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► **To cite this version:**

Caroline Doose, Soizic Morin, Jacky Vedrenne, Claude Fortin. Zirconium impact on freshwater periphytic communities. 28th SETAC Europe Annual Meeting, May 2018, Rome, Italy. pp.1, 2018. hal-02607473

**HAL Id: hal-02607473**

**<https://hal.inrae.fr/hal-02607473v1>**

Submitted on 16 May 2020

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# ZIRCONIUM IMPACT ON FRESHWATER PERIPHYTIC COMMUNITIES

Caroline Doose<sup>1</sup>, Soizic Morin<sup>2</sup>, Jacky Vedrenne<sup>2</sup>, Claude Fortin<sup>1</sup>

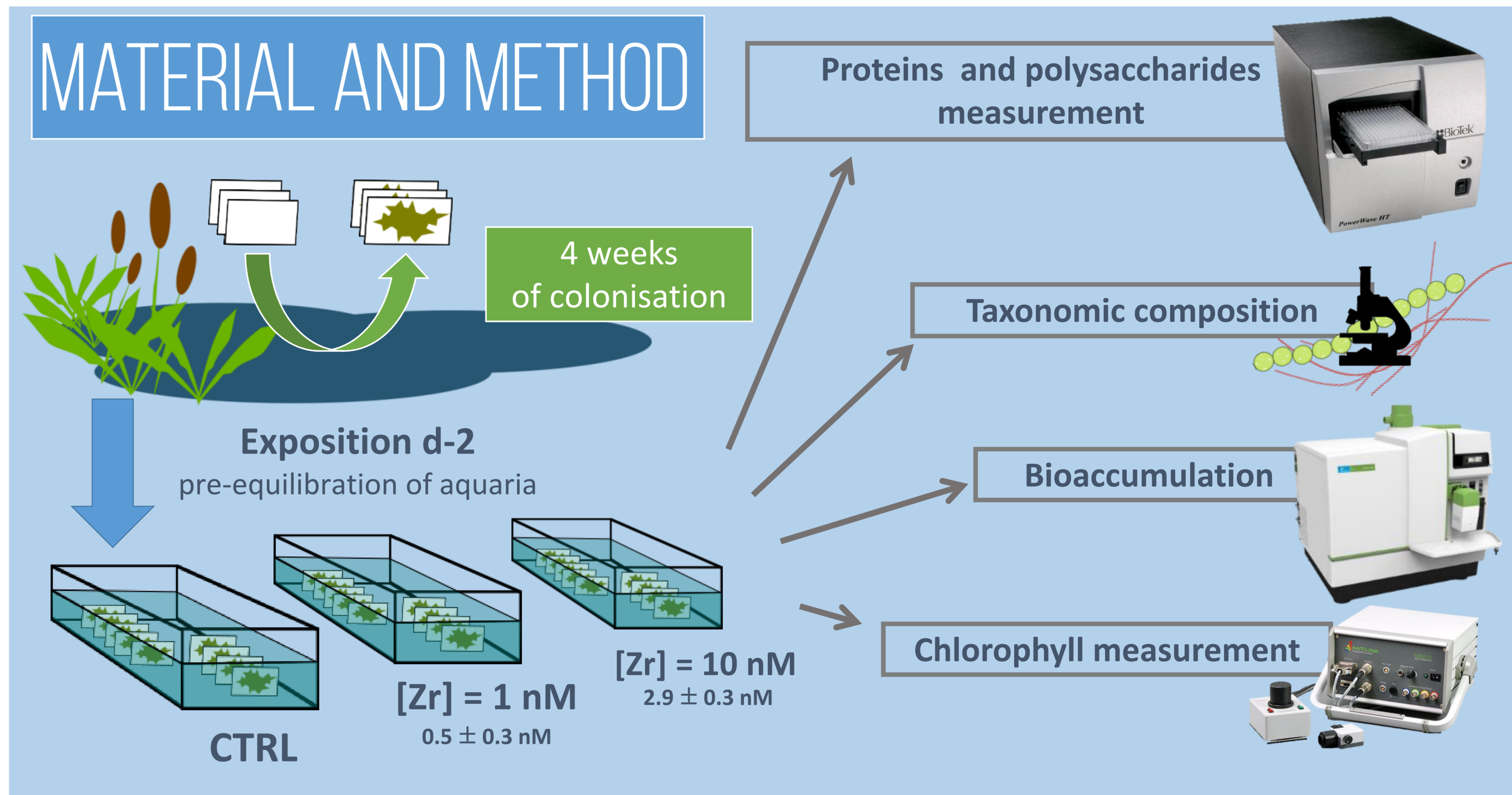
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## INTRODUCTION

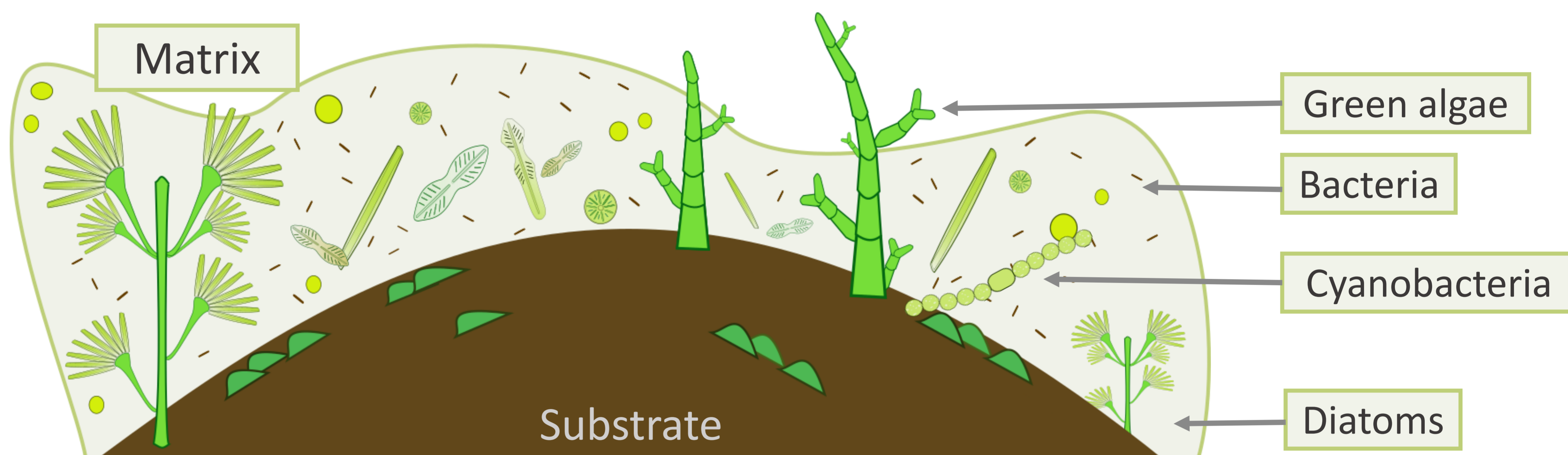
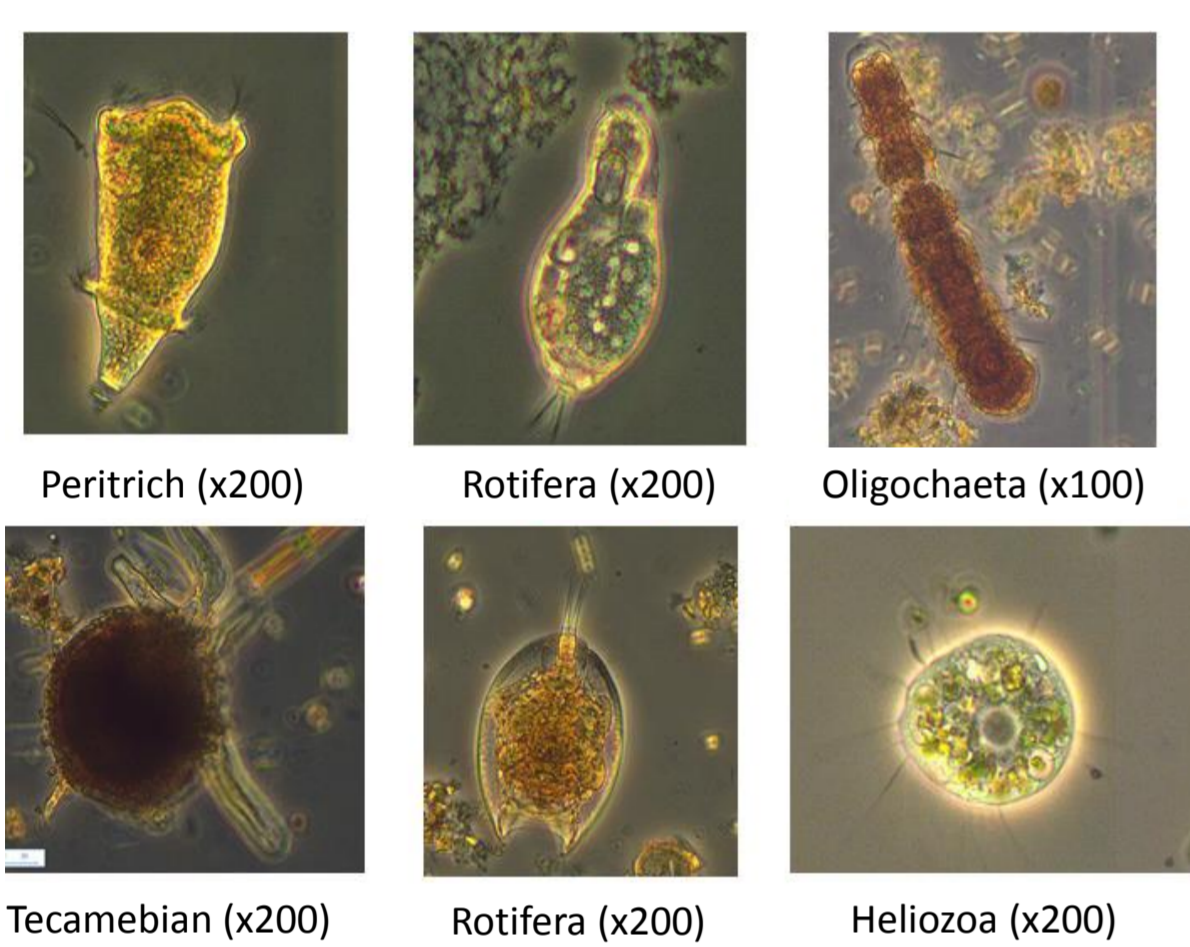
Zirconium (Zr) is a tetravalent element for which the steady increase of global demand could lead to an increase in its mobilization in aquatic systems<sup>1</sup>. Benthic microorganism communities (periphyton) have shown good potential as a biomonitoring tool to assess metal exposure of aquatic organisms<sup>2;4</sup>. The effect of Zr on periphyton biodiversity and biochemistry was investigated to apply this tool to tetravalent metals contamination assessment and to better understand their potential impacts on aquatic ecosystems.

91,2 40  
Zr  
Zirconium

## MATERIAL AND METHOD



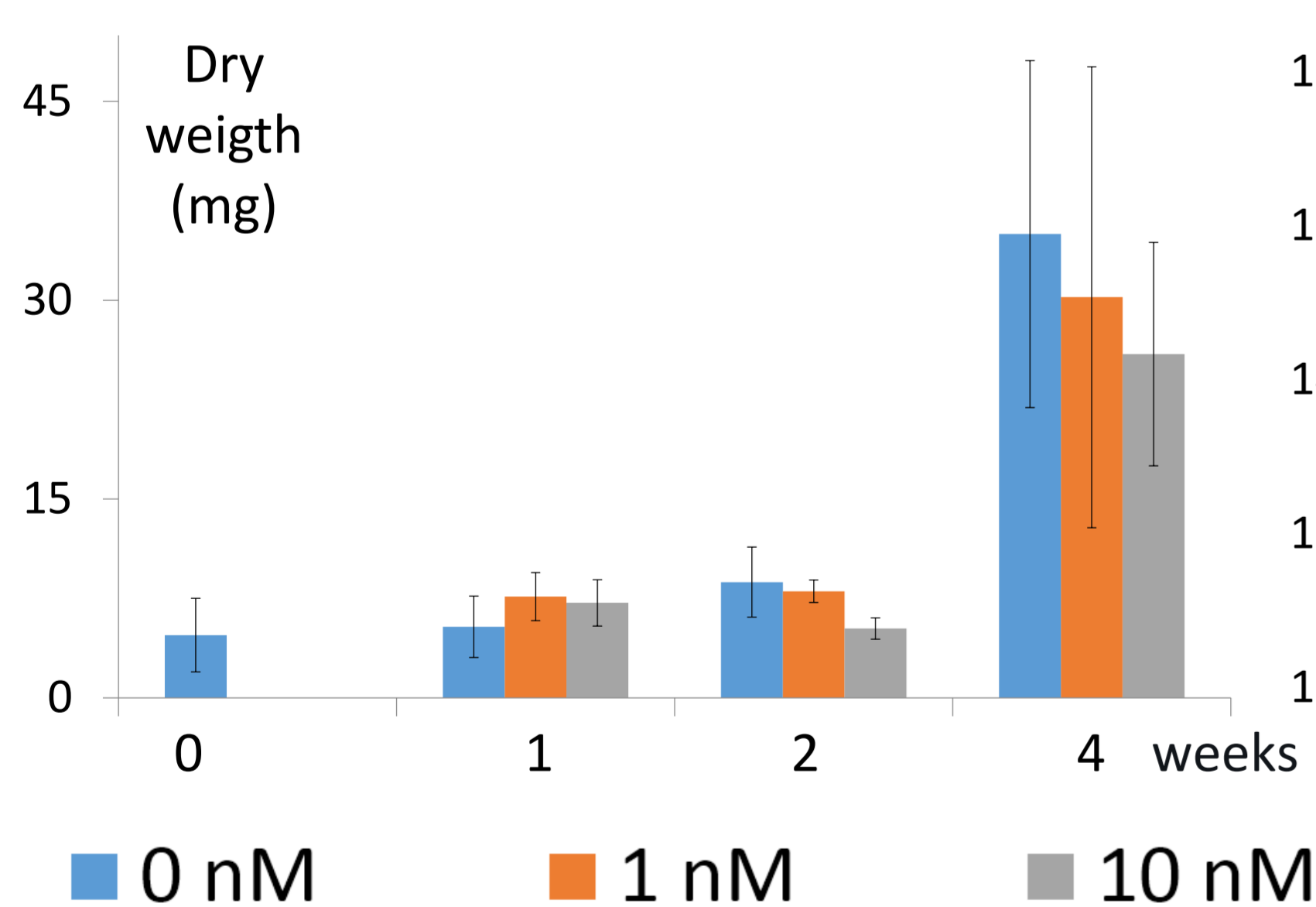
## PERIPHYTON



## RESULTS

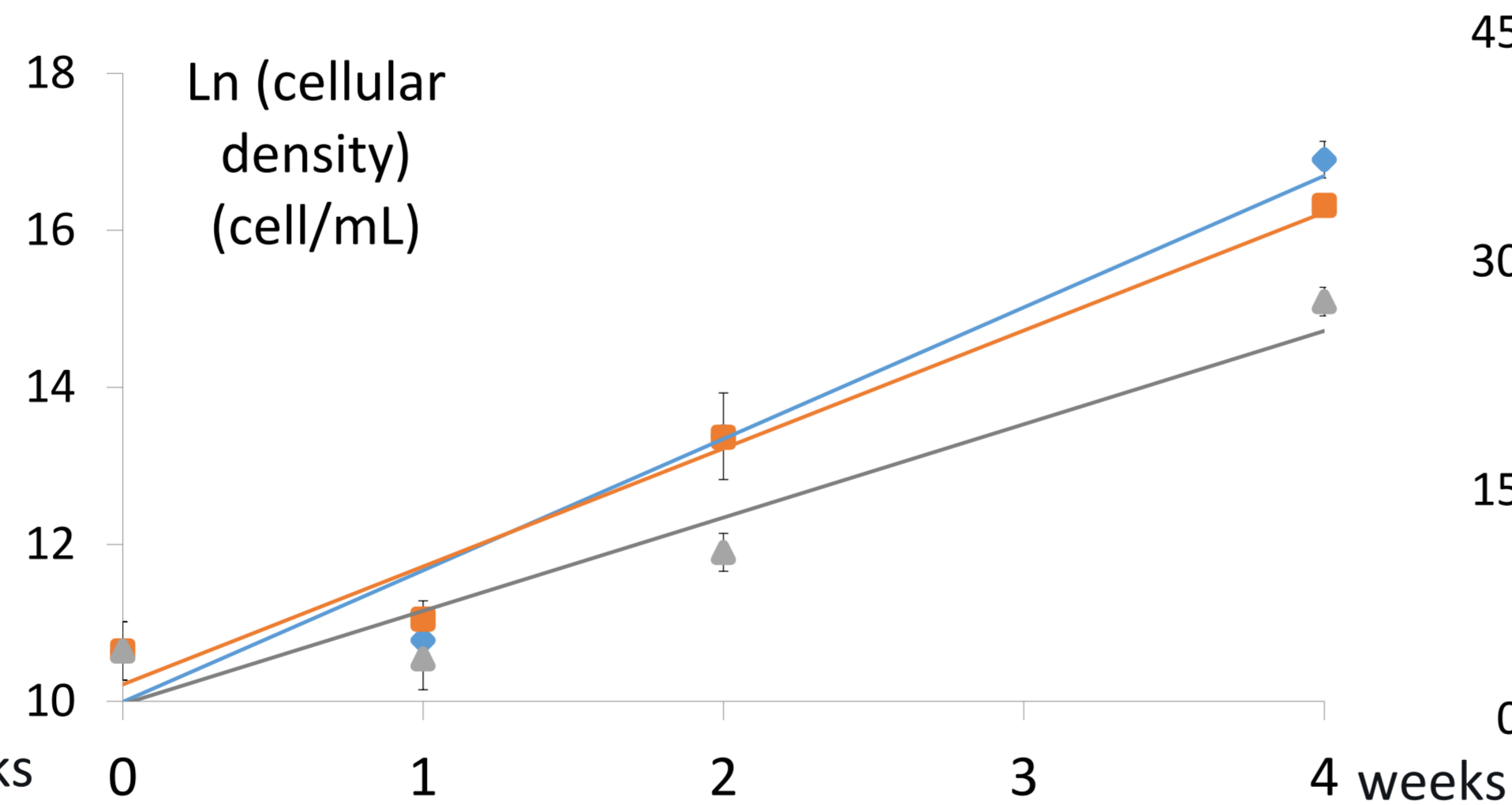
### BIOMASS

→ Increase between 2 and 4 weeks



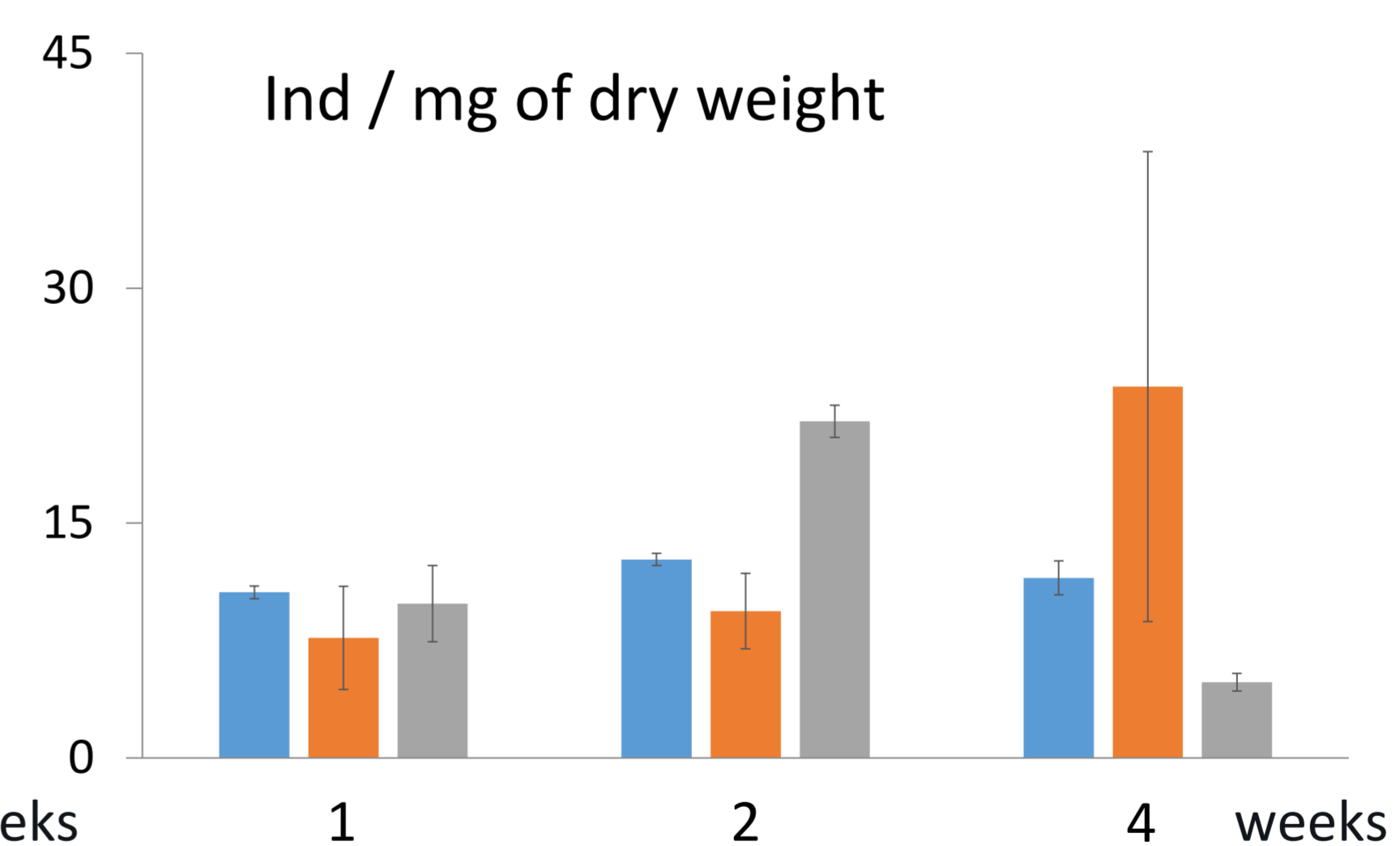
### ALGAL GROWTH

→ Algal growth lower at 10 nM Zr (ANCOVA, R<sup>2</sup> = 0,97)



### MICROMEIOFAUNA

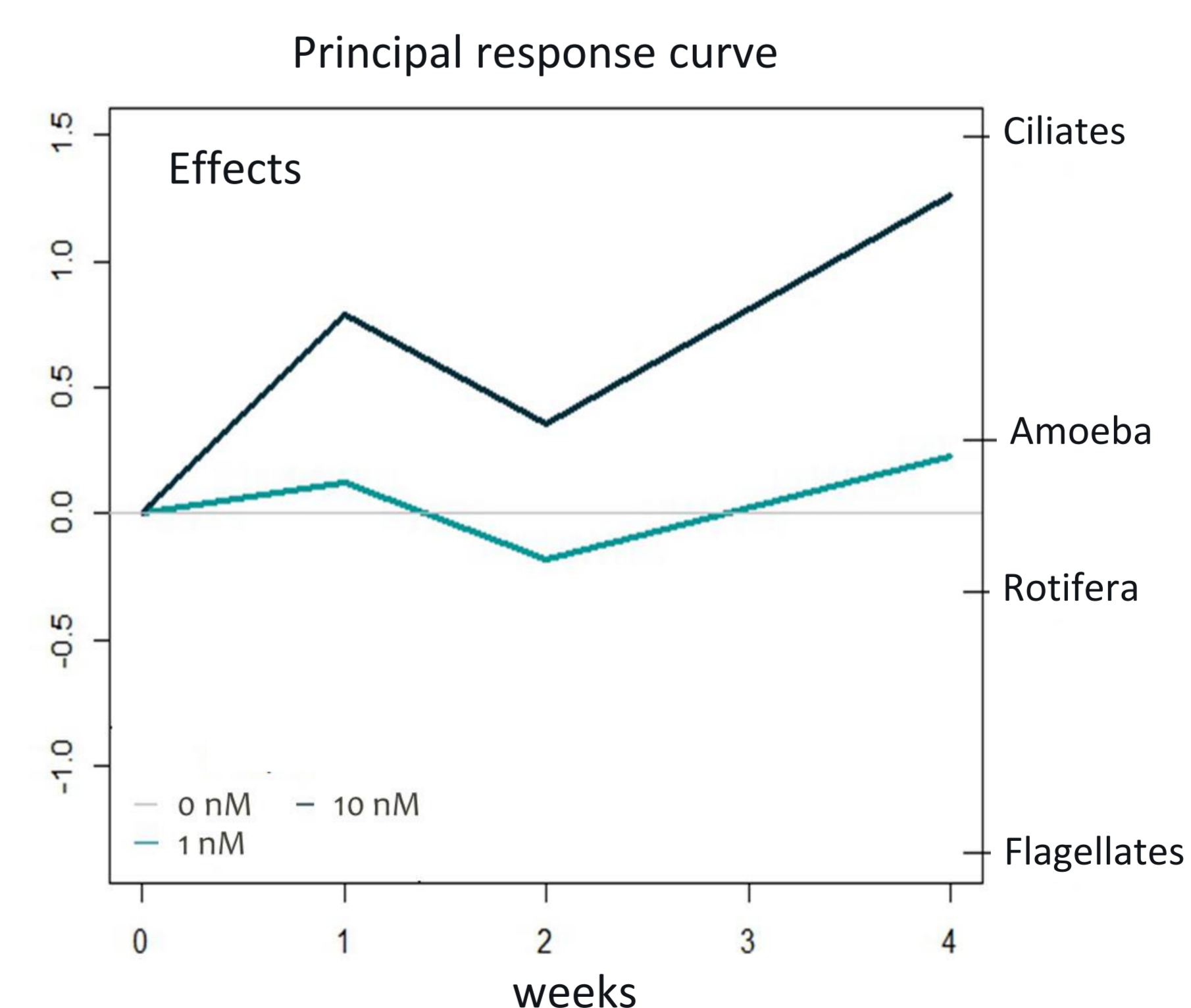
→ Effects at 10 nM Zr: number of individuals lower at week 4



→ Combined effect of time and concentration (ANOVA, p < 0,05)

## CONCLUSION

Impacts on algal growth and on micromeiofauna at low concentrations (2.9 ± 0.3 nM) show that Zr could affect the periphyton structure and its essential function on aquatic ecosystems. Zr bioaccumulation still need to be determined (Ti interferences during ICP-MS analysis). Enzymatic analyses linked to oxidative stress responses and organic matter degradation are in progress.



→ Impact on the composition of the micromeiofauna (ANOVA, p < 0,001)

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## ACKNOWLEDGMENT

The help of Betty Chaumet and Julie Neury-Ormanie (PhD students at IRSTEA) and all the ECOVEA team of IRSTEA was greatly appreciated. Thanks to the Jérôme Cachot (HDR EPOC) research team and the technicians of INRS for their help. Thanks to Jean-Paul Maalouf, Marie Wach and David Carrayon for their assistance in statistics.

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