



# Webinar CyTOF group France

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## Enhanced single-cell segmentation and whole slide imaging analysis through dual-modality immunofluorescence and imaging mass cytometry (IMC)

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Zoom link : <https://univ-amu-fr.zoom.us/j/86066463277?pwd=NS9ZNUsvUIMyWEIBQUI6R084dDFNUT09>

### Abstract

Imaging mass cytometry (IMC) is a powerful multiplexed tissue imaging technology that allows simultaneous detection of more than 30 markers on a single slide. It has been increasingly used for single-cell-based spatial phenotyping in a wide range of samples. However, IMC's limited field of view and low resolution pose challenges for downstream analysis. To address these limitations, we present a novel dual-modality imaging method that combines high-resolution immunofluorescence (IF) and high-dimensional IMC on the same tissue slide. Our computational pipeline uses the whole slide image (WSI) of IF as a spatial reference and integrates small FOVs IMC into a WSI of IMC. The high-resolution IF images enable accurate single-cell segmentation to extract robust high-dimensional IMC features for downstream analysis.

We applied this method to esophageal adenocarcinoma samples of different stages, reconstructing WSI IMC images to identify single-cell pathology and demonstrating the advantages of our dual-modality imaging strategy.