



**HAL**  
open science

## High-resolution 3D imaging of whole zebrafish ovary

Maxence Frétaud, Stéphanie Gay, Jean-Jacques Lareyre, E. de Job, A. Jenett,  
Pierre Affaticati, Jean-Stéphane Joly, Violette Thermes

### ► To cite this version:

Maxence Frétaud, Stéphanie Gay, Jean-Jacques Lareyre, E. de Job, A. Jenett, et al.. High-resolution 3D imaging of whole zebrafish ovary. 9. European Zebrafish Meeting, Jun 2015, Oslo, Norway. , 2015, Zebrafish 2015. hal-02742931

**HAL Id: hal-02742931**

**<https://hal.inrae.fr/hal-02742931>**

Submitted on 3 Jun 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



# FINAL PROGRAMME

**The 9th European Zebrafish Meeting**

**Oslo, Norway, June 28-July 2, 2015**



# [P1-089] High-resolution 3D Imaging Of Whole Zebrafish Ovary.

M Frétau [FRANCE]<sup>1</sup>, S Gay [FRANCE]<sup>1</sup>, JJ Lareyre [FRANCE]<sup>1</sup>, E De Job [FRANCE]<sup>2</sup>, P Affaticati [FRANCE]<sup>2</sup>, JS Joly [FRANCE]<sup>2</sup>, V Thermes [FRANCE]<sup>1</sup>

INRA<sup>1</sup>, CNRS<sup>2</sup>

Transgenic animals expressing fluorescent proteins are important tools to characterize fish reproduction biology and pathologies. Traditionally, phenotypic analyses of ovaries are conducted on mechanical tissue sections, which do not give access to three-dimensional information. Three-dimensional imaging of biological tissues is limited due to light absorption and scattering by tissue component. Several techniques that render tissues permissive to light have been recently described. Here, we tested several clearing protocols (CLARITY, CUBIC...) on zebrafish ovaries. We established that CLARITY is the best-suited method for clearing ovary since it allows two-photon imaging until 300µm, compared to 40µm without treatment. Endogenous GFP fluorescence is conserved although the signal is weakened, and immunohistochemistry is possible. Furthermore, to achieve whole-tissue high-resolution imaging we combined the two-photon imaging of cleared tissue with automatic serial sectioning (VibMicTM, Leica). Mechanical sectioning and successive block-face imaging allowed us to go beyond the existing limits of conventional microscope objectives and to image the whole organ. We established a pipeline for 3D imaging of whole zebrafish ovary at cellular resolution within one month. Large sample dataset generated can thus be used to perform 3D morphological analyses and cellular quantifications at the whole organ level.

---