Supplementary material for "CYTO Lab Hacks: A platform for the exchange of innovations in cytometry"

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ABSTRACT

This supplementary material document shows a snapshot image of the existing CYTO Lab Hacks prototype website and a video showing the submission process for the future CYTO Lab Hacks website. Slides from the presentation accompanying the workshop at CYTO 2019 are also included.
Fig. 1. Snapshot of the CYTO Lab Hacks website [http://bit.ly/CytoLabHacks](http://bit.ly/CytoLabHacks). The snapshot shows the navigation panel with four entries on the left. The entries lead to website sub-sections: (1) “About” the CYTO Lab Hacks project, (2) “Publications” related to the project (3) scheduled “Events”, and (4) “CYTO Lab Hacks Submission” button to post a new innovation. The main window to the right shows three innovations currently posted on the website. The image is current as of September 2019.

Video 1. Example of a project submission process for the future CYTO Lab Hacks website. A screen capture video was created from an existing website used in the creative industry. It shows the workflow associated with a project submission that we aim to recreate in the future CYTO Lab Hacks website. The video was prepared for the workshop participants to quickly imagine our idea of the future submission process and be able to provide accurate feedback and suggestions for improvement.

Presentation 1. The slides starting on the next page guided the workshop and supported the oral presentations with a visual reference.
CYTO Lab Hacks: A Platform for the Exchange of Innovations in Cytometry

Cláudia Bispo (UCSF), Bunny Cotleur (Biogen), Christopher Hall (Sanger), Jakub Nedbal (KCL)
Structure of the Workshop

- Introduction
- Present a few innovations
- Break out sessions (round table discussion)
- Summary of the break out sessions
- Show and tell
  - Realise that your “little” project can help others and others can help you to improve it.
Motivation

**Problem:**

We have common issues.

Disseminate solutions to avoid wasted effort.

**Opportunity:**

Create centralized directory for innovations.

Incentivize sharing and exchange of innovations.
Strategy

- Group of volunteers (since CYTO 2018).
- Organization, planning, website development.
- We are seeking your help to push us forward.
  - Workshop.
  - Submitting these innovations.
CYTO Lab Hacks

- Budding platform for the exchange of cytometry innovations.
- Community driven activity.
- Overseen by the CYTO Innovations Committee.

Directory for non-commercial innovations related to cytometry

CYTO Lab Hacks Prototype Website

https://cytolab.000webhostapp.com

About
Publications
Events
CYTO Lab Hacks Submission

Enter your search query
Search

Automatic Monitor of Sample Acquisition Quality
Automatically monitor user sample quality for flow cytometers.

Sheath Filter Holder
This sheath filter holder helps keeping the sheath filter vertical to avoid viewing for bubbles and the tubing organized.
Why we did this?
Need for replacement nozzles as Core grew from 2 to 8 FACSARia purchasing new Nozzle was becoming prohibitively expensive

Repaired O-ring lasts for 3-6 months only, although replacing the O-ring has saved the Core over thousands of $$ / yr

Posted on: YouTube

Multimedia files available: Detailed protocol with instructions

https://flow.ucsf.edu/
Why we did this?
Tool kept being misplaced, and users were starting to damage the plates
We now have 1 tool per instrument
Printed and color coded with instrument’s “color”, easy ID’ed

Posted on: Thingiverse

Multimedia files available: STL file with instructions
Sheath Filter Holder

Why we did this?
Sheath filter was loose and most times horizontally placed in custom fluidics cart
Vertical placement maintains fluidics more stable, keeps tubing organized and more intuitive for user’s inspection for bubbles

Posted on: Thingiverse & https://flow.ucsf.com

Multimedia files available: STL file with instructions
User “Acquisition Quality” Program

What is it?
Autonomously monitor user sample quality for flow cytometers.

Why we did this?
We wanted to find identify problematic users to prevent their poor sample preparation affecting other later users.

Posted on: https://github.com/SangerCytometry/SampleQualityMonitor

Multimedia files available: YouTube (soon), Poster B106
Latin Square Sort Patterns

**What is it?**
Use sorted cell position to control batch effect.

**Why we did this?**
To mitigate the effect of plate position in downstream processes, such as uneven plate heating on thermocyclers and robotic pipetting accuracy

**Posted on:** [https://github.com/SangerCytometry/Influx_auto_sort_template](https://github.com/SangerCytometry/Influx_auto_sort_template)

**Multimedia files available:** YouTube
Question 1

What makes an innovation generate interest and enthusiasm in the cytometry community?

- Practical Innovations
- Biological Innovations
- Personal Innovation

Help us define the criteria for worthy innovations, both major or incremental.
Question 2

How to organize the CYTO Lab Hacks group to work efficiently towards its goals?

Different roles required.

How to organize and keep a globally dispersed group of volunteers engaged.

How to ensure consistent regular progress.

Help us come up with a committee structure and roles for volunteers.
Question 3

How should CYTO Lab Hacks website look like? What should each submission include?

Minimum requirements for a submission.

Easy of navigation.

Sweet spot between its usefulness to the community and effort required from the innovator.

*Help us define the criteria that will guide the development of the website.*
Break out session

Introduce each other.
Take notes - designate a person.
Discuss the questions amongst yourself.
Record notable comments.
Aim towards conclusive outputs.
We need your hacks