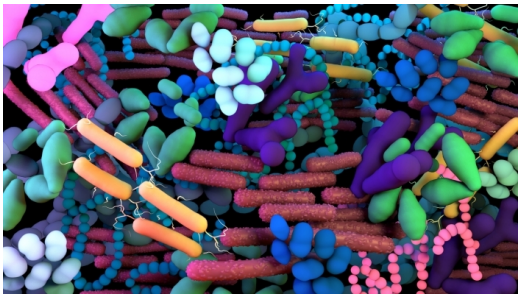
One Planet, One Health, One Microbiome: A Holistic Approach to Antimicrobial Resistance



~Open and free activity
~18:00h
~Miramar Palace, San Sebastián or streaming

Lecture by Itziar Alkorta Calvo, Professor of Biochemistry and Molecular Biology. EHU - SGIker

"Antimicrobial resistance is advancing and requires a joint health and environmental response"

07.May 2026

Cod. W07-26

Mod.:
Streaming Face-to-face

Edition
2026

Activity type
Open activity

Date
07.May 2026

Location
Miramar Palace

Languages
Spanish

Organising Committee

Description

Antimicrobial Resistance has become one of the great threats to public health, food security and stability of the ecosystems. The inappropriate and excessive use of antibiotics in veterinary and human medicine, agriculture and other fields has triggered strong selective pressure that fosters the appearance and propagation of resistant bacteria. In 2022, the extent of the problem caused four international authorities – the World Health Organisation (WHO), the Food and Agriculture Organisation of the United Nations (FAO), the World Organisation for Animal Health (WOAH) and the UN Environment Programme (UNEP) – to join force in a four-party partnership to address this crisis from a **One Health** approach.

The One Health approach is a holistic view of health as it recognises how people, animals and the environment are interdependent. Its goal is to foster the partnership between fields such as medicine, veterinary medicine, ecology and public health to develop coordinated surveillance and monitoring systems, joint responses to health emergencies, and sustainable solutions based on scientific evidence. In the case of antimicrobial resistance, this approach is essential to understand the complexity of its origin and to control spread.

Even though resistance to antibiotics has traditionally been studied from the clinical perspective, the environment is now known to play a crucial role both in its appearance and in its transmission. An important part of the antibiotics used in human and veterinary medicine – and their transformation products – reach the soil, rivers and seas, where they act as an emerging pollutant and contribute to the selection of resistant bacteria in natural ecosystems.

Bacterial conjugation has a central place among the mechanisms that foster the spread of resistance. This process allows genetic material to be exchanged between bacteria, facilitating the transfer of resistance genes contained in conjugative plasmids. Consequently, a recipient bacterium does not only acquire resistance, but it also becomes a transmitter of those genes, which drives a rapid spread even between different species.

Our research group has spent over twenty-five years studying one of the key agents of this process: the coupling protein, present in all conjugative systems and fundamental for the transfer of conjugative plasmids to take place. In recent years, we have identified several molecules capable of inhibiting the activity of this protein, opening up new ways to curb the spread of resistance and offering a window of hope for this global challenge. Furthermore, we are working on developing new formulas for existing antibiotics, as we are aware that finding new antibacterial compounds will be difficult in the short-term. We therefore resort to nanotechnology, encapsulating antibiotics in nanoparticles in order to improve their effectiveness and extend their clinical usefulness given the increase in multi-resistant bacteria. Given the environment’s key role in this phenomenon, we are developing tools that allow the impact of the emerging pollutants on resistance appearance and spread to be anticipated.

Finally, and because global challenges require integrated responses, we are part of the Joint Research Laboratory on Environmental Antibiotic Resistance (https://www.jrl-environmental-antibiotic-resistance.eus/en/home-english/), an international network that combines different disciplines to progress in finding solutions for the problem of antibiotic resistance by means of research, training new scientists and raising awareness of this pressing problem.

Objectives

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Program

07-05-2026

18:00 - 19:15 “Un planeta, una salud, un microbioma: un enfoque holístico frente a la resistencia a los antimicrobianos“

Idioma: Español

Itziar Alkorta Calvo | EHU - Catedrática de Bioquímica y Biología Molecular, Facultad de Ciencia y Tecnología, EHU y directora de los Servicios Generales de Investigación de la EHU (SGIker)

Eva Caballero kazetariak hizlariarekin elkarrizketa izango du hitzaldia amaitutakoan / La periodista Eva Caballero mantendrá un diálogo con la ponente una vez finalizada la conferencia

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Teachers

Itziar Alkorta Calvo

Professor of Biochemistry and Molecular Biology, EHU, Titular de Universidad

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Itziar Alkorta Calvo is a Professor of Biochemistry and Molecular Biology at the UPV/EHU. She obtained her PhD from the University of the Basque Country and completed a post-doctoral stay at the University of California, Berkeley. Her research focuses on antibiotic resistance, particularly on the mechanisms for the horizontal transfer of genes by bacterial conjugation. Her work has been pioneering in the study of the TrwB protein, where she has made a decisive contribution to its functional and structural characterisation, and to the development of strategies to curb the spread of resistance in environmental, crop-livestock agriculture and environmental areas. Itziar has published over 100 articles and headed European, national and regional projects, along with coordinating networks on resistance in the environment. She been the Vice-Dean of the Faculty of Science and Technology, Director of the Biofisika Institute and she is currently heading the UPV/EHU General Research Services (SGIker). She is known for her teaching and dissemination work, and is the author of ‘Mensajeras Ocultas de apocalipsis’. In 2025, Stanford University included Itziar on its World’s Top 2% Scientist List, a ranking of the most cited researchers.

Registration fees

REGISTRATION - FACE-TO-FACE	UNTIL 07-05-2026
General	0 EUR

REGISTRATION - ONLINE	UNTIL 07-05-2026
General	0 EUR

Place

Miramar Palace

Pº de Miraconcha nº 48. Donostia / San Sebastián

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