



# APPLIED HOLOGENOMICS CONFERENCE

Bilbao, Spain 13th-15th September 2022



A HoloFood  
conference

**HoloFood**  
Hologenomics for sustainable food production

Local organiser:



Universidad  
del País Vasco

Euskal Herriko  
Unibertsitatea

Conference Venue: Palacio Euskalduna, Bilbao

Version 07-Sept-2022-Subject to changes

## 13th of September 2022

12pm Registration Opens

14:00-14:30 Conference Opening

14:30-16:45 Session 1: Introductory and Keynote Sessions

17:00 - 20:00 Poster Session with local pintxos and wine reception

## 14th of September 2022

07:30-08:15 Morning run

09:00-11:00 Session 2: Human Health

11:30-18:15 Session 3: Agriculture, Aquaculture and Food Production

17:00-23:00 Conference Social Tour & Dinner

## 15th of September 2022

09:00-10:45 Session 4: Biodiversity and conservation

11:15-12:30 Session 5: Technical & Methodological Perspectives

13:15-14:15 Session 6: The Industry/Academia Partnership

14:20- 15:00 Session 7: Student Poster award & Closing talks

Scan here to ask  
questions!

Ask a question!



Slido: #AHC2022

@AppliedHoloConf



#AHC2022

See the  
conference  
abstracts here!



[www.appliedhologenomicsconference.eu](http://www.appliedhologenomicsconference.eu)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817729

**Tuesday 13th of September 2022**

**12pm Registration Opens** Coffee and welcome



## **14:00 Conference Opening**

Ask a question!



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

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

14:20 Welcome by Research Vice Director of the University of the Basque Country Dra.  
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**

*Please note - attendees with posters are split in the following groups and are asked to stand by their posters during the following time points*

**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



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

Various paces available. Total distance 5.1km

Meeting & end point: front of conference venue

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## Session 2 Human Health

Moderated by Prof. Tom Gilbert (UCPH, DK)

Ask a question!



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**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**

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## Session 3: Agriculture, Aquaculture and Food Production

Moderated by Associate Professor Morten Limborg (UCPH, Denmark) and Research Associate Dr Iratxe Zarraonaindia (UPV/EHU, Spain)

Ask a question!



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### 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

Professor Lone Gram, DTU, Denmark

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

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

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

Assistant Researcher Dr Amaia Nogales, ISA, 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

### 15:05 Potential drivers of plasticity and persistence of the gut microbiome

Prof. Itzik Mizrahi Ben-Gurion University of the Negev, Israel

### 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

Session ends 16:15.

**17:00 Social Evening - Tour and dinner - Pick up at 17:00pm in front of conference venue. Return to Bilbao approximately 11pm**



## Session 4: Biodiversity and conservation

Moderated by Prof. Mike Martin (NTNU, Norway)

Ask a question!



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**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 CO<sub>2</sub> 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

**Coffee Break 10:45 – 11:15**



## Session 5: Technical & Methodological Perspectives

Moderated by 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 Lunch**



## Session 6: Holo-omics and the Industry/Academia Partnership

Round table moderated by Ana R. Verissimo (UCPH, Denmark)

### **13:15-14:15 Round table panel discussion on the industry - academia partnership**

with 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)

Ask a question!



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## 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



## Posters associated with this Session 2: Human Health

**Poster #21 Paleofeces reveal recent loss of diversity and microbial symbionts in the Western gut microbiome**

ALEXANDER HÜBNER, MPI, Germany

**Poster #28 The Parasite microbiome: a novel resource for therapeutic and diagnostic development**

DHEILLY NOLWENN, UMR, France

**Poster #48 Gut-on-a-chip in vitro models for a more accurate understanding of the action of probiotics in human health**

OSTAIZKA AIZPURUA, UCPH, Denmark

**Poster #57 Bidirectional causality between gut microbiota and HLA DQ2 celiac patients: a Two-sample Mendelian Randomization approach**

IRAIA GARCÍA SANTISTEBAN, UPV/EHU, Spain



## Posters associated with Session 3: Agriculture, Aquaculture and Food production

**Poster #4 Impact of feed additives and host-related factors on bacterial metabolic activity, and immunological traits in the ileum of broilers**

YADA DUANGNUMSAWANG, Freie Universität Berlin, Germany

**Poster #5 Impact of feed additives and host-related factors on bacterial metabolic activity, and immunological traits in the caecum of broilers**

YADA DUANGNUMSAWANG, Freie Universität Berlin, Germany

**Poster #7 Comparative analysis of metagenomics and metataxonomics for the characterization of vermicompost microbiomes**

KEITH A. CRANDALL, George Washington University, USA

**Poster #12 Recovering ancient fermented beverages from trans-Himalayan trade routes along the Tibetan plateau**

MAXIME BORRY, MPI, Germany

**Poster #18 Drivers of ecological assembly in the hindgut microbiome of juvenile farmed Atlantic cod (*Gadus morhua*) fed a macroalgal supplemented diet**

CIARA KEATING, University of Glasgow, USA

**Poster #19 Microbiome composition and distribution of major endosymbionts in *Scaphoideus titanus* Ball, 1932 across northern Italy.**

JUAN SEBASTIAN ENCISO, The Free University of Bozen-Bolzano, Italy

**Poster #22 Specific microbial fingerprints are associated with low levels of LT toxin-carrying enterotoxigenic *Escherichia coli* in the gut**

ALESSANDRA TANCREDI, Gent University, Belgium



**Posters associated with Session 3: Agriculture, Aquaculture and Food production #2**

**Poster #23 Engineering microbiomes to improve insect production and performance**

ASMUS TOFTKÆR MUURMANN, Aalborg University, Denmark

**Poster #29 Role of the microbiota in alimentary tick-borne encephalitis virus infection**

DHEILLY NOLWENN, Anses UMR Virology, France

**Poster #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, Kasetsart University, Thailand

**Poster #31 Temporal development of the intestinal microbiota and tissue gene expression in broiler chickens**

SOFIA MARCOS, University of the Basque Country, Spain

**Poster #39 Koji-based fermented foods as a model system for understanding fungal-bacteria interactions and their potential effects on host-associated metabolism**

TIFFANY MAK, DTU BioSustain, Denmark

**Poster #41 Improving the characterisation of the chicken gut microbiome: a multi-kingdom genomic approach**

GERMANA BALDI, VARSHA KALE, EMBL-EBI, UK

**Poster #42 A paired metagenomic and metatranscriptomic analysis of the salmon gut microbiome to assess the performance of sustainable feed additives**

VARSHA KALE, GERMANA BALDI, EMBL-EBI, UK

**Poster #43 Berberrubine, a berberine-derived metabolite, is produced by the gut microbiota and improves gut health**

TESSA DEHAU, Ghent University, Belgium

**Poster #45 Microbiome of pigs treated with different antimicrobials during an outbreak of post-weaning diarrhoea**

JUDITH GUITART-MATAS, INSTITUT DE RECERCA I TECNOLOGIA AGROALIMENTÀRIES (IRTA), Spain

**Poster #46 Viromes of Atlantic salmon correlate with gut microbiota and disease infection status – potential for modulating microbiome dysbiosis**

CAROLINE SOPHIE WOLTERS PETERSEN, University of Copenhagen, Denmark

**Poster #47 HOLO-OMICS ELUCIDATE COEVOLUTION OF HOST-MICROBIOTA IN SALMONIDS**

JACOB AGERBO RASMUSSEN, University of Copenhagen, Denmark

**Poster #51 Interactions between the probiont *Phaeobacter inhibens* S4, the marine pathogen *Vibrio coralliilyticus* RE22, and the holobiont of larval American oysters, *Crassostrea virginica***

JESSICA COPPERSMITH, University of Rhode Island, USA

**Poster #55 Unlocking aggressive animal behaviour using metatranscriptomics**

LUISA SANTOS-BAY, University of Copenhagen, Denmark

**Poster #56 The HoloFood Data Portal**

ALEXANDER ROGERS, EMBL-EBI, UK





**Posters associated with Session 3 #3**



**Poster #58 Dynamics of the Top Biome of cereal leaf beetle (*Oulema melanopus*) is influenced by the diet and developmental stage.**

BEATA WIELKOPOLAN, Institute of Plant Protection, Poland

**Poster #60 Revisiting in the ecological origins of bacteria in our fermented foods**

VERONICA M. SINOTTE, University of Copenhagen, Denmark

**Poster #61 *Saccharomyces cerevisiae* on the rise: Domestication of yeast in breadmaking**

MARGOT RUFFIEUX, North Carolina State University, USA

**Poster #62 Social bee microbiomes are the missing link in the origin of human fermented foods**

ANA CUESTA-MATÉ, University of Copenhagen, Denmark

**Poster #63 Molecular mechanisms of microbiota-mediated protection against *Flavobacterium* infection in gnotobiotic zebrafish**

DAVID PÉREZ PASCUAL, Institute Pasteur, France

**Poster of #64 In vitro model to study synbiotic-pathogen-gut microbiota interactions at microscale**

ANDI EREGA, ETH Zürich, Switzerland



**Posters associated with Session 4: Biodiversity and conservation**

**Poster #15 Origin and acquisition of rhizosphere microbes in antarctic vascular plants**

EDUARDO CASTRO-NALLAR, Universidad de Talca, Chile

**Poster #34 Feed-microbiome-host interactions in Atlantic salmon over life stages**

SHASHANK GUPTA, NMBU, Norway

**Poster #38 Experimental warming and cooling shapes host microbiota composition**

JINGDI LI, University of Oxford, UK

**Poster #40 Exploring the pet gut microbiome within a large-scale investigation of animal gut metagenomes**

ANA CUSCO, Fudan University, China

**Poster #44 Hologenomic Adaptation of European Whitefish**

MENG ZHAO, University of Copenhagen, Denmark



Posters associated with Session 5: Methodological Breakthroughs



**Poster #1 Improving accessibility to ancient microbiome data beyond palaeogenomics**

JAMES A. FELLOWS YATES, LEIBNIZ INSTITUTE FOR NATURAL PRODUCT RESEARCH AND INFECTION BIOLOGY & MPI, Germany

**Poster #6 Evaluation of computational methods for human microbiome analysis using simulated data**

MATTHIEU J. MIOSSEC/MARCOS PÉREZ-LOSADA, George Washington University, USA

**Poster #10 microbetag: a microbial co-occurrence network annotator**

HARIS ZAFEIROPOULOS, KU Leuven, Belgium

**Poster #13 Can shallow shotgun-based profiling of the gut microbiome improve the detection of host genetic effects?**

FELIPE MORILLO SANZ DIAS, Center for Genomic Regulation, Spain

**Poster #37 Recovering High-Quality Host Genomes from Gut Metagenomic Data through Genotype Imputation**

SOFIA MARCOS, University of the Basque Country, Spain

**Poster #49 Reference-agnostic estimation of microbial read abundance in holobionts**

RAPHAEL EISENHOFER, University of Copenhagen, Denmark

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