CLEARING TECHNIQUES FOR 3D IMAGING OF TISSUES

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The tutorial deals with novel technologies to image in 3D tissues at single cell resolution. The methodology is based on the clearing of opaque tissues and its fluorescent labeling. The clearing of the tissue makes it transparent so that fluorescence structures in the tissues can be visualized. Novel methodologies were introduced in the past decade for 3D imaging of tissues dealing with either clearing, staining or imaging of the tissue, each with their own advantages and disadvantages (1-4). This tutorial is focused on the first step of the tissue preparation for 3D imaging, the clearing. We have experience with large tissues such as mouse brain, and smaller pieces of tissue like skin and gingiva. In the tutorial we will discuss all steps in the methodology for large tissues and smaller tissues using the various methods. We will discuss the methods that are practically the most compatible and those that are not compatible with a particular type of tissue.