

Shared Instrumentation Core

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The Shared Instrumentation Core provides access to several instruments which many laboratories do not use heavily so that access to a multi user instrument is the most cost effective solution in terms of purchase, maintenance, space and training. The core is supported by the School of Medicine.

Access

- Most instruments are in Jordan Hall room 1076.
- Users can access this room at all hours.
- Web based reservations using iLab
- Web page:

http://www.medicine.virginia.edu/research/cores/biomolec/Shared_Instrumentation

Fluorescence plate reader.

Molecular Devices Spectra MAX Gemini EM

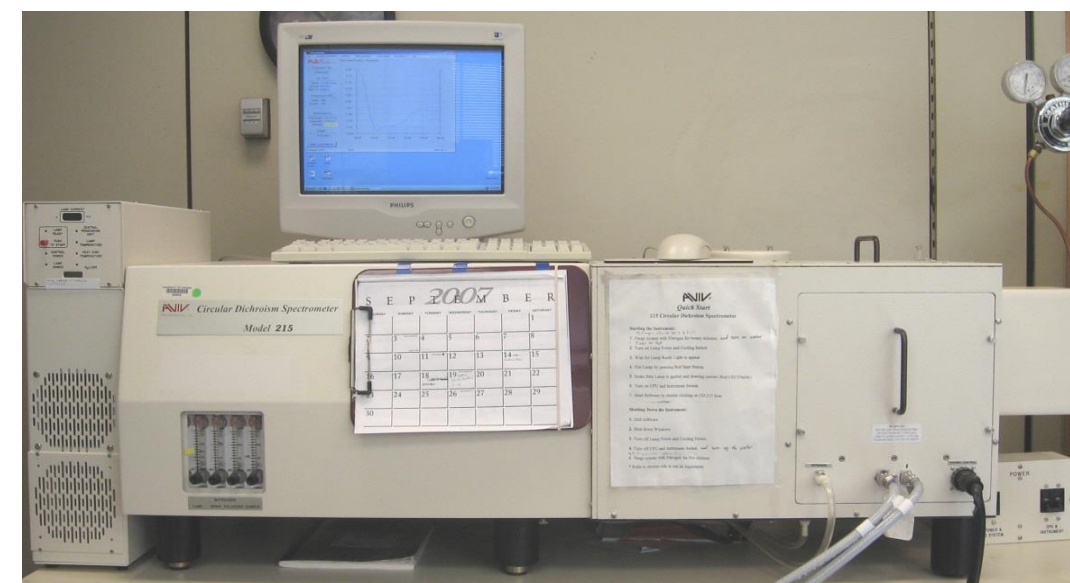
- Reads 6, 24, 96, 384 well plates.
- Dual monochromators for excitation and emission readings between 250 and 850 nm.
- Data is commonly converted to text files for analysis in a spreadsheet.
- Uses include; estimation of cell proliferation using Alamar blue for cell growth; DNA quantitation using Pico Green; caspase assay, CyTox assay
- Filter based absorbance reader available
- Fee per use



Circular Dichroism.

Aviv Instruments model 410

This instrument is used for CD spectra and monitoring of circular dichroism at specific wavelengths to observe changes in secondary structure caused by mutations or solvents. Measuring CD at increasing temperatures gives stability data. Hourly fee

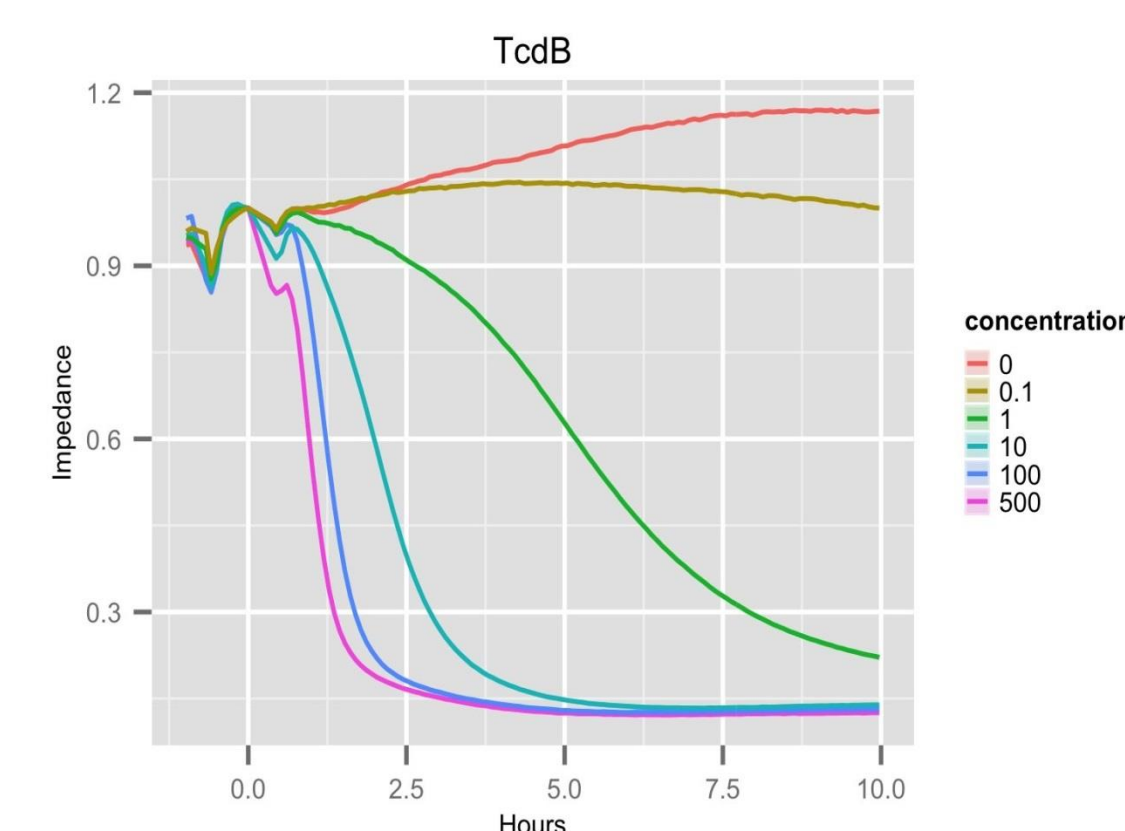


Real time cell analysis.

Acea Biosciences xCELLigence RTCA DP

This instrument measures cell growth and adhesion in real time without use of labels. The frequent measurements can detect events not seen with endpoint assays.

Common uses are measurement of cell proliferation, and measurements of toxicity, time course of cellular responses to agents. A special Boyden chamber plate can monitor cell invasion. Local applications are measuring bacterial toxins, complement mediated cytotoxicity, toxin effects on cell morphology. Daily fee.

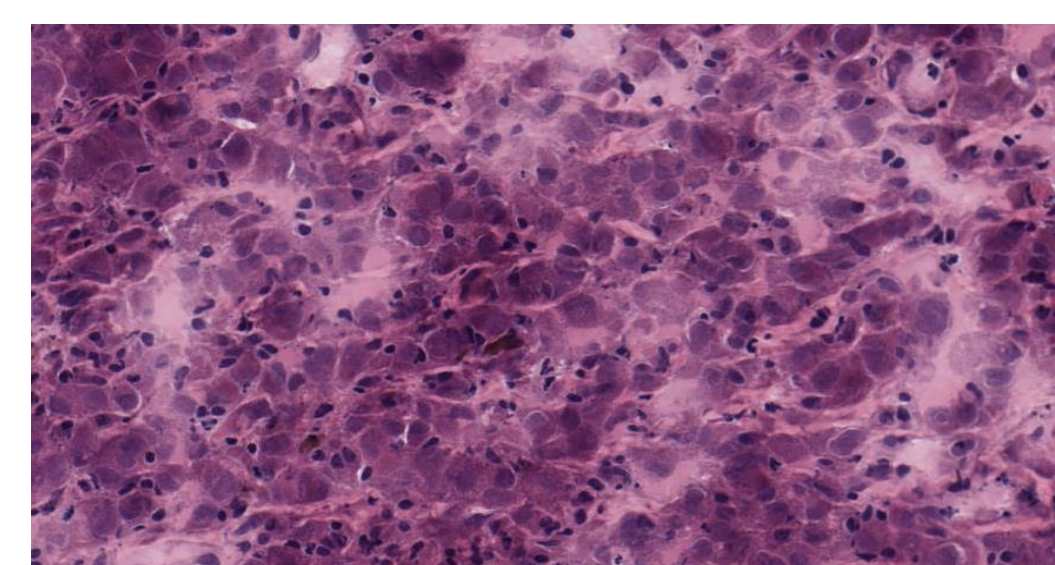


Response of human cells to *C. difficile* toxin. Data from D'Auria et al. BMC Microbiology (2015) 15:7

Slide Scanning

Aperio ScanScope

This instrument scans standard microscope slides at 20X or 40X to a digital image (SVS format), which can be converted to JPEG or TIFF formats. Up to 5 slides can be loaded at one time. There is also an oil immersion lens (83X) for blood smears. The free ImageScope program displays the images and allows annotations. Fee for training. The core can scan slides for a fee.



20x magnification scan

Molecular Interactions by Bio-Layer Interferometry. fortéBIO Octet RED96

This instrument measures interactions between molecules using a probe with an immobilized molecule dipped into a solution of the other molecule. The instrument measures association and dissociation rates and hence a dissociation constant. Applications include binding of small molecules to potential drug targets, antibody characterization and specific protein quantitation. Hourly fee.



Densitometry

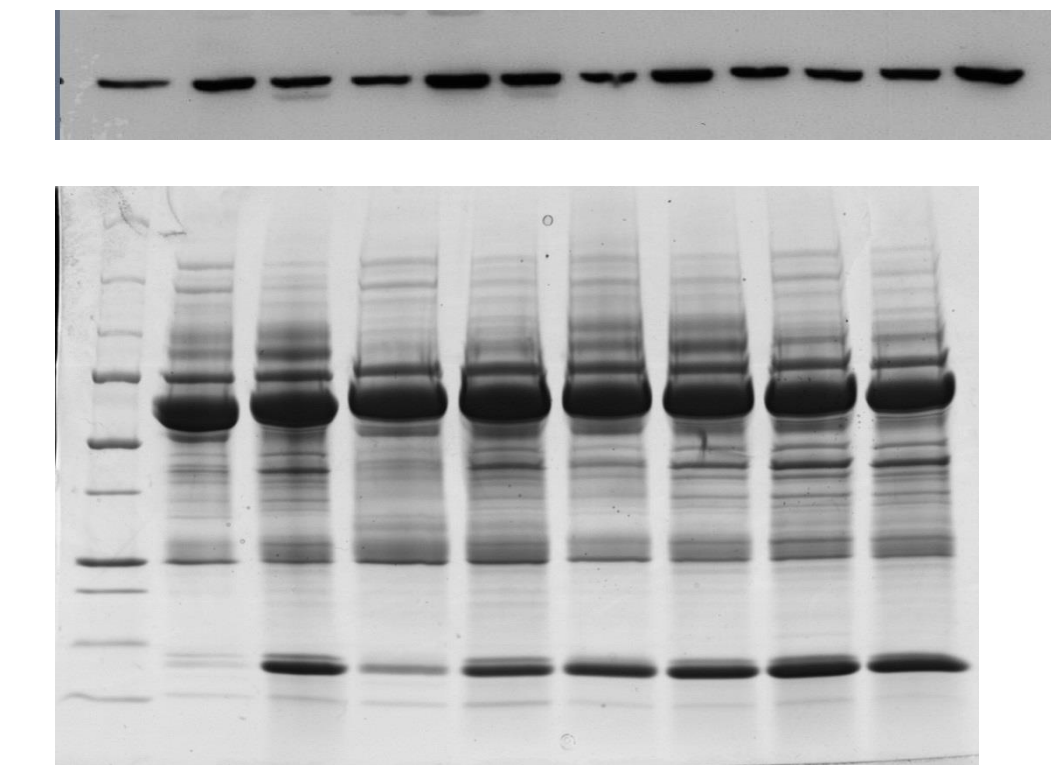
Bio-Rad GS-800 and ImageQuant software

Scan films, Coomassie and silver stained gels.

Images can be converted to JPEG or TIFF format

ImageQuant software for quantitative analysis

Analysis data can be saved as MS Excel file



Western blot scan

Coomassie stained Serum samples

Core operated services

Chromatography Service.

The core can perform chromatography by reverse phase, ion exchange and gel filtration. For reverse phase separations, sample size can be from sub microgram to milligrams.

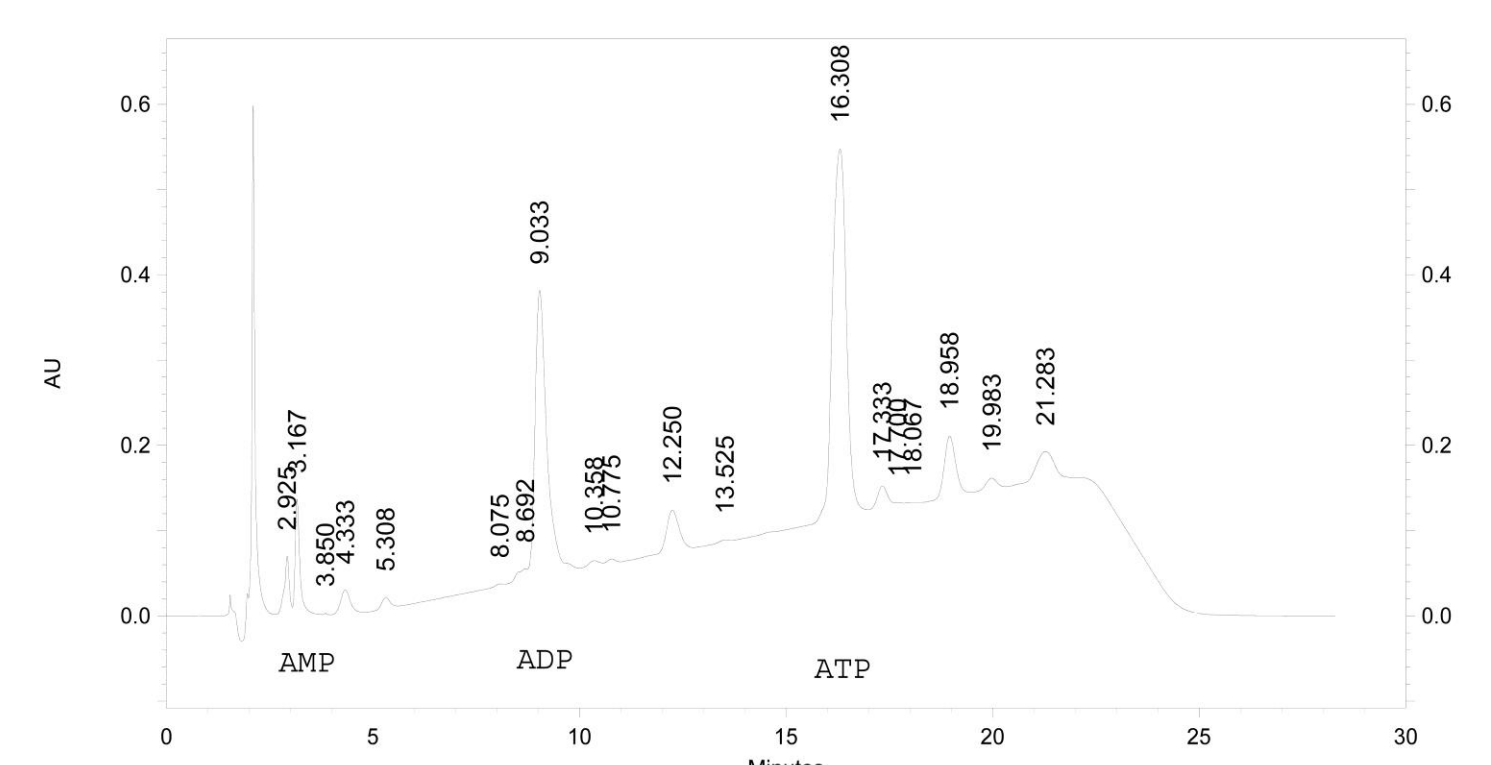
Most of our work has been separation of peptides and proteins, but we have also separated some hormones, drugs, and nucleotides.

Equipment:

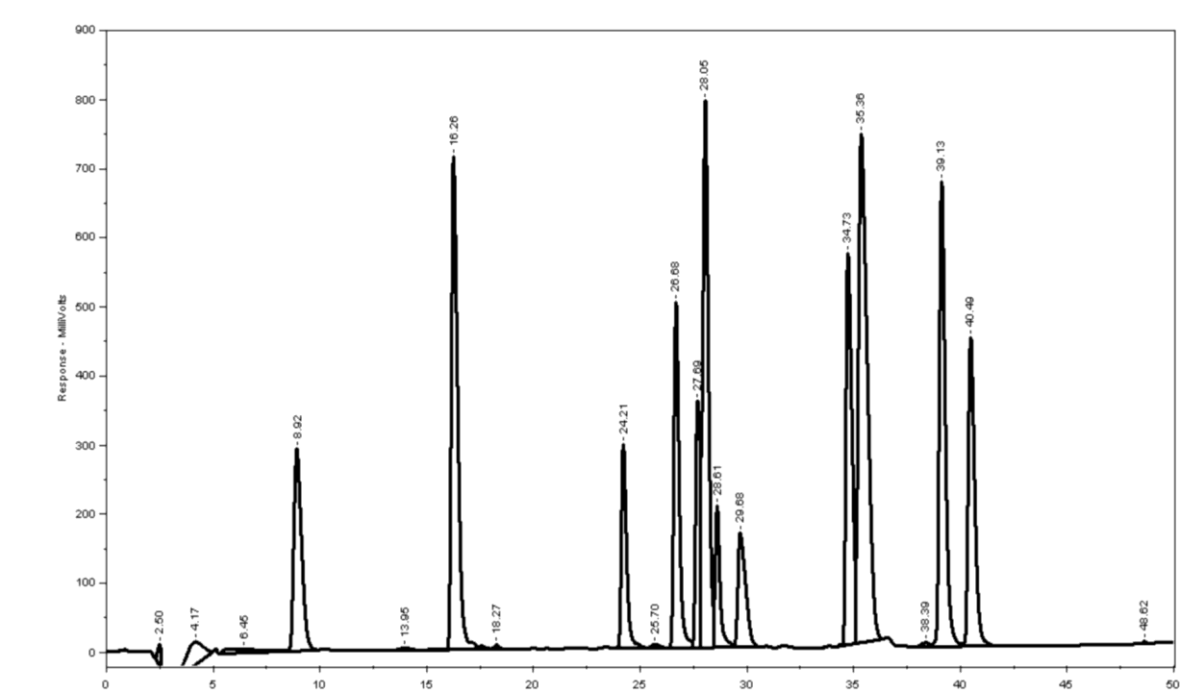
FPLC (Pharmacia/Amersham), for ion exchange and gel filtration.

Dionex Ultimate 3000 for capillary/microbore This system can monitor at 2 wavelengths.

Beckman HPLC. This system is for larger samples run on 4.6 mm diameter columns.



Nucleotide separation by ion exchange chromatography



Separation of 12 peptides from melanoma vaccine from Human Immune Therapy Center

Slide scanning service

For some researchers, having the core scan slides is more efficient than training and relearning to use the scanner for occasional use and spending time loading slides.

Electrophoresis equipment available for use

Isoelectric focusing apparatus (Bio-Rad and Amersham)

2nd dimension electrophoresis apparatus (Bio-Rad and Amersham)

Rotofor separation apparatus (Bio-Rad)

Mini Prep Cell tube gel electrophoresis apparatus (Bio-Rad)