

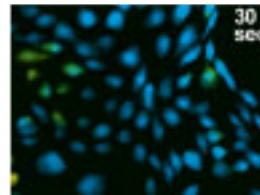
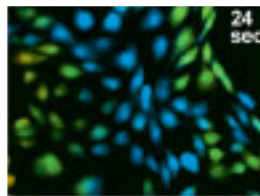
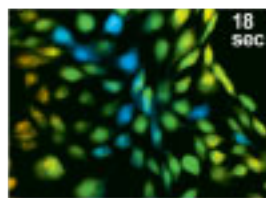
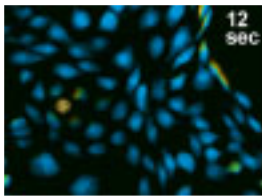
# Ratio Plus

## FRET and Ratiometric Imaging for GFP and Ion Concentration Measurements

### Ratio Plus

Ratio Plus is an IPLab extension which enables you to acquire, process and analyze **dual wavelength image data from fluorescently labeled cells**. Ratio Plus enables you to perform ratiometric experiments using scientific-grade cameras and wavelength switching systems.

The Ratio Plus extensions have been designed to provide power, flexibility, ease of use, and improved experimental consistency. With Ratio Plus, you can acquire image sequences, store them in memory or on hard disk, calculate ion concentration, plot mean fluorescence or ion concentration over



time, and animate the resulting image sequence. In addition, Ratio Plus gives you maximum flexibility in designing your own experiments.

Ratio Plus systems can use digital or intensified-video CCD cameras.

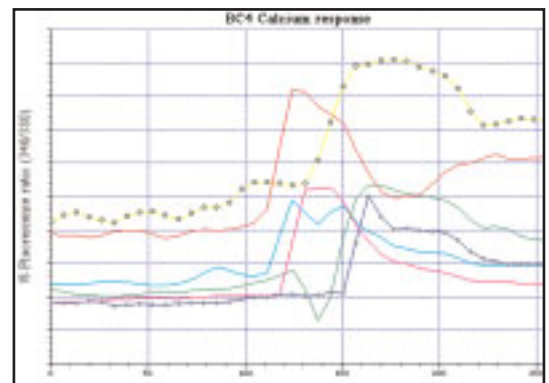
The ICCD-based system is designed specifically for ratio imaging of fast cellular events. Because this system utilizes an intensified CCD video camera, you can detect very low light emissions from your fluorescent samples even at video-rate exposure times (1/30 of a second). The software can perform image averaging or summing to improve the overall signal to noise ratio (SNR) and the dynamic range of your intensity readings.

You can also choose a cooled digital CCD system which is very versatile, although somewhat slower. Digital CCD cameras give higher spatial resolution in the XY plane. The cooling provides greater signal-to-noise performance, while the 12-bit digitization yields greater gray level resolution to detect minute changes in ion concentration.

### Available for Macintosh, Windows 98, and Windows NT/2000/XP

Add a high-speed filter wheel or other wavelength changer, and you can rapidly capture image data resulting in high quality time-lapse sequences of

dual-wavelength images. Switch between using the excitation or the emission filter wheel, or use both. Ratio Plus' acquisition capability includes control of LEP, Prior, or Sutter filter wheels and shutters, or most other RS-232-controllable wavelength changing devices. This gives you the control of exposure at the excitation light source, minimizing photo-bleaching and subsequent damage to the sample.



# RATIO PLUS FEATURES

## Ratio Plus Features Include:

- **Easy-to-use, integrated environment** for acquiring and processing dual wavelength image data
- Choice of camera types:
  - **Intensified CCD camera** for the most demanding low-light situations
  - **Cooled digital CCD camera** with 12- to 16-bit data and low SNR
- Flexible control of camera and wavelength switching equipment
- Program optimized for **speed and precision**
- Save data to RAM for maximum speed, or to disk for increased capacity
- Generate **movies** of ion concentration changes, and export them as QuickTime movies (Mac) or AVI movies (Win)
- Quickly and easily produce **mosaic images** for presentations, showing representative snap shots of the experiment
- Make **plots** showing changes in selected cells or regions through time



# RATIO IMAGING SYSTEM

## Recommended System Components

<i>Product</i>	<i>Description</i>
<b>IPLAB</b>	IPLab image acquisition, processing and analysis software for Power Macintosh and Windows computers
<b>RATIO PLUS</b>	Software extension module for single- and dual-wavelength fluorescence ratio image acquisition and analysis
<b>FILTER WHEEL</b>	High-speed filter wheel or scanning mirror, or most other RS-232 filter-switching devices
<b>OPTICAL FILTERS</b>	Select appropriate excitation/emission filter sets for your ratiometric probes and microscope configuration
<b>CAMERA</b>	Low light capable CCD camera system. IPLab options to support both video frame grabber and digital CCD camera systems from various manufacturers

Please contact us for information about the best hardware configuration.



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