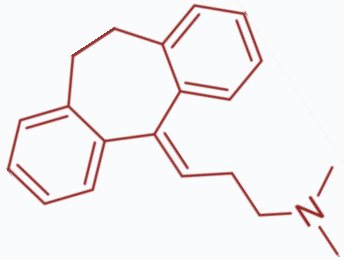
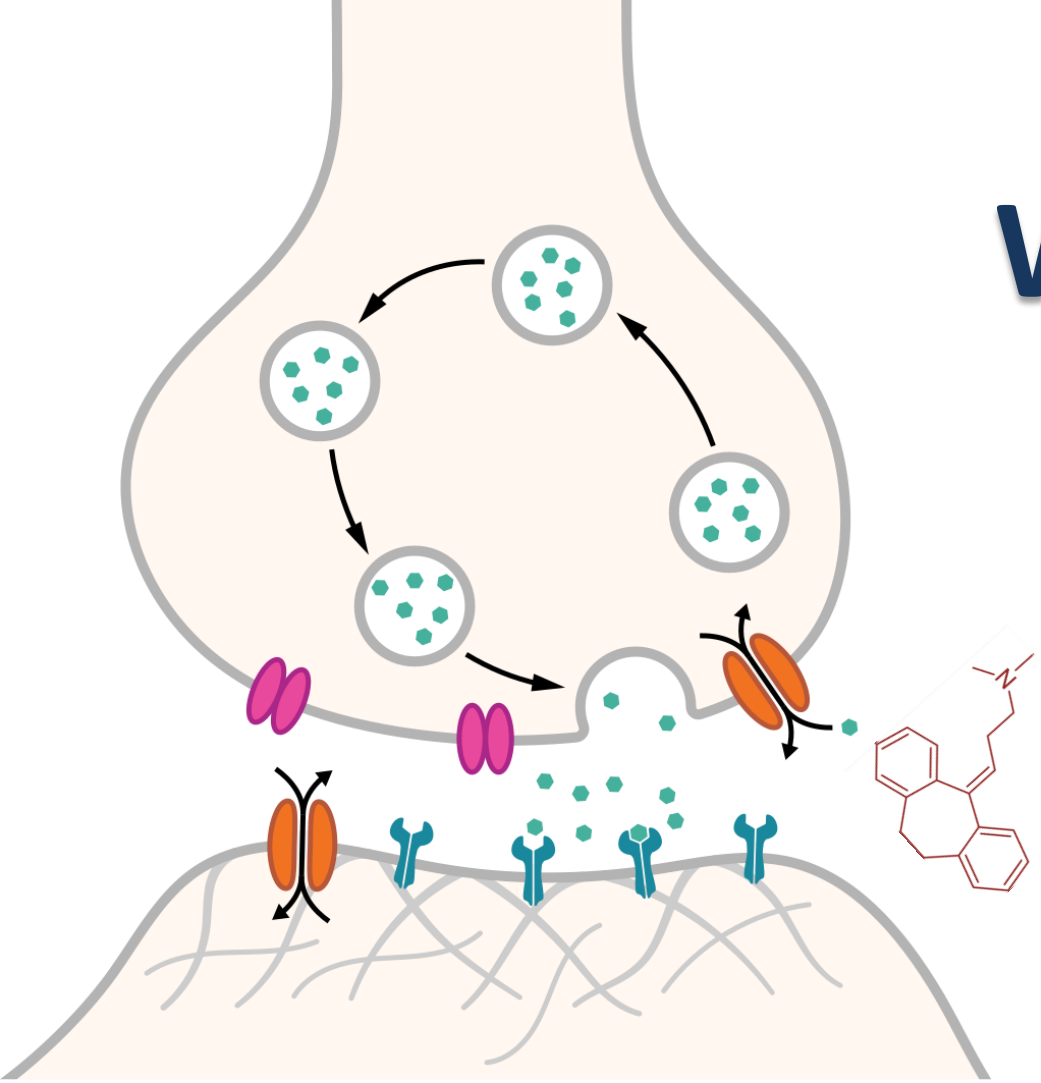
Targeted approach to identify metabolomic pathways significantly altered in gilt-head bream liver and brain exposed to amitriptyline

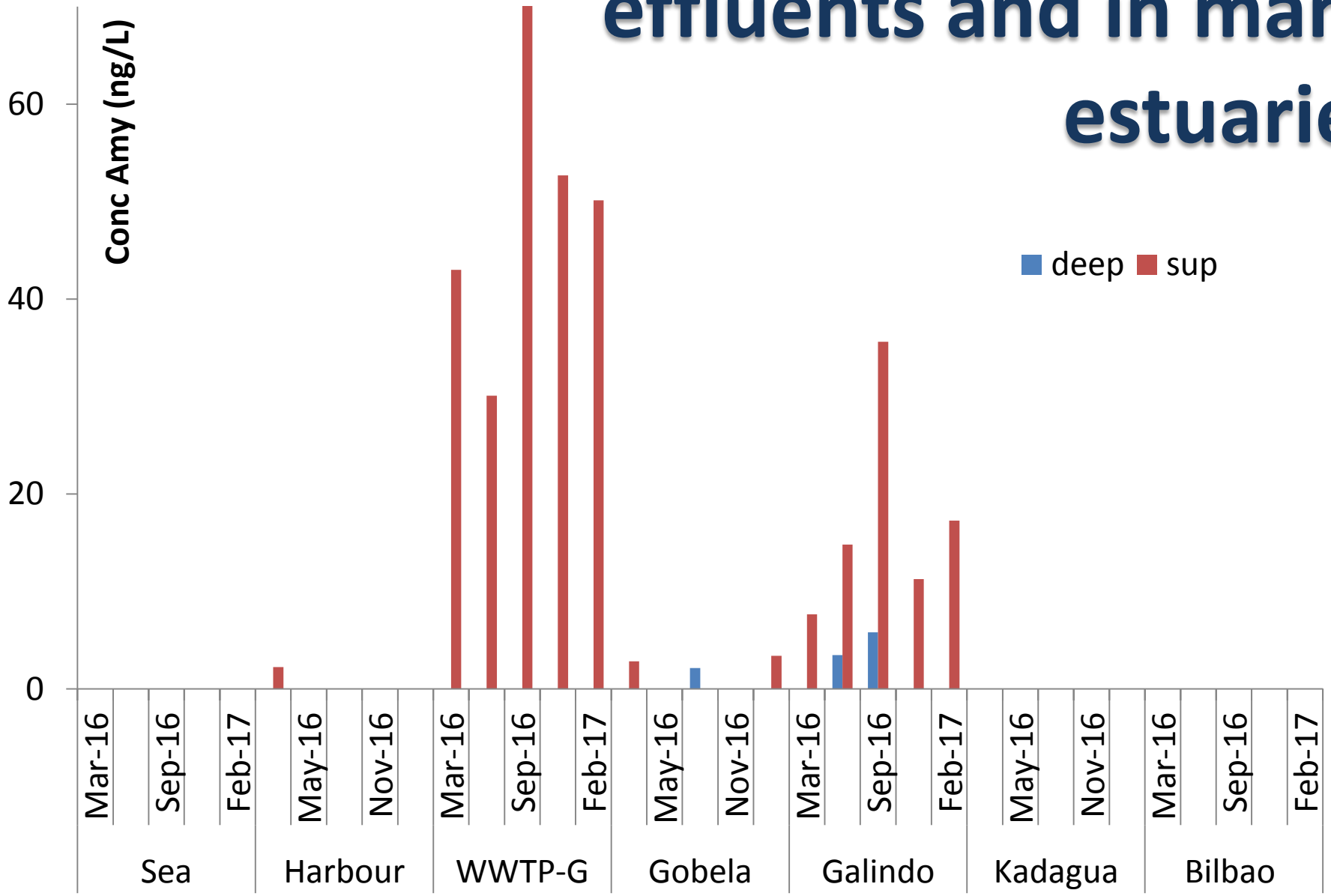
H. Ziarrusta, A. Ribbenstedt, L. Mijangos, A. Prieto, U. Izagirre, M. Olivares, O. Zuloaga, J. P. Benskin, N. Etxebarria



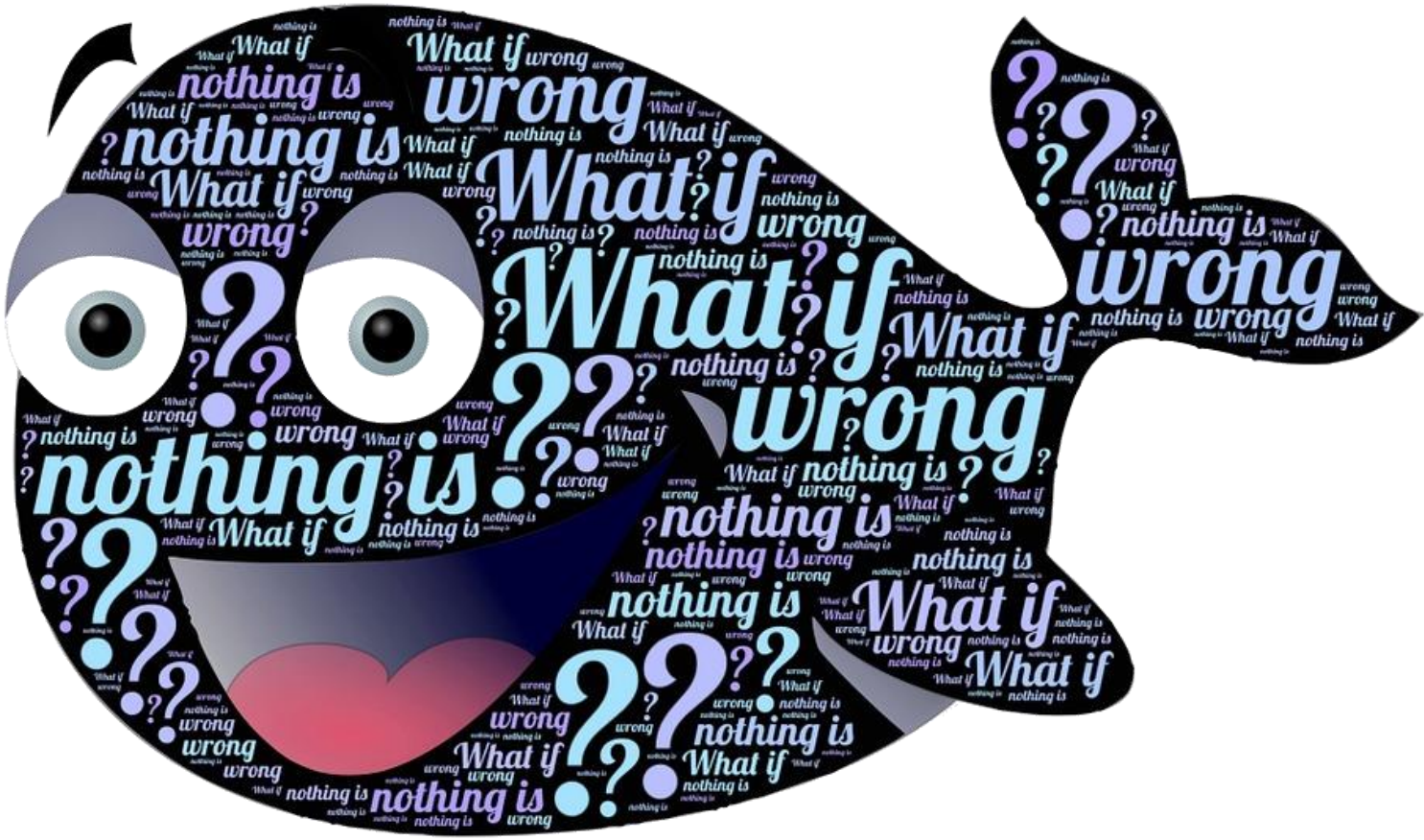
Why Ami?



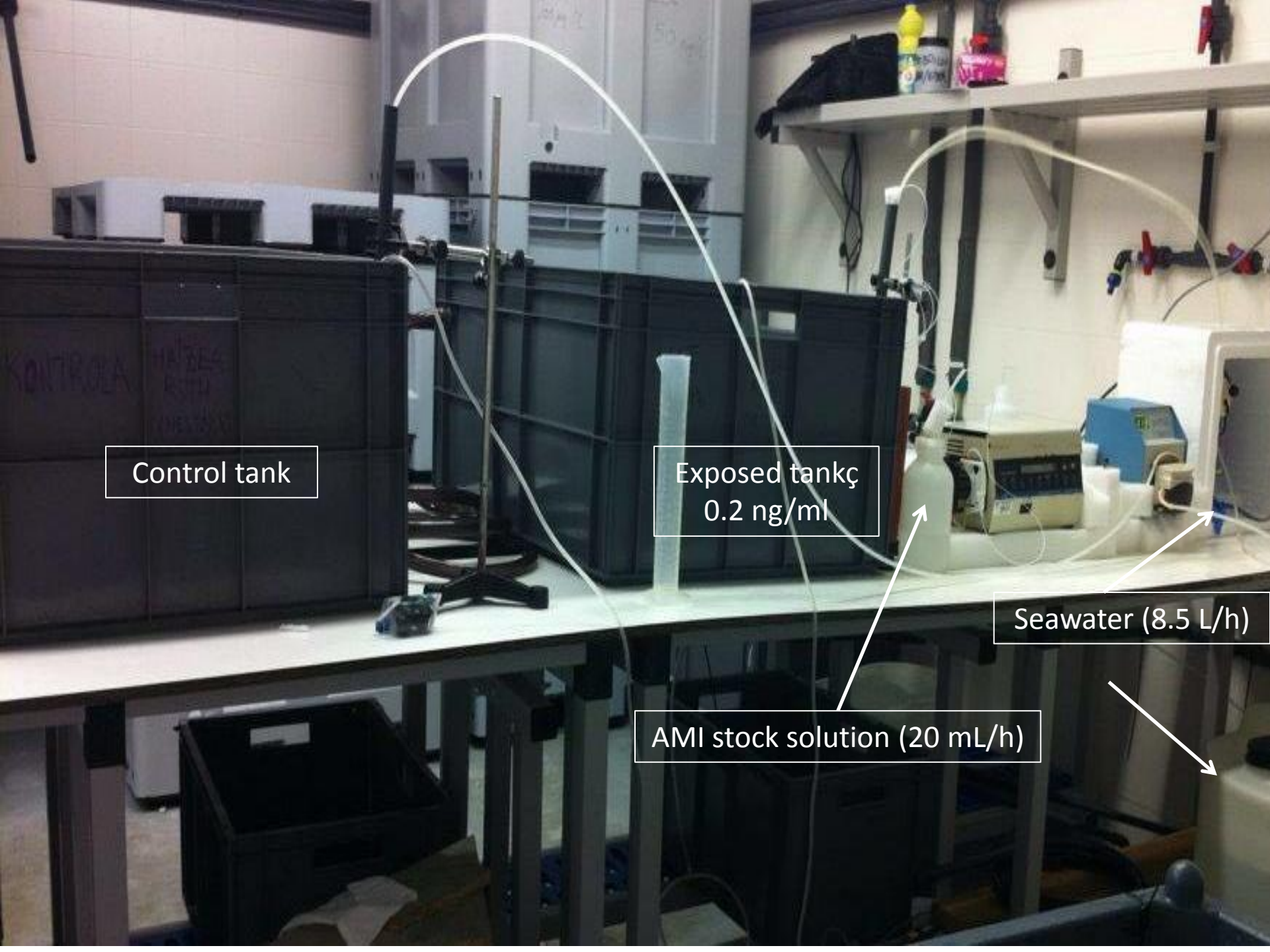
It is found in WWTP effluents and in many estuaries



We want to know the effects of a chronic exposure under sublethal concentrations



Gilt-head sea bream
(*Sparus aurata*)


Control tank
Exposed tankç
0.2 ng/ml
Seawater (8.5 L/h)
AMI stock solution (20 mL/h)

Sampled tissues

Analytical Workflow

HILIC UHPLC-MS/MS (38 metabolites)

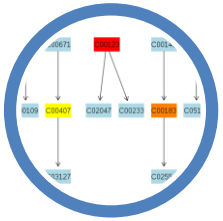
- Amino acids
- Biogenic amines
- Nucleobases
- Neurotransmitters

Flow Injection-MS/MS (150 polar lipids)

- Carnitines
- Phosphatidylcholines (PCs)
- LysoPCs
- Sphingomyelins

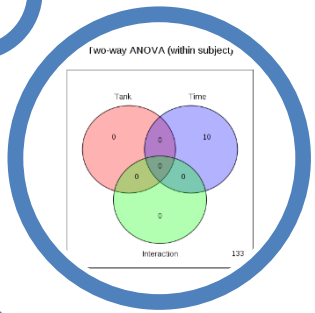
MetaboAnalyst 3.0

– a comprehensive tool suite for metabolomic data analysis

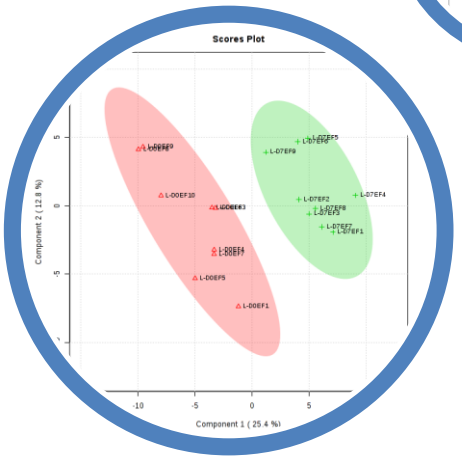


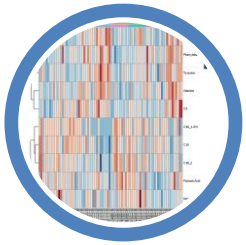
Pathways

Multivariate Analysis



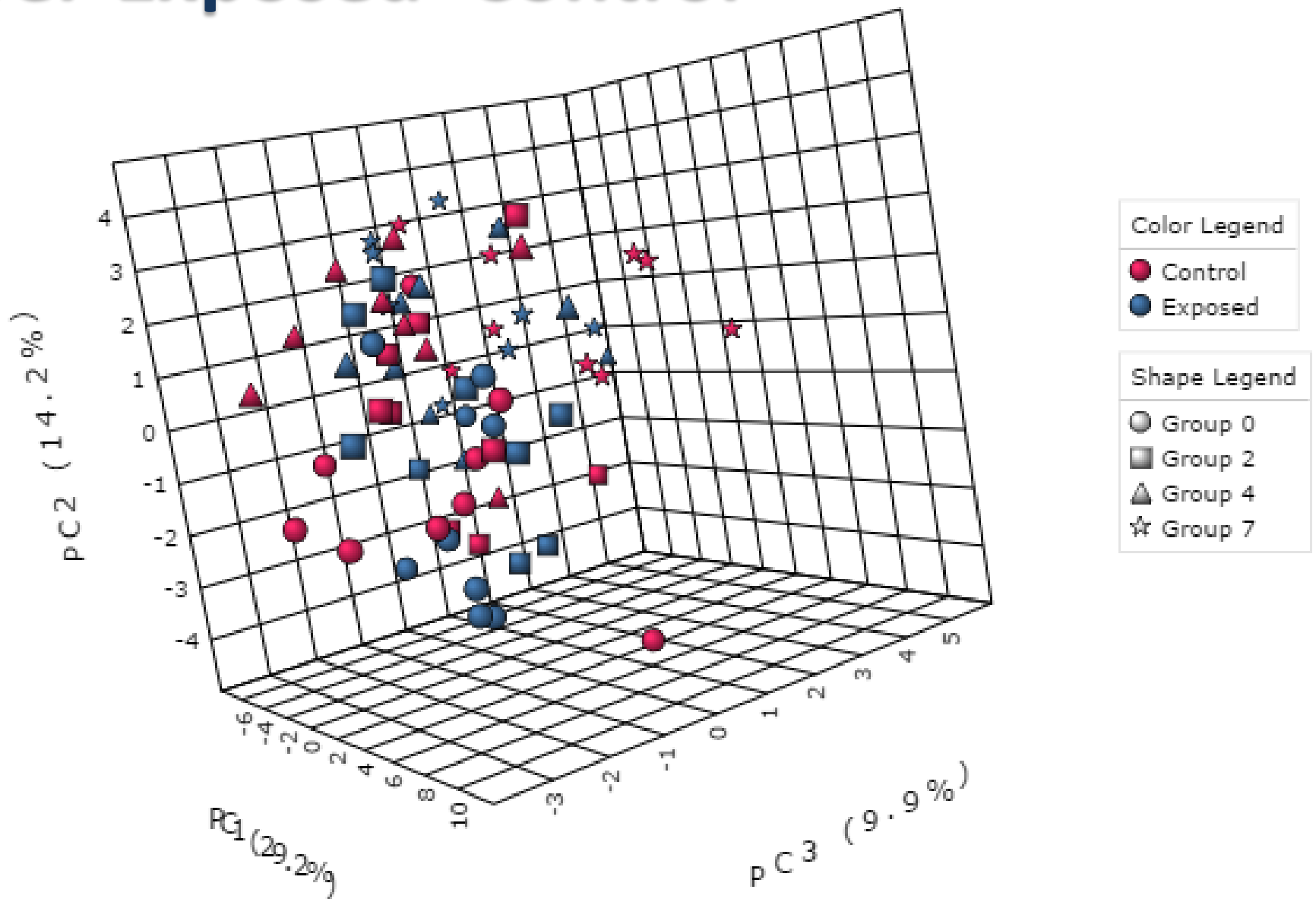
ANOVA



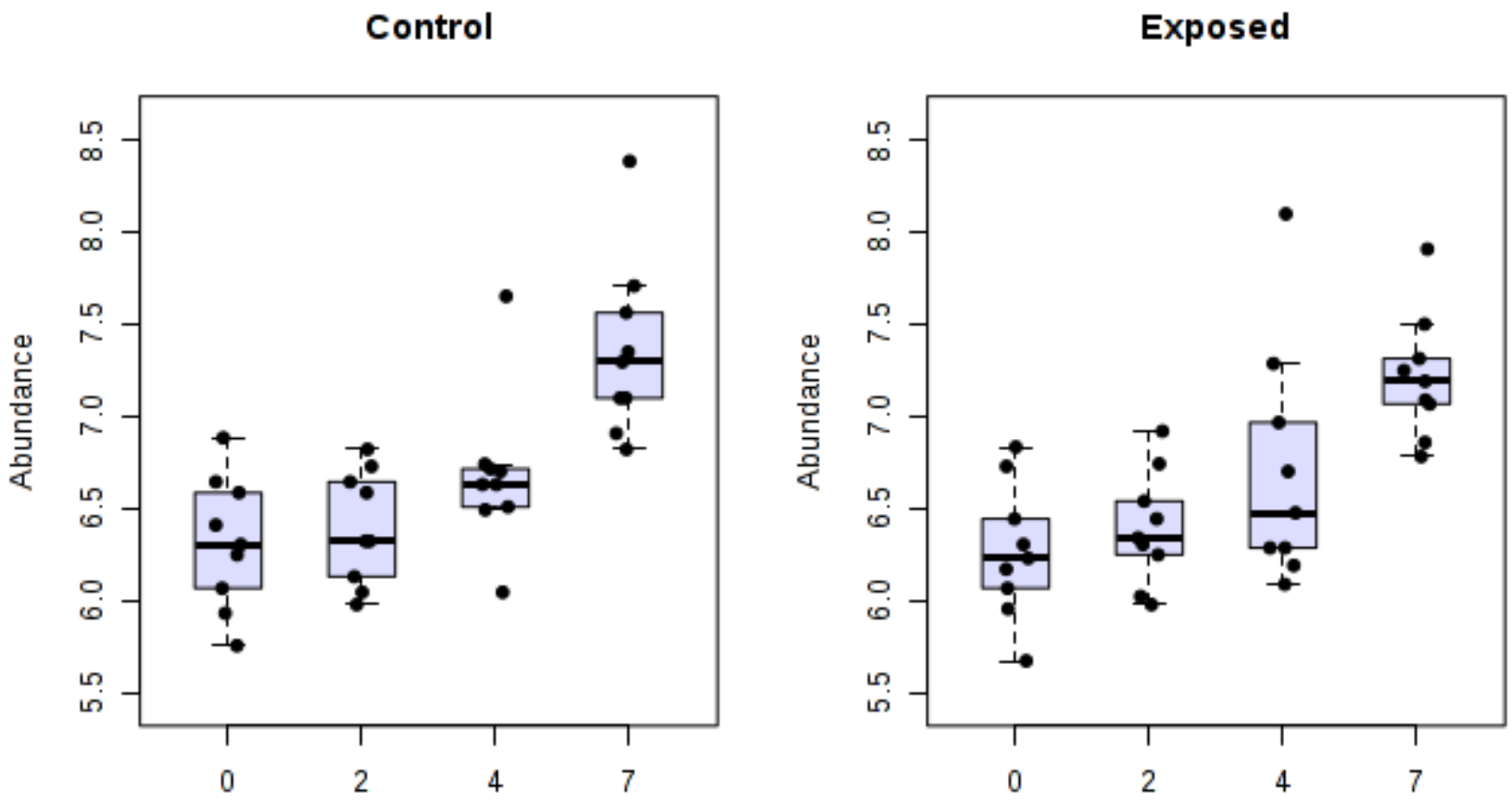


Heatmaps

Liver-Exposed+Control

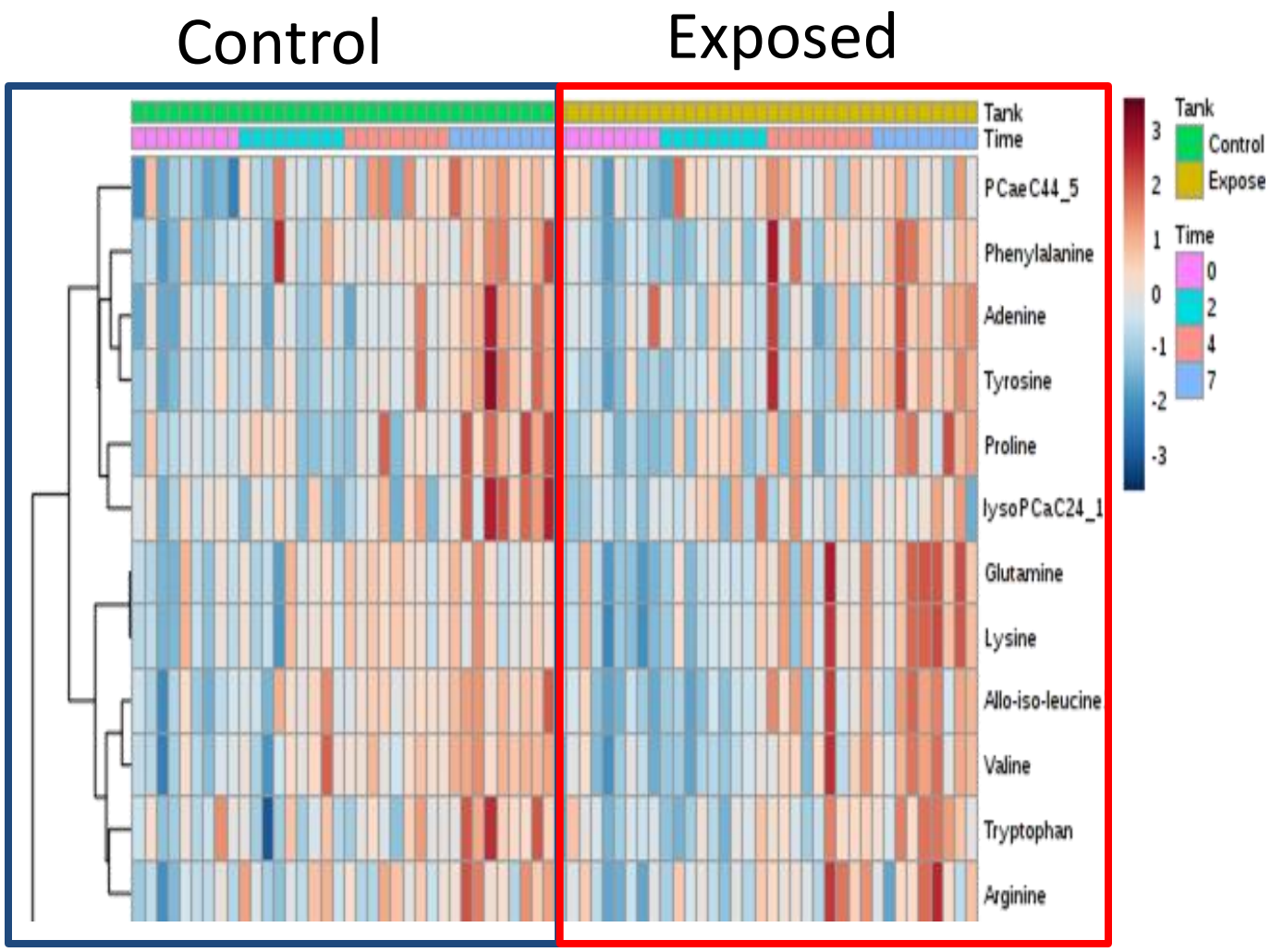


Liver-Exposed+Control

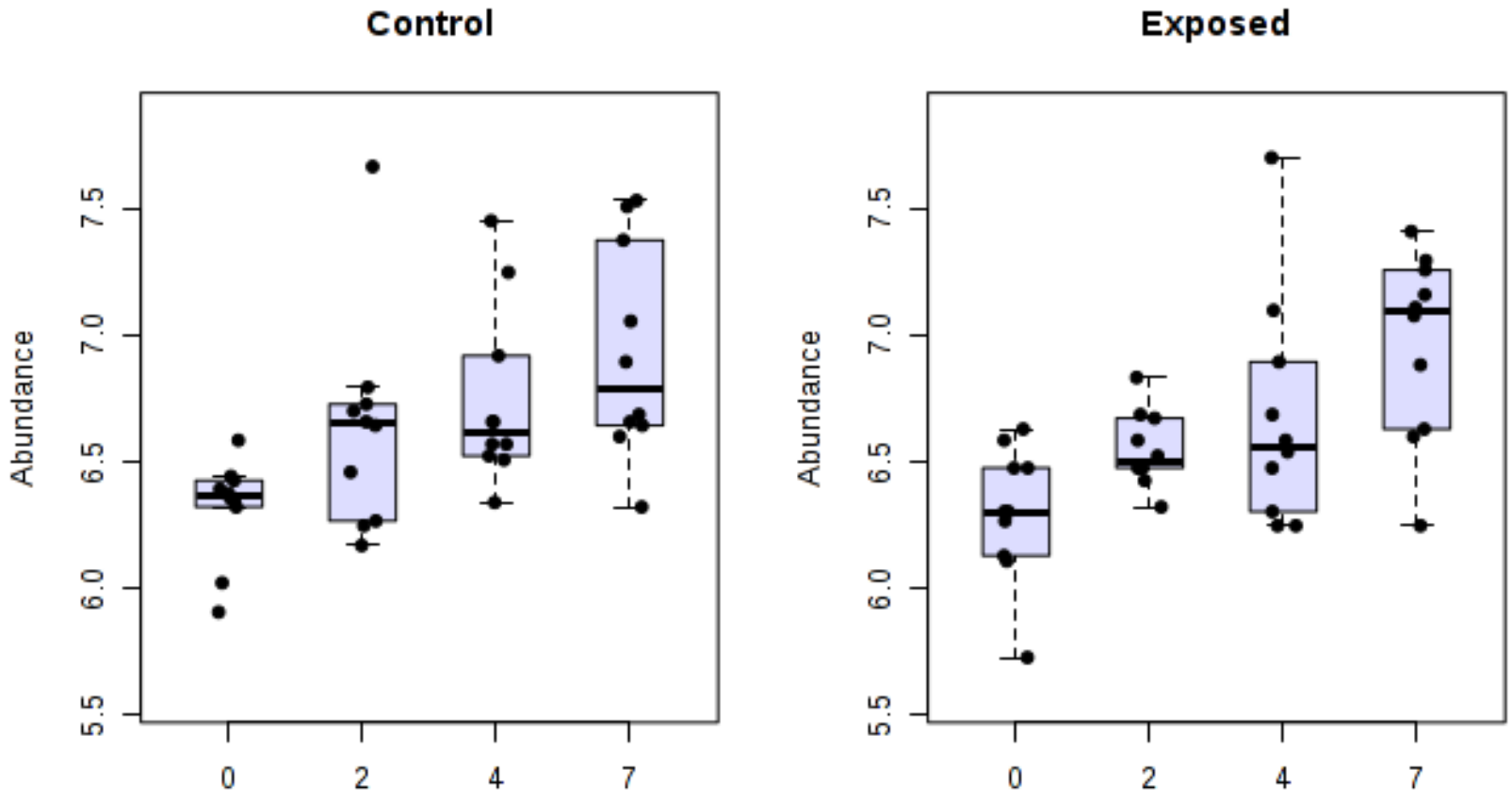


Tyrosine

Exposure time is the most significant variable

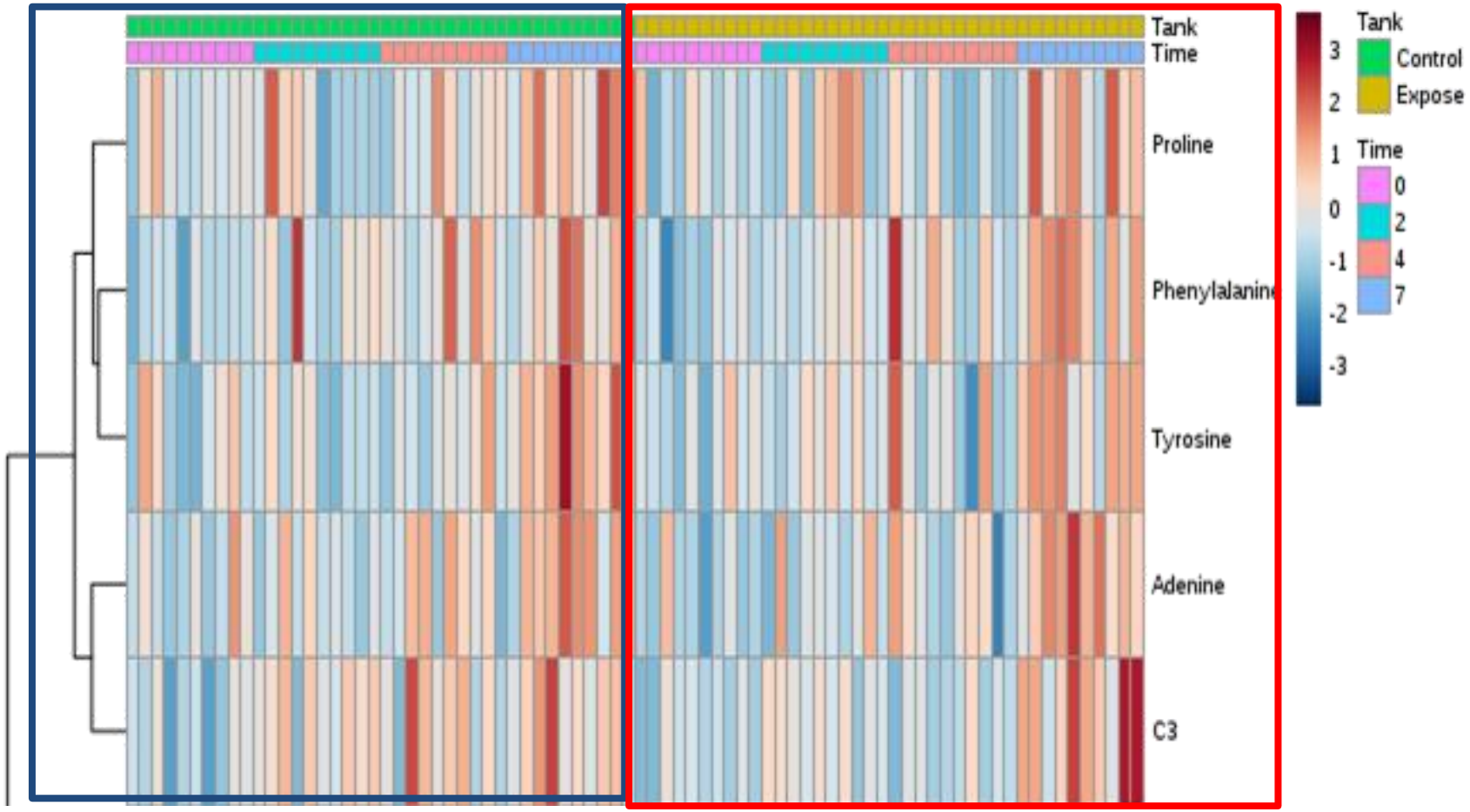


Brain-Exposed+Control

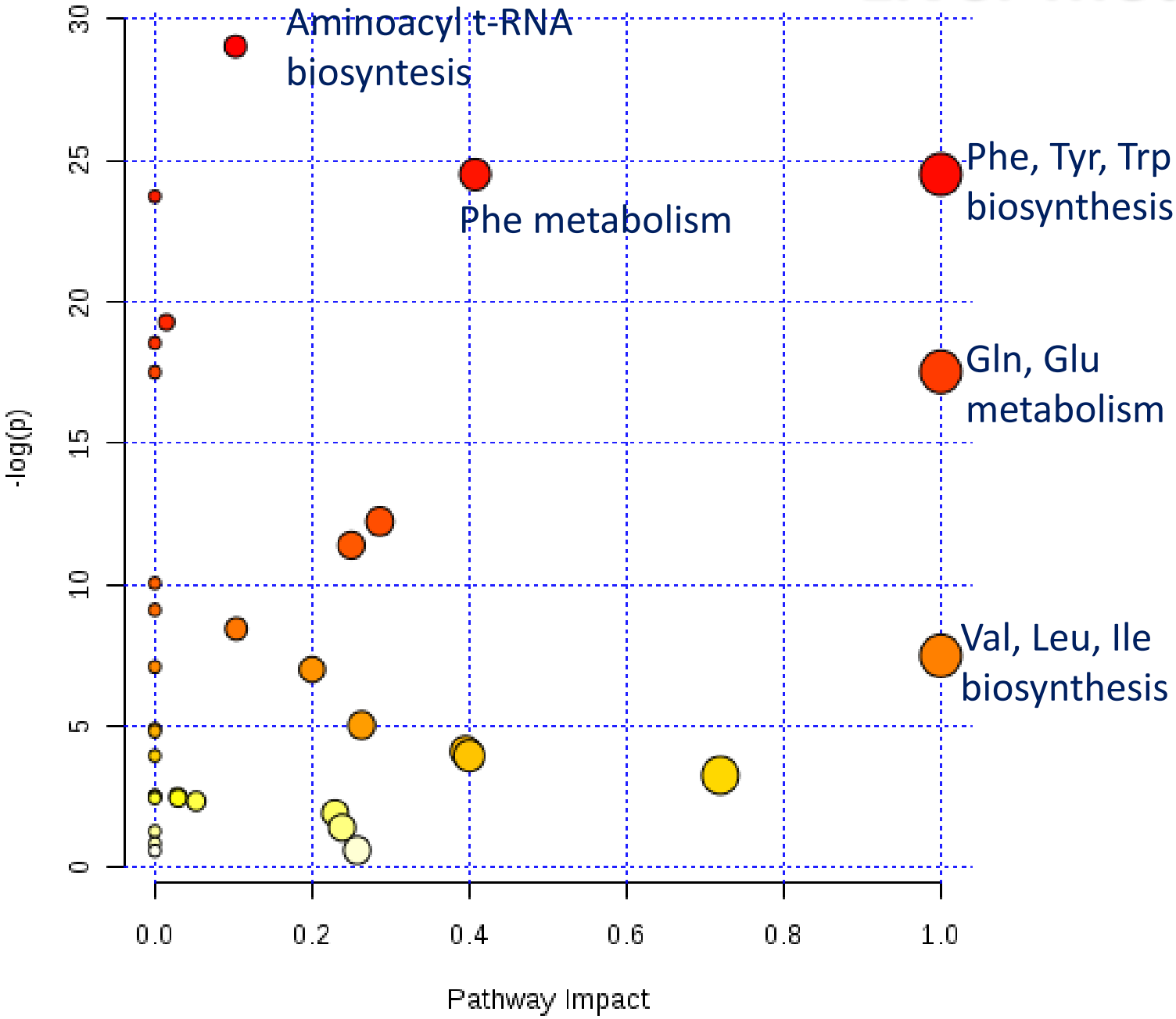


Phenylalanine

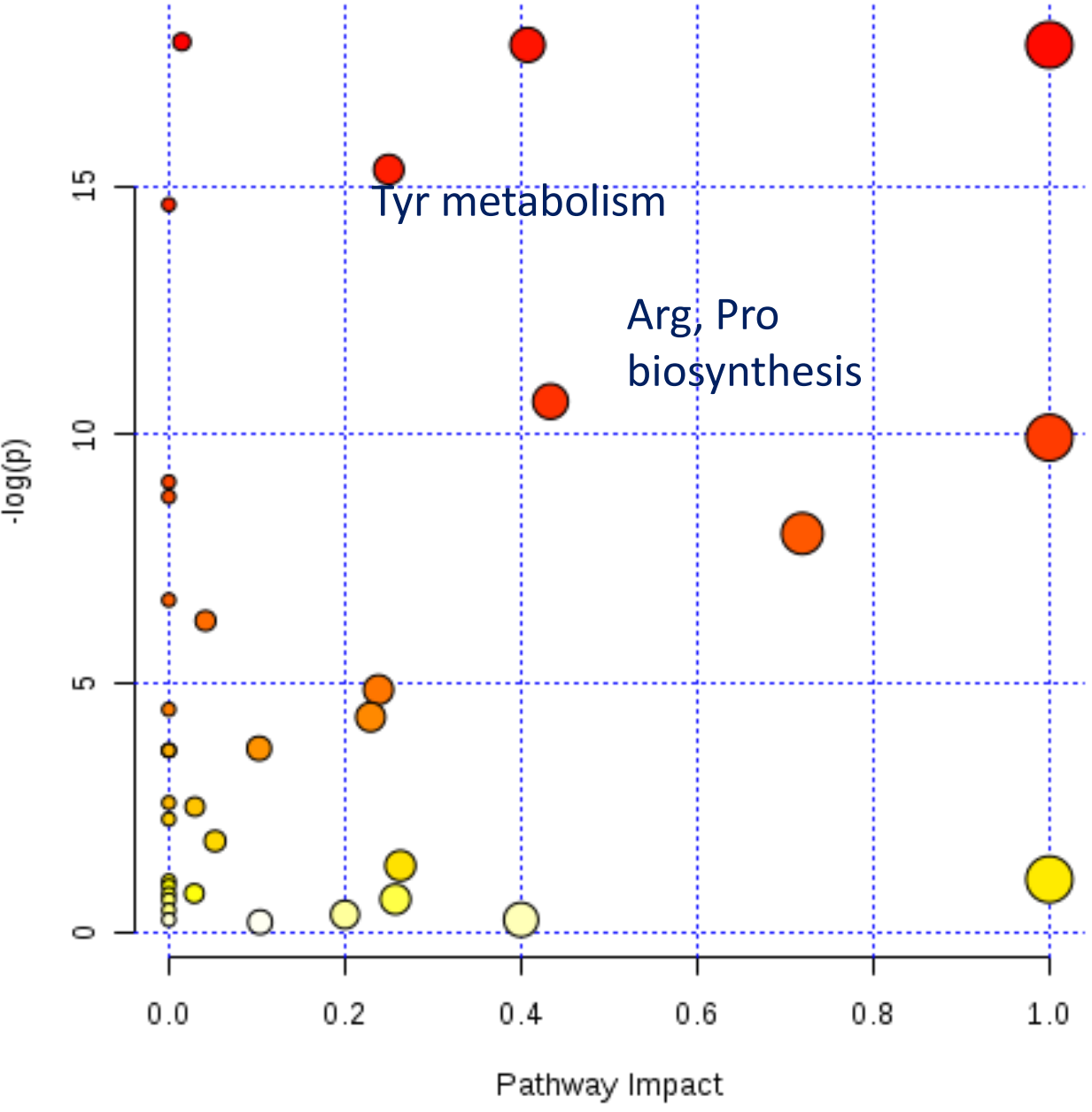
The variations at the brain are less even weaker



Liver metabolism



Brain metabolism



Main conclusions

- Good experimental design
- Exposure time is more stressing than AMI
- New experiments at higher concentration / exposure time

Thank You!
LABORATORY FILM
LIMITE DE LLENADO
VWR
H2O ELIX

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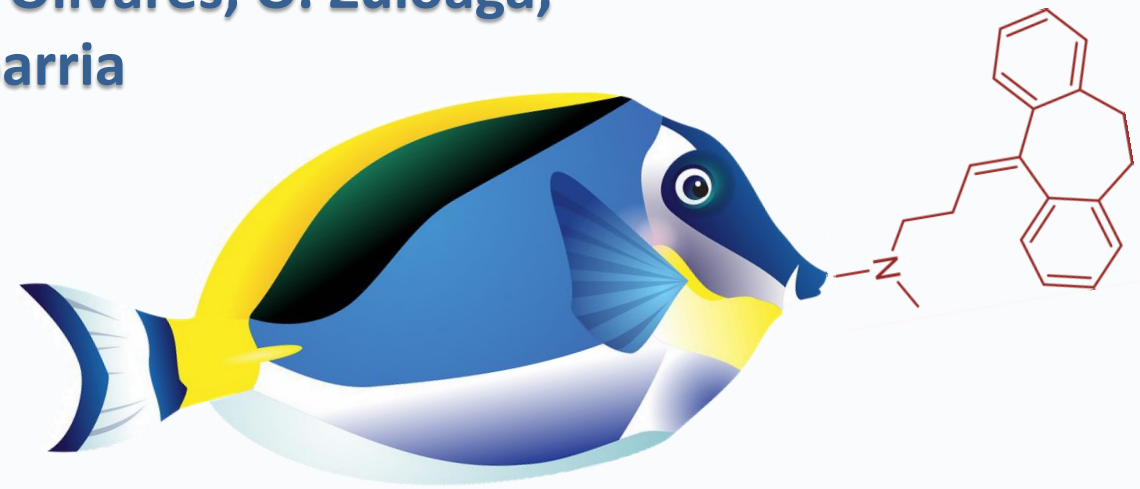
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