

# 2009 Antibody Report

## Market Overview and Industry Survey

### Executive Summary

Biocompare Surveys and Reports  
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## Report Introduction

The 2009 Antibody Report is composed of an in-depth overview of the Antibody Market and the results of the 2009 Antibody Survey. The survey explores topics such as antibody usage, antibody pricing, and purchase behavior of users of research antibodies. Other questions include antibody supplier preference and how users rate their suppliers on antibody specificity, sensitivity, value, technical support, and usefulness of their websites. The survey results show what common technical issues users experience while using antibodies and what resources are used to find commercially available antibodies. Other survey topics include conjugates and which antibodies are being used in bulk quantities. The complete questionnaire is on page 67 of this report.

The 2009 Antibody Survey consisted of thirty-nine antibody-related questions and five demographic questions. The survey was administered online between February 3rd and February 27th, 2009, and the data is tabulated and presented in this report.

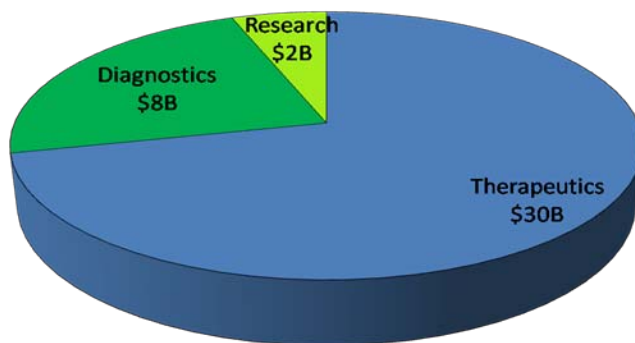
## Market Overview

Antibodies are among the most important and most utilized molecular tools for Medicine and Research. Applications span the biomedical market sectors of Biotechnology, Pharmaceuticals & Therapeutic Drug Development and Research. Driven overwhelmingly by monoclonal antibodies, the “Antibody Market” continues to rapidly expand especially in the Therapeutic and Diagnostics industry<sup>1-3</sup>.

An antibody’s intrinsic design of binding specifically to a target with two binding sites per molecule, *and* the ability to engineer a target specific antibody through monoclonal technology allows consistent and controlled manufacture of an antibody. It would not be an overstatement to claim that one of the major medical and technical triumphs over the last 30 years is related to our current myriad of methods to design, manufacture, and utilize monoclonal antibodies.

The Antibody Market in 2008 is estimated at approximately \$40 Billion as illustrated in Figure 1, with the Therapeutic antibody market representing a consensus of approximately \$30 Billion<sup>1-5</sup>. Monoclonal antibodies represent almost all of the Therapeutic antibody market. Antibody revenue from the 2008 Diagnostics market is estimated at approximately \$8 Billion, according to information in the BCC Research Report<sup>3</sup> on Monoclonal Therapeutics and Diagnostic Imaging, which identified the market for monoclonal antibodies in Diagnostics at approximately \$6.5 Billion in 2007 with 7% growth<sup>3</sup>. Using these estimates and the overall sector CAGR of 6-7%, the use of antibodies in the Diagnostics area would reach over \$10 Billion in 2013<sup>3,6-8</sup>. The current market for antibodies in the Research sector is currently estimated at \$2 Billion in 2008 with an average growth rate of 9-10%, reflected by relevant divisions of leading companies as well as industry estimates<sup>9-14</sup>.

**Figure 1. 2008 Antibody Market Estimated at \$40 Billion**



## Market Overview (con't.)

### Market Sectors

#### Therapeutics: Antibodies for Therapeutic Use

In the rapidly growing sector of monoclonal therapeutics, major focus areas are Autoimmunity, Inflammation, Cancer and Infectious Disease. In 2007 and in projections for 2008, the major therapeutic monoclonal antibodies were Remicade, Rituxan, Herceptin, Avastin, and Humira which together accounted for a majority of revenues for therapeutic antibodies<sup>5</sup>.

Key players in the therapeutics antibody area with major products are Johnson & Johnson (Remicade), Roche (Rituxan, Herceptin, Avastin), Abbott (Humira), Bristol Myers Squibb, Merck Kga (Erbix), Novartis, Roche (Lucentis, Xolair), Astra Zeneca (Synagis), and Biogen, Idec, Elan (Tysabri), summarized from the Global Antibodies Market Review<sup>5</sup> and other sources<sup>1-4</sup>.

Company	Product	Target
Johnson & Johnson	Remicade	TNF $\alpha$
Roche	Rituxan	CD20
Roche	Herceptin	HER2
Roche	Avastin	VEGF
Abbott	Humira	TNF $\alpha$

**Figure 2. Therapeutic Antibodies – Top 5 Products and Targets**

#### Diagnostics: Antibodies for Diagnostics Research

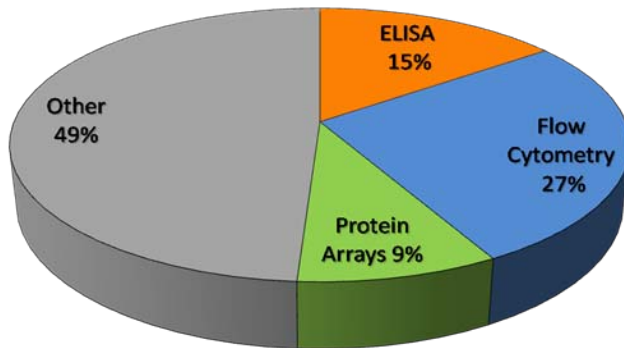
Figures derived from a variety of sources place the 2008 overall Diagnostics market at approximately \$40 Billion for 2008<sup>6-8</sup>. Revenues from the antibody based products represent \$8 Billion apportioned into the major Diagnostics areas of Immunodiagnostics, Clinical Chemistry and Hematology<sup>6-8</sup>. These general Diagnostics areas are often grouped somewhat differently by various industry analysts but clearly represent a majority of the total revenues for Diagnostics markets. In addition, a majority of the antibody-based revenues are generated from these same areas.

## Market Overview (con't.)

### Research and Discovery: Antibodies for Research Use

Antibodies used in the Research and Discovery sectors are used extensively as probes for applications of detection and quantitation. Key instrument platforms for detection and quantitation of antibodies are shown in Figure 3. The estimated revenues for antibody use in these key platforms are based on corporate reports<sup>9-15</sup>, market reports<sup>16-18</sup>, and industry estimates.

**Figure 3. Key Platforms for Antibody use in Research Sector Estimated at \$2 Billion**



With estimated antibody revenues of \$2 Billion in the Research and Discovery Market sector, ELISA, Flow Cytometry and proteomics array applications and platforms comprise approximately half of the revenues for research antibody applications. Other platform technologies include Microscopy/Imaging and Blotting techniques.

## Market Overview (con't.)

### Antibody Formats

Purified antibodies are the major format for therapeutic use. In Diagnostic Imaging major formats are isotopic tags or fluorophore tagged antibody probes<sup>13-14</sup>. For In Vitro Diagnostics and Research & Discovery uses, antibodies are tagged with isotopes, enzymes, chemiluminescent probes and fluorophores<sup>13-14</sup>.

Fluorescent probes still have the greatest share of the market with chemiluminescent and radioactive probes estimated at about the same market share. Applying these same ratios to antibodies which is the predominant reporter probe used, fluorescent labels comprise 40% of the market share while luminescent and radioactive probes comprise approximately 28 to 29%<sup>13-15</sup>.

### Trends- Targets - Multiplexing Labels - Read-out Platforms

#### Targets

Identification and increased understanding of dominant molecules in cellular pathways and characterization of their functional role drives the rapid development of therapeutic antibodies as drugs to target these key molecules. Building on the success of therapeutic antibodies such as Remicade, Velcade, and Avastin, continued expansion of the use of therapeutic antibodies is expected in the next decade<sup>1-5</sup>.

Accompanying the identification of specific targets is the development of companion diagnostics which will be utilized to monitor and quantitate treatment. One such example is the examination of signaling pathways and their discrepancies or modifications in disease states<sup>22-23</sup>.

In the Research and Discovery sector, identification and determination of molecular transcription and translation at the protein level continues to be a prototypical modern approach. An example would be the examination of transcription factors which characterize states of differentiation in T-Cells or self-renewal capability in stem cells<sup>24-25</sup>.

## Market Overview (con't.)

### Multiplexing Technology

Enhanced specificity and increased sensitivity of new detection techniques for antibodies continue to drive their use in detection and quantitative diagnostic analyses *in vivo* and *in vitro*. The limitation is in the identification and demonstration of diagnostic value of targets as biomarkers<sup>26</sup>. More accurate analysis is often determined by the detection of multiple analytes than by a single marker. Multiplexed markers together are more and more often being utilized for diagnostic purposes. Simultaneous detection of a related set of biomarkers provides advantages of improved analysis, throughput, and therefore new diagnostic tests<sup>26-27</sup>.

Multiplexing technology using antibody probes has also provided impetus for the introduction of protein microarrays and microarray reading instrumentation using a variety of read-out techniques with labeled or non-labeled antibodies. Multiplexed virtual arrays using beads in bead-based Flow Cytometry is one example<sup>15</sup>. Another is chemiluminescent based read-outs using planar microarrays<sup>28</sup>.

### New Antibody Labels - Non-Labeled Antibody Applications and Read-Out Platforms

Together with multi-parameter analysis and throughput is a parallel development of new labels for antibodies which facilitate simultaneous analyte detection with enhanced speed. As an example, some of the newer labels would be violet laser excited fluorochromes for utilization in flow cytometry<sup>29-31</sup>. Other newer antibody labels for flow cytometry are nanocrystals<sup>32-33</sup>. Nanocrystals or quantum dots are often made of semi-conductor metallic cores such as cadmium and selenium coated with a zinc sulfide semi-conductor shell and a layer of polymer to which an antibody can be attached<sup>32</sup>. Nanocrystals range from 5-20nm in diameter, will absorb and then emit light at wavelengths dependent on the nanocrystal size<sup>32-33</sup>. Advantages of nanocrystals include intrinsic brightness, narrow emission spectra and the ability to expand multicolor panels<sup>32-33</sup>. Examples of relatively new nonlabeled antibody applications includes surface plasmon resonance<sup>34</sup> or interferometry<sup>35</sup> which detect antibody binding to target by measurement of refractive index changes.

## Market Overview (con't.)

### Summary

Antibodies and monoclonal antibodies in particular, remain key tools for discovery and are key weapons as therapeutics for treatment of major diseases such as Cancer, Rheumatoid Arthritis, Autoimmunity and Infectious Diseases. The use of antibodies as therapeutics is in a robust growth phase as research demonstrates that antibodies can neutralize single molecular disease targets, showing promise of therapeutic efficacy and commercial success.

Based on specificity and sensitive detection techniques, antibodies continue to be used in detection and quantitative diagnostic analyses *in vivo* and *in vitro*. A moderating factor for the Diagnostic market sector is the identification and demonstration of diagnostic value of targets as biomarkers. More accurate analysis is often determined by the detection of multiple analytes than by a single marker and multiplexed marker panels are being utilized for diagnostic purposes with increased frequency.

Research applications have expanded into newer areas of focus such as Stem Cell biology, Cell Signaling, Innate Immunity and intracellular control mechanisms. Success in these areas depends on the identity of key molecules and the development and availability of antibody probes to detect key targets.

In all the market sectors - Therapeutics (Pharmaceuticals), Diagnostics and Research & Discovery – methods for target identification, assay development, and platforms are all being integrated into systems which extensively use antibodies as probes. Taken together, based on performance, utility, and commercial value, antibodies and monoclonal antibodies especially, should remain at the core of advances in medicine and biomedical research for the foreseeable future.

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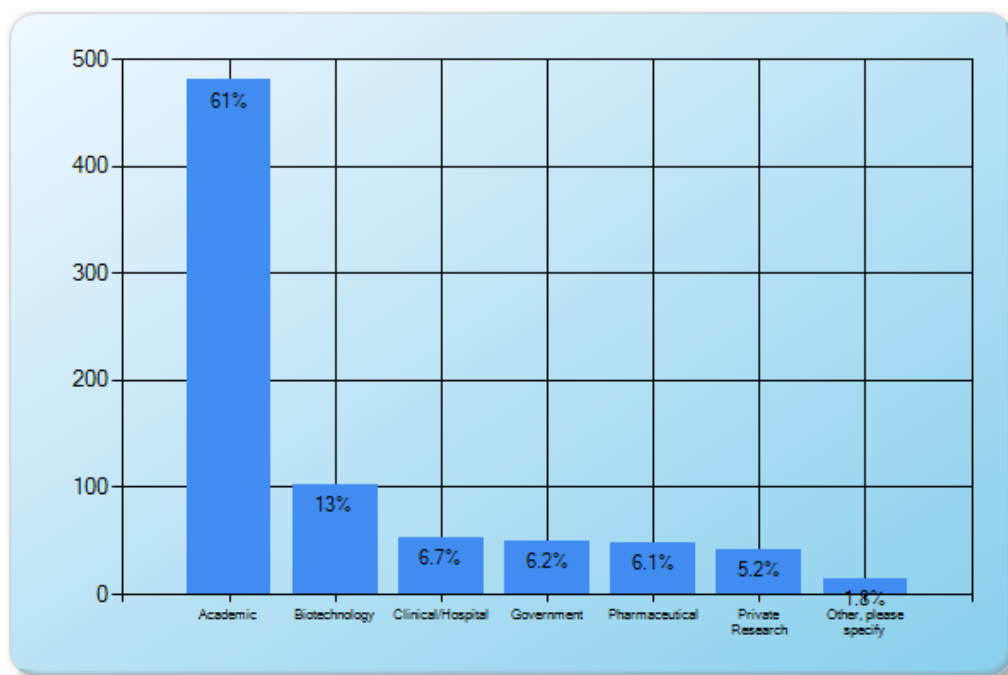
# 2009 Antibody Survey Respondent Profile

## In which type of institution do you work?

- Academic and Government comprise ~ 67% of respondents as “Non-commercial” antibody users
- Biotechnology and Pharmaceuticals comprise 19% of respondents as “Commercial” antibody users

N = 787

Response	Frequency	Count
Academic	61.0%	480
Biotechnology	13.0%	102
Clinical/Hospital	6.7%	53
Government	6.2%	49
Pharmaceutical	6.1%	48
Private Research	5.2%	41
Other, please specify	1.8%	14

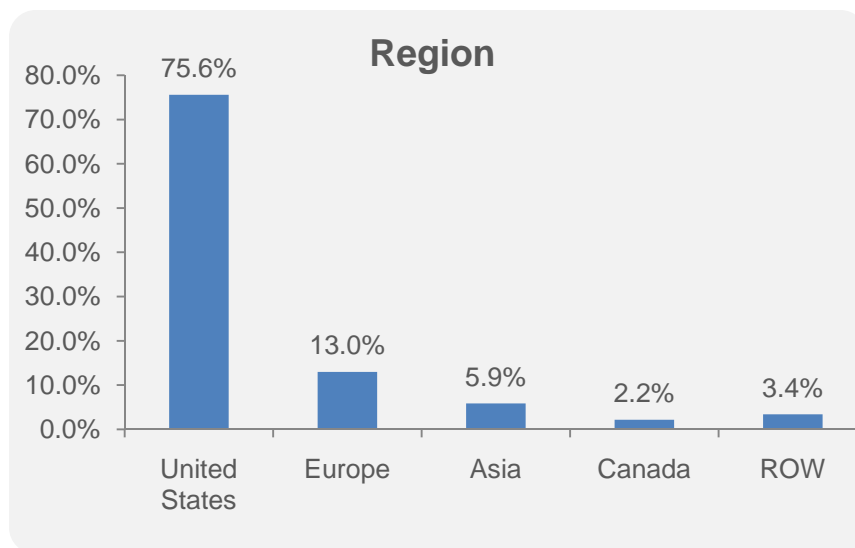


## Where are you located?

76% are in the United States; 13% are in Europe; 6% are from Asia.

*N* = 733

Response	Count	Frequency
United States	554	75.6%
Europe	95	13.0%
Asia	43	5.9%
Canada	16	2.2%
ROW	25	3.4%



# 2009 Antibody Report

## Which title best applies?

Response	Frequency	Count
Staff Scientist	13.7%	108
Postdoctoral Fellow	13.6%	107
Professor/Instructor	12.6%	99
Graduate Student	11.6%	91
Principal Investigator	10.0%	79
Research Associate	9.4%	74
Lab Manager/Supervisor	8.8%	69
Technician/Research Assistant	8.6%	68
Lab Director/Chief Scientist	3.6%	28
Research Director/VP of Research	2.4%	19
Department Head	1.8%	14
Business Development Director/Manager	0.9%	7
President/CEO/Owner/VP	0.3%	2
Process Engineer	0.3%	2
Other	2.5%	20

76% of survey participants work at the bench.\*

*N* = 787

\* Includes: Staff Scientist, Postdoctoral Fellow, Graduate Student, Principal Investigator, Research Associate, Lab Manager/Supervisor, Technician/Research Assistant.

## 2009 Antibody Report

**Which of the following are your key areas of research or work?  
(Select all that apply)**

Response	Frequency	Count
Cell Biology	53.7%	423
Molecular Biology	51.7%	407
Immunology	35.1%	276
Cell Signaling	30.7%	242
Biochemistry	29.5%	232
Microbiology/Virology	21.5%	169
Genomics/Genetics	16.6%	131
Neuroscience	15.8%	124
Proteomics	13.3%	105
Diagnostics/Pathology	12.2%	96
Drug Discovery	12.2%	96
Pharmacology/Toxicology	10.5%	83
Bioinformatics	9.1%	72
Bioengineering	7.0%	55
Purchasing	3.9%	31
Other, please specify	3.7%	29
Marketing/Sales	3.0%	24
Administration	1.8%	14

More than half of the survey participants identified Cell Biology (54%) or Molecular Biology (52%) as one of their key research areas.

*N = 787*

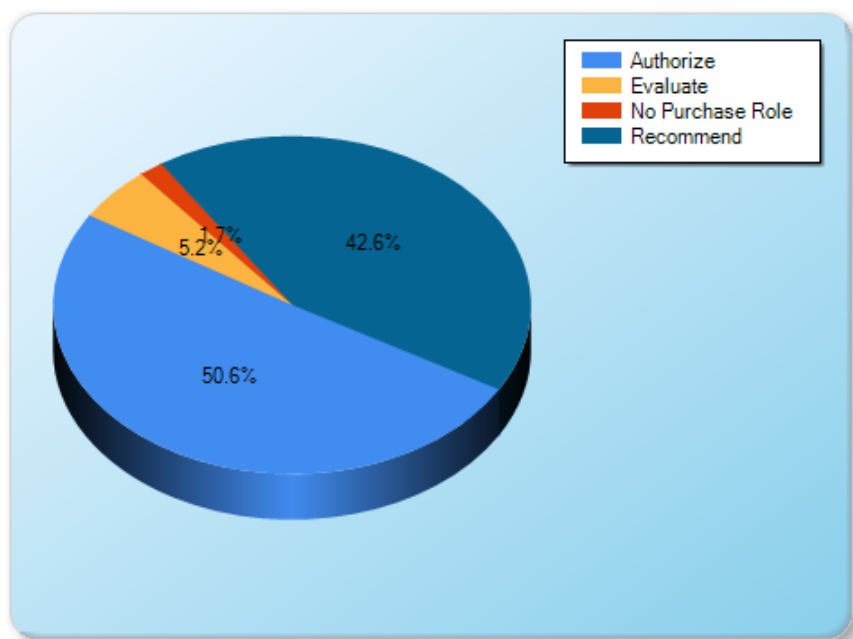
# 2009 Antibody Report

## Which best describes your purchasing authority?

93% of survey participants either authorize or recommend laboratory purchases.

$N = 787$

Response	Frequency	Count
Authorize	50.6%	398
Recommend	42.6%	335
Evaluate	5.2%	41
No Purchase Role	1.7%	13



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### Market Overview

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# 2009 Antibody Survey Questionnaire

## Antibody Questionnaire

### 1. In which type of institution do you work?

- Academic
- Biotechnology
- Pharmaceutical
- Government
- Private Research
- Clinical/Hospital
- Other, please specify \_\_\_\_\_

### 2. Which title best applies?

- Professor/Instructor
- Business Development Director/Manager
- Research Director/VP of Research
- Department Head
- Technician/Research Assistant
- Lab Manager/Supervisor
- Account Manager/Sales Executive
- Research Associate
- Graduate Student
- Staff Scientist
- Principal Investigator
- President/CEO/Owner/VP
- Lab Director/Chief Scientist
- Postdoctoral Fellow
- Procurement Manager/Purchasing Agent
- Consultant
- Process Engineer
- Other, please specify \_\_\_\_\_

### 3. Which of the following are your key areas of research or work? (Select all that apply)

- Bioinformatics
- Microbiology/Virology
- Immunology
- Genomics/Genetics
- Cell Biology
- Diagnostics/Pathology
- Drug Discovery
- Administration
- Biochemistry
- Marketing/Sales
- Pharmacology/Toxicology
- Molecular Biology
- Bioengineering
- Neuroscience
- Proteomics
- Purchasing
- Cell Signaling
- Other, please specify \_\_\_\_\_

### 4. Which best describes your purchasing authority?

- Authorize
- Recommend
- Evaluate
- No Purchase Role

# 2009 Antibody Report

**5. What types of antibody-based applications do you perform or plan to perform in the next 12 months? (Select all that apply)**

*Respondents must select Currently use for at least one application or they are screened out of the survey.*

	Currently use	Plan to use	Do not use or plan to use
Affinity Purification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blocking/Neutralize	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ChIP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electron Microscopy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ELISA/EIA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flow Cytometry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Functional Assay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fluorescence Microscopy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gel Shift	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Immunocytochemistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Immunodiffusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Immunohistochemistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Immunoprecipitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IRMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Microarray	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radioimmunoassay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Western Blot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other application, please specify \_\_\_\_\_

**6. Please indicate your major objective(s) for using antibodies. (Select all that apply)**

- Identity of marker/analytes for basic research
- Quantitation of marker/analyte for basic research
- Mechanism of action/pathway analysis
- Diagnostic application
- Screening application
- Functional or therapeutic use
- Other, please specify \_\_\_\_\_

**7. Please estimate how many antibody-based applications you perform on a weekly basis. (e.g. western blots, immunoassays, affinity purifications, flow cytometry, etc.)**

- Less than 1
- 1 - 2
- 3 - 5
- 6 to 10
- 11 to 20
- More than 20

**8. How do you expect this number to change over the next 12 months?**

- Increase by > 50%
- Increase by 25% to 50%
- Increase by 10% to 25%
- Increase by 1% to 10%
- No change
- Decrease by 10% to 25%
- Decrease by 10% to 25%
- Decrease by 25% to 50%
- Decrease by > 50%

**9. Please estimate how much money (in \$USD) your laboratory spends on antibodies per month.**

	Less than \$500	\$500 to \$1,000	\$1,000 to \$2,000	More than \$2,000	I don't know
Spent per month in 2008	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plan to spend per month in 2009	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**10. What do you consider to be an acceptable price (in \$USD) for 100ug/ul of primary antibody that allows you to perform 10 western blots?**

- \$245
- \$295
- \$345
- Other, please specify \_\_\_\_\_

**11. How often do you purchase antibodies that you use routinely?**

- Daily
- A few times a week
- Weekly
- A few times a month
- Monthly
- A few times a year
- Yearly
- Less than once a year
- Never

**12. How often do you purchase the following antibodies you have never purchased before?**

	Daily	A few times a week	Weekly	A few times a month	Monthly	A few times a year	Yearly	Less than once a year	Never
A new antigen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A new conjugate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A new species (reactivity)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**13. Which of the following best describes your typical antibody purchase?**

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

**14. When there is no published data available, what are the top three criteria you use when shopping for a new antibody? (Select exactly three)**

- Best price (if quality is acceptable)
- Colleague recommendation
- Fastest delivery
- Low cross-reactivity
- Sensitivity
- Specificity
- Trusted brand name
- Widest selection (hard-to-find antibodies)
- Other, please specify \_\_\_\_\_

**15. Which species do you most often study in your research? (Select all that apply).**

- Human
- Mouse
- Rat
- Non-Human Primate
- Other, please specify \_\_\_\_\_

**16. What are the top companies that come to mind when you think of antibodies in general? (Please list up to three companies)**

Company 1: \_\_\_\_\_  
Company 2: \_\_\_\_\_  
Company 3: \_\_\_\_\_

**17. What are the top companies that come to mind when you think of flow cytometry antibodies? (Please list up to three companies)**

Company 1: \_\_\_\_\_  
Company 2: \_\_\_\_\_  
Company 3: \_\_\_\_\_

**18. Which of the following types of antibodies do you use? (Select all that apply)**

- |   |   |
|---|---|
| <input type="checkbox"/> Adaptive Immunity                      | <input type="checkbox"/> Membrane Transporter/Protein                           |
| <input type="checkbox"/> Angiogenesis                           | <input type="checkbox"/> Intracellular Staining of Phosphorylated               |
| <input type="checkbox"/> Apoptosis/Tumor Suppressor             | <input type="checkbox"/> Metabolic Pathways                                     |
| <input type="checkbox"/> CD and Cell Surface Marker             | <input type="checkbox"/> Modification State Specific (phosphor, acetyl, methyl) |
| <input type="checkbox"/> Cell Cycle                             | <input type="checkbox"/> Neurobiology   |
| <input type="checkbox"/> Cell Signaling/Signal Transduction     | <input type="checkbox"/> Nuclear Function                                       |
| <input type="checkbox"/> Cytokine and Growth Factor             | <input type="checkbox"/> Secondary/Immunoglobulin Specific                      |
| <input type="checkbox"/> Cytoskeleton                           | <input type="checkbox"/> Stem Cell  |
| <input type="checkbox"/> DNA Damage and Repair                  | <input type="checkbox"/> Toll Receptor  |
| <input type="checkbox"/> Epitope-tagged (e.g. anti-His)         | <input type="checkbox"/> Transcription Factor/Regulation                        |
| <input type="checkbox"/> Extracellular Matrix and Cell Adhesion | <input type="checkbox"/> Translational Control                                  |
| <input type="checkbox"/> Infectious Disease                     | <input type="checkbox"/> Other, please specify _____                            |
| <input type="checkbox"/> Inflammation Research                  | <input type="checkbox"/> None of the above                                      |
| <input type="checkbox"/> Innate Immunity                        |   |
| <input type="checkbox"/> Intracellular Signaling Proteins       |   |

**19. From which compan(ies) do you primarily purchase [type] antibodies? (Select all that apply)**

*There will be a separate question for each Ab type selected in Q18.*

- |  |   |
|--|---|
| <input type="checkbox"/> Internal preparation/made in-house      | <input type="checkbox"/> EMD Biosciences                                      |
| <input type="checkbox"/> Abcam                                   | <input type="checkbox"/> Invitrogen (Zymed/Caltag/Molecular Probes/BioSource) |
| <input type="checkbox"/> AbD Serotec                             | <input type="checkbox"/> Jackson Immunoresearch                               |
| <input type="checkbox"/> Abgent                                  | <input type="checkbox"/> MBL  |
| <input type="checkbox"/> Abnova                                  | <input type="checkbox"/> Meridian/BioDesign                                   |
| <input type="checkbox"/> Acris                                   | <input type="checkbox"/> Millipore (Chemicon/Upstate)                         |
| <input type="checkbox"/> Affinity Bioreagents (ABR) (now Thermo) | <input type="checkbox"/> Novus Biologicals                                    |
| <input type="checkbox"/> Assay Designs/Stressgen                 | <input type="checkbox"/> PeproTech  |
| <input type="checkbox"/> Aviva Systems Biology                   | <input type="checkbox"/> R&D Systems  |
| <input type="checkbox"/> BACHEM                                  | <input type="checkbox"/> Rockland Immunochemicals                             |
| <input type="checkbox"/> Beckman Coulter                         | <input type="checkbox"/> Santa Cruz Biotechnology                             |
| <input type="checkbox"/> BD Biosciences                          | <input type="checkbox"/> Sigma  |
| <input type="checkbox"/> Bethyl                                  | <input type="checkbox"/> Signalway Antibody Company                           |
| <input type="checkbox"/> BioLegend                               | <input type="checkbox"/> Thermo Scientific                                    |
| <input type="checkbox"/> Cayman Chemical                         | (LabVision/Endogen/Fisher)  |
| <input type="checkbox"/> Cell Signaling Technology               | <input type="checkbox"/> Other, please specify _____                          |
| <input type="checkbox"/> Covance Research Products               | <input type="checkbox"/> Don't know/can't remember                            |
| <input type="checkbox"/> Dako                                    |   |
| <input type="checkbox"/> eBioscience                             |   |

**20. Which of the following antibody suppliers would you say you are most familiar with? (Select up to five companies)**

- |  |   |
|--|---|
| <input type="checkbox"/> Abcam                                   | <input type="checkbox"/> EMD Biosciences                                      |
| <input type="checkbox"/> AbD Serotec                             | <input type="checkbox"/> Invitrogen (Zymed/Caltag/Molecular Probes/BioSource) |
| <input type="checkbox"/> Abgent                                  | <input type="checkbox"/> Jackson Immunoresearch                               |
| <input type="checkbox"/> Abnova                                  | <input type="checkbox"/> MBL  |
| <input type="checkbox"/> Acris                                   | <input type="checkbox"/> Meridian/BioDesign                                   |
| <input type="checkbox"/> Affinity Bioreagents (ABR) (now Thermo) | <input type="checkbox"/> Millipore (Chemicon/Upstate)                         |
| <input type="checkbox"/> Assay Designs/Stressgen                 | <input type="checkbox"/> Novus Biologicals                                    |
| <input type="checkbox"/> Aviva Systems Biology                   | <input type="checkbox"/> PeproTech  |
| <input type="checkbox"/> BACHEM                                  | <input type="checkbox"/> R&D Systems  |
| <input type="checkbox"/> Beckman Coulter                         | <input type="checkbox"/> Rockland Immunochemicals                             |
| <input type="checkbox"/> BD Biosciences                          | <input type="checkbox"/> Santa Cruz Biotechnology                             |
| <input type="checkbox"/> Bethyl                                  | <input type="checkbox"/> Sigma  |
| <input type="checkbox"/> BioLegend                               | <input type="checkbox"/> Signalway Antibody Company                           |
| <input type="checkbox"/> Cayman Chemical                         | <input type="checkbox"/> Thermo Scientific                                    |
| <input type="checkbox"/> Cell Signaling Technology               | (LabVision/Endogen/Fisher)  |
| <input type="checkbox"/> Covance Research Products               | <input type="checkbox"/> Other, please specify _____                          |
| <input type="checkbox"/> Dako                                    | <input type="checkbox"/> Don't know/can't remember                            |
| <input type="checkbox"/> eBioscience                             |   |

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**21. How would you rate the following product and service characteristics of the antibody suppliers you selected?**

*Only the suppliers selected in Q20 will appear in the table.*

**Drop down rating scale:**

- 1 = Excellent
- 2 = Very good
- 3 = Average
- 4 = Fair
- 5 = Poor
- Don't know

Supplier	Antibody Sensitivity	Antibody Specificity	Value	Usefulness of Website	Technical Support
Abcam	<i>Rating scale</i>				
AbD Serotec					
Abgent					
Abnova					
Acris					
Affinity Bioreagents (ABR)					
Assay Designs/Stressgen					
Aviva Systems Biology					
BACHEM					
Beckman Coulter					
BD Biosciences Pharmingen					
Bethyl					
BioLegend					
Cayman Chemical					
Cell Signaling Technology					
Covance Research Products					
Dako					
eBioscience					
EMD Biosciences/Calbiochem					
Invitrogen (Zymed/Caltag/Molecular Probes/BioSource)					
Jackson Immunoresearch					
MBL					
Meridian/BioDesign					
Millipore (Chemicon/Upstate)					
Novus Biologicals					
PeproTech					
R&D Systems					
Immunochemicals					
Biotechnology					
Sigma					
Signalway Antibody Company					
Thermo Scientific (LabVision/Endogen/Fisher)					

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## 22. What type of CUSTOM services do you use or plan to use? (Select all that apply)

	Currently Use	Plan to Use	Do not Use or Plan to Use
Ascites hybridoma expansion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polyclonal antibody development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antibody purification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antibody conjugation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Immunohistochemistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assay development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In vitro hybridoma expansion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monoclonal antibody development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stable cell line development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Custom plate coating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animal housing and care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peptide synthesis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 23. How do you currently develop or plan to develop custom monoclonal antibodies? (Select all the apply)

*Only ask if Q22 is "Currently use" or "Plan to use" for Monoclonal antibody development.*

- In-house facility
- Mouse monoclonal company
- Rabbit monoclonal company
- HuCAL recombinant monoclonal company
- Other, please specify \_\_\_\_\_

## 24. Are there antibodies against specific targets, species, or for particular applications for which you have not been able to find a supplier? (Select all that apply)

- I have not been able to find a supplier of an antibody to a particular target
- I have not been able to find a supplier of an antibody against a particular species
- I have not been able to find a supplier of an antibody which works in a particular application
- None of the above

## 25. Please list 1 to 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.

*Only ask if response 1 is selected in Q24.*

Target 1: \_\_\_\_\_

Target 2: \_\_\_\_\_

Target 3: \_\_\_\_\_

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**26. Please name at least one antibody and species for which you can't find a supplier. Only ask if response 2 is selected in Q24.**

	Antibody	Species
1.		
2.		
3.		

**27. Please name at least one antibody and application for which you can't find a supplier. Only ask if response 3 is selected in Q24.**

	Antibody	Application
1.		
2.		
3.		

**28. If a key antibody for your research is not available from a commercial supplier, which of the following actions are you most likely to take? (Select all that apply)**

- Make a polyclonal antibody in house
- Make a monoclonal antibody in house
- Outsource to make a polyclonal antibody
- Outsource to make a monoclonal antibody
- Other, please specify \_\_\_\_\_

**29. Which of the following would you identify as the biggest technical problem with your antibody-based methods?**

- Lack of sufficient specificity
- Lack of available antibodies which are sufficiently specific
- Non-availability of direct conjugates
- Methods are not sufficiently quantitative
- Antibodies to certain targets are not available
- Other, please specify \_\_\_\_\_

**30. Assume the quality of an antibody (i.e. specificity, sensitivity) is the same among suppliers. Please rate the following characteristics on how important each is in your decision to purchase from one supplier over another.**

	1 = Very Important	2	3	4	5 = Not Important
Price	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online resources (e.g. protocols, application notes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of samples	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Published results	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helpful technical support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**31. Please indicate which of the following antibody conjugates, probes, sets or kits you use.**

- Fluorochrome labels
- Chemiluminescent labels
- Radioisotope label
- Enzyme labels
- Biotin label
- Nanocrystal/ Quantum Dots
- Beads
- None of the above

**32. Do you use directly conjugated primary antibodies?**

- Yes
- No

**33. What percent of your antibody purchases are directly conjugated primary antibodies?**

*Only ask if "yes" in Q32 is selected.*

- 1 to 10%
- 10 to 20%
- 20 to 50%
- > 50%

**34. Which of the following commercially available secondary antibody conjugates do you prefer to use? (Select all that apply)**

- Alexa Dye
- Alkaline Phosphatase (AP)
- APC
- Biotin
- CyDye
- DyLight
- FITC/fluorescein
- Horse Radish Peroxidase (HRP)
- IRDyes/IRDyes
- PE
- Quantum Dots
- Other, please specify \_\_\_\_\_
- I do not purchase commercially available secondary antibodies – I perform secondary antibody conjugation myself
- I do not use secondary antibodies

**35. Do you currently use or plan to use bulk quantities of antibodies?**

- Currently use
- Plan to use – within 6 months
- Plan to use – within 12 months
- Plan to use – in more than 12 months
- Do not use or plan to use

**36. What is the antigen and species of the bulk antibody you use or plan to use? (e.g. Mouse anti-human CD42a) \_\_\_\_\_**

*Only ask if "Currently use" or "Plan to use" is selected in Q35.*

**37. Please rate the following characteristics of an antibody supplier's web content. (1 = Very Important, 5 = Not Important)**

	1 = Very Important	2	3	4	5 = Not Important
Comprehensive reference materials (pathways, protocols, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online promotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New product listings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product validation data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
eCommerce capability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relevant search results	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Available pricing information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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**38. Where do you look for antibodies? (Select your top three resources; 1= Most frequently utilized)**

	1	2	3
AfCS Antibody Database	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antibody Resource Page	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biocompare	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
BioResearchOnline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Colleague referral	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Email newsletters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exact Antigen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Journal advertisements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Journal references	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Linscott's Directory of Immunological and Biological Reagents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MSRS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sciquest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SelectScience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supplier catalogs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supplier websites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify below	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other resource \_\_\_\_\_

**39. How important is it for the products you use in the lab to have the following labels/marks?**

	1 = Very Important	2	3	4	5 = Not Important
IVD Label	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASR Label	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CE Label	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>