

Developing 3D printing solutions and improvements for flow cytometry.

Chelsea Otis (otisc@mskcc.org), Memorial Sloan Kettering Cancer Center, **Mark Kweens**, Memorial Sloan Kettering Cancer Center, **Chelsea Otis**, Memorial Sloan Kettering Cancer Center, **Fang Fang**, Memorial Sloan Kettering Cancer Center, **Rui Gardner**, Memorial Sloan Kettering Cancer Center

Hardware problems in flow cytometry facilities are common and can significantly impact daily operations. Frequently, these issues may involve users bringing unusual requests or the need of a collection vessel that requires a holder not provided by the manufacturer. Other times they can be quality of life issues where the existence of a specific tool could improve the experience of setting up an instrument. In recent years, 3D printing has evolved to a point where many problems can be tackled with ease. Although most software tools used to create complex 3D printable models can take time to master, there are ways a novice can design simple objects that can solve or improve a many issues in a flow cytometry facility. In the Flow Cytometry Core Facility at MSKCC we are using an Ultimaker3 printer to develop solutions that have a significant impact on daily operations and usability of our instruments. Here, we present a list of our 3D print designs that are posted on the FCCF's Thingiverse page, <https://www.thingiverse.com/fccfatmskcc/designs>, which can be useful for a flow cytometry lab. In conclusion, we present a list of designs made for 3D printing that can offer custom and innovative solutions to problems and needs that arise in labs with flow cytometers. We provide tips on how to setup 3D printing capabilities at a low cost, and by sharing these solutions online we aim to help other labs and inspire them to develop their own designs and share them with the community.