xichuan Zhai, Dennis Sandris Nielsen, Mathias Middelboe, Morten Tønsberg Limborg	University Of Copenhagen, Globe Institute
47	Holo-Omics Elucidate Coevolution Of Host-Microbiota In Salmonids	JACOB AGERBO RASMUSSEN Karsten Kristiansen, Morten Tønsberg Limborg	University Of Copenhagen
51	Interactions between the probiont <i>Phaeobacter inhibens</i> S4, the marine pathogen <i>Vibrio coralliilyticus</i> RE22, and the holobiont of larval American oysters, <i>Crassostrea virginica</i>	JESSICA COPPERSMITH Evelyn Takyi, Kira Bernabe, Jamal Andrews, David R. Nelson, David C. Rowley, Marta Gomez-Chiarri	University Of Rhode Island
55	Unlocking aggressive animal behaviour using metatranscriptomics	LUISA SANTOS-BAY Luisa Santos-Baya, M. Thomas P. Gilberta, A,B Antton Alberdia, Ostaizka Aizpurua	Center For Evolutionary Hologenomics, Globe Institute, Faculty Of Health And Medical Sciences, University Of Copenhagen, Copenhagen, Denmark
56	The HoloFood Data Portal	ALEXANDER ROGERS Varsha Kale, Germana Baldi, Lorna Richardson, Rob Finn (All Of Them Are Members From Microbiome Informatics Team At Embl-Ebi)	Microbiome Informatics Team At Embl-Ebi

ID	Title	Authors	University / Institution or Company
58	Dynamics of the Top Biome of cereal leaf beetle (<i>Oulema melanopus</i>) is influenced by the diet and developmental stage.	BEATA WIELKOPOLAN1, Alicja Beresewicz-Szabelska2, Krzysztof Krawczyk1, Aleksandra Obrepalska-Stepłowska1	Institute Of Plant Protection - National Research Institute
60	Revisiting in the ecological origins of bacteria in our fermented foods	VERONICA M. SINOTTE Ana Cuesta-Maté, Jonathan Z. Shik, Sandra B. Andersen, Robert R. Dunn	Center For Evolutionary Hologenomics, Globe Institute, University Of Copenhagen
61	Saccharomyces cerevisiae on the rise: Domestication of yeast in breadmaking	MARGOT RUFFIEUX Alexxis Gutierrez, Nathan Brandt, Rob Dunn, Caiti Smukowski Heil	North Carolina State University
62	Social bee microbiomes are the missing link in the origin of human fermented foods	ANA CUESTA-MATÉ Veronica M. Sinotte, Jonathan Z. Shik, Sandra B. Andersen, Rob R. Dunn	Center For Evolutionary Hologenomics, Globe Institute, Copenhagen University, Denmark
63	Molecular mechanisms of microbiota-mediated protection against Flavobacterium infection in gnotobiotic zebrafish	DAVID PÉREZ PASCUAL Rebecca Stevick*, Bianca Audrain, Emmanuel E. Adade, Arthur Lenson, Alex Valm, Jean-Marc Ghigo	Institut Pasteur
65	In vitro model to study synbiotic-pathogen-gut microbiota interactions at microscale	ANDI EREGA 3d'omics Consortium, Annelies Geirnaert	Laboratory Of Food Biotechnology, Department Of Health Sciences And Technology, Institute Of Food, Nutrition And Health, Eth Zürich

POSTERS SESSION BIODIVERSITY AND CONSERVATION

ID	Title	Authors	University / Institution or Company
15	Origin and acquisition of rhizosphere microbes in antarctic vascular plants	EDUARDO CASTRO-NALLAR Sergio Guajardo-Leiva; Jaime Alarcón; Jorge Gallardo-Cerda; Marco Molina-Montenegro; Keith A. Crandall; Marcos Pérez-Losada	Universidad De Talca
34	Feed-microbiome-host interactions in Atlantic salmon over life stages	SHASHANK GUPTA Sabina Leantila Rosa, Arturo Vera-Ponce De León, Miyako Kodama, Morten Tømsberg Limborg, Simen R. Sandve, Torgeir R. Hvidsten, Phillip B. Pope	Nmbu, Norway
38	Experimental warming and cooling shapes host microbiota composition	JINGDI LI Kieran Bates, Kim Hoang, Tobias Hector, Sarah Knowles, Kayla King	University Of Oxford
40	Exploring the pet gut microbiome within a large-scale investigation of animal gut metagenomes	ANNA CUSCÓ Anthony Noel Fullam; Pamela Ferretti; Oleksandr Maistrenko; Sebastian Schmidt; Peer Bork; Luis Pedro Coelho	Fudan University
44	Hologenomic Adaptation of European Whitefish	MENG ZHAO Juan Antonio Rodríguez Pérez, Tom Gilbert	Center For Evolutionary Hologenomics, Globe Institute, University Of Copenhagen

POSTERS SESSION TECHNICAL / METHODOLOGICAL PERSPECTIVES

ID	Title	Authors	University / Institution or Company
1	Improving accessibility to ancient microbiome data beyond palaeogenomics	JAMES A. FELLOWS YATES	Leibniz Institute For Natural Product Research And Infection Biology & Max Planck Institute For Evolutionary Anthropology
6	Evaluation of computational methods for human microbiome analysis using simulated data	MATTHIEU J. MIOSSEC Sandro L. Valenzuela, Marcos Pérez-Losada, W. Evan Johnson, Keith A. Crandall And Eduardo Castro-Nallar	George Washington University
10	microbetag: a microbial co-occurrence network annotator	HARIS ZAFEIROPOULOS Karoline Faust	Rega Institute, Ku Leuven
13	Can shallow shotgun-based profiling of the gut microbiome improve the detection of host genetic effects?	FELIPE MORILLO SANZ DIAS Amelie Baud	Centre For Genomic Regulation
37	Recovering High-Quality Host Genomes from Gut Metagenomic Data through Genotype Imputation	SOFIA MARCOS Melanie Parejo, Andone Estonba, Antton Alberdi	University Of The Basque Country
49	Reference-agnostic estimation of microbial read abundance in holobionts	RAPHAEL EISENHOFER Antton Alberdi, Ben Woodcroft	University Of Copenhagen

Health and safety

Please be aware that conference policies and essential health and safety information can be found here:

https://appliedhologenomicsconference.eu/AHC_conference_policies.html

As a general rule we have ensured plenty of space both in the conference lecture hall and communal spaces in order to avoid crowding. Please be aware that there are local COVID-19 regulations in Spain whereby face masks are mandatory in all public transport. Details can be found here: <https://travelsafe.spain.info/en/during/>

During the conference we encourage the use of masks whilst seated within the conference lecture hall. Please bring your own facemasks. For those attending the conference gala dinner please be aware that masks are mandatory during the bus transportation.

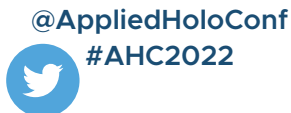
If you start to have any COVID-19 related symptoms, or feel unwell please write to us appliedhologenomics@tisasasa.es and do not come to the conference venue in person. If you are unable to get a test, please let us know. There is an option to join the conference by its hybrid format.

Scan here to ask questions!

Ask a question!



Slido: #AHC2022



See the conference abstracts here!



www.appliedhologenomicsconference.eu



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