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Longitudinal exposure to antiseizure medications shapes gut-derived microbiome composition, resistome, and metabolome

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INRAE

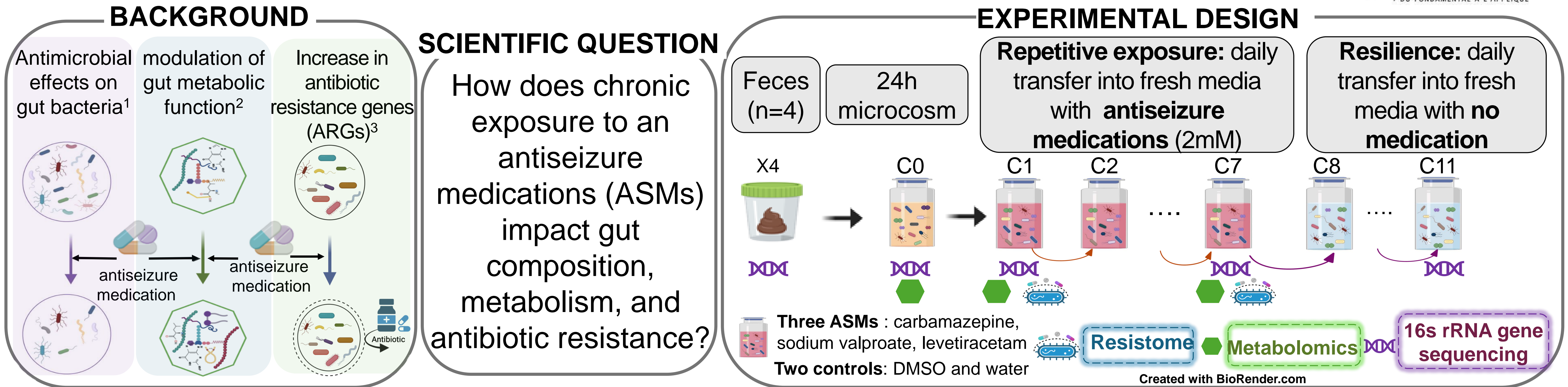
ISME

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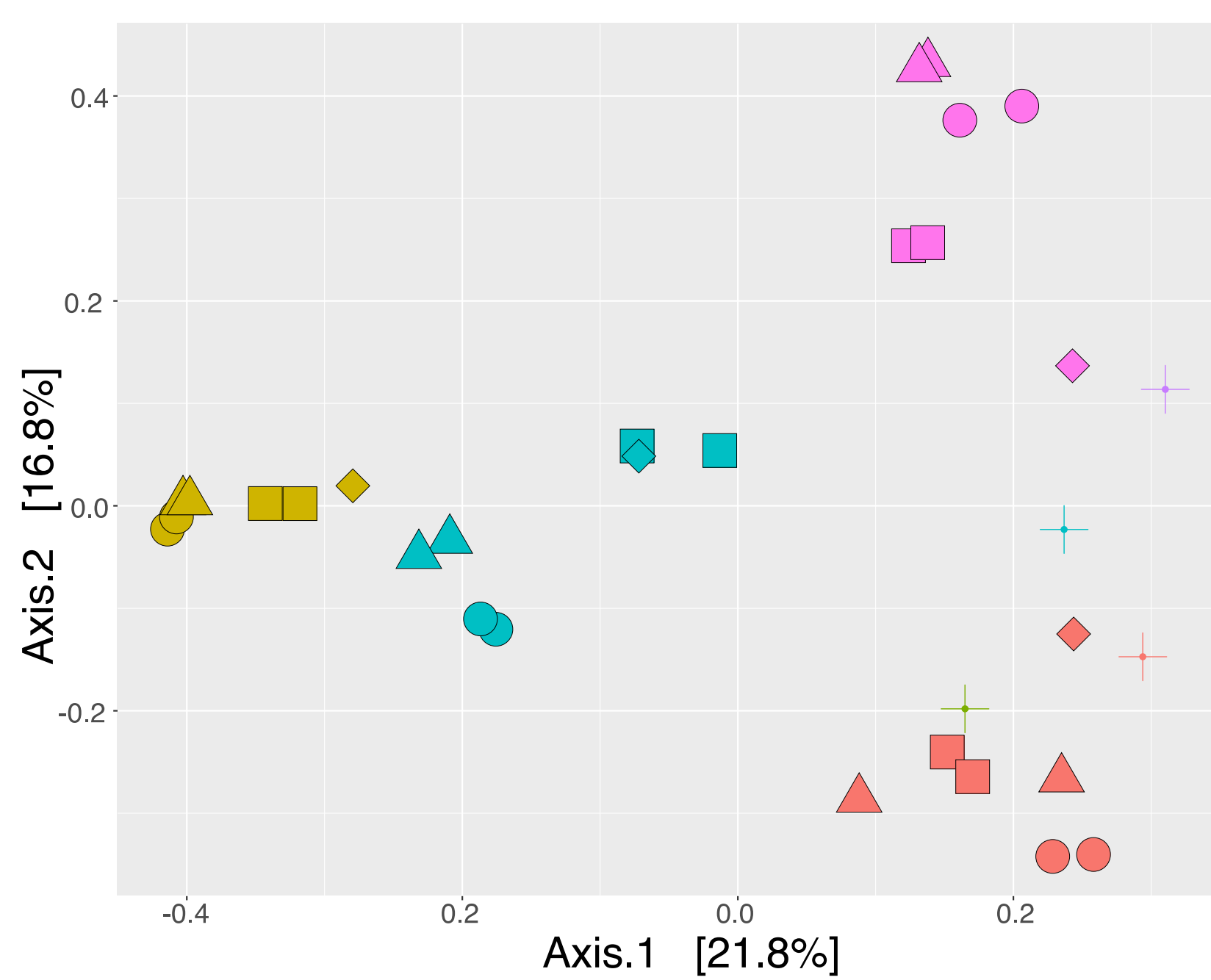
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ÉCOLE DOCTORALE Innovation Thérapeutique DU FONDAMENTAL À L'APPLIQUÉ



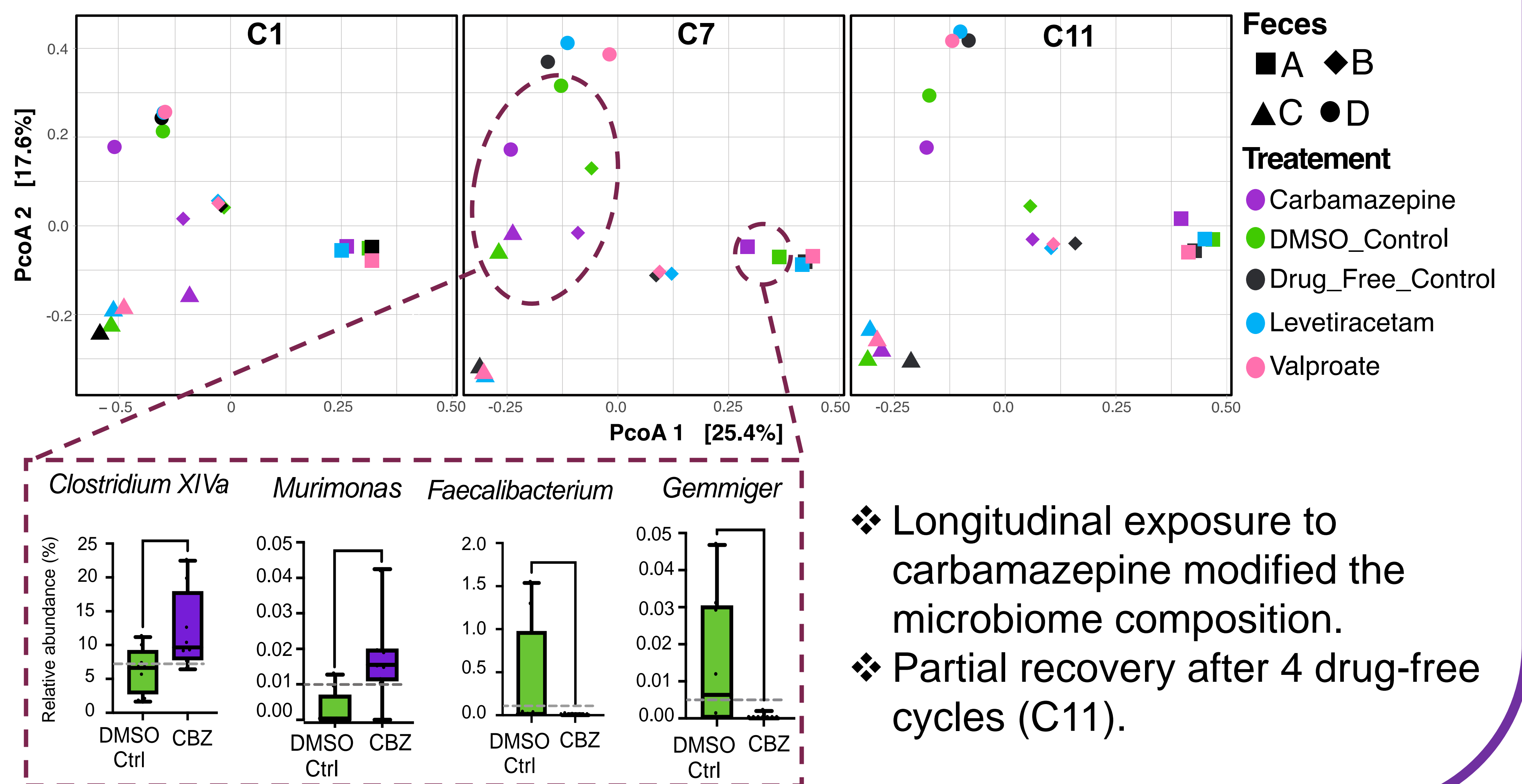
Shifts in the gut microbiome due to longitudinal exposure to carbamazepine

Semi-continuous cultivation preserved the inter-individual variation



❖ cultivation strategies generate compositionally different microcosms.

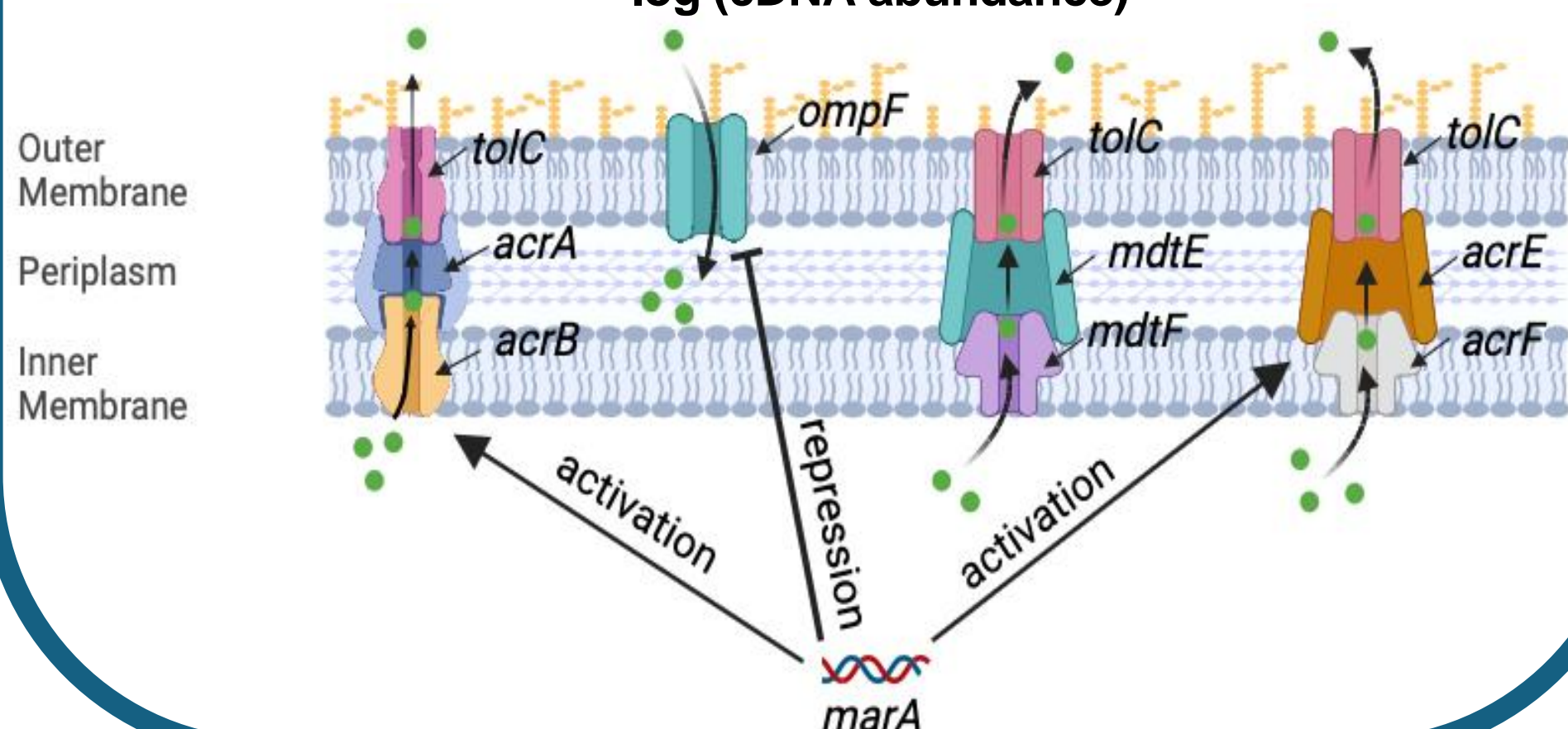
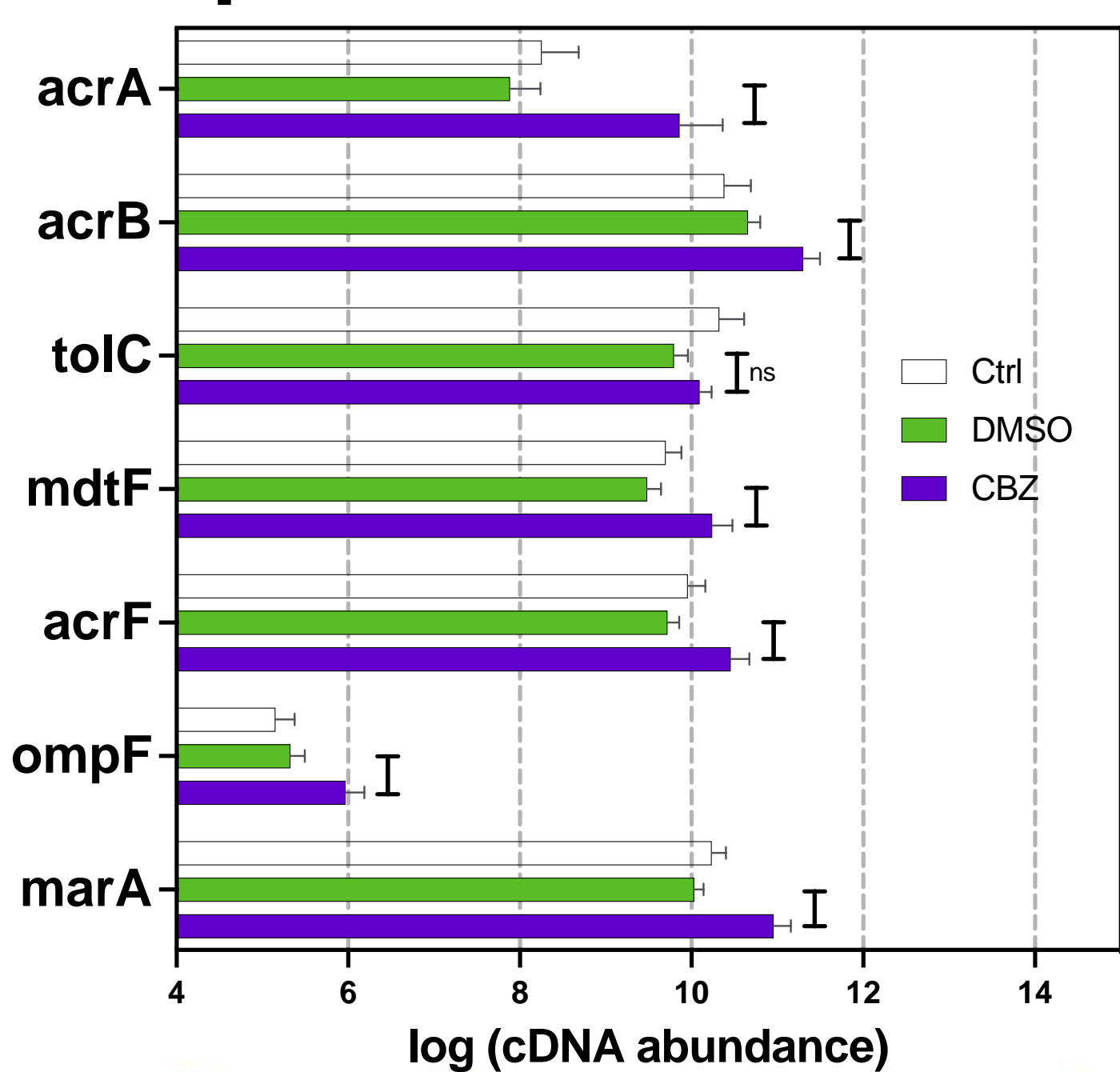
Repetitive exposure to carbamazepine impact the community composition



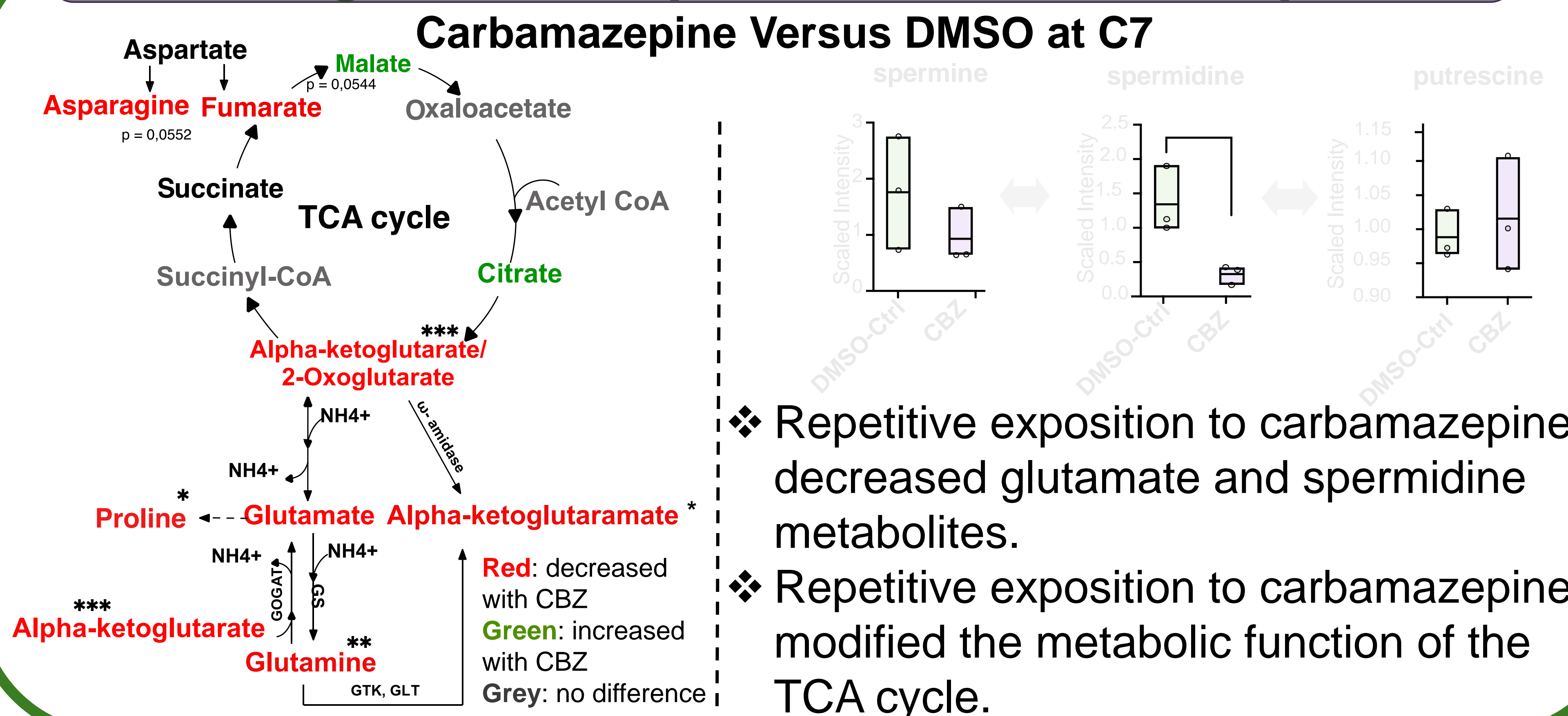
❖ Longitudinal exposure to carbamazepine modified the microbiome composition.
❖ Partial recovery after 4 drug-free cycles (C11).

Increased in ARGs expression

Repetitive exposure to carbamazepine increased the expression of ARGs



Shift in the microbiome metabolic function due to longitudinal exposure to carbamazepine

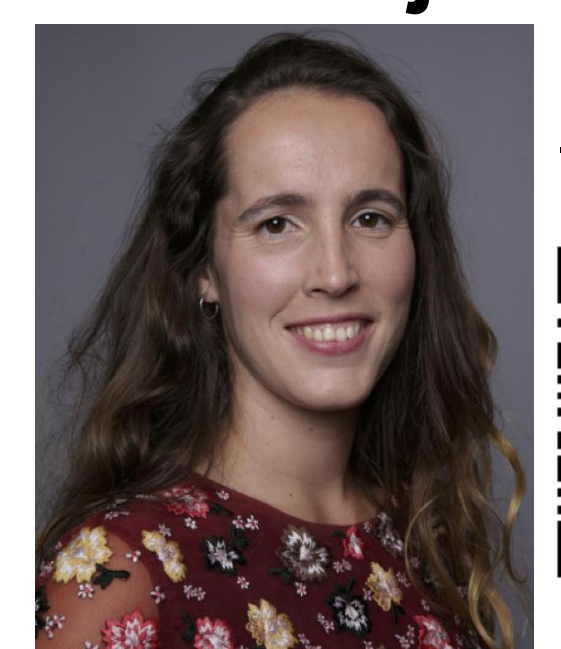


❖ Repetitive exposition to carbamazepine decreased glutamate and spermidine metabolites.
❖ Repetitive exposition to carbamazepine modified the metabolic function of the TCA cycle.

Conclusion

- ❖ Microcosms longitudinally developed based on inoculum feces composition.
- ❖ Repetitive carbamazepine exposure modified gut microbiome composition and increased ARGs expression.
- ❖ Carbamazepine exposure altered vital metabolic functions involving TCA cycles and polyamines of the gut microbial communities.

Where to join me!



LinkedIn link:



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¹Maier et al., PMID : 29666994, ² Cossotto et al, PMID : 30155748,

³ Wang et al, PMID : 30291330,