

Habitat-related variation in the plasticity of a UV-sensitive photoreceptor over a small spatial scale in the palmate newt

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R�sum� en anglais	<p>Plastic phenotypes are expected to be favoured in heterogeneous environments compared with stable environments. Sensory systems are interesting to test this theory because they are costly to produce and support, and strong fitness costs are expected if they are not tuned to the local environment. Consistently, the visual system of several species changes with the conditions experienced during early development. However, there is little information on whether the amplitude of the change, that is the reaction norm, differs between visual environments. Given the rapid change of many ecosystems, especially eutrophication for aquatic habitats, it is crucial to determine down to which spatial scale, change in the reaction norm occurs. We addressed this issue by quantifying the between-habitat variation in the expression of a UV-sensitive opsin in a newt. In western France, this species breeds in ponds of small forest patches, where water filters out UV, and in agricultural ponds where UV transmission is variable. We raised larvae from both habitats with or without exposure to UV. Opsin expression was reduced in larvae from agricultural habitats when raised without UV, whereas it was low in larvae from forest ponds under all lighting conditions. Thus, the variation in the reaction norm of opsin expression was lower in stable filtering environments and higher in heterogeneous environments. Its variation occurred between habitats across a small spatial scale. We discuss the hypotheses for this pattern and for the maintenance of residual opsin expression in forest populations.</p>
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