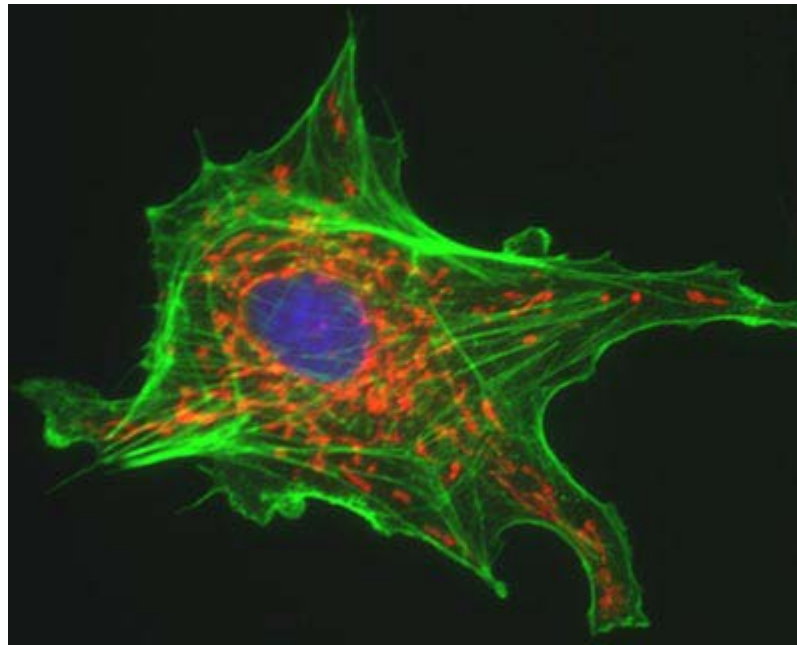


## Neuroscience, Microscopy, Imaging and Image Analysis: Seeing is Knowing



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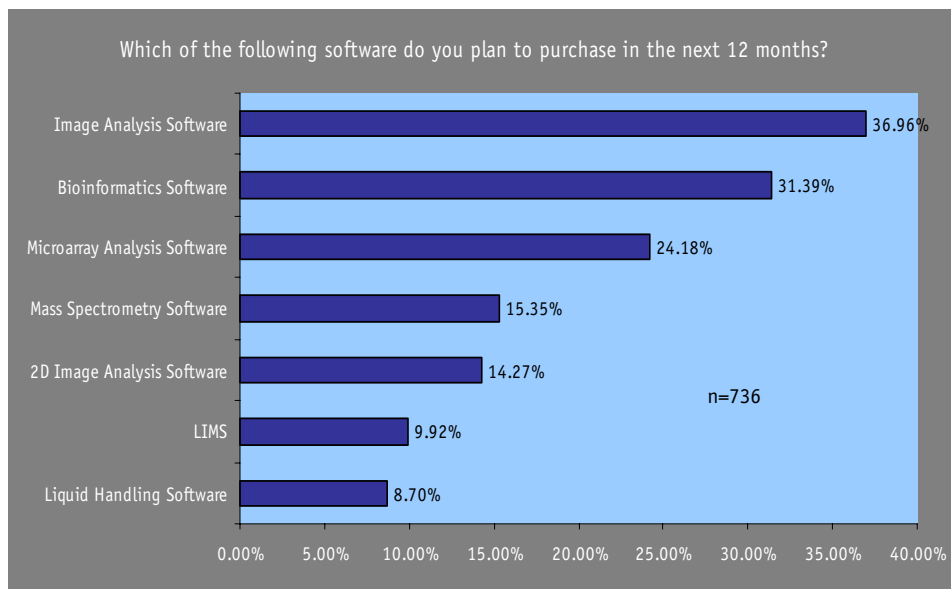
## Introduction

Major advances in imaging and microscopy in recent years have allowed scientists to visualize their results like never before. In addition, the increased use of imaging has created a need for image analysis software and image databases to allow researchers to interpret their data and store the images being captured.

In October 2003 Biocompare surveyed more than 2000 life scientists regarding their purchasing plans for FY2004. The results, published in the *Fall Purchasing Survey 2003* report, showed that half of respondents use microscopy (up from 44% the previous year) and 37% of those who will be purchasing software said they would be purchasing image analysis software in FY2004.

In this survey, *Neuroscience, Microscopy, Imaging and Image Analysis: Seeing Is Knowing*, Biocompare has taken a closer look at the microscopy, imaging, and image analysis market. With a survey focused on neuroscientists and timed to coincide with the Society for Neuroscience conference in Orlando, FL we set out to examine the current usage of these technologies by neuroscientists along with their plans for the future.

“If anything has remained constant over centuries of biological research, it is the value of the evidence of your own eyes, gained by examining specimens — living or dead — in as much detail as possible.” Tim Chapman *Nature* **425**, 867 - 873 (23 Oct 2003)



Data from Biocompare's Fall Purchasing Survey 2003

Biocompare's survey and report examines this market by answering such questions as:

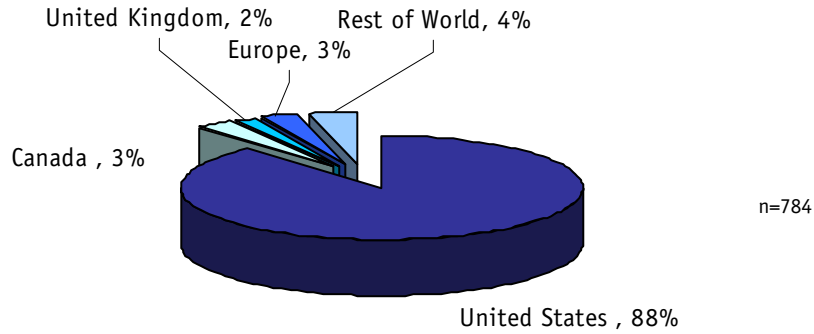
- what types of equipment and software are currently being used?
- what are important factors in the decision to buy a microscope?
- how much is budgeted for imaging equipment in FY2004?

## Methodology

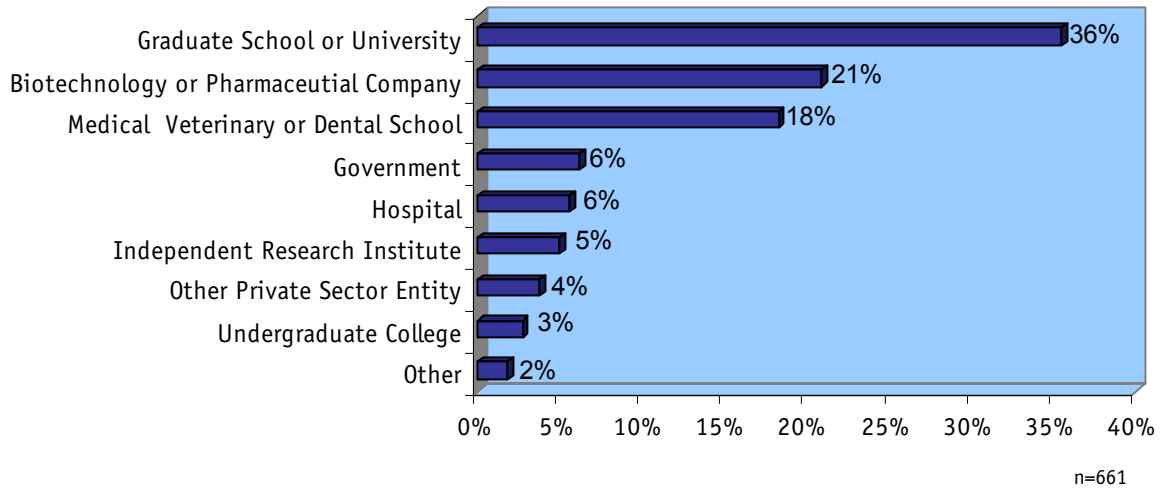
This report is based on the responses of 784 scientists who completed a survey online between November 13 and November 24, 2003. Survey invites were sent to 10,450 people comprised of researchers who's interests include neuroscience, microscopy and image analysis.

The survey consisted of 24 closed or partially closed ended questions designed to reveal the survey takers' opinions, practices and purchasing plans regarding neuroscience, microscopy, imaging and image analysis. All participants were required to complete demographic profiling questions to characterize their role in the laboratory, their main research focus and their purchasing authority.

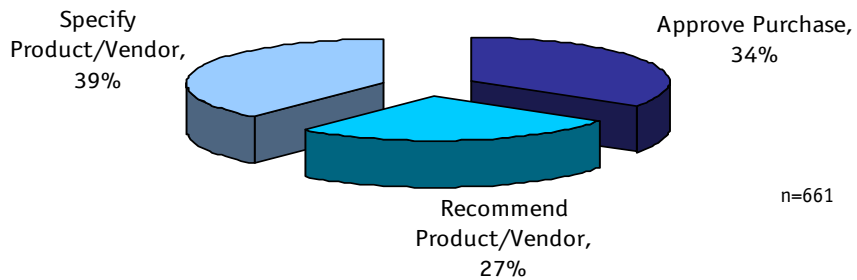
Survey respondents in this report were limited to those scientists with a role in purchasing and those currently using microscopy, imaging or image analysis.



91% of survey takers are in North America. 57% are in an academic setting and 21% are at a Biotechnology or Pharmaceutical company

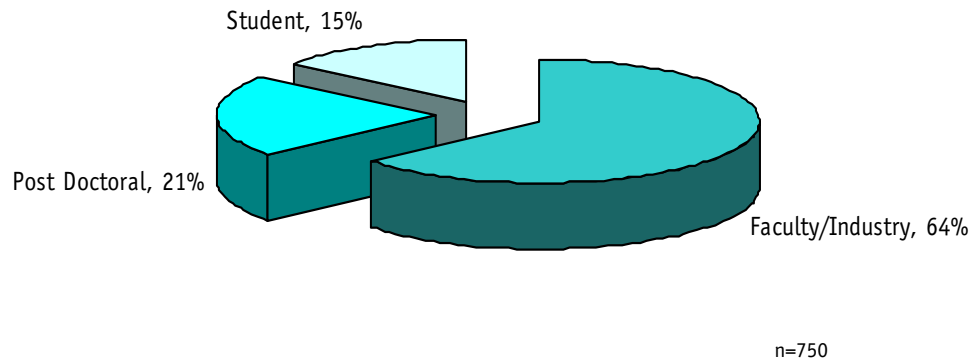


### Purchasing Authority

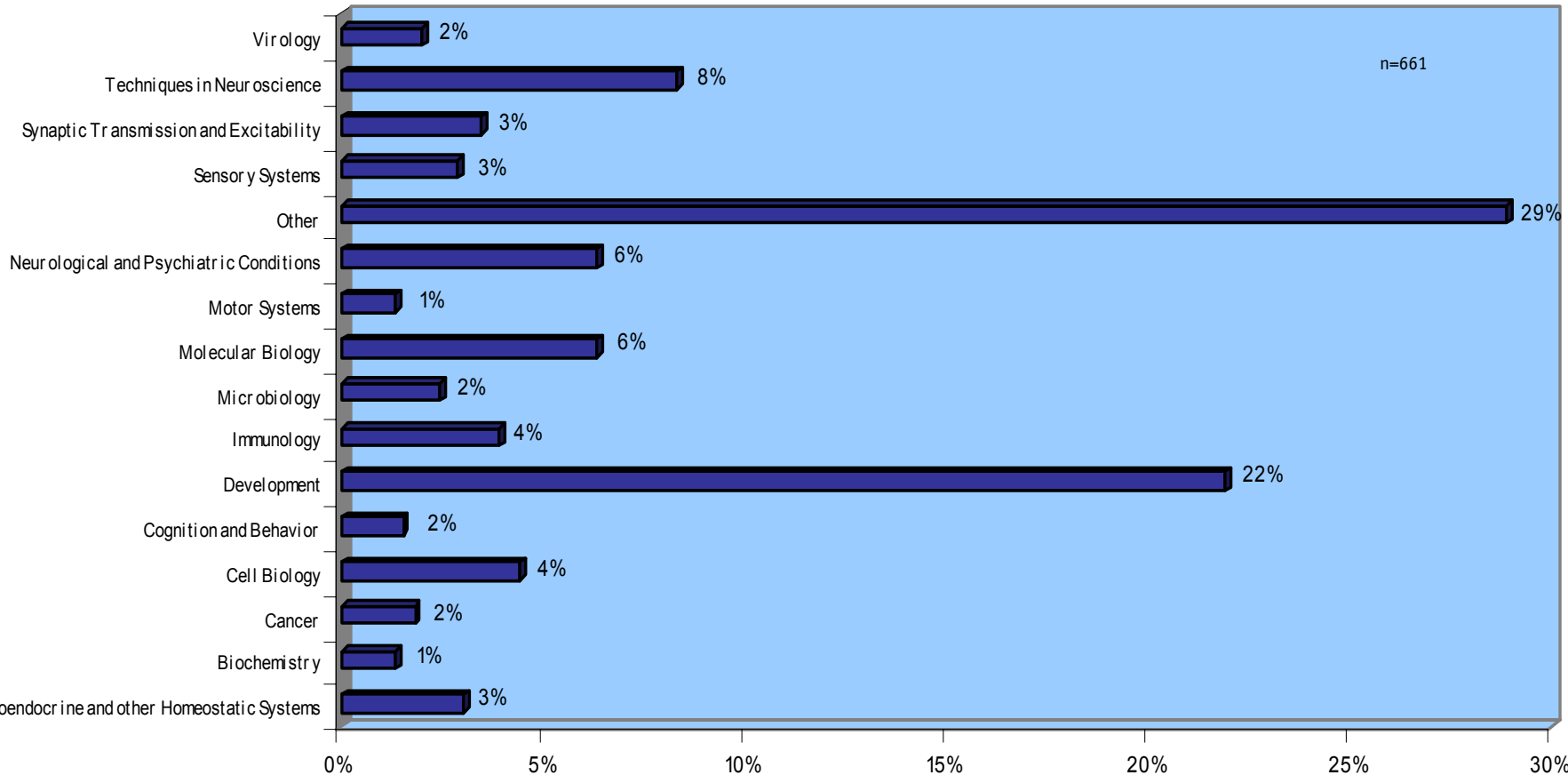


While all of the survey respondents have some role in Purchasing 73% are decision makers

### Job Type



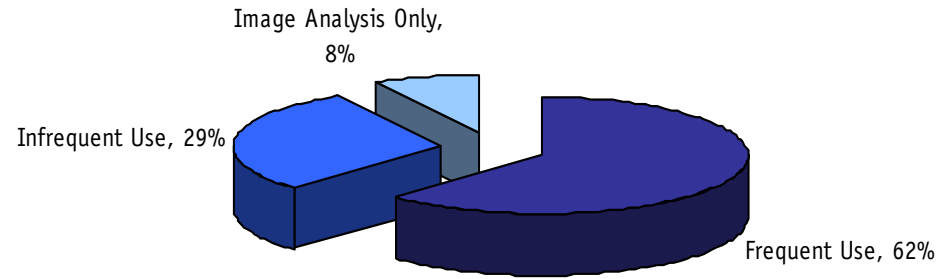
## Primary Specialization



22% of survey respondents' primary specialization is Development.

Write-in responses from those who chose 'Other' included the following: Apoptosis, Aquatic Animal Pathologist, Bacterial Genetics, Biodefense, Bioengineering, Bioinformatics, Breast Cancer, Cardiology, Chemical Engineering, Clinical Testing, Crystallography, Drug Design, Drug Discovery, Enzymology, Forensic Science, Histology, HTS, Infectious diseases, Medical Imaging, Memory, Metabolism, Microarray, Multiple Sclerosis, Neurobiology, Neurodegeneration, Nutrition, Oncology, Orthopedics, Osteoporosis, Pharmacology, Physiology, Toxicology, Tumor, Vaccine, Vascular Biology

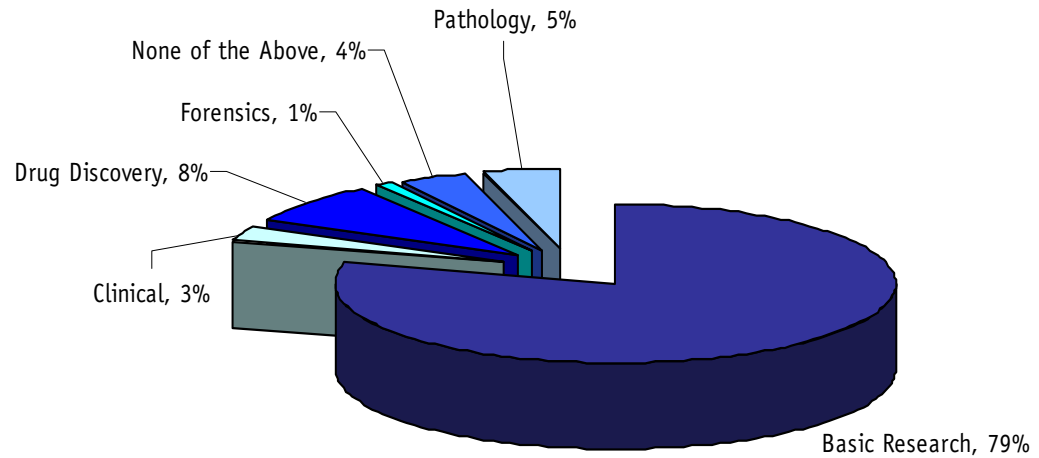
### How would you characterize your Microscopy/Imaging use?



n=595

62% of survey takers characterized their Microscopy/Imaging use as Frequent. The large majority are using Microscopy/Imaging for Basic Research.

### What are you currently using Microscopy/Imaging for?



n=595

## Surveys

19. How do you archive your images?
  - a. Images stored in files on hard drive/server/removable media
  - b. Images files stored in database
  - c. Hardcopy images stored in binders
  - d. Other (please specify)
20. Do you analyze your images using image analysis software?
21. If no, would you be interested in image analysis software for your particular application?
22. Whom do you think of when you think of imaging equipment?
23. Are you currently using or planning to use any of the following?
  - a. High Content Screening
  - b. In-vivo Digital Imaging
  - c. Confocal Microscopy
  - d. Light Microscopy
  - e. Fluorescent Microscopy
  - f. Electron Microscopy
24. Are you currently using or do you plan to use any of the following?
  - a. Image Stitching
  - b. Image Database
  - c. 3D Reconstruction
  - d. Image Data Analysis
  - e. Neuron Tracing and Analysis
25. What is the next imaging related product that you plan to purchase?
  - a. Image Analysis Software
  - b. Light Microscope
  - c. Fluorescent Microscope
  - d. Confocal Microscope
  - e. Cooled CCD Camera
26. When capturing images from your microscope do you use film or digital capture?
27. If using film, do you plan to switch to digital in the next 12 months?
28. How important is ergonomics to you when choosing a microscope?
29. How important is potential for automation to you when choosing a microscope/imaging system?
30. How important is online ordering to you when purchasing a microscope or imaging system?
31. Which of the following platforms do you prefer to use for image analysis?
  - a. PC
  - b. Macintosh
  - c. SGI
32. Do you prefer to be able to write your own algorithms for image analysis?
33. How much do you have budgeted for Microscopy/Imaging equipment in Q1 2004?
  - a. \$0-\$50,000
  - b. \$50,001-100,000
  - c. \$100,001-\$500,000
  - d. \$500,001-\$1,000,000
  - e. >\$1,000,000
34. What are your bottlenecks in neurobiology?
  - a. Automated imaging of cells and cellular processes
  - b. Appropriate assays and reagents
  - c. Data analysis
  - d. Other (please specify)

## Surveys

35. Are you currently using or planning to use an imaging system for Tissue MicroArrays?

- a. Currently using
- b. Planning to use
- c. None of the above

36. Do you perform or plan to perform cell counting using stereological methods?

- a. Perform
- b. Plan to perform
- c. None of the above

37. Which of the following do you perform or plan to perform on virtual slides? (check all that apply)

- a. High-speed Image Capture and Montage (under 5 min for full slide)
- b. Image Serving and Access Control via Intranet or Internet
- c. Browser Based Viewing and Annotation of Slides by Research Collaborators or Students

38. What types of samples do you currently plan to analyze by image analysis?

- a. 1-D gels
- b. 2-D protein gels fluorescently stained (excluding DIGE)
- c. 2-D protein gels DIGE
- d. Chemiluminescent Western Blots
- e. Fluorescent (far-red or infrared labeled) western blots
- f. Colorimetric western blots
- g. Radiolabeled samples (northern blots, Southern blots, etc.)
- h. Other radiolabeled samples
- i. Whole tissue sections
- j. Microarray slide
- k. Microplates
- l. Live animal bioluminescence
- m. Live animal fluorescence

39. Which of the following imaging applications are of importance to your research?

- a. Cell detection and counting
- b. Cell density
- c. Intensity measurements
- d. Neuronal tracing
- e. Cell or particle tracking
- f. Automatic abnormal cell recognition, based on morphological differences
- g. Montaging of images (e.g. brain slices, tissues, etc.)
- h. Extended focus imaging for thick sections
- i. Multipoint extended focus imaging
- j. Stereology
- k. Calcium imaging/ratio imaging
- l. FRET
- m. Deconvolution
- n. TTL control/TTL interfacing of microscope & camera with other hardware
- o. Other (please specify)

## Other Reports Available from Biocompare

Fall Purchasing Survey 2003

Price: \$4000

Antibodies: Tools for Discovery

Price: \$2250

### Upcoming Reports

Year in Review: An analysis of user viewing and searching on Biocompare's site for 2003

Price: \$3000

Mass Spectrometry Survey

Price: \$3500

RNAi Survey

Price: \$3000

Protein Arrays Survey

Price: \$3000

**Thank you for participating in Biocompare's Neuroscience, Microscopy, Imaging and Image Analysis survey. If you have any questions about this survey or any of Biocompare's other marketing services please contact us at:**

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