ANtibioticS and mobile resistance elements in WastEwater Reuse applications: risks and innovative solutions

H2020-MSCA-ITN-2015/675530 - ANSWER

Outreach Activity 6:

" Participation at Café Scientifique Event "

ESR 2: Roberto Marano

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The Volcani Center –Institute of Water Soil and Environmental Sciences

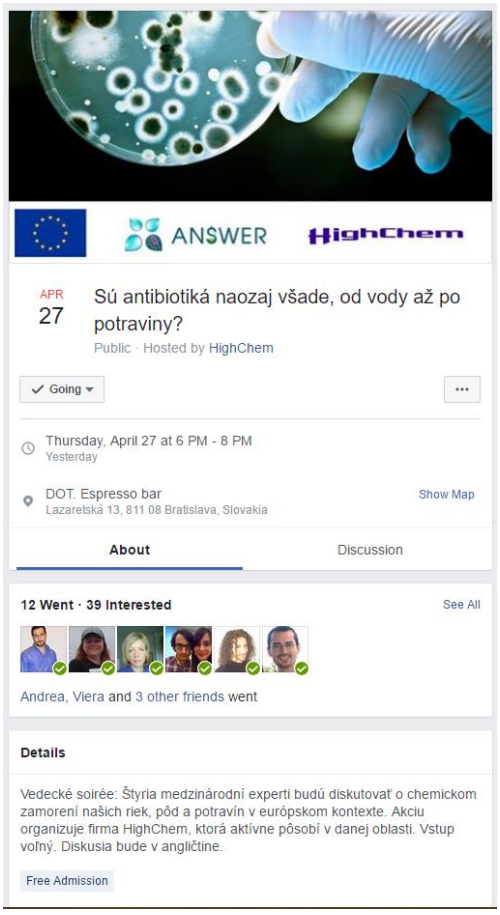
"This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 675530"

Description

- Date of the event: 27th of April, 2017.
- Place where the event took place: “DOT. Espresso bar”, Lazaretská 13, Bratislava, Slovakia
- Audience Details (number of participants, age, sex, etc.): The audience consisted of 14 participants (7 males and 7 females) ranging from 25 to 55 years old (two babies joined us as well)
- Description of the topic of your presentation: The ANSWER project was presented in the context of antibiotic resistance, and wastewater reuse as well as within the Horizon2020. The initial topics were then the concept of antibiotic resistance from a biological point of view (evolutionary significate, main mechanisms, genetic of antibiotic resistance and evolution of bacterial genomes). Subsequently the known mechanisms of antibiotic resistance and their dynamics in wastewater treatment plants were discussed. Questions followed this introduction and thus the conversation was then driven by Q&A. Finally, the chemical perspectives of the topic were discussed by ESR8 and ESR15.

Announcement of the (i.e. café scientifique) event

- Announcement was done by email and by social media (Facebook event).



Moreover, we made an email announcement, inviting researchers from Slovenska Akademia Vied together with their families.

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Dissemination material distributed during the event

- During Café Scientifique a brochure and handouts were disseminated to the participants. Two types of handouts per each ESR were given, the first one contains basic information about the ESR and the second about the ESR's topic.

WHY ANTIBIOTICS?

Antibiotics are one of the most important groups of pharmaceuticals and antibiotic resistance is one of the major challenges for human and veterinary medicine.

Besides being used for treating and preventing infectious diseases in humans, antibiotics are also used for animal farming and as well as for agricultural purposes.

WHAT IS ANTIMICROBIAL RESISTANCE?

Antimicrobial resistance is a consequence of bacterial evolution and adaptation to antibiotic exposure.
As a result, the medicines become ineffective and infections persist in the body, increasing the risk of spreading to others.

SOURCES OF ANTIBIOTICS DISSEMINATION INTO OUR ENVIRONMENT:

- Effluents from pharmaceutical manufacturing plants
- Disposal of unused or expired drugs
- Patient excreting of unabsorbed medications
- Effluents from hospitals and veterinary clinics
- Medicated animal foods or treat for disease outbreaks (i.e. in fisheries)
- Farming - manure used as fertilizer
- Crop production

IF ANTIBIOTICS ARE IN WATER AND SOIL... WHAT ABOUT THE CROPS?

Plants can uptake antibiotics!
The ability of plants to absorb antibiotics raises the potential for contamination of human food supply.

Consumption of antibiotics in plants may cause allergic reactions in sensitive populations, such as young children.

There is also concern that consuming antibiotics may lead to the development of antimicrobial resistance, which can render antibiotics ineffective.

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Roberto Marano

- Bachelor Degree in Molecular Biology, University of Catania
- Master Degree in Functional Genomics, University of Trieste
- Early-stage Researcher in ITN MSCA ANSWER; Project title: **"Development and application of novel methods for targeting mobile genetic elements in wastewater and downstream environments"**

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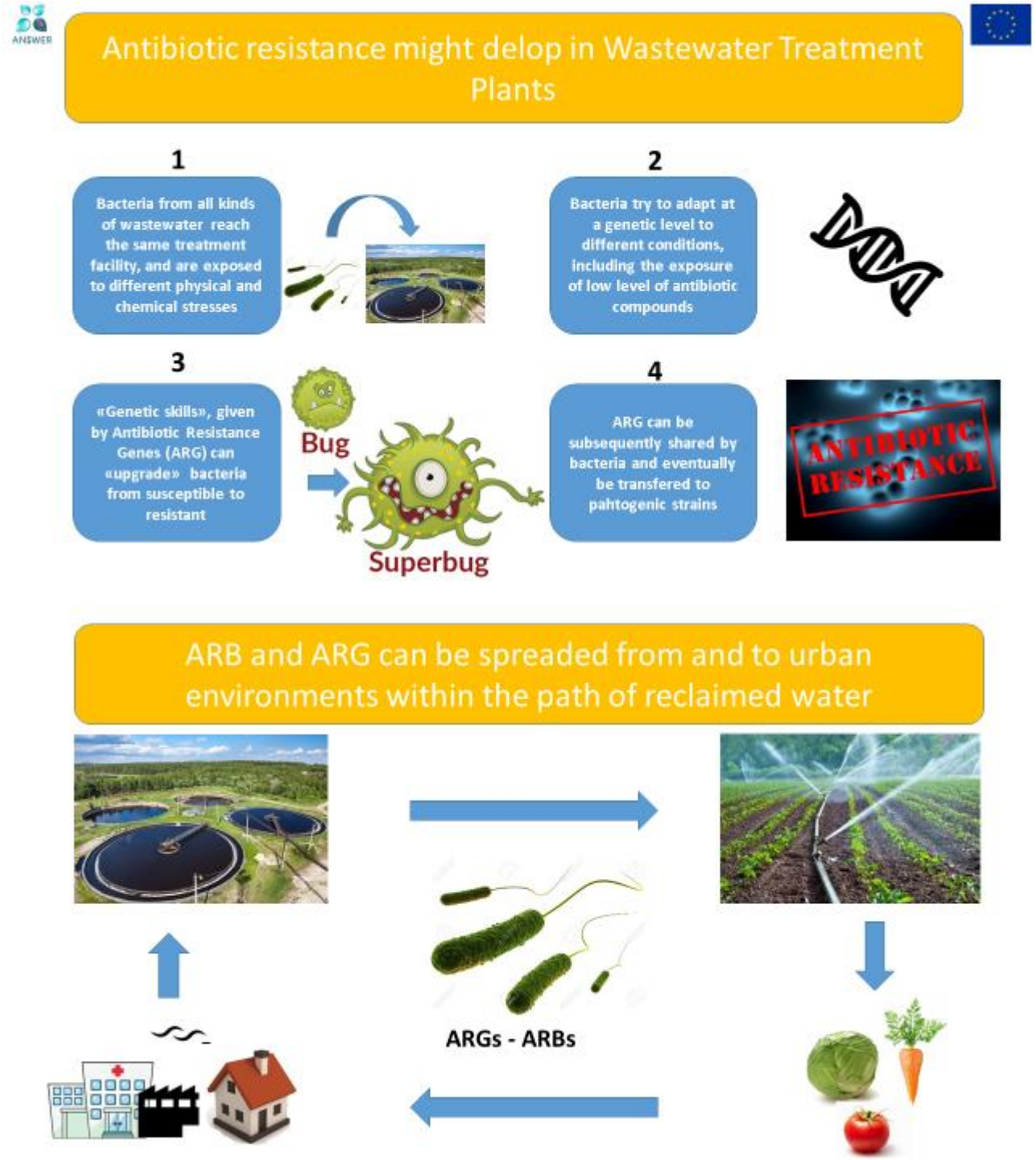

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Photos of the event

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Final Remarks

- A very pleasant and active discussion was made throughout the all event. All the participants were involved and showed interest in the topics by asking questions. Take home messages were eventually conveyed and questions were discussed and/or fruitfully answered.

We would like to thank Dr Robert Mistrik who helped us to organize this event.

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