

CryoVR: Virtual Reality training & outreach tools for cryoEM

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Cryo-electron microscopy (CryoEM) has received global recognition for its capacity to resolve high-resolution structures of macromolecules, and deservedly, was the topic of the 2017 Nobel Prize in Chemistry. CryoEM is a powerful imaging technique because it can resolve particles well below the limit of resolution of visible light (~200 nm). To preserve a specimen in a physiologically-relevant state for EM imaging, samples are first snap-frozen in liquid ethane. This grid preparation process is a major hurdle for those outside of the EM field in adapting the method to their research. The goal of this research is to utilize virtual reality gaming as a venue for training researchers on the sample preparation process for EM, thereby making the technique more accessible to those unfamiliar with EM sample preparation. We began with the freezing process, developing a user-friendly, virtual reality training module that can illustrate the instrument workflow for the Gatan CP3 (Fig. 1). Ideally, this style of training can be used to familiarize personnel with expensive instruments without tying up facilities and removing the risks associated with traditional training paradigms.

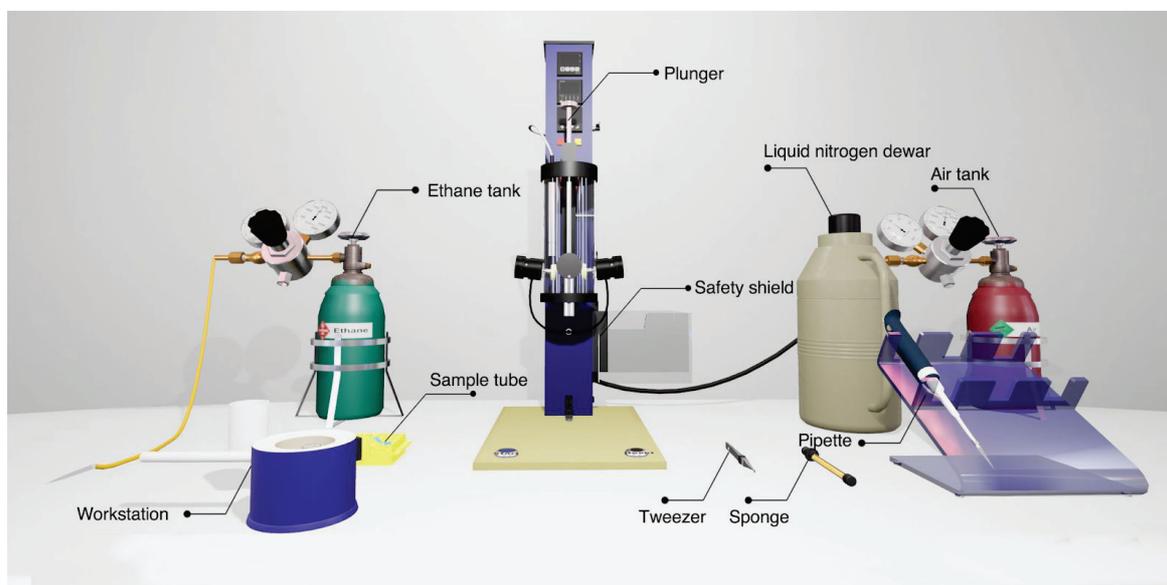


Fig. 1. An overview of our CryoVR Gatan CP3 Training Module setup.