

## The role of Wastewater Treatment Plants in the control of Antibiotic Resistance dissemination

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In the last years, the increase in the prevalence of antibiotic resistance has attracted the attention of researchers and regulators, and the increasingly common occurrence of multidrug resistant bacteria placed this problem as one of the global health threats of ours and future generations. To find solutions and try to define mitigation strategies, it is important to understand the problem.

The wastewater treatment plants are considered a major source in the dissemination of antibiotic resistance in the environment. The antibiotic resistance may be disseminated through the spread of antibiotic resistant bacteria (ARB) or of the hosted antibiotic resistance genes (ARGs). For that reason, it is important to understand how wastewater treatment contributes to remove ARB and ARGs. It is also important to try to understand if some groups of bacteria have higher relevance as harbours or donors of ARGs, contributing to increase the dissemination rates of antibiotic resistance. And, which genes, if some, can be used as good indicators of the level of antibiotic resistance contamination of an environment. The role of other factors, such as the presence of stressors (e.g. antibiotic residues, metals, disinfectants) in the wastewater should also be considered as a possible contributor for the selection of ARB and/or ARGs.

These are among the major goals to achieve in order to have an adequate set of tools to measure the impact that the treated effluents, released to the environment or reused for example for irrigation practices, may have in the environment.

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### Ivone Vaz-Moreira

Ivone Vaz-Moreira graduated in Biochemistry at the University of Coimbra (Faculty of Sciences and Technology) in 2005 and completed her Ph.D. in Biotechnology with specialization in Microbiology at Biotechnology College from the Portuguese Catholic University in 2012.

Presently she is a postdoctoral researcher at CBQF (Centre for Biotechnology and Fine Chemistry), a State Associated Laboratory of the Faculty of Biotechnology, Portuguese Catholic University, Porto, Portugal.

Her research is focused in Environmental Microbiology, associated with aquatic habitats and their intersections with soil/sediments, plants, animals, and finally humans; including the study of the bacterial diversity with particular emphasis on the urban water cycle and the potential of antibiotic resistance dissemination from aquatic environments. In 2014, she was listed among the ten bacterial taxonomists in Portugal.

She has experience in different methodologies, from most classical microbiology methods to last generation Microbiology and Molecular Biology methods, as the use of bioinformatics tools for genome or microbiome's analysis.

Seminarium odbywa się w ramach współpracy badawczej w projektach: Wpływ rozprzestrzeniania się genów antybiotykooporności (ARG) ze ścieków komunalnych oczyszczalni ścieków do środowiska: Badania porównawcze w Polsce i Portugalii - Program współpracy bilateralnej Polska-Portugalia na lata 2017-2018, finansowany przez MNiSW oraz Metogemoniczny profil genów antybiotykooporności i genetycznych elementów mobilnych w ściekach komunalnej oczyszczalni ścieków - Konkurs HARMONIA 9, finansowany przez NCN (2017/26/M/NZ9/00071).