

Genotyping, analgesia and euthanasia: 3R in Zebrafish under the amended dir. 2010/63/EU

Jean-Philippe Mocho

Directive 2010/63/EU has recently been amended aiming for national implementation by December 2026. The amendment contains zebrafish (*Danio rerio*) specific requirements and authorisation.

Housing standards are detailed and they will have some direct implications on the isolation of adult zebrafish for identification post fin clipping. In practice, the regulation will encourage the genotyping of larvae rather than adults, a significant 3R application that we will discuss. When it is still necessary to fin clip adults, we will describe some protocols to provide analgesia practically. At the end of the animal's life or to sample fish, euthanasia is performed.

The amended directive will now authorise to kill zebrafish by hypothermic shock. That does not mean that the method is more refined than an overdose of anaesthesia – it depends on the anaesthetic. We will discuss options for the euthanasia of zebrafish and propose refined options according to the purpose of the euthanasia.