



Centre for Biological Timing & Cognition, University of Toronto, 100 St. George Street, M5S 3G3

WAVEFX LIVE CELL SPINNING DISC CONFOCAL IMAGING SYSTEM (FRAP/FRET)

- Rapid Live-Cell Spinning Disc Confocal Imaging
- Automated Multi-channel, Multi-Z plane, Multi-XY, Time-lapse acquisitions
- Photo-activation and Photo-bleaching
- Environmental control including temperature, CO₂, and humidity with adapters for 35mm dishes, chambered slides, chambered cover-glasses
- High NA oil immersion objectives with DIC optics

Zeiss AxioObserver Z1 with motorized focus and filter turret

- 10x 0.30na Neofluar Ph1
- 20x 0.80na Plan-Apochromat with DIC optics
- 40x 0.60na LD Neofluar Ph2 Korr
- 40x 1.30na oil Plan-Apochromat Iris (UV) VIS-IR with DIC optics
- 63x 1.40na oil Plan-Apochromat with DIC optics
- 100x 1.40na oil Plan-Apochromat with DIC optics
- DAPI(350ex/460em), GFP/FITC (470ex/525em), DsRed/CY3 (545ex/620em),
- CY5 (620ex/700em) filter sets

Quorum WaveFX modified CSU-10 spinning disc scanhead with speed control 4-line Laser Merge Module

- 442nm, 491nm, 561nm, 638nm excitation solid-state diodes with individual ND wheels for attenuation

Emission Filters

- CFP (480), GFP (525), YFP (540), CY3 (605), Texas Red (620), CY5 (700), Dual CFP/YFP, Dual YFP/RFP, Triple GFP/RFP/CY5,
- Hamamatsu ImageEM Enhanced 512x512 back-thinned EMCCD camera (high speed/sensitivity)
- ASI motorized XYZ stage with piezo top-plate (100um range)
- Photonic Instruments Digital Mosaic Diaphragm for Photo-activation/Photo-bleaching
- EXFO X-cite fluorescence illumination for widefield epifluorescence
- LCI live cell stage-top incubator with temp., CO₂, humidity control
- Anti-vibration table
- High Performance Acquisition computer workstation
- Full suite of Volocity Imaging software for online acquisition and offline analysis

Contact: Ken Seergobin (kseergobin@gmail.com, 416.978.4243)

Website: <http://cbtc.utoronto.ca>



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CALCIUM IMAGING SYSTEM

- Automated multi-channel, multi-Z plane acquisitions
- Microinjection, perfusion with temperature control
- High NA lenses
- High resolution CCD camera for fluorescence imaging
- High speed CCD camera for live cell imaging

Zeiss AxioObserver Z1 with motorized focus and filter turret

- 10x 0.50na Fluar with DIC optics
- 40x 1.30na oil Fluar with DIC optics
- DAPI(350ex/460em), GFP/FITC (470ex/525em), Texas Red (560ex/630em) filter sets

- Sutter DG4 Fluorescence illumination system
- Burleigh PCS-6000 micromanipulators (left and right)
- Hamamatsu ORCA AG High Resolution 1344x1024 CCD camera
- Rolera XR
- Warner V6 six channel valve controller
- Harvard TC-202A temperature controller
- Faraday cage enclosure
- Anti-vibration table
- High Performance Acquisition computer workstation
- Full suite of Volocity Imaging software for online acquisition and offline analysis

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INVERTED DECONVOLUTION IMAGING SYSTEM

- Automated multi-channel, multi-Z plane, multi-XY
- High resolution CCD camera for fluorescence imaging of plastic dishes or glass slides

Zeiss AxioObserver Z1 with motorized focus and filter turret

- 10x 0.30na Neofluar Ph1
- 20x 0.40na LD Neofluar Ph2 Korr
- 40x 0.60na LD Neofluar Ph2 Korr
- 40x 1.30na oil Plan-Apochromat Iris (UV) VIS-IR with DIC optics
- 63x 1.40na oil Plan-Apochromat with DIC optics
- DAPI(350ex/460em), GFP/FITC (470ex/525em), DsRed/CY3 (545ex/620em), TexasRed (560ex/630em) filter sets
- EXFO X-cite fluorescence illumination system with iris
- Hamamatsu ORCA AG High Resolution 1344x1024 CCD camera
- ASI motorized XY stage
- Anti-vibration table
- High Performance Acquisition computer workstation
- Full suite of Volocity Imaging software for online acquisition and offline analysis

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UPRIGHT DECONVOLUTION IMAGING SYSTEM

- Automated multi-channel, multi-Z plane, multi-XY acquisitions
- Fluorescence and brightfield imaging in colour and monochrome
- Ideal for glass slide preps
- High NA oil immersion lenses

Zeiss AxioImager Z1 with motorized focus and filter turret

- 1.25x 0.03na Plan-Neofluar
- 10x 0.45na Plan-Apochromat
- 20x 0.80na Plan-Apochromat with DIC optics
- 40x 1.30na oil Plan-Apochromat Iris (UV) VIS-IR with DIC optics
- 63x 1.40na oil Plan-Apochromat Iris with DIC optics
- 100x 1.40na oil Plan-Apochromat with DIC optics
- DAPI(350ex/460em), GFP/FITC (470ex/525em), CY3 (545ex/605em), TexasRed (545ex/620em), CY5 (620ex/700em) filter sets

- Retiga EXi Cooled MONO 12bit
- MicroPublisher 5.0 RTV Colour 10bit
- EXFO X-cite fluorescence illumination system with iris
- Ludl BioPoint2 motorized XY stage
- Anti-vibration table
- High Performance Acquisition computer workstation
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CELL CULTURE IMAGING SYSTEM 1

- Automated multi-channel, multi-Z plane acquisitions
- Microinjection, solution stimulus delivery, patch clamping, intra- and extra-cellular recording, perfusion with temperature control
- High resolution CCD camera for fluorescence imaging

Zeiss AxioObserver Z1 with motorized focus and filter turret

- 10x 0.25na A-Plan Ph1
- 20x 0.30na LD A-Plan Ph1
- 40x 1.30na oil Plan-Apochromat Iris (UV) VIS-IR with DIC optics
- DAPI(350ex/460em), GFP/FITC (470ex/525em), DsRed/CY3 (545ex/620em) filter sets

- Hamamatsu ORCA AG High Resolution 1344x1024 CCD camera
- EXFO X-cite fluorescence illumination system with iris
- Burleigh PCS-6000 micromanipulators (left and right)
- Harvard TC-334B Dual Automatic Temperature Controller
- Warner SF-77B Perfusion Fast – Step
- Axon CNS Digidata 1440A
- Axon CNS Axoclamp 900A
- Faraday cage enclosure
- Anti-vibration table
- High Performance Acquisition computer workstation
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CELL CULTURE IMAGING SYSTEM 2

- Automated multi-channel, multi-Z plane
- Microinjection, patch clamping, intra- and extra-cellular recording, perfusion with temperature control
- High resolution CCD camera for fluorescence imaging

Zeiss AxioObserver Z1 with motorized focus and filter turret

- 10x 0.25na A-Plan Ph1
- 20x 0.30na LD A-Plan Ph1
- 40x 1.30na oil Plan-Apochromat Iris (UV) VIS-IR with DIC optics
- DAPI(350ex/460em), GFP/FITC (470ex/525em), DsRed/CY3 (545ex/620em) filter sets

- Hamamatsu ORCA AG High Resolution 1344x1024 CCD camera
- EXFO X-cite fluorescence illumination system with iris
- Burleigh PCS-6000 micromanipulators (left and right)
- Harvard TC-334B Dual Automatic Temperature Controller
- Warner V6 six channel valve controller
- Axon CNS Digidata 1440A
- Axon CNS Axoclamp 900A
- Faraday cage enclosure
- Anti-vibration table
- High Performance Acquisition computer workstation
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BRAIN SLICE IMAGING SYSTEM 1

- Automated multi-channel, Multi-Z plane acquisitions
- Nerve and muscle stimulation, patch clamping, intra- and extra-cellular recording, microinjection, perfusion with temperature control
- High resolution CCD camera for fluorescence imaging
- High speed CCD camera for live cell imaging

Zeiss AxioExaminer

- 5x 0.13na Achroplan
- 10x 0.30na Achroplan water dipping Ph1
- 40x 0.80na Achroplan water dipping
- 63x 1.0na Apochromat water dipping

- DAPI, GFP, CY3 filter sets
- Hamamatsu C4742-96-12G04
- Rolera XR
- EXFO X-cite fluorescence illumination system with iris
- Harvard TC-334B Dual Automatic Temperature Controller
- Warner V6 six channel valve controller
- Axon CNS Digidata 1440A
- Axon CNS Axopatch 200B
- Sutter MPC-200
- Sutter ROE-200 manipulator
- A.M.P.I. Master-8
- Faraday cage enclosure
- Anti-vibration table
- High Performance Acquisition computer workstation
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BRAIN SLICE IMAGING SYSTEM 2

- Automated multi-z plane acquisitions
- Nerve and muscle stimulation, patch clamping, intra- and extra-cellular recording, microinjection, perfusion with temperature control
- High resolution CCD camera for fluorescence imaging
- High speed CCD camera for live cell imaging

Zeiss Axioskop 2 with motorized focus and filter turret

- 5x 0.12na Achromplan
- 10x 0.30na Achromplan water dipping Ph1
- 40x 0.80na Achromplan water dipping
- 63x 1.0na Apochromat water dipping

- DAPI, GFP, CY3 filter sets
- Burleigh PCS-6000 micromanipulators (left and right)
- Motorized Gibraltar platform
- Ludl motorized focus drive
- Hamamatsu C4742-96-12G04
- Rolera XR
- EXFO X-cite fluorescence illumination system with iris
- Harvard TC-334B Dual Automatic Temperature Controller
- Warner V6 six channel valve controller
- Axon CNS Digidata 1440A
- Axon CNS Axopatch 200B
- A.M.P.I. Master-8
- Faraday cage enclosure
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Summary

Stations

- 4 electrophysiology
- 1 calcium imaging
- 2 dedicated live cell & deconvolution
- 1 Quorum Wave/FX Spinning Disc Confocal

Microscopes

- 6 AxioObserver Z1
- 1 Axioskop 2
- 1 AxioExaminer

Volocity

- 8 Acquisition
- 2 Visualization
- 2 Classification
- 2 Restoration

In addition, the Centre hosts 1 Laser Capture Microdissection station (MMI CellCut) provided by Quorum

- Contamination-free laser microdissection of paraffin or cryosections
- High-precision laser cutting ($< 1\mu\text{m}/40\times$)
- Appropriate for single cell or large area captures
- Outstanding image quality providing clear evaluation of captured sections
- Easy operation with high-level of automation including autodocumentation

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