

<https://3d.nih.gov/entries/3DPX-021194>

The Positional Cooling Platform Device (PCPD, known as the 'CryoKit') is a 3-D printable device that supports reproducible cryopreservation with standard cooling rates (5 to 35°C/min). The CryoKit accommodates French straws (0.25 and 0.5-mL) and cryopreservation vials (0.5 and 2-mL). Efforts in development of germplasm repositories to preserve genetic resources of aquatic species are impeded globally by a lack of standardized, inexpensive, reproducible, and portable cryopreservation technologies. The CryoKit can be used with a standard Styrofoam container that holds liquid nitrogen for on-site sperm cryopreservation for aquatic species and is distributed as open hardware. Detailed instructions are provided to meet the needs of different users. Please scroll to the 'Supplementary Documentation Files' tab to download the user manual.

All Fusion 360 files can be found on our GitHub through the following link:
<https://github.com/aggrc/CryoKit-V2.4.7>

Video:

Demonstration of the CryoKit in English can be found here: <https://youtu.be/OeEilBYR2WI>

La demostración del CryoKit en Español se puede encontrar aquí: <https://youtu.be/6qb-IWSLU2I>

Version 2.4.7 of the CryoKit was refined from the previous. Major changes include the French Straw and Cryovial Thermocouple Fasteners and an updated User Manual. Minor design changes were made on the 40 and 50-mm Claw Locks, the Top Rack, and the Bottom Rack.

French straw sealers can be found through a separate NIH model:
<https://3d.nih.gov/entries/3DPX-021229>

Developed by the Aquatic Germplasm and Genetic Resources Center (AGGRC) at the Louisiana State University Agricultural Center. The CryoKit was designed by Brittany Ratliff, E Hu, Bill Childress, Victoria Byrd, Yue Liu, Terrence Tiersch, and colleagues, in partnership with the International Zebrafish Resource Center (ZIRC) and USDA National Animal Germplasm Program (NAGP). This work was funded in part by NIH Office of Research Infrastructure Program (ORIP). This device is part of a multi-year project to develop a series of open hardware to support development of standardized and reproducible tools for the research communities that use aquatic models to study human diseases.

The details about development of the CryoKit series can be found in the publication: Hu, E., Childress, W. and Tiersch, T.R., 2017. 3-D printing provides a novel approach for standardization and reproducibility of freezing devices. *Cryobiology*, 76, pp.34-40.

Please visit AGGRC.COM to learn more about our work.