

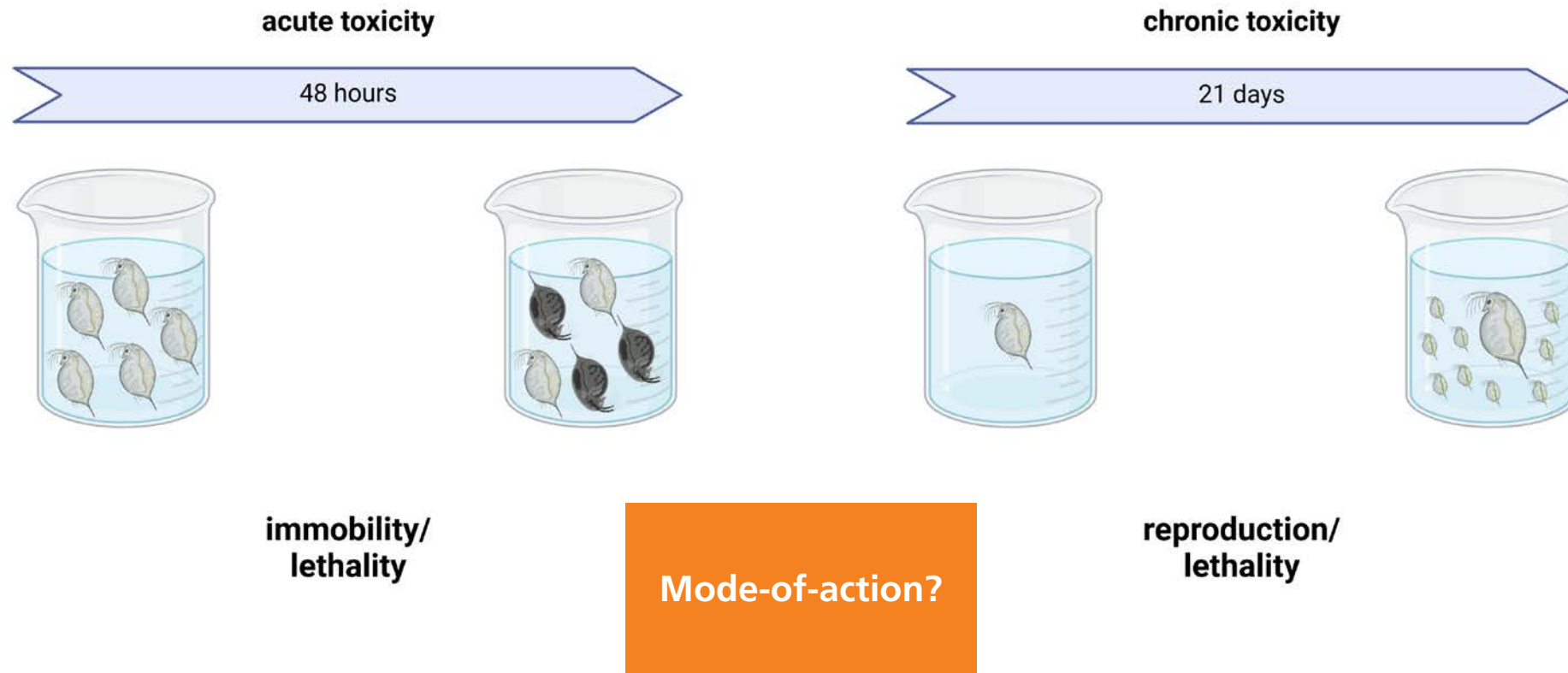
Functional transcriptomic fingerprints of neurotoxic modes-of-action in *Daphnia magna*

Julia Pfaff, Hannes Reinwald, Steve U. Ayobahan, Julia Alvincz, Bernd Göckener, Orr Shomroni, Gabriela Salinas, Rolf-Alexander Düring, Christoph Schäfers and Sebastian Eilebrecht

16th of May 2022

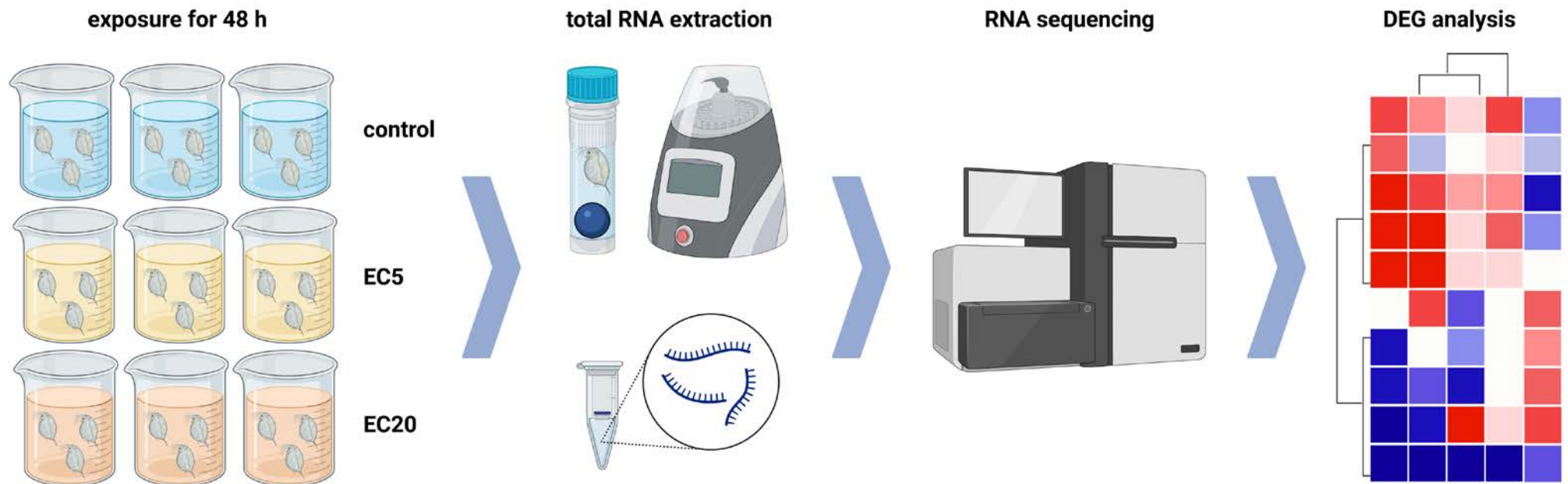
Endpoints of ecotoxicological testing in *D. magna*

Background



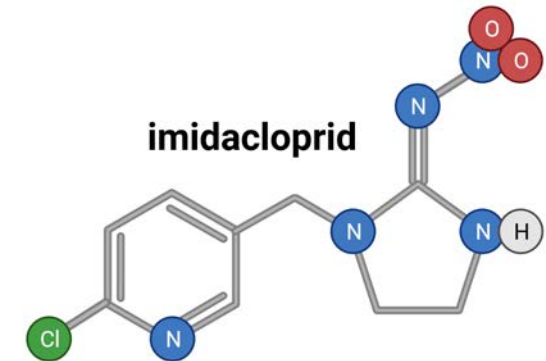
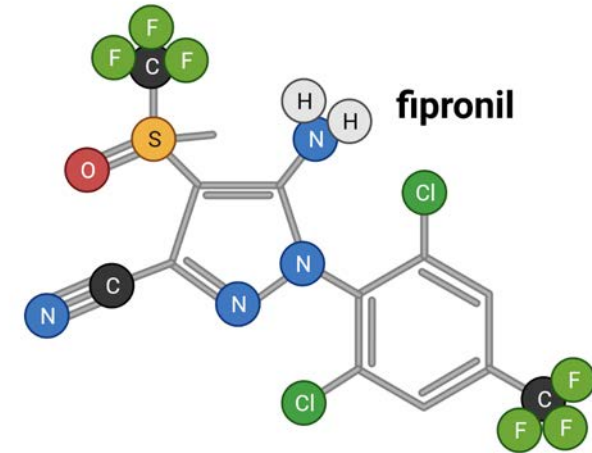
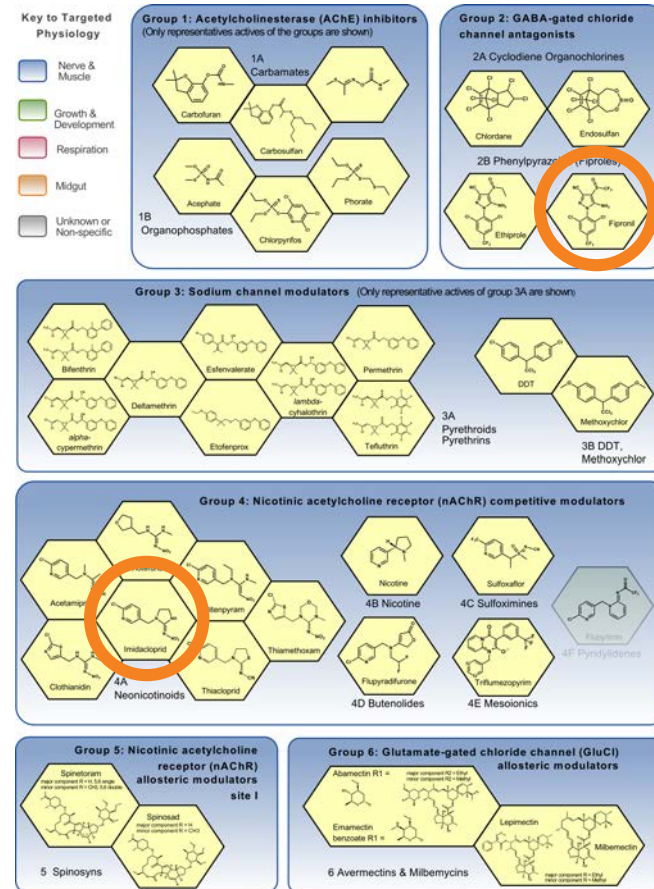
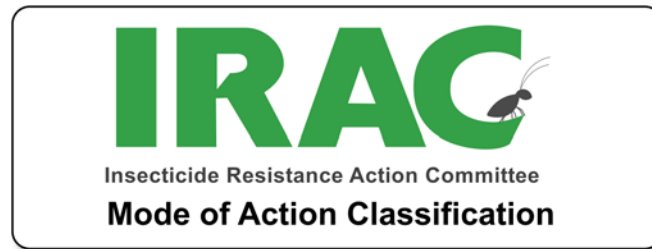
Identification of ecotoxicogenomic fingerprints in *D. magna*

Background



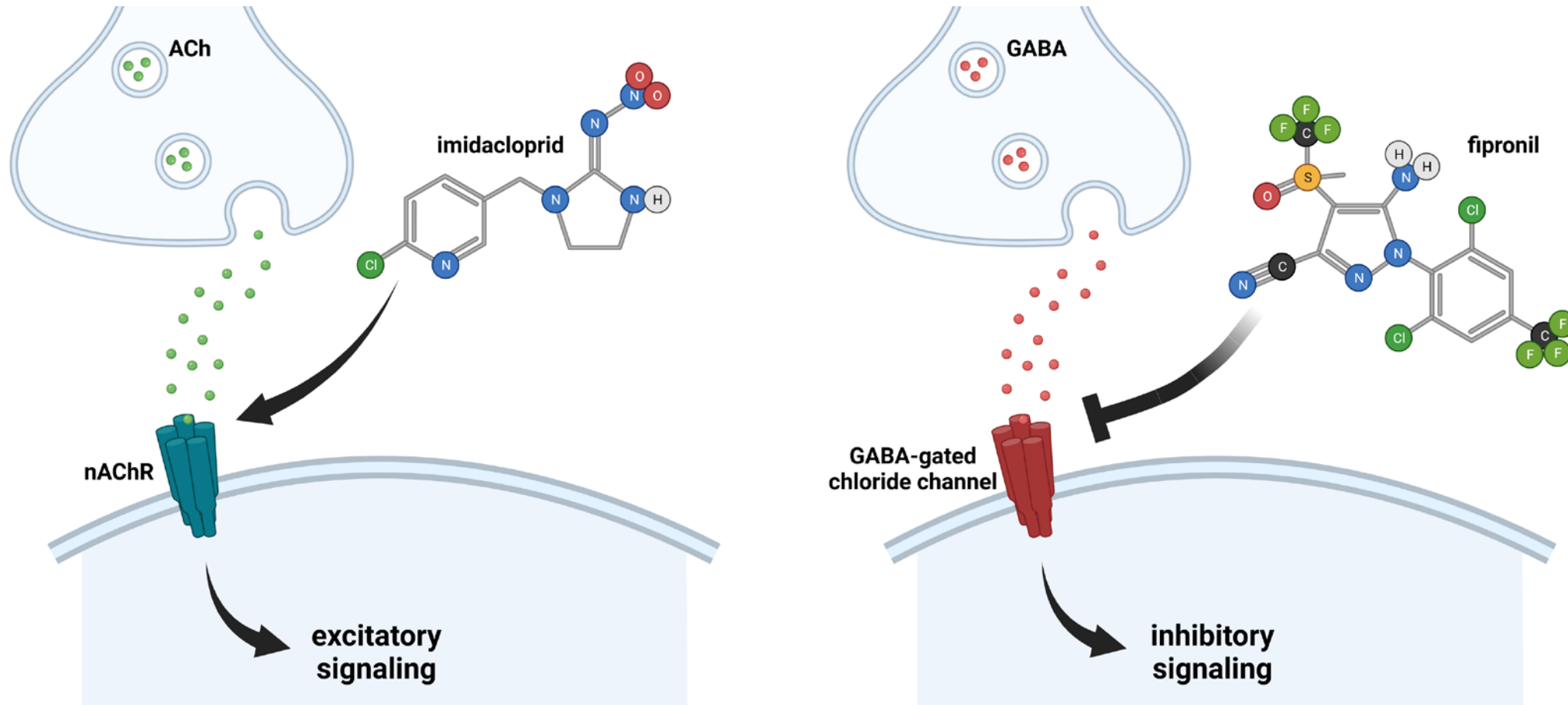
Reference substances for ecotoxicogenomic testing in *D. magna*

Background



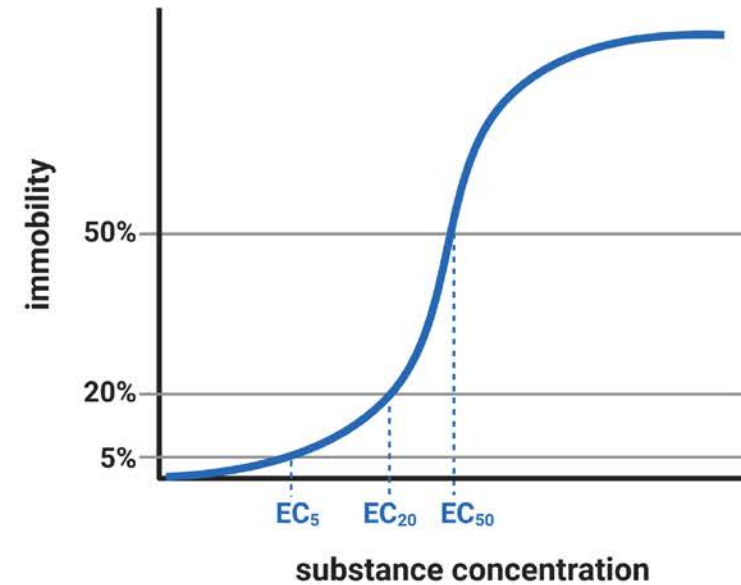
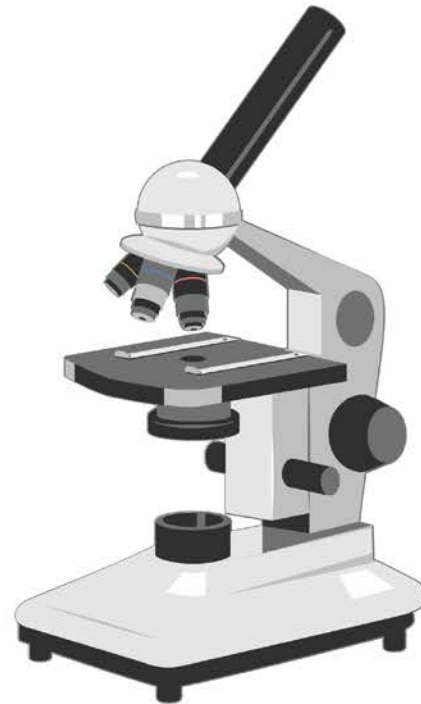
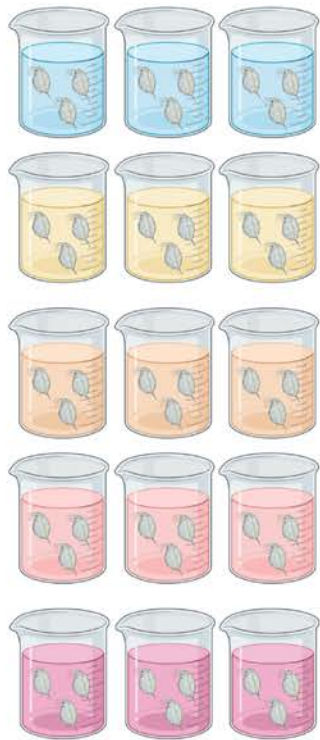
Reference substances for ecotoxicogenomic testing in *D. magna*

Background



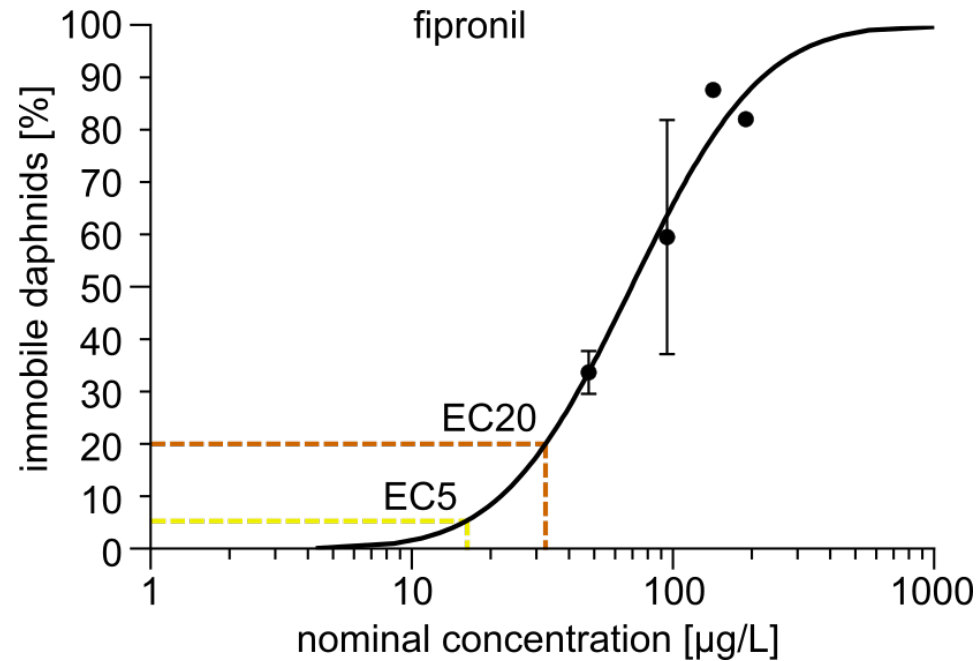
Identification of low effect concentrations in *D. magna*

Background



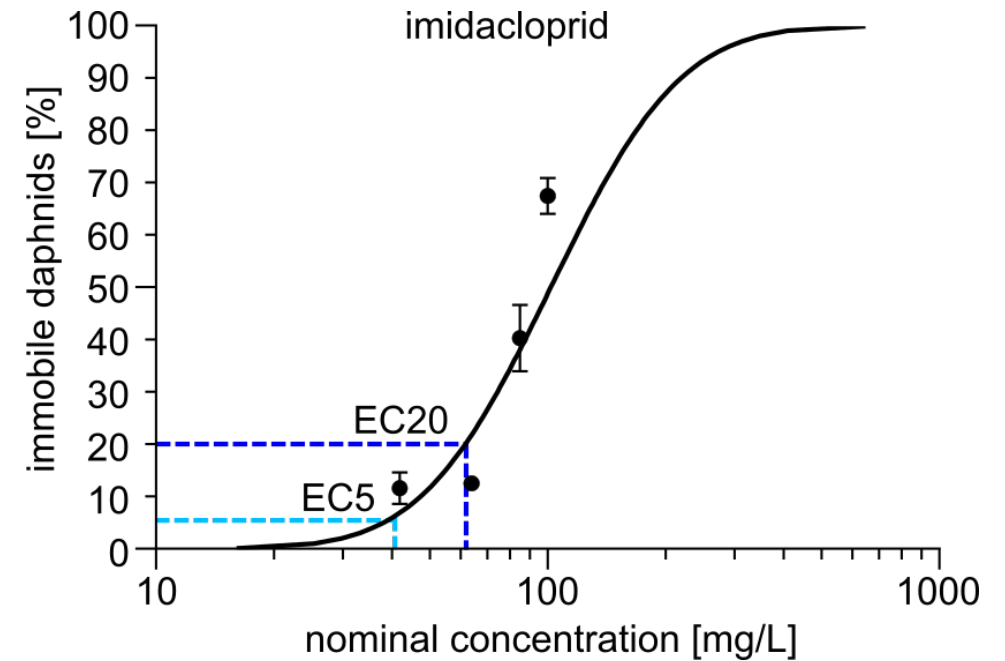
Effect concentrations of fipronil and imidacloprid in *D. magna*

Results



EC₅ 16 µg/L

EC₂₀ 32 µg/L

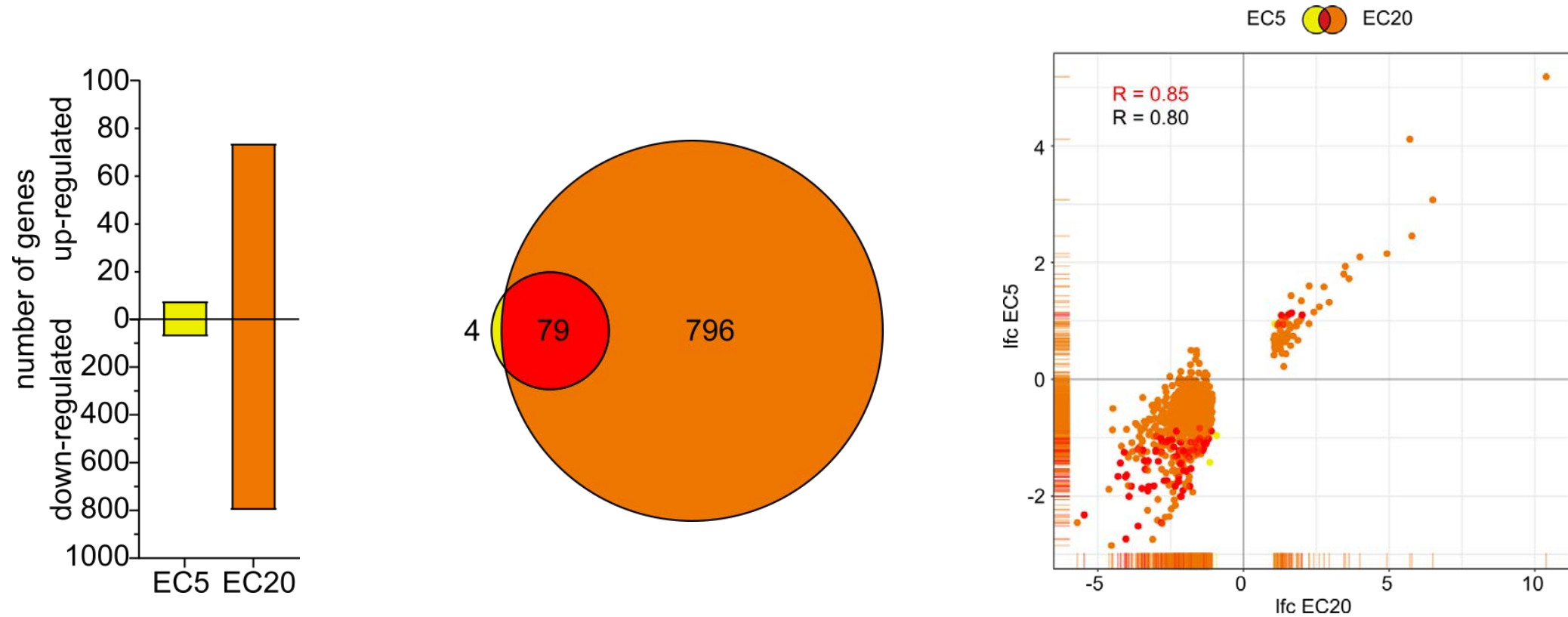


EC₅ 42 mg/L

EC₂₀ 64 mg/L

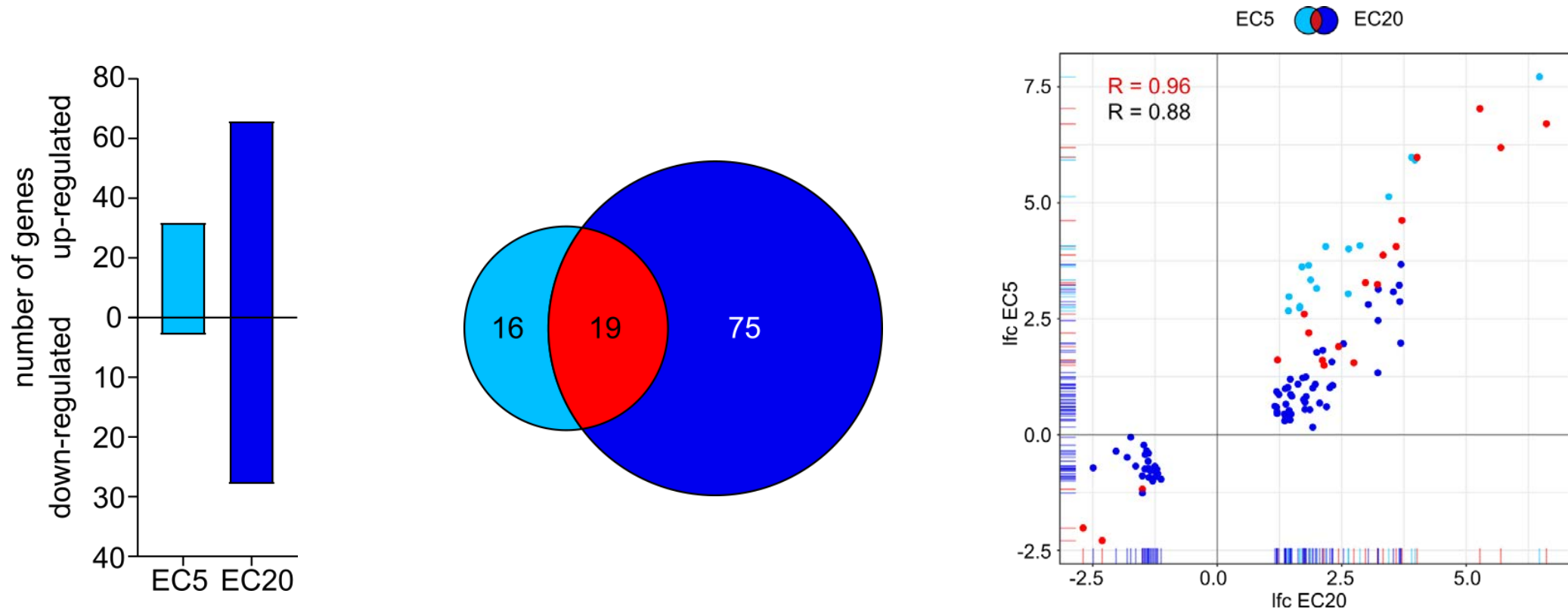
Gene expression fingerprint of fipronil in *D. magna*

Results



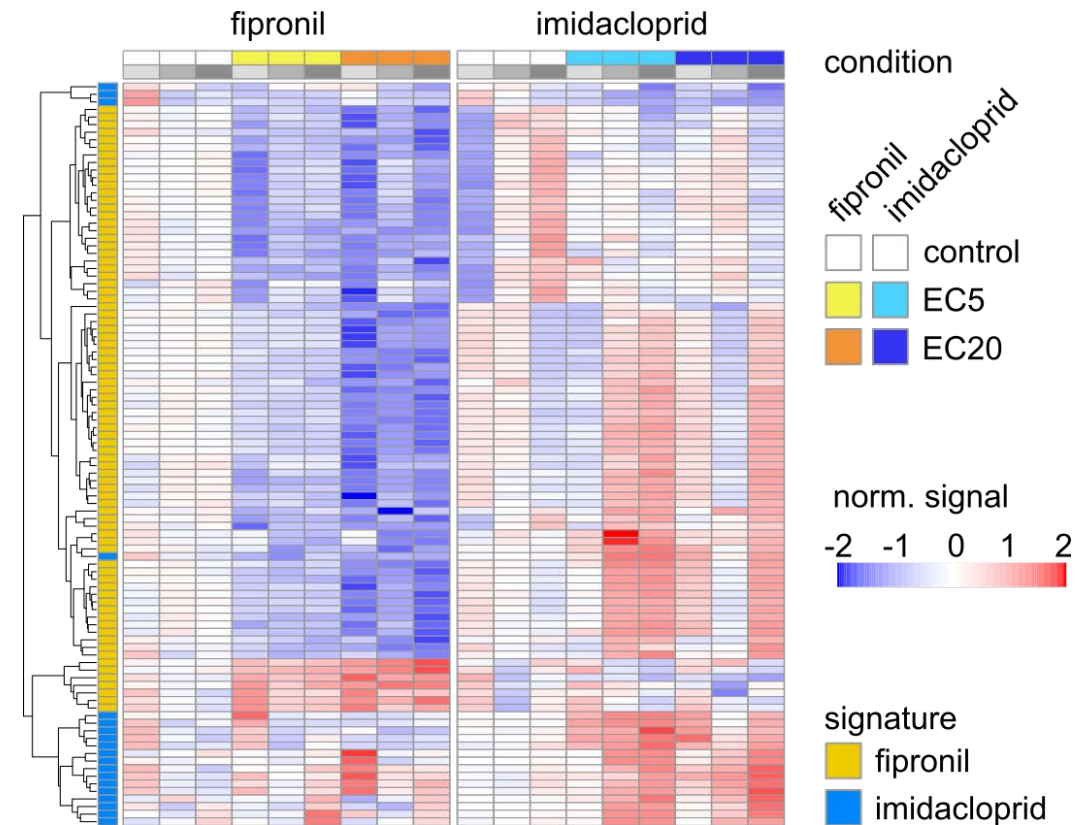
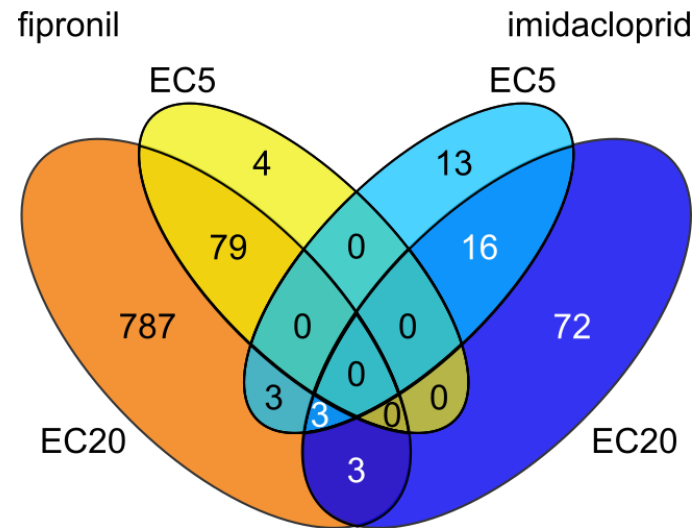
Gene expression fingerprint of imidacloprid in *D. magna*

Results



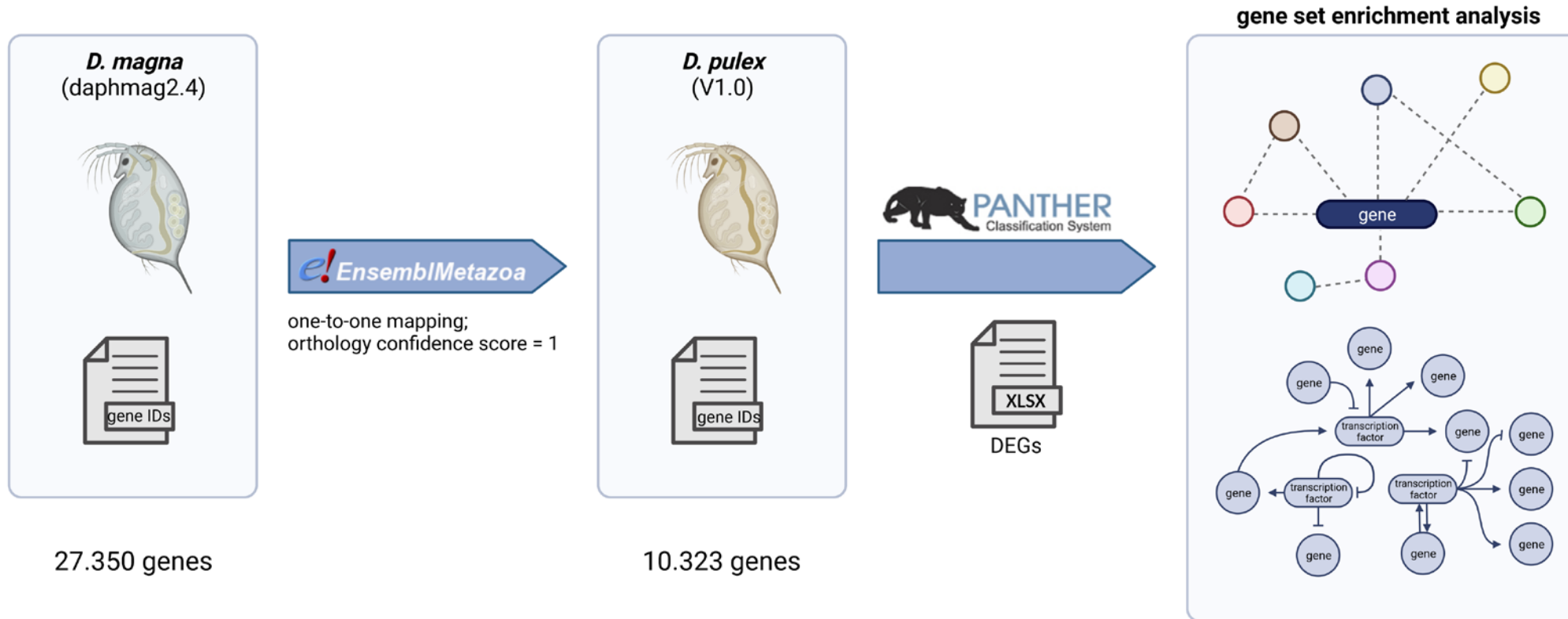
Comparison of fingerprints of fipronil and imidacloprid in *D. magna*

Results



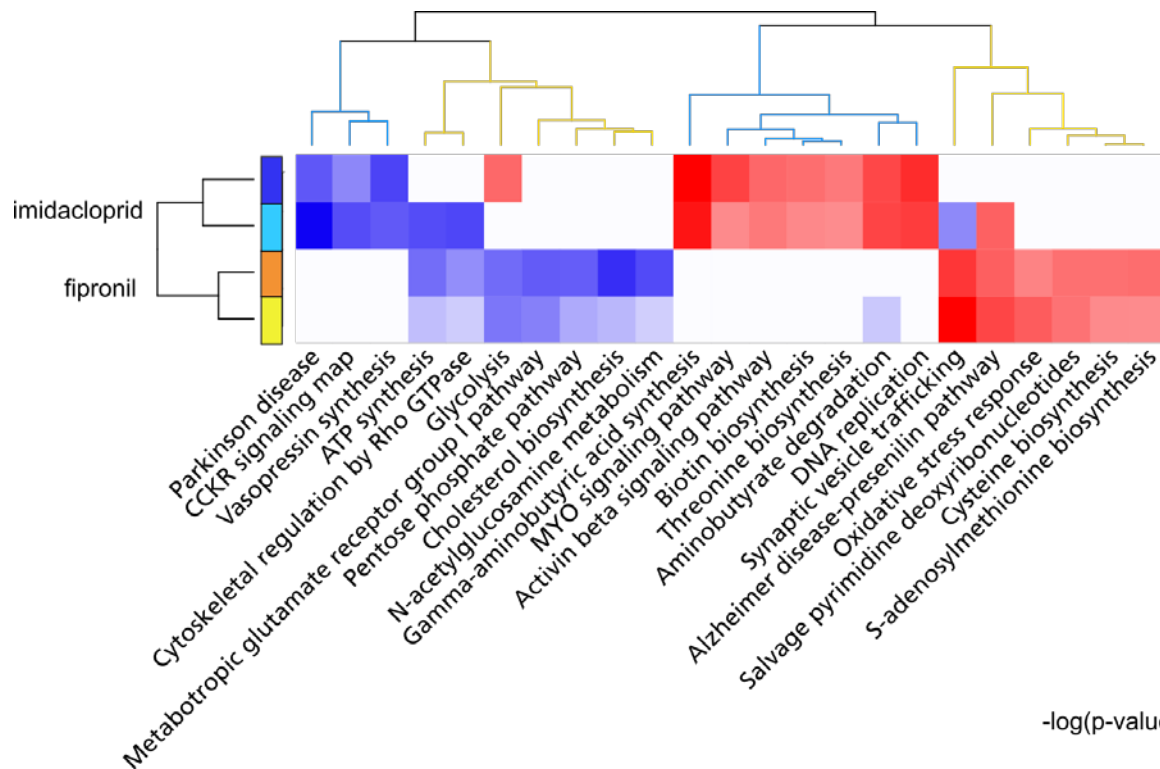
Functional annotation and gene set enrichment in *D. magna*

Approach



Gene set enrichment analysis of fipronil and imidacloprid in *D. magna*

Results



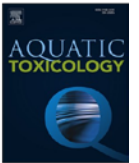
Aquatic Toxicology 238 (2021) 105927



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journal homepage: www.elsevier.com/locate/aqtox



Toxicogenomic differentiation of functional responses to fipronil and imidacloprid in *Daphnia magna*

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Conclusion ecotoxicogenomic mode-of-action assessment in *D. magna*

Take home messages

1

Gene expression changes induced by low effect concentrations of the test compounds showed a concentration-response behaviour and were highly consistent between low and high exposure concentration

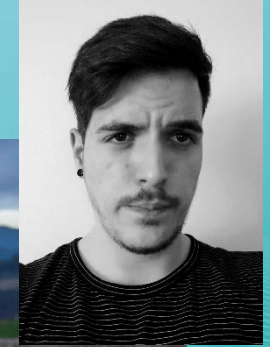
2

Gene expression changes of fipronil and imidacloprid were distinct for each test compound and allowed a discrimination of the test compounds

3

Functional annotation of the *D. magna* reference genome allowed gene set enrichment analysis, which identified mode-of-action related affected pathways

Thank you



OECD, 2004. Test Guideline 202: *Daphnia* Sp. Acute Immobilisation Test. eds, Paris.

OECD, 2012. Test Guideline 211: *Daphnia magna* Reproduction Test. eds, Paris.

Pfaff, Julia, et al. "Toxicogenomic differentiation of functional responses to fipronil and imidacloprid in *Daphnia magna*." *Aquatic Toxicology* 238 (2021): 105927.

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