

## Tissue Culture

Contaminations can happen – spot the enemy!

**Cell culture contaminations cost time & money.**

**Recognize the culprits.**



**BACTERIA**

- Most common
- Causes turbidity
- Changes in pH
- Visible as tiny wiggly granules

**YEAST**



- Causes turbidity
- No initial changes in pH
- Visible as tiny bright spheroids

**MYCOPLASMA**



- Not visible
- No changes in pH or turbidity
- No cell death
- Changes in cell behavior
- Inconsistent results
- Detection with kits

**MOLD**



- Causes turbidity
- No initial changes in pH
- Visible as thin filaments

**VIRUS**



- Not visible
- Difficult to detect
- Detection- antibody testing, ELISA or PCR with viral primers

**ENDOTOXIN**



- Changes in cell behavior
- Inconsistent results
- Use 'endotoxin free' reagents

## Flow Cytometry

Database Cleanup – BD Fortessa and Sony SP6800

- Please back-up all your experiments by exporting files to an external hard drive by Friday, December 16th
- On Monday, December 19th all data acquired prior to August 1, 2022, will be purged from the database
  - Exception: templates and single stain files (SP6800)

**For routine experiments:**

- Please create and save a template
- Save a copy of your template on an external hard-drive, as a back-up

**Coming in Early 2023**

BD Aria III sorter upgrade - **Yellow-Green Laser (561nm- 50mW)**

- Benefits: will permit the identification/sorting of RFP, mCherry, and dsRed transduced cells

## What's New



**Replacing a full sharps container**

1. Close the full sharps containers
2. Leave at collection site for pickup
3. Take an empty container for use

**Borrowing Histology equipment**

Did you know that you can borrow both the Hybridization RNAscope System and TintoRetriever Pressure Cooker (antigen retrieval) and use them in your lab bench? Please contact Xiaofeng Lu (xiaofeng.lu@unityhealth.to) for more details.

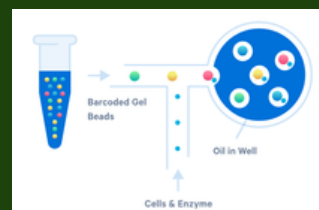
**Recycling in the labs**

During the month of November, we led a pilot project on the 4th floor lab space to determine the feasibility of recycling in the labs. We found that **recycling bins were contaminated 95% of the time with non-recyclable items** (most frequently with paper towels, gloves, soft plastic packaging, aluminum foil). Given these disappointing results, we are not yet ready to roll out recycling on all the lab floors. Instead, we will be conducting a separate pilot project with a more targeted recycling approach. Stay tuned for more details.

## Genomics

Single Cell Sequencing Library Prep has arrived! Thanks to Dr. Richard Gilbert and his kind donation of a 10X Genomics Chromium Controller to the RCF, single cell library prep is now possible using 10X reagents/workflow. The Chromium Controller uses advanced microfluidics to perform single cell partitioning and barcoding so you can go beyond population averages to capture and resolve cellular heterogeneity. The technology has been validated with fixed, fresh, and frozen samples, as well as whole cells and nuclei.

For more information, please see the Genomics Core Specialist, Pamela Plant (pamela.plant@unityhealth.to)



**Upcoming Events**

Keep your eye on the RCF Upcoming Events site for a Gene Expression Profiling Course, starting in January 2023.

# Histology

## New Equipment

Both EpreDia™ PrintMate™ AS 450 Cassette Printer and SlideMate™ AS Slide Printer are set up and ready to use. The training videos are currently under preparation. See below for an example of the printed cassette and slides.



Great news! We are going to upgrade to purchase the Leica tissue processor – PEGASUS. PEGASUS is a brand new model from Leica and just launched in May 2022. It is a fully enclosed tissue processor, can run parallel protocols on a single instrument, and process up to 400 samples simultaneously. For more information, please click [here](#).



# Pre Clinical Imaging

## Newton 7.0 Bioluminescence and Fluorescence Animal Imager

- ✓ High throughput capability with imaging of up to 5 mice at once
- ✓ Great for longitudinal studies



## Tips for a longitudinal bioluminescent imaging experiment

How long should I image for?

- Always run a pilot study if possible to determine luciferin kinetics (Figure 1)
- Timeline differs between disease models, strain of mice, subjects, time points
- Image as frequently as needed until “peak signal” is clearly passed

How often should I image?

- Consider how aggressive the disease model is
- Image as frequently as you need
- If it is a treatment study, choose time points accordingly
- If you need to image more than once a week, always start with a pre-injection image to ensure substrate has been cleared

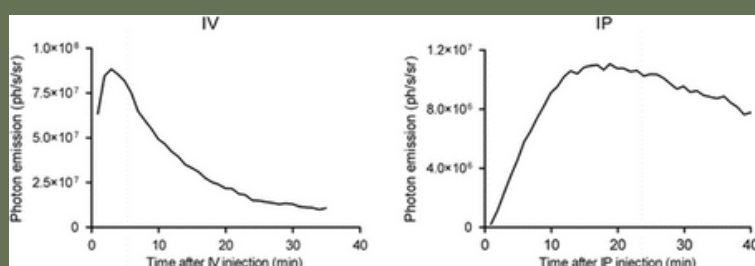


Fig 1 Keyaerts, M. et al. Eur J Nucl Med Mol Imaging (2008)

# Light Microscopy

## Very Important Dates

- **Dec 7, 2022** – NEW Agilent/Biotek Cytation 5 installation
- **January 31, 2021** – ImageXpress to be decommissioned. Data and analysis PC will remain accessible
- **Feb 1, 2023** – NEW Zeiss Cell Discoverer 7 installation
- **March 1, 2023** – LSM700 converted to wide-field microscope with deconvolution

## New Equipment

- The **NEW** Zeiss LSM900 with Airyscan is installed and up and running. Please contact Caterina for training ASAP as the LSM700 will be converted to a wide field system March 1, 2023.
- The **NEW** Agilent/Biotek Cytation 5 is here. It will be installed on Dec 7 and will replace the ImageXpress Micro. There are some nice added features including, real-time data analysis and exporting, and the ability to house and automatically image 8 plates.

## Get the skinny on Airyscan and

### Deconvolution

Airyscan allows for 1.7-fold better resolution than a traditional confocal with a larger pinhole making it more sensitive and gentler. [Learn more here.](#)

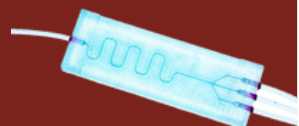
Deconvolution is a post processing mathematical approach to remove out-of-focus light from your 3-stacks. [Learn more here.](#)

# Microfabrication

## New Expanded Plasma Cleaner

Located in the 7th floor Cleanroom, the expanded plasma cleaner is a larger benchtop plasma instrument used for:

- ✓ Nanoscale surface cleaning and surface activation
- ✓ Surface alteration and modification
- ✓ Introduction of specific chemical functionalities to the surface without affecting the bulk material
- ✓ PDMS bonding for microfluidics device fabrication
- ✓ Surface patterning



Includes adjustable RF power settings, maximum RF power of 30W, 6" diameter x 6.5" length Pyrex chamber, metering valve to control gas flow and chamber pressure, and more.

This equipment is a donation by Dr. Darius Rackus, iBEST researcher and Assistant Professor at TMU.