ANTIMICROBIAL RESISTANCE IN AOTEAROA: OCCURRENCE AND TRANSPORT THROUGH WASTEWATER

Louise Weaver[1], Isabelle Pattis[1], William Taylor[1], Erin McGill[1], Christina Straub[1], Angela Cornelius[1], Pierre-Yvres Dupont[1], Panan Sitthirit, Bronwyn Humphries, Lee Liaw[2], Kristin Dyet[1]

[1] Institute of Environmental Science & Research Ltd (ESR)

[2]Christchurch City Council

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Antimicrobial Resistance (AMR)

What is it?

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Antimicrobial Resistance (AMR)

Why do we care?

Emerging Contaminants 7 (2021) 160–171

Contents lists available at ScienceDirect

Emerging Contaminants

journal homepage: http://www.keaipublishing.com/en/journals/emerging-contaminants/

The role of emerging organic contaminants in the development of antimicrobial resistance

Izzie Alderton [a,*], Barry R. Palmer [b], Jack A. Heinemann [c], Isabelle Pattis [a], Louise Weaver [a], Maria J. Gutiérrez-Ginés [a], Jacqui Horswell [b,1], Louis A. Tremblay [d,e]

Figure 1. Schematic of potential transmission pathways of AMR bacteria between human, environmental and animal reservoirs.

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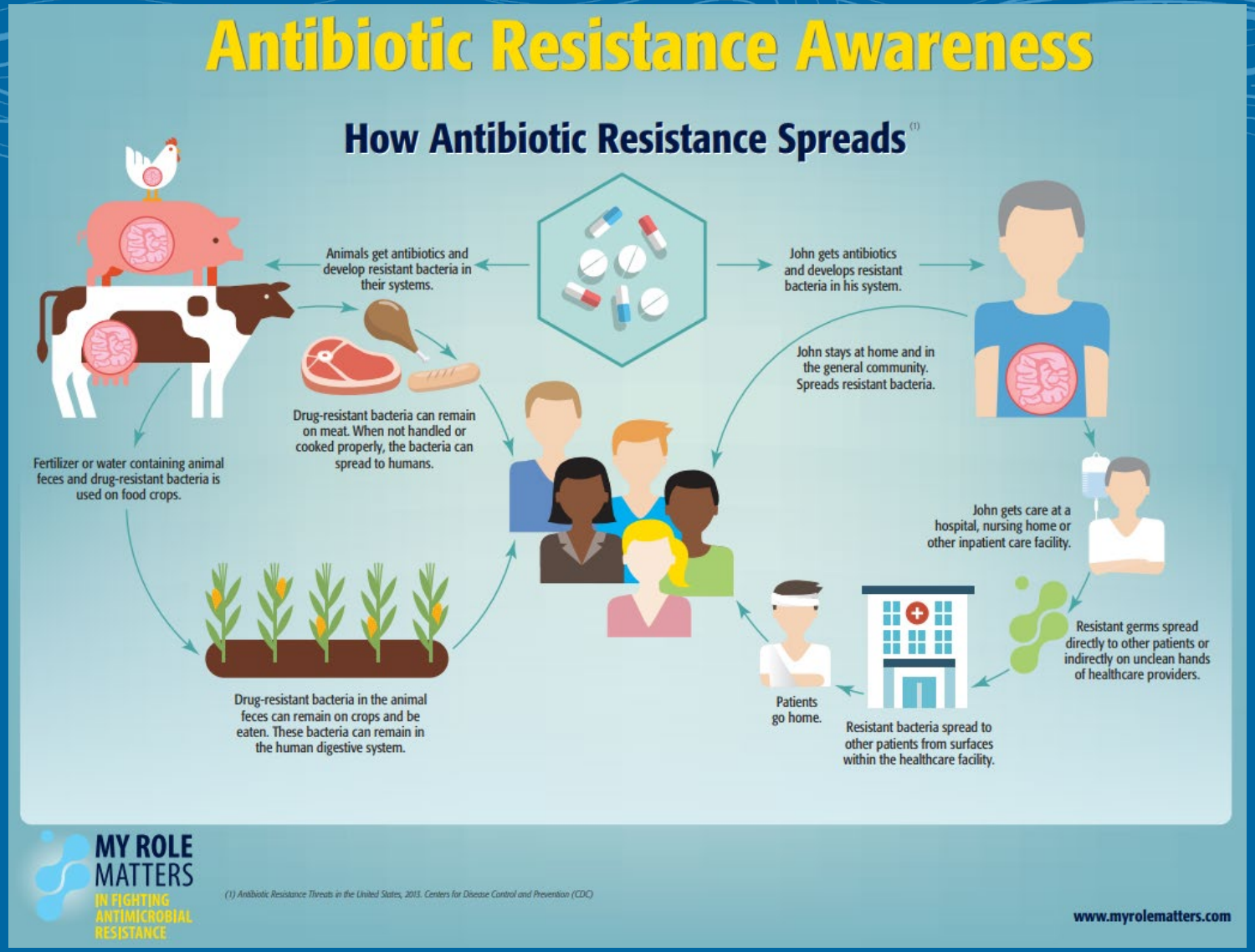
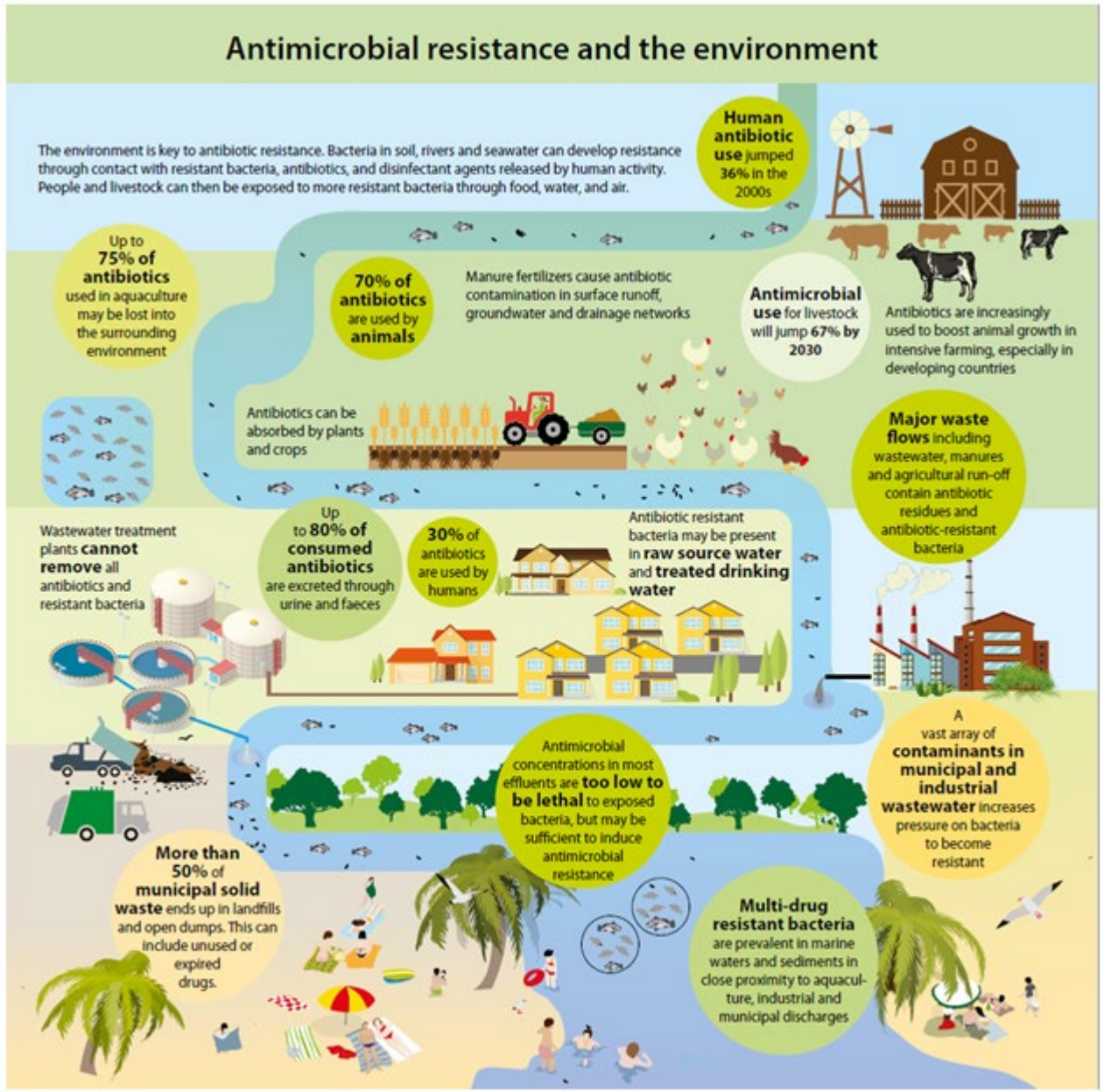
Antimicrobial Resistance (AMR)

How does it happen?



Antimicrobial Resistance (AMR)

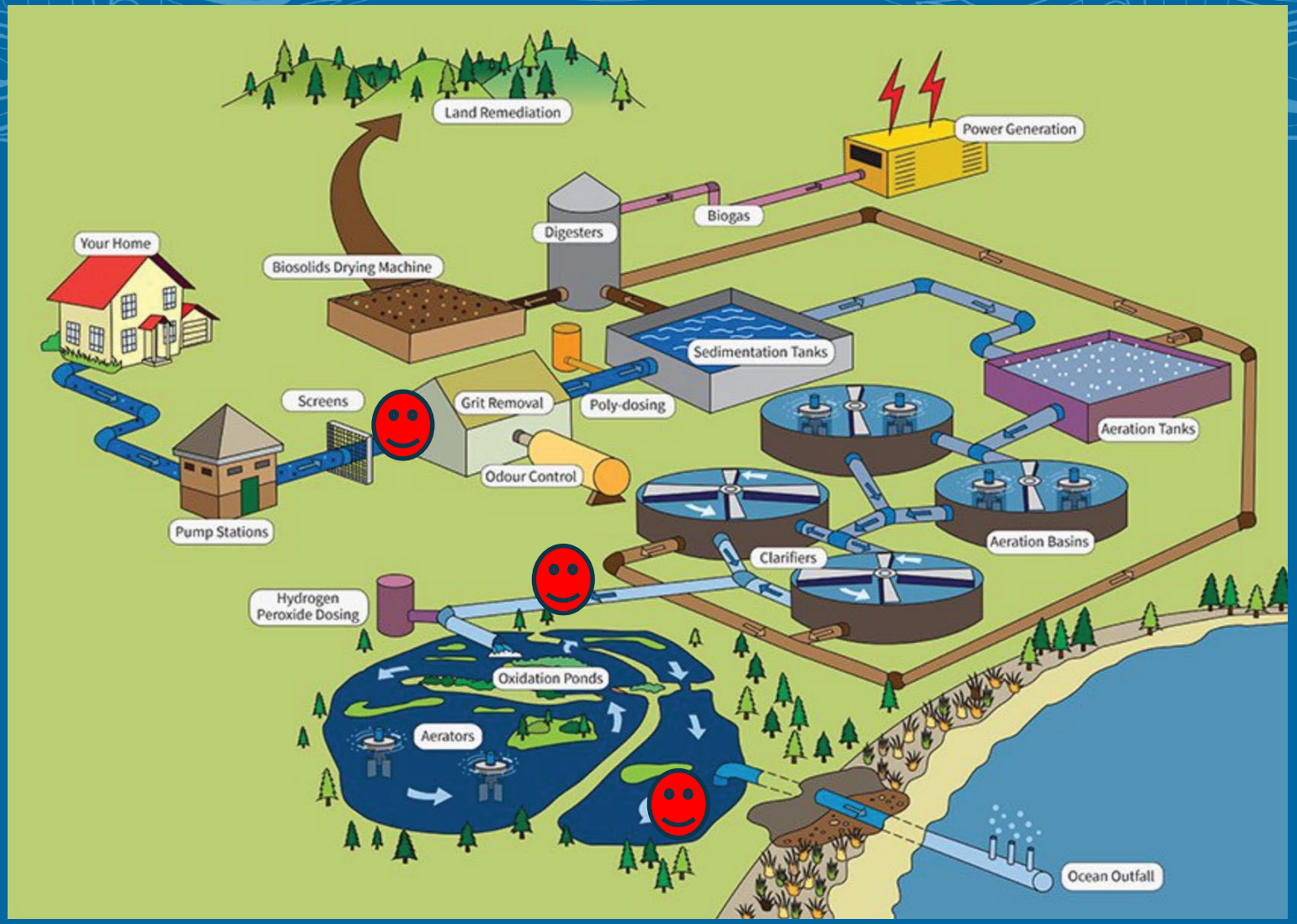
Why wastewater?



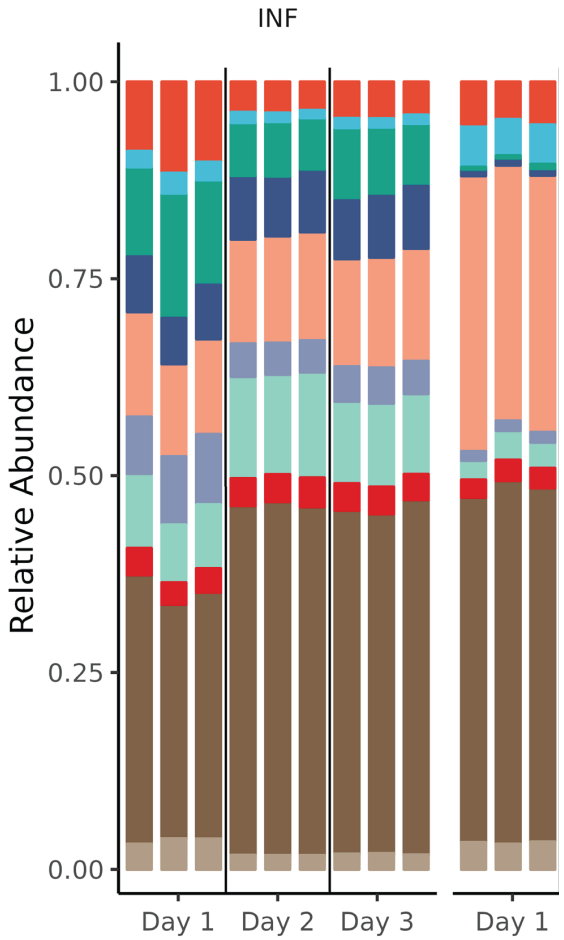
Source: Healthy environment is key for antibiotics to work | UNEP | 2020

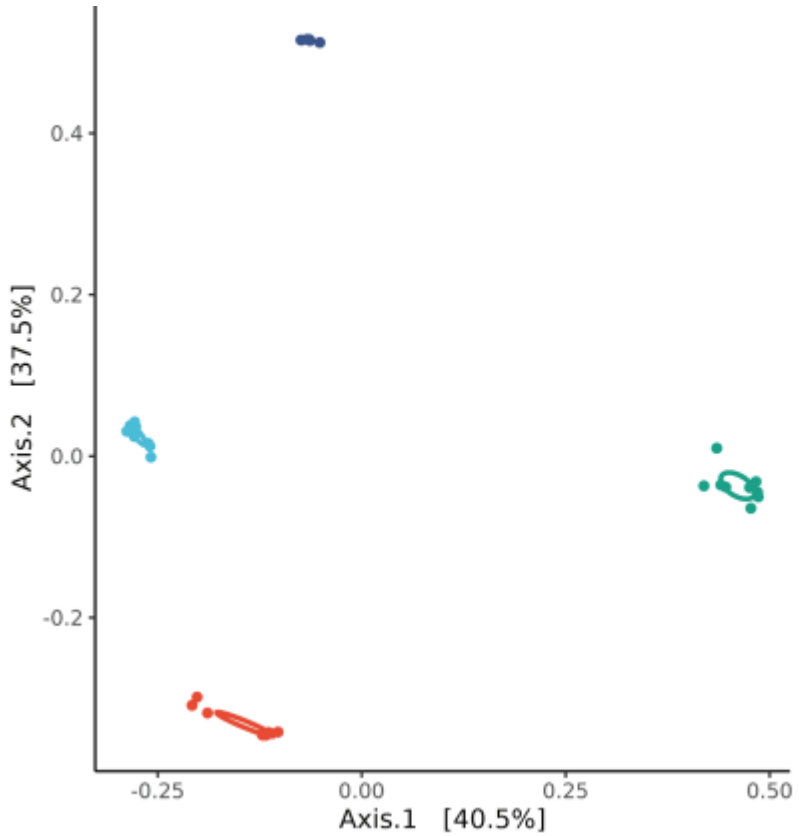
Antimicrobial Resistance (AMR)

Methods



Results – Microbial communities





mycetia
proteobacteria
roidia
roteobacteria
idia
nproteobacteria
acteriia
aproteobacteria

- Microbial communities changed throughout the treatment plant.
- Betaproteobacteria increased in abud.
  - nitrification
  - denitrification
  - ammonia oxidation

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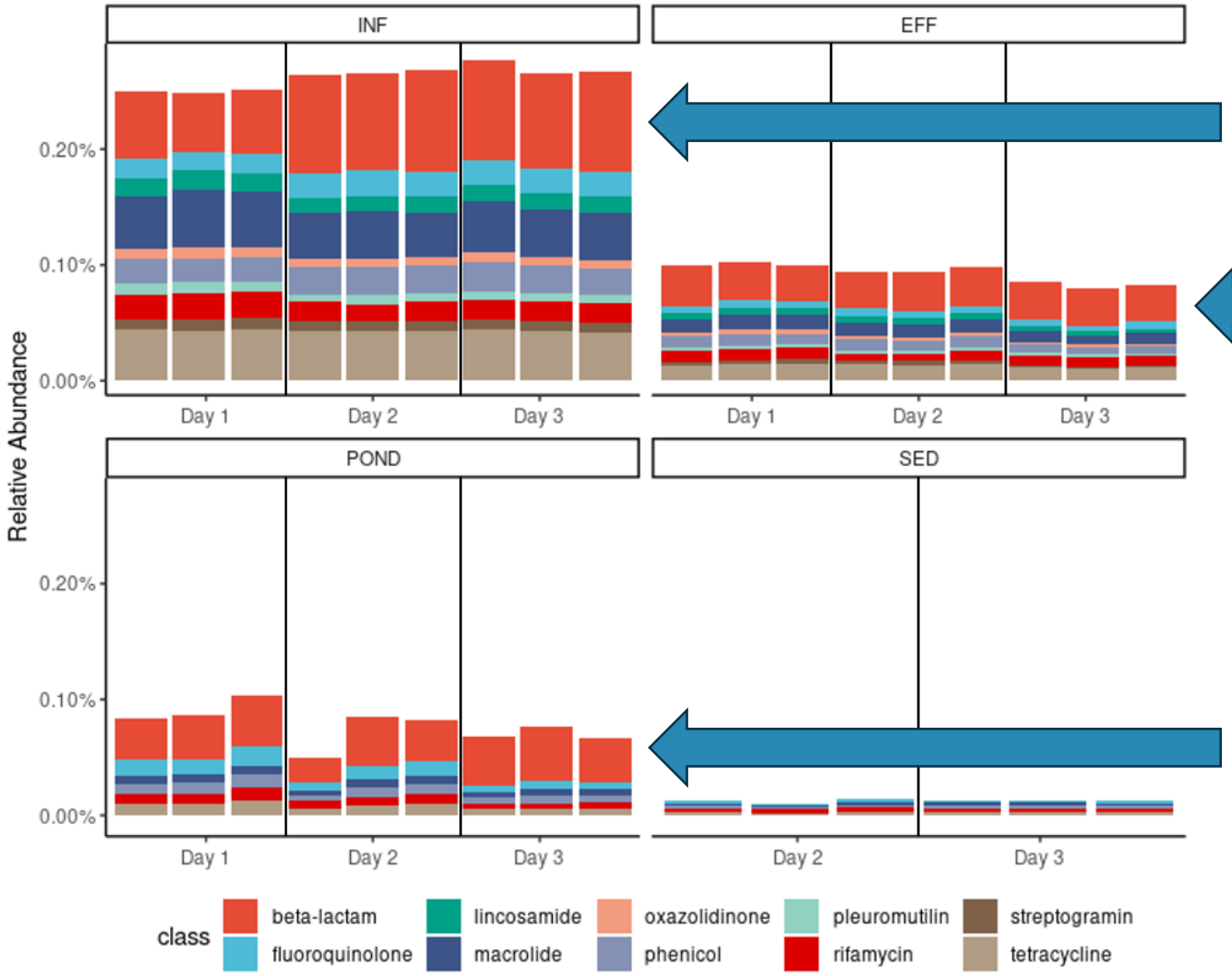
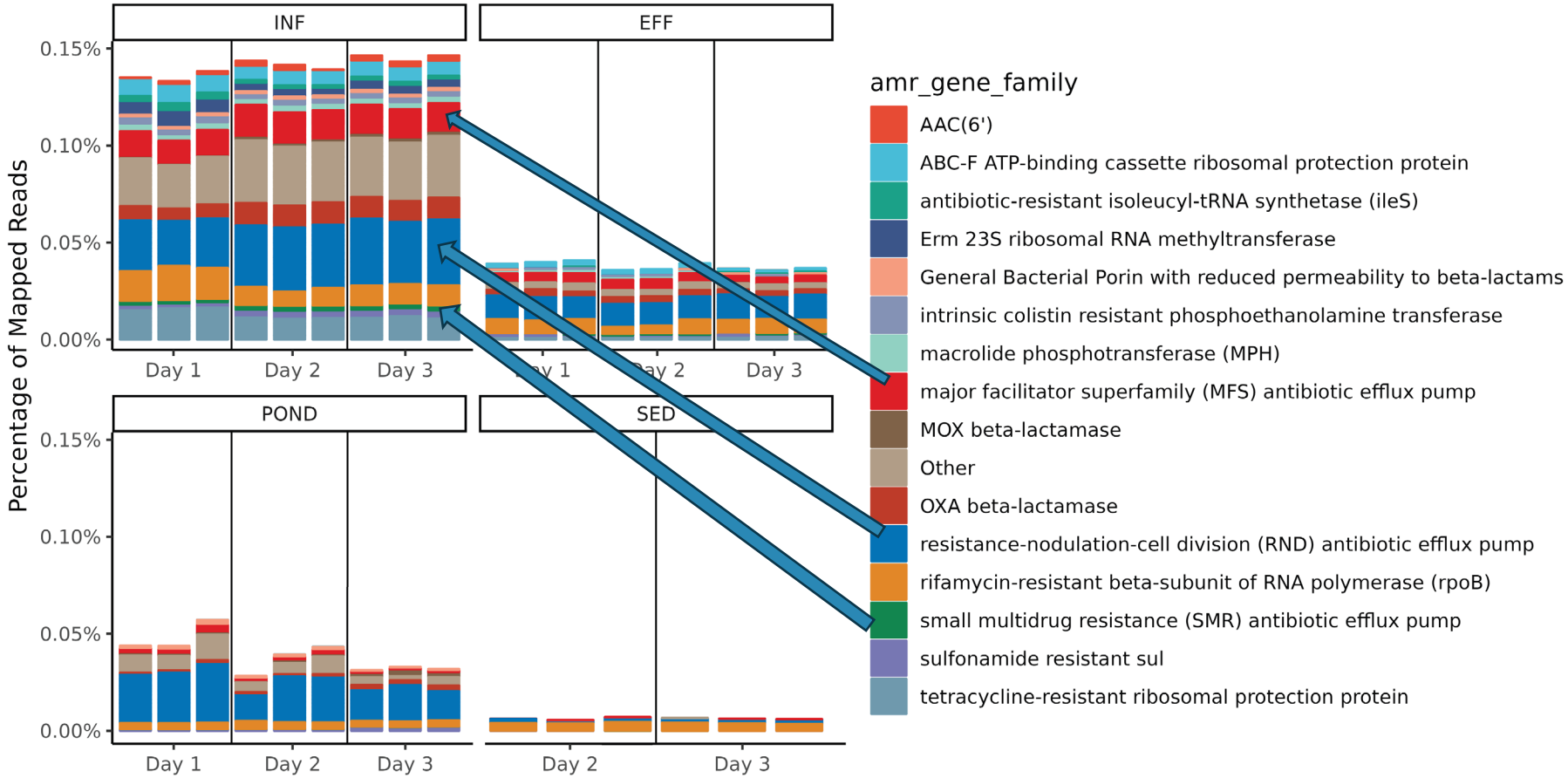
Results – AMR genes



Ten most abundant microbial classes of AMR genes present across the WWTP.

Results – AMR gene families



Results – Resistant bacteria

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Conclusions

- A reduction in AMR through the WWTP was observed.
- AMR resistant bacteria and genes were detected in the polishing pond and pond sediment.
- There is a risk of environmental dissemination and transmission

Many thanks for listening!

Thanks to MBIE Strategic Science Investment Fund (SSIF) administered through ESR for funding this research.

If you have any questions: please email

Louise.Weaver@esr.cri.nz

Isabelle.Pattis@esr.cri.nz