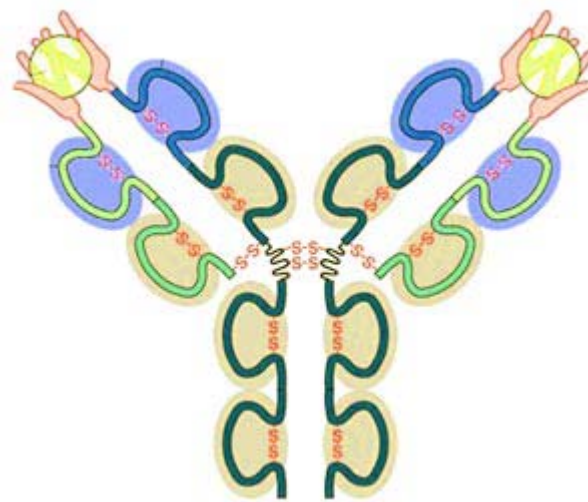


Antibodies: Tools for Discovery 2004



Introduction

The genomes of many organisms (e.g. human, mouse, yeast) have been completed and many researchers are now involved in studying the proteomes (the complete set of proteins encoded by the genome) of these organisms. There are about 30,000 – 40,000 genes in the human genome.¹ It has been estimated that there are up to 30 times that number of proteins in the human proteome.² Add to that the proteomes of the other organisms, and the number of proteins available for study becomes staggering. There are currently about 2.5 million non-redundant protein sequences in GenBank®.³ Tony Pawson, the director of research at the University of Toronto's Samuel Lunenfeld Research Institute says, "We are entering an exciting phase, but I would say that we have just gotten started."²

In addition to their sheer numbers, there are numerous challenges to working with proteins. Far more than nucleic acids, proteins vary in size, shape, affinity and abundance. In recent years, techniques and technologies used to study and characterize proteins have developed in response to these challenges (e.g. the emergence of protein arrays and the advancements in 2-dimensional electrophoresis). In the continued creation of new technologies and the advancement of those in current use, antibodies will remain an important tool for proteomics research.

The necessity to study proteins present in low copy numbers and the need for automation are two of the most frequently discussed challenges: through their ability to selectively bind proteins, antibodies are being used to address both of these requirements. Expression levels of various proteins can vary from 3 to over 10 orders of magnitude within a cell or tissue.⁴ Since no method currently exists for protein amplification (genes can be amplified using PCR), accessing proteins expressed at low levels requires fractionation. Many fractionation methods are affinity-based and utilize antibodies. Affinity-chromatography, where protein-specific antibodies are attached to a solid support, is also the basis of several commercially available automated protein-purification systems.⁵

In addition to these techniques, antibodies are used in many routine laboratory experiments such as western blot analysis and immunohistochemistry. Antibodies also play key roles in drug development through their use in screening assays such as ELISA.

Introduction (continued)

Antibodies remain the best hook with which researchers catch their protein of interest. Exactly how the use of antibodies will evolve with advancements in proteomics research is unknown, but they will certainly continue to play an important role. It is the purpose of this study to help suppliers better understand the researchers who are using their antibodies, how they use them, and to identify opportunities within the market.

Methodology

Over 1200 researchers completed the Antibodies: Tools for Discovery 2004 survey. The survey was administered online. 236 respondents completed the survey at the International Congress of Immunology (ICI) meeting in Montreal, Canada during the week of July 18 – 22, 2004. 973 participants answered the survey in response to an email invitation: 734 email participants were from Biocompare Inc.'s email list, 239 were from a non-Biocompare email list. All email respondents completed the survey during the week of July 19 – 26, 2004. 98% of the researchers who began the survey at the ICI Meeting completed the survey. The completion rates for those on the email lists were 78% and 66%, for respondents from the Biocompare list and the non-Biocompare list, respectively.

The survey consisted of 29 questions: 28 closed-ended and 1 open-ended. Of the 28 closed-ended questions, 11 listed "other" as an option and provided space for the respondent to add his or her specific answer.

Demographic information was evaluated from answers to 5 questions within the survey and from addresses provided by the respondents.

Where appropriate, comparisons are made to the Antibodies: Tools for Discovery, 2003 survey (695 respondents).⁶

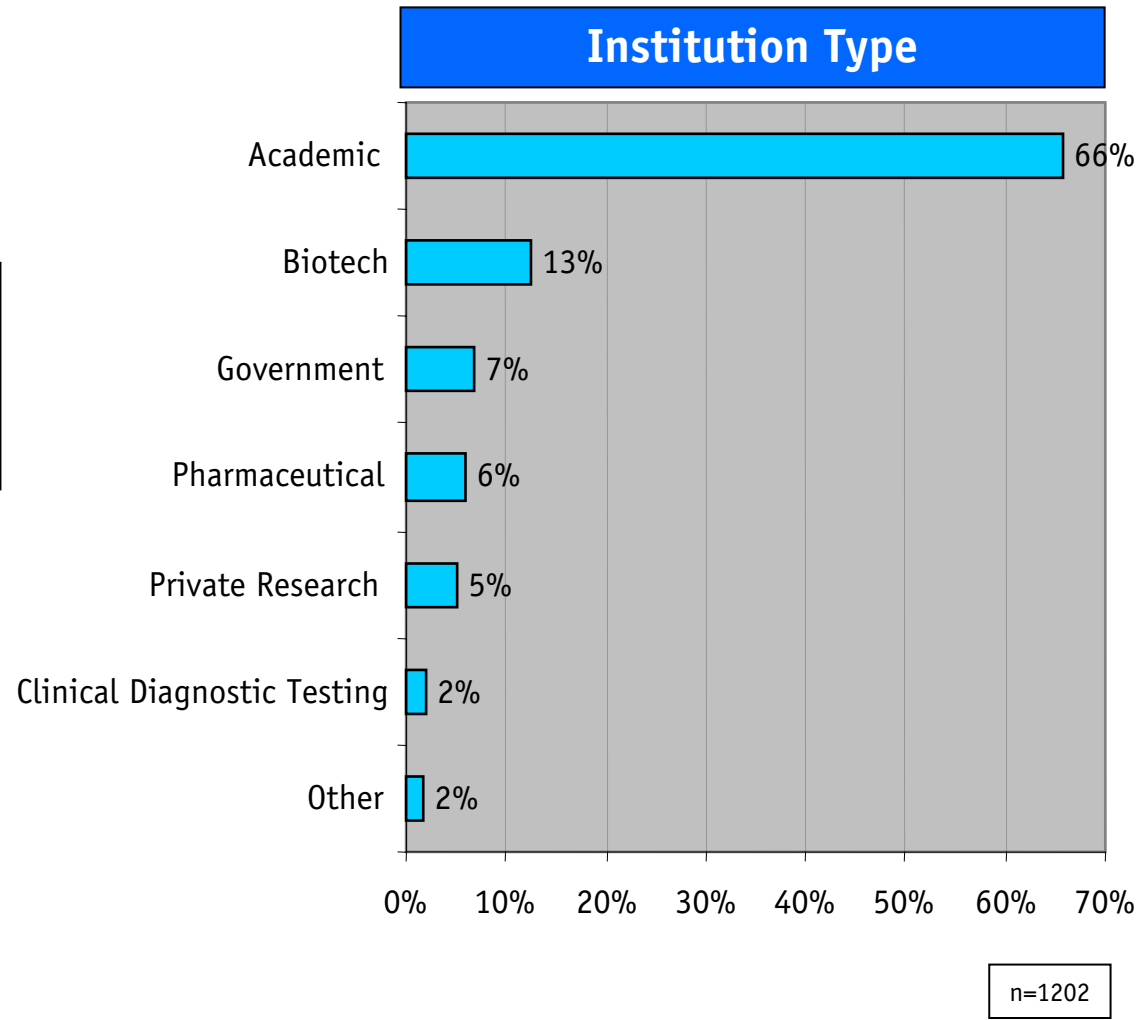
Results: Demographics

Location					
United States	755	Mexico	6	Chile	1
Canada	86	Norway	6	Croatia	1
United Kingdom	71	Taiwan	6	Czech Rep.	1
Germany	49	Ireland	5	Greece	1
France	23	Israel	5	Israel	1
Italy	22	Austria	4	Jamaica	1
Australia	19	Poland	4	Martinique	1
Sweden	15	Portugal	4	Pakistan	1
Netherlands	13	Hungary	3	R.Macedonia	1
Belgium	12	Argentina	2	Russia	1
India	12	China	2	Serbia & Montenegro	1
Spain	11	Cuba	2	Slovakia	1
Switzerland	11	Finland	2	Slovenia	1
Denmark	9	Iceland	2	Sri Lanka	1
Turkey	7	Iran	2	Thailand	1
Brazil	7	Kuwait	2		
Japan	6	New Zealand	2		

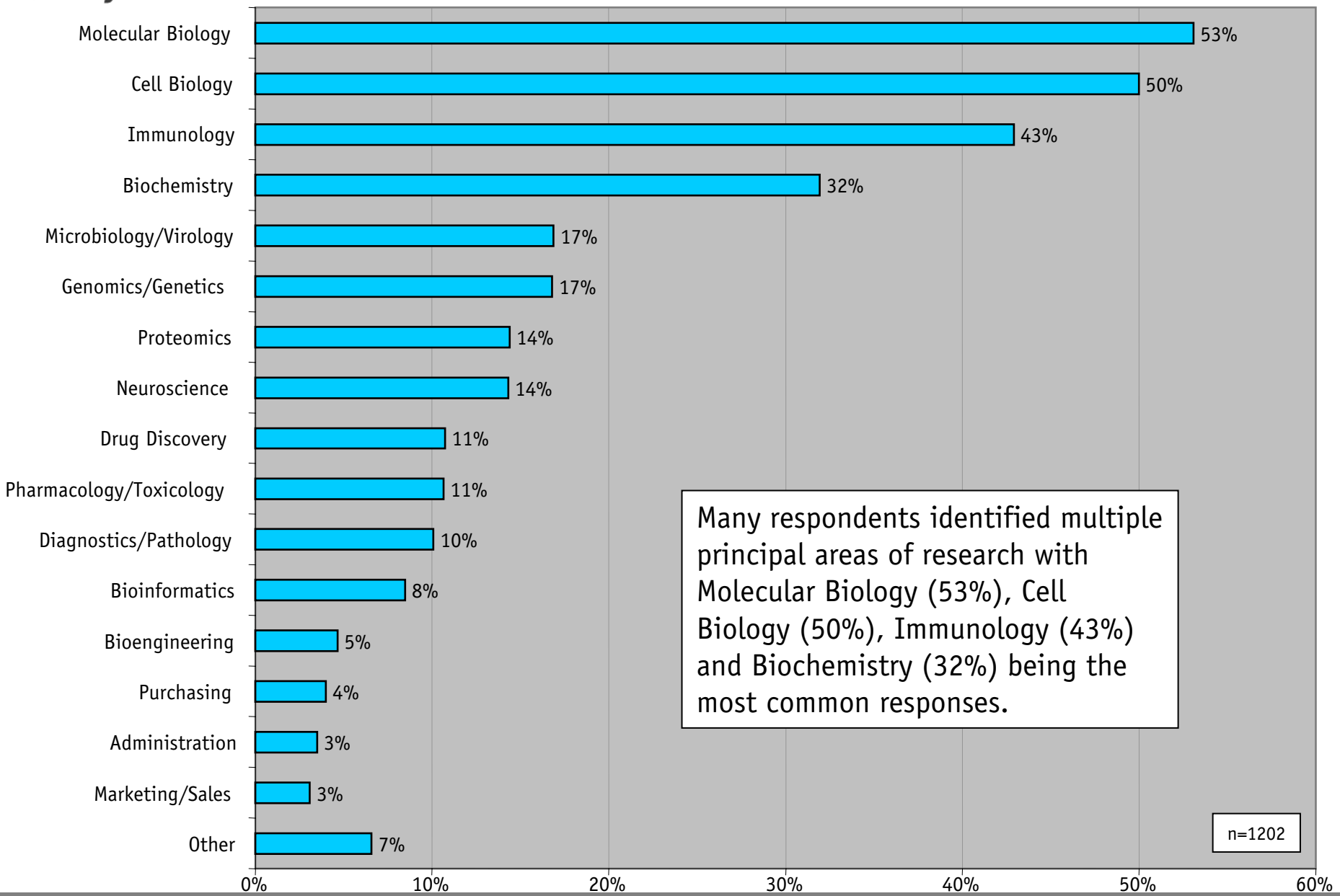
North America: 70%
Europe: 22%
Asia: 2%
Rest of world: 6%

n=1202

The majority of respondents were at academic institutions while over 18% were in biotech or pharmaceutical companies.



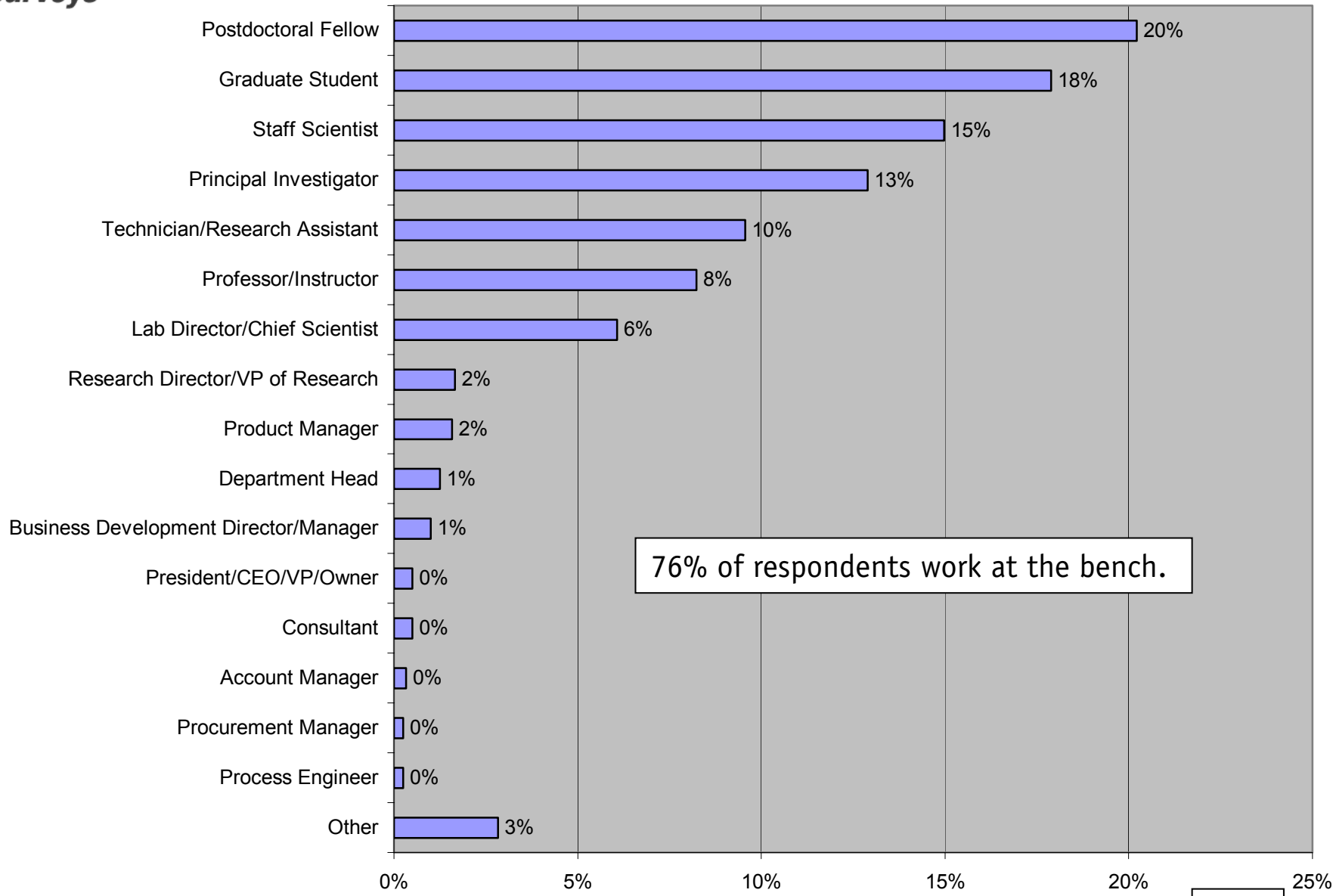
Principal Area of Research



Many respondents identified multiple principal areas of research with Molecular Biology (53%), Cell Biology (50%), Immunology (43%) and Biochemistry (32%) being the most common responses.

n=1202

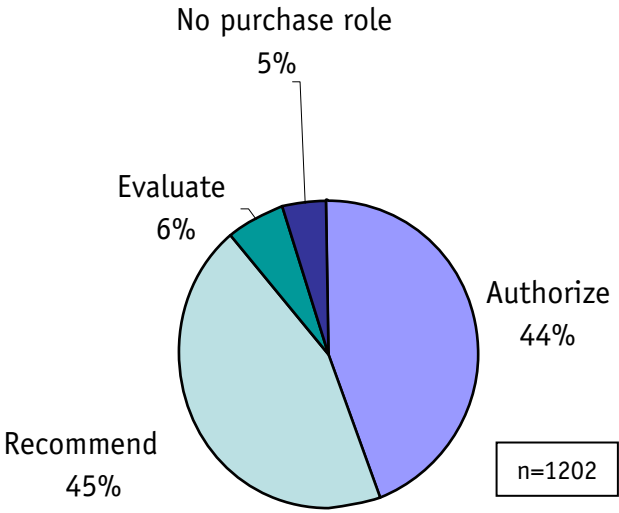
Title



n=1202

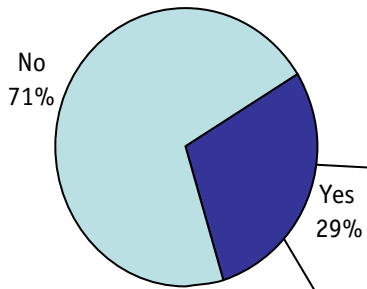
Purchasing Authority

89% of respondents either authorize or recommend purchases.



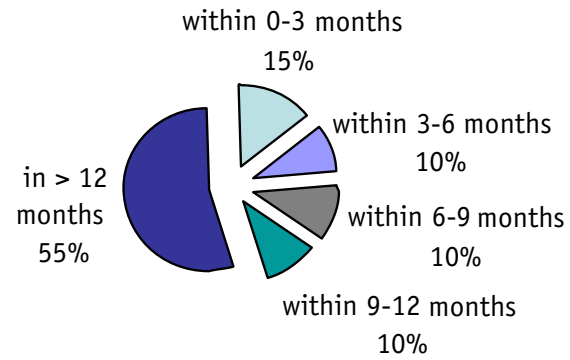
Are you planning to start a new lab?

Of those planning to start a new lab, 45% plan to do so within 1 year.



n=1202

If yes, when?



Results:

The Antibody Market

Surveys

How often do you purchase antibodies?

- Daily
- A few times a week
- Weekly
- A few times a month
- Monthly
- A few times a year
- Yearly
- Less than once a year

How often do you purchase an antibody you have never purchased before?

(For example, against a new antigen, a new conjugate or a new species)

- Daily
- A few times a week
- Weekly
- A few times a month
- Monthly
- A few times a year
- Yearly
- Less than once a year
- Other

Which of the following best describes your typical antibody purchase?

- I always purchase from the same supplier
- I shop around every time I purchase an antibody
- I shop around only when purchasing an antibody not available from my usual supplier

When shopping for antibodies what do you look for?

- Best Price
- Highest Quality
- Widest Selection (hard-to-find antibodies)
- Trusted Brand Name
- Fastest Delivery
- Other (please specify)

Which of the following best describes your relationship with your usual antibody supplier?

- My institution has an agreement with my usual supplier
- We have a stockroom/stock freezer program for antibodies
- My usual antibody supplier offers the highest quality antibodies
- My usual antibody supplier offers the best customer service/technical support
- My usual antibody supplier offers the best pricing
- Other (please specify)

Where do you look for antibodies?

- Abcam
- Antibodyresource
- Biocompare
- Colleague referral
- Conferences
- Email newsletters
- Google
- Journal advertisements
- Journal references
- LabVelocity
- Sciquest
- Antibody supplier catalogs
- Supplier websites

Which of the following are you studying with antibodies?

Angiogenesis
 Apoptosis
 CD Markers
 Cell Adhesion
 Cell Cycle
 Cell Signaling / Signal Transduction
 Cytokines and Growth Factors
 Cytoskeleton
 DNA Damage and Repair
 Infectious Disease
 Neurobiology
 Nuclear Function
 Phosphorylation State
 Secondary / Ig Specific
 Transcription Factors / Regulation
 Translational Control
 None of the above
 Other (please specify)

Which type(s) of cells are you working with?

Myotubes/myoblasts/muscle cells
 Neuroblastoma (CLEBPEC; SHEP...)
 Monocytes/macrophages
 Epithelial-like cells (HeLa; CaCo2...)
 Leukemia cells/lymphoblasts (Jurkat; K562...)
 Hepatocyte-like cells (HEPA-1; HepG2...)
 Melanoma
 Primary Cells
 Endothelial-like cells (HuVEC; BAEC...)
 Keratinocytes
 Fibroblast-like cells (HEK 293; COS-7...)
 None of the above
 Other (please specify)

What type(s) of antibody based applications do you perform or plan to perform?

Affinity Purification
 Blocking / Inhibition
 Cell Enrichment
 Dot Blot
 Electron Microscopy
 ELISA/EIA
 ELISPOT
 FACS/Flow Cytometry
 Gel Shift
 Immunocytochemistry
 Immunofluorescence
 Immunohistochemistry
 Immunoprecipitation
 In Vivo Functional
 Multiplex Assay
 Protein/Antibody Arrays
 Radioimmunoassay
 Radial Immunodiffusion
 Western Blot
 Other (please specify)

Are there antibodies against specific targets for which you have not been able to find a supplier?

Yes
 No

Those who answer 'Yes' will be asked:

Please list 1-3 specific targets for which you have not been able to find an antibody. If the target is a particular protein modification please specify amino acid and residue number.

(Open ended responses will not be in report but will be available as raw data in the leads delivered with the report)

What type of custom services do you use or plan to use?

Antibody development – Monoclonal
 Antibody development – Polyclonal
 Antibody purification
 Antibody conjugation
 In-vitro hybridoma expansion
 Ascites Hybridoma Expansion
 Custom Plate Coating
 Assay Development
 Stable Cell Line Development
 Immunohistochemistry
 Animal Housing & Care
 Peptide Synthesis
 None of the Above

Do you work with polyclonal and/or monoclonal antibodies?

Monoclonal

Polyclonal

Both monoclonal and polyclonal

*Those who answer monoclonal or both will be asked:***Which species monoclonal antibodies do you prefer to use?**

Mouse

Rat

Rabbit

Other (please specify)

*Those who answer polyclonal or both will be asked:***Which species polyclonal antibodies do you prefer to use?**

Mouse

Rat

Chicken

Rabbit

Sheep

Goat

Other (please specify)

Do you prefer to use directly conjugated primary antibodies or secondary antibodies in antibody detection methods?

Secondary antibody detection methods

Directly conjugated primary antibodies

How much do you typically pay for enough antibody to perform 10 western blots? (e.g., 10ml of a 1ug/ml solution, non phospho-specific)

<\$175 USD

\$175-\$200 USD

\$201-\$225 USD

\$226-\$250 USD

\$251-\$275 USD

\$276-\$300 USD

> \$300 USD

None of the above

Which of the following antibody package sizes do you prefer? For trial? For follow-up studies?

.05mg

.1mg

.25mg

.5mg

Other (please specify)

Which of the following dyes do you typically conjugate to your antibodies?

HRP

Alk Phos

APC

Quantum Dots

Streptavidin

PE

Alexa Dye

IRDyes

CyDye

None of the Above

Other (please specify)

Other Surveys and Reports Available From Biocompare

DNA Microarrays: An Essential Technology

\$3500

Description: The focus of this survey was to determine the purchasing plans and perceived challenges of these researchers that are either currently using or planning to use DNA microarrays as well as the market leaders in this arena.

Protein Arrays: A Market Overview

\$3500

Description: In this report, Biocompare asked nearly 300 scientists who either use protein arrays or plan to use them, for which type of research they think protein arrays are well-suited, their opinions towards current products available to them, and their purchasing plans for the near future.

RNAi: A Market Update

\$3500

Description: This report, based on a survey of over 600 scientists, spotlights this growing market by investigating who are the market leaders for RNAi kits and reagents, gauging the growth potential for RNAi products and outlining the current RNAi applications of researchers.

Mass Spectrometry: Fueling Discovery

\$4000

Description: In this report, Biocompare surveyed the mass spectrometry market to determine who the market leaders are, find out what the most challenging aspects of using this technology are and to gauge the growth of the market by identifying the purchasing plans of mass spectrometry users.

For more information or to purchase please contact:

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