



2009/2010 MSPPSA SERIES

# MULTIPLIED PROTEIN ASSAY SYSTEMS

AN ANALYSIS OF  
MARKET SIZE & GROWTH  
PURCHASE PLANS &  
SUPPLIER ASSESSMENT FOR  
THE NORTH AMERICAN LIFE SCIENCE  
RESEARCH MARKET

*A Multi-Client Report*

by  
PhorTech International  
San Carlos, California

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# I. BACKGROUND





## A. SURVEY OBJECTIVES

The purpose of this survey was to provide the management of our clients' companies with an analysis of the current market for multiplexed protein assays (including an audit of consumables and instrumentation) for bioresearchers in the North American market and of the attitudes and expectations of a cross-section of researchers who utilize these assays or are planning to start work in this area in the near future.

The survey was Web-based, at a location on our Web site made known to respondents through an email invitation. The surveying was blind, with no reference made to any of our clients for the survey. To encourage respondents to express themselves freely and without bias, the survey was anonymous, and made frequent use of open-ended questions.

We used numerous demographic screens to characterize respondents including their organization, years of experience with multiplexed protein assays, scientific discipline, job description, primary areas of research or testing, and the type of laboratory (either a core facility providing multiplexed protein assay services, a core not providing these services or a non-core laboratory). In addition, respondents were asked to identify the research areas currently utilizing multiplex protein assay technology and characteristics of this work including the classes of proteins studied, application areas and types of samples analyzed.

All respondents were also asked to indicate the basis for their survey responses from two options, either their individual work or the combined work of their entire laboratory. Those answering on behalf of their lab were queried as to the number of researchers using multiplexed protein assays and covered by their laboratory's budget.

Early on the in survey, respondents were asked whether they currently run multiplexed protein assays in their own lab, analyze results from a core or central facility, obtain results from a commercial service company, or are not currently using these but plan to start in the near future. Respondents identifying the fifth and final response, who neither currently use nor plan to start working in this area, were automatically screened out of the survey. Their unique user ID was then invalidated to prohibit restarting the survey, as they were not qualified to continue.

Respondents running multiplexed protein assays analyzing results generated in an outside facility are queried as to which vendor is performing these assays. All researchers currently utilizing or planning to use these assays according to the first question, including those running their assays in their own labs, are then directed to two questions which generally describe their research. Specifically, they are asked to identify the area of research or testing





from eight options (basic research, clinical diagnostics, clinical/translational research, clinical trials, diagnostic development, drug discovery, preclinical drug development or an open-ended option provided for respondents to write-in any other unlisted responses). The second query asks the respondent to identify all research areas in which they use multiplexed protein assays. Possible responses to this multiple-choice question include ADME, biomolecule identification/ development, isotyping, primary or secondary screening, protein expression profiling, protein-protein interaction, protein-small molecule interaction, target development, tissue typing, toxicology, or an open-ended 'other' research area.

Current non-users who are planning to start using these assays within the next 18 months are directed to a short series of questions which measures their likelihood to purchase a new assay system, applications under consideration, the type of assays and instrumentation platforms under consideration, as well as the number of protein targets new users intend to analyze using this technology.

Current users are directed to a number of questions which are designed to identify the characteristics of current multiplexed protein assay usage and instrumentation used. The first of these series starts with questions asking specifically about the classes of proteins studied (intracellular signal transduction protein, receptor and/or cell surface protein, secreted protein, global protein expression or an 'other' type). This is followed by queries regarding the application areas in which these assays are used (from a list of 24 options), the species of samples used for multiplexed assays (human, mouse, rat, non-human primate or other) and the type of sample (cell culture supernatant, cell extract/lysate, plasma, serum, tissue or other). Two open-ended queries examine the main reason for using multiplexed assays and whether the respondent is satisfied with the results and obtaining the anticipated benefits of using this technique.

These researchers were then asked to complete an audit, providing the number of samples assayed per week and the estimated plex level for each application. Users were next queried as to how they expect the number of samples and/or plex level to change in the near future. They are also asked to indicate whether they had ever considered drilling down from a high-content array to a more specific low-content array, and, if so, to explain their reasons for this decision.

Having obtained information about the respondents' multiplexed protein assays, the next questions measure the annual budget for consumable products (including assay kits, reagents and any associated consumables but not instrumentation) and the anticipated change in usage over the coming 18 months.





Then respondents are then asked to complete a second audit, providing the primary supplier and percent of budget spent with that company for each application. The first of two subsequent open-ended queries examines the reasons for choosing these suppliers, while the second gathers suggested improvements for specific multiplexed protein assays. A single query measuring dissatisfaction with these suppliers asked respondents to indicate if there were any companies from which they refuse to purchase. Those answering affirmatively were directed to identify the brand and explain the reason behind their responses.

Using a ten-point scale, respondents were then asked to rate the importance of 13 different factors (plus an optional write-in 14<sup>th</sup> factor) when selecting a multiplexed protein assay product supplier. The factors were presented in a random order and include affordability/value for money, multiplexing factor, minimal hands-on time, assay specificity/cross-reactivity, consistent quality/reproducibility, application-specific assay panels, the reputation of the supplier, ease of ordering, selection of available assays, dynamic range of assays, time to results, user-friendliness/ease of use, and sensitivity/low signal to noise. Alternatively, respondents could write-in their own 'other' unlisted factor.

The next question asks respondents to select multiplexed protein assay product suppliers from an alphabetical list of 36 companies that they recognize, either because their products are used on a regular basis or the researcher is familiar with their offerings. This list of suppliers of both instrument and consumable products includes ArrayIt Corporation, BD Biosciences/Pharmingen, BioArray Solutions, Biomedical Diagnostics, BioRad Laboratories, BioSource/Invitrogen, Clontech/Takara, EMD/Novagen, Full Moon Biosystems, Gentel Biosciences, Hypromatrix, Illumina, INDOOR Biotechnologies, INOVA Diagnostics, Inverness Medical, Invitrogen/Life Technologies, Luminex, Marligen, Meso Scale Discovery, Millipore Corporation, MiraiBio, Multimatrix GmbH, One Lambda, Panomics, Primorigen Biosciences, Protein One, Qiagen, Quansys Biosciences, R & D Systems, Randox, RayBiotech, Sigma, Thermo Fisher Scientific/Pierce, US Biomax, Zeptosens, Zeus Scientific, or an 'other' respondent specified supplier.

For up to seven 'important' factors (identified as those rated above five on the ten-point scale), respondents then indicated which of the suppliers they are familiar with (according to their earlier response) ranked the highest regarding each factor. Using this method, researchers rank only familiar suppliers for a random selection of those criteria which are most important to them.

The next section of the survey questionnaire examines the instrumentation respondents are using to analyze their multiplexed assays. The first of several





queries asks for the brand, model and year of acquisition. The kind of assay currently used (planar or positional arrays, suspension arrays, or an 'other' array defined by the respondent). Those using planar or positional arrays for at least some of their multiplex assays were also asked to provide the type of array used: a slide-based positional array, microtiter-plate based positional array or other type specified by the respondent. The final option is 'don't know'.

All respondents were queried as to the brand and software program used to analyze their multiplexed assays, to describe why they chose their instrument platform and software supplier in their own words and to indicate how likely they are to purchase a new instrument for multiplexed assays in the next 12 months. Those respondents who either definitely, probably or maybe plan to purchase a system were also queried as to the brand and model under consideration, and to provide the reasons for preferring this instrument. All current users are also queried whether there are suppliers of instrumentation platforms from whom they refuse to buy, and if so, to identify the brand and the reason for this decision. Respondents were then given the opportunity to describe any improvements they would like to see in instrumentation.

The final section examines future plans for new multiplexed protein assays. This includes the likelihood that new protein targets will be added to those currently analyzed using these assays, new applications and suppliers being considered, as well as whether the respondent is considering using a different assay methodology.

Major objectives of the survey were to profile characteristics of current multiplexed protein assays and identify future trends by both current and future users. We will also estimate the market size of the North American multiplexed protein assay instrument platform market, measure the historic growth rate based upon the identified installed base, and identify the leading manufacturers in terms of units placed.

This should permit the evaluation of our clients' present market positions, identify marketing strengths and weaknesses, and suggest strategies to develop or improve sustainable competitive advantage.

Several programmed features enable respondents to move through the survey more quickly responding to only relevant questions. For example, Question #1 serves as a gating question. Respondents not currently involved but planning to start using multiplexed protein assays were directed to a short series of questions regarding their future plans while current users were directed to questions regarding their current usage.

Constructed lists were also employed for several questions to simplify and personalize the survey based upon responses to earlier questions. For example, in Question #4C, respondents were asked to indicate application areas in





which they use multiplexed protein assays. These responses are then utilized in the audit questions in which the sample throughput and plex level are defined for each application. Subsequently, these are repeated in the audit of consumable suppliers and percent of budget spent for each application.

Finally, in Question #30, respondents were asked to identify the importance of a variety of factors when selecting a multiplexed protein assay supplier and in Question #31, to indicate which suppliers they recognize. In the subsequent question, only factors considered to be important (earning a rating greater than 5) were shown and the pull-down menu of suppliers showed only companies familiar to each respondent.

Tailored questions were used to imprint the basis respondents used to answer the survey. In Question #3, respondents were asked whether they would answer the survey based upon their own personal usage or based on the combined usage of their laboratory. Depending upon their answer, some of the subsequent questions were worded either 'your individual usage' or 'your laboratory's usage'.

This report is the second 2009/2010 study in a growing series of market research analyses that began in 1993. We plan to continue the series, adding titles and alternating between North American and international markets, depending upon our clients' suggestions and support.

The first in the current series is entitled:

Molecular Biology Reagent Systems, Volume 2.

The four 2008/2009 studies already released cover:

Microplate Readers & Equipment  
Protein Electrophoresis Equipment  
Protein Electrophoresis Gels, Stains & Standards  
Protein Expression and Purification Systems.

The series of three reports in the 2007/2008 series covering segments of the North American life science research market are entitled:

Molecular Biology Reagent Systems, Volume 1  
Proteomics Research, Volume 1 and  
Proteomics Research, Volume 2.

The two reports in the 2006/2007 series which have been released cover the North American market for

DNA Amplification Instrumentation  
DNA Amplification Reagents & Methodology





The three reports published in the 2004/2005 series cover the U.S. market for:

DNA Sequencing & Sequencing Services  
Electrophoretic Equipment & Reagents and  
HPLC Columns in the Life Sciences.

In addition, a single report examining the European market covers the:

Microarray Market Analysis (including Arrayers, Scanners and Microarrays).

Reports published in the 2003/2004 series cover the following U.S. topics:

Molecular Biology Reagent Systems, Vol. 1  
Molecular Biology Reagent Systems, Vol. 2  
Protein Expression Systems  
Proteomics Research, Volume 1 (Sample Prep & 2-D)  
Proteomics Research, Volume 2 (Mass Spec & Protein Microarrays).  
Reports released in the 2002/2003 series include the following U.S. topics:

DNA Amplification Instrumentation  
DNA Amplification Reagents & Methodology  
Microplate Reader & Equipment Market

Topics in the U.S. series published in 2001/2002 include:

Electrophoretic Instrumentation & Reagents  
Molecular Biology Reagent Systems, Vol. 2

This series also includes the following reports covering international markets:

Densitometers & Image Analysis in Europe  
DNA Sequencing in the Far East.

The 2000/2001 series covered the following three reports:

U.S. DNA Amplification  
U.S. Molecular Biology Reagent Systems, Vol. 1  
Molecular Biology Reagent Systems, Vol. 1 in the Far East.

In the 1999/2000 series, we have released three reports examining the following markets. These are:

Microplate Equipment in Europe  
DNA Sequencing in the U.S.  
Monoclonal Antibodies in the U.S.





The following nine titles have been released in the series for 1998/1999:

Cell & Tissue Culture in the U.S.  
Cytokines & Growth Factors in the U.S.  
DNA Amplification in the Far East  
DNA Sequencing in Europe  
Electrophoretic Gel Media in Europe  
HPLC in the Life Sciences in the U.S.  
Molecular Biology Reagent Systems, Vol. 1  
Molecular Biology Reagent Systems, Vol. 2 in the Far East  
Protein Expression Systems in the U.S.

The following titles have been released in the U.S. series for 1997/8:

DNA Sequencing  
Molecular Biology Reagent Systems, Vol. 1  
Molecular Biology Reagent Systems, Vol. 2  
Molecular Diagnostics.

Clients are reminded that additional copies of any of these reports that have been purchased in the past are available at a modest cost. Please contact us for further details. Those wishing to know publication dates for any of these reports, or wanting to read summaries of the 84+ reports in this series are invited to visit our Web site at: [www.phortechn.com](http://www.phortechn.com).







## B. SURVEY METHODOLOGY

Personalized e-mail invitations to take part in the survey were sent to a cross-section of North American life science researchers from our panel of over 50,000 life science researchers worldwide. Invitations were successfully sent to a random selection of 8,657 North American members of the panel from June 8<sup>th</sup> to June 22<sup>nd</sup>, 2009.

Each participant received an e-mail invitation including the web address of the survey and a unique validation code.

The questionnaires were anonymous, using a combination of tabular entry, check-offs, and open-ended probes. However, all respondents who completed the survey did identify themselves by filling in the prize entry form. This makes it possible for us to double-check the responses to any questions by telephoning or emailing respondents, improving the overall confidence in the data. We did not observe any survey fatigue in this questionnaire, and felt that respondents spent considerable time explaining their positions on the open-ended questions.

The survey was closed on July 27<sup>th</sup> since no additional returns had been received for a few days and we had exceeded our target of 350 completed survey questionnaires.

A total of 668 researchers, equivalent to 7.7% of those receiving an invitation, indicated that they were willing to take part in this survey by opening the questionnaire. However, 78 of these didn't answer any questions. A further 86 attested in Question #1 that they didn't currently multiplex proteins and had no plans to start in the near future and were therefore disqualified from continuing. An additional 16 entries contained responses to the first few questions at most, and did not provide any valuable information. While these have been excluded from this dataset, incomplete responses from a further 113 researchers currently using or planning to start multiplexing proteins have been imported along with the 373 who completed the survey into this data set. Although these did not finish the questionnaire, they do provide useful information, and expand the basis to include a total of 486 respondents of which 303 respondents are currently multiplexing proteins or analyzing data obtained from an outside source, and 183 respondents who plan to start working in this area within the next 18 months.

Based upon all 486 complete and partial responses, the overall statistical results presented in this report are accurate to within  $\pm 4.4$  percentage points at the 95% confidence level. Statistical results based on the 373 researchers completing the survey, are accurate to within  $\pm 5.1$  percentage points at the 95% confidence level. In our experience, 95% confidence levels are appropriate primarily for scientific experiments. Most business people making





decisions are content to be right more often than they are wrong. In this case, a 65% confidence level, (in which you would be right twice as often as you would be wrong) is more appropriate. Conveniently, 65% confidence levels are nearly exactly one half the size of the 95% level, thus our 65% levels would be  $\pm 2.2\%$  for all 486 respondents and  $\pm 2.5\%$  for the 373 respondents completing the survey.

According to the binomial distribution theory, these values are valid when the measured event has about a 50% probability. When the measured event is considerably more rare than this, the corresponding confidence intervals get smaller. On the other hand, these confidence intervals are valid for answers based upon the complete pool of respondents. When analyzing data for a group that includes only a small segment of respondents, the answers are less certain and confidence intervals are correspondingly larger.

In this report, we will calculate more exact individual confidence intervals when appropriate. In our comments, we will note whether given differences are significant at either the 65% or 95% level. To aid our clients in determining the appropriate confidence interval for various combinations of sample size and measurements, we have created the table found at the top of the next page. Just read the closest percentage on the left and find the closest sample size column. The intersection will show the confidence interval for that combination. For example, a measured 35% value with a sample size of 200 has a 95% confidence interval of  $\pm 6.6\%$ .

95% Confidence Intervals for Various Percentages & Sample Sizes

Percent	n=10	n=20	n=50	n=100	n=200	n=500	n=1000
5%	$\pm 13.5\%$	$\pm 9.6\%$	$\pm 6.0\%$	$\pm 4.3\%$	$\pm 3.0\%$	$\pm 1.9\%$	$\pm 1.4\%$
10%	$\pm 18.6\%$	$\pm 13.1\%$	$\pm 8.3\%$	$\pm 5.9\%$	$\pm 4.2\%$	$\pm 2.6\%$	$\pm 1.9\%$
20%	$\pm 24.8\%$	$\pm 17.5\%$	$\pm 11.1\%$	$\pm 7.8\%$	$\pm 5.5\%$	$\pm 3.5\%$	$\pm 2.5\%$
35%	$\pm 29.6\%$	$\pm 20.9\%$	$\pm 13.2\%$	$\pm 9.3\%$	$\pm 6.6\%$	$\pm 4.2\%$	$\pm 3.0\%$
50%	$\pm 31.0\%$	$\pm 21.9\%$	$\pm 13.9\%$	$\pm 9.8\%$	$\pm 6.9\%$	$\pm 4.4\%$	$\pm 3.1\%$
65%	$\pm 29.6\%$	$\pm 20.9\%$	$\pm 13.2\%$	$\pm 9.3\%$	$\pm 6.6\%$	$\pm 4.2\%$	$\pm 3.0\%$
80%	$\pm 24.8\%$	$\pm 17.5\%$	$\pm 11.1\%$	$\pm 7.8\%$	$\pm 5.5\%$	$\pm 3.5\%$	$\pm 2.5\%$
90%	$\pm 18.6\%$	$\pm 13.1\%$	$\pm 8.3\%$	$\pm 5.9\%$	$\pm 4.2\%$	$\pm 2.6\%$	$\pm 1.9\%$
95%	$\pm 13.5\%$	$\pm 9.6\%$	$\pm 6.0\%$	$\pm 4.3\%$	$\pm 3.0\%$	$\pm 1.9\%$	$\pm 1.4\%$





# II. DEMOGRAPHIC SEGMENTATION





## QUESTION 0.

### Question:

Our latest software program permits us to identify two primary characteristics of the computers respondents are using, the operating system and browser.

### Rationale:

We provide a brief summary of this information giving clients a general idea of the type of computer and browser to which these researchers have access.

### Results:

First, we present the distribution of the operating system run on the computers of 483 out of the 486 respondents who provided partial or complete survey data. These are sorted in descending order.

Operating System of Computers Used to Answer Survey Questionnaire

Operating System	# Resps	% Resps
Windows XP	318	65.8%
Macintosh	97	20.1%
Windows Vista	50	10.4%
Windows NT 5.0	12	2.5%
Windows NT 5.2	4	0.8%
Linux x86_64	1	0.2%
Windows 98	1	0.2%
Total # Resps	483	

More than three out of every five respondents are using Windows XP, the dominant operating system followed by the one out of every five researchers answering the questionnaire on a computer utilizing a Macintosh operating system.

Turning our attention to the browser, Microsoft's Internet Explorer continues to be the most common, used by 283 of these 486 respondents, equivalent to 58.2%. Just under half as many respondents (21.6%) use a version of Firefox while Safari came in a distant third, utilized by 13.0% of these researchers to access the survey questionnaire. In comparison, Netscape, Navigator, Camino and a few others are rarely used. The frequency of usage for these browsers is remarkably consistent with that noted in previous surveys.

More detailed information, including versions, are presented in the table found on the next page.





**Browser Used to Answer Survey Questionnaire**

Browser	# Resps	% Resps
MSIE 6.0	121	24.9%
MSIE 7.0	121	24.9%
Firefox 3.0.11	45	9.3%
Firefox 3.0.10	44	9.1%
MSIE 8.0	41	8.4%
Netscape 5.0	28	5.8%
Safari 530.17	19	3.9%
Safari 525.28.3	11	2.3%
Safari 525.27.1	8	1.6%
Firefox 2.0.0.20	6	1.2%
Safari 530.5	5	1.0%
Safari 530.18	4	0.8%
Safari 419.3	3	0.6%
Safari 525.22	3	0.6%
Safari 528.16	3	0.6%
Firefox 3.0	2	0.4%
Firefox 3.0.1	2	0.4%
Navigator 9.0.0.6	2	0.4%
Camino 1.5.4	1	0.2%
Firefox 1.5.0.8	1	0.2%
Firefox 2.0	1	0.2%
Firefox 2.0.0.14	1	0.2%
Firefox 2.0.0.18	1	0.2%
Firefox 2.0.0.6	1	0.2%
Firefox 3.0.9	1	0.2%
Mozilla 20060414	1	0.2%
Presto 2.1.1	1	0.2%
Safari 312.6	1	0.2%
Safari 523.10	1	0.2%
Safari 523.12	1	0.2%
Safari 523.12.2	1	0.2%
Safari 525.18	1	0.2%
Safari 525.19	1	0.2%
Safari 525.20	1	0.2%
UP.Link 6.3.0.0.0	1	0.2%
VendorID 100	1	0.2%
Total # Resps	486	





## QUESTION 1.

### Question:

Do you currently use or plan to start using multiplexed protein assays and do you run the assays in your lab?

Yes, I currently use multiplexed protein assays that are run in our own lab.

Yes, I currently use multiplexed protein assays but analyze results run by a core/central facility.

Yes, I currently use multiplexed protein assays but analyze results provided by a commercial service company.

No, I do not currently use multiplex assays, but I plan to start in the next 18 months

No, I do not currently use, nor plan to use multiplexed protein assays.

### Rationale:

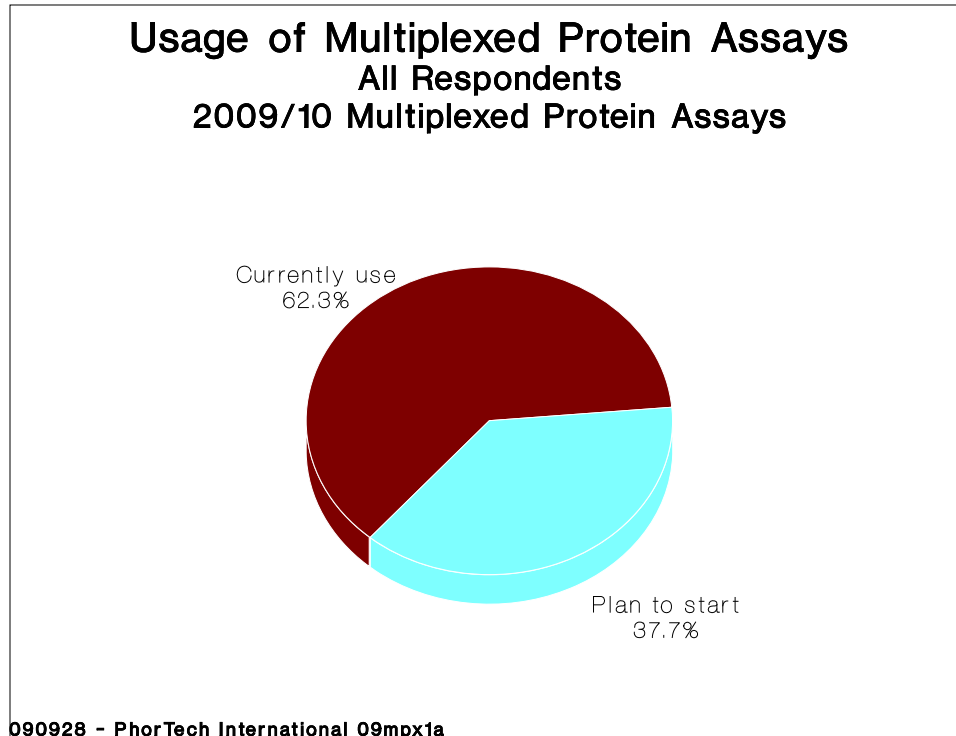
This introductory question not only measures respondents' current as well as future intentions to start working with multiplexed protein assays but also identifies whether users are currently running these assays in their own lab, or sending them out to a core or centralized facility or a commercial supply company. This also serves as a gating question, identifying respondents who are not currently involved nor planning to start using multiplexed protein assays and are therefore not qualified to complete the survey.

### Results:

The pie chart located at the top of the next page depicts the distribution of the 486 responses to this question.

As mentioned in the description of the Survey Methodology, a further 86 respondents not represented here don't currently work in this area nor plan to start performing multiplexed protein assays and were therefore disqualified from participating in this survey.





#### **Analysis:**

According to these results, there should be a considerable expansion in the use of multiplexed protein assays in the near future. For every 1.7 current users, we had one researcher who is planning to start work within the next 18 months.

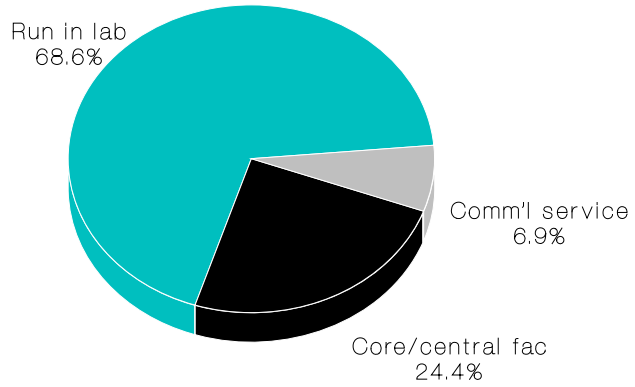
Amongst the 303 respondents currently running multiplexed protein assays or analyzing results, the source of data is depicted in the next pie chart, located at the top of the next page.

As shown here, 68.6% of current users run multiplexed protein assays in their laboratories. We would expect that these respondents to be most familiar with the instrumentation and assay kits used for this research. The remaining 31.4% analyze data obtained from assays run by outside sources. The least common source and perhaps most expensive is commercial sources, used by 6.9% of current users, while 24.4% have a core or central facility running their assays.





### Source of Multiplexed Protein Assay Data Current Users 2009/10 Multiplexed Protein Assays



090804 - PhorTech International 09mpx1







## QUESTION 1A.

### Question:

In the first question, you indicated that your multiplex protein assays are run by an outside service vendor.

Please identify the vendor performing your multiplexed protein assays.

### Rationale:

This follow-up question directed to only those respondents who indicated in Question #1 that their assays are performed by a commercial service. Although based on a small group of respondents, reviewing these should reveal the breadth of options chosen. Presumably, respondents or their labs have determined that these are the best sources available.

### Results:

The 20 verbatim descriptions of commercial vendors providing multiplexed protein assay data are presented below.

#### Verbatim Descriptions of Commercial Vendors Performing Multiplexed Protein Assays

Bio-Rad  
Bio-Rad  
Covance  
CRCC  
Discoverex  
GE Healthcare  
Gentel Biosciences  
Invitrogen  
Kinexus  
Millipore  
OSU molecular  
Outsourced to India  
Quest Diagnostics  
RayBiotech  
RBM  
Rules-Based Medicine  
SearchLight  
SuperArray  
Thermo Scientific  
ThermoFisher

### Analysis:

Due to the relatively few responses, the range of sources says more about the diversity of sources available. We were surprised to see that these include major manufacturers which don't provide services, and to find that work is outsourced to India. We expected references to RBM (Rules-Based Medicine)





as well as the few mentions referring to ‘Thermo’ or ‘Searchlight’. In March of this year, the latter mentioned SearchLight® Protein Array business and technology assets were sold by ThermoFisher Scientific to Aushon BioSystems. Since respondents currently show relatively little awareness of this, it will be interesting to re-examine Aushon’s position in this market in a few years time.





## QUESTION 91.

### Question:

Finally, please answer a few questions about yourself.

How would you best describe your organization?: Academia, Hospital/medical school, Biotech/pharma industry, Other industry, Government agency, or Private research foundation.

### Rationale:

This standard screening question identifies the location of all respondents. By cross-tabulating these results with the responses to Question #1 regarding current and future work in this area, we will be able to not only examine the current utilization of multiplexed protein assays over these six types of organizations, but also look at future usage.

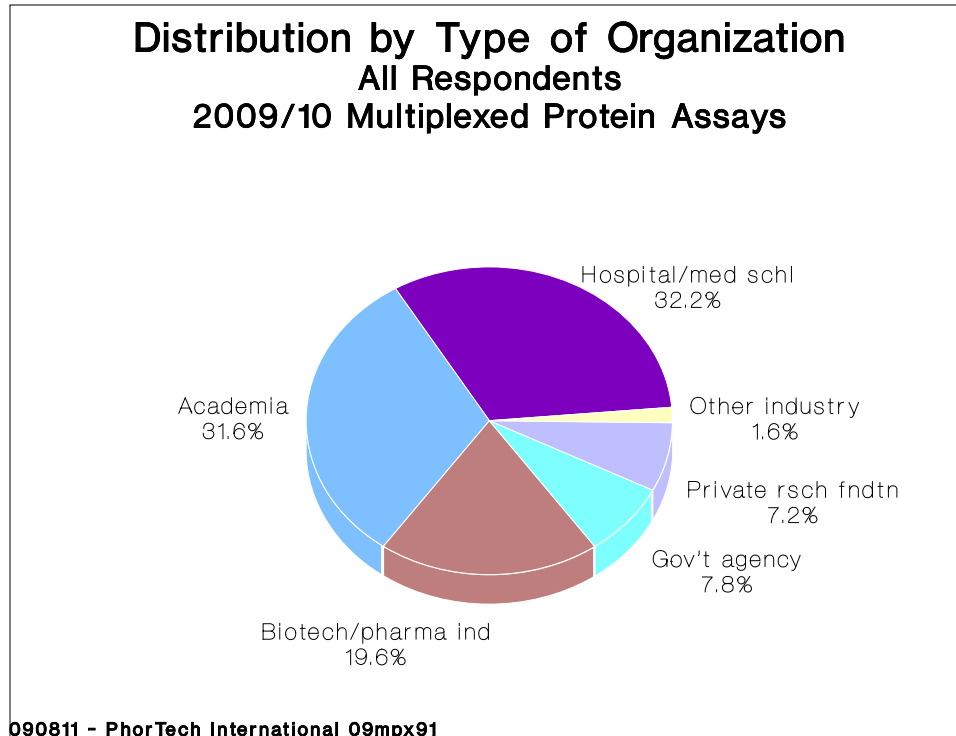
### Results:

Before analyzing, the data required some editing in order for responses to be consistent. In order to reflect the source of funding, those working in a hospital, medical school or similar organization such as a health sciences center, have all been categorized as a hospital or medical school. Whereas respondents might consider themselves to be located in academia, for this analysis this classification has been expanded to include medically-related research.

Researchers working in private research foundations, many of which have an email ending in .org, and those receiving private funding have been classified as private research foundations. In addition, those receiving funding from government sources, such as the NIH or CDC laboratories, as well as others such as VA hospitals, are identified in this survey as a government agency. Companies involved in biotechnology or pharmaceuticals are grouped together in the industrial sector.

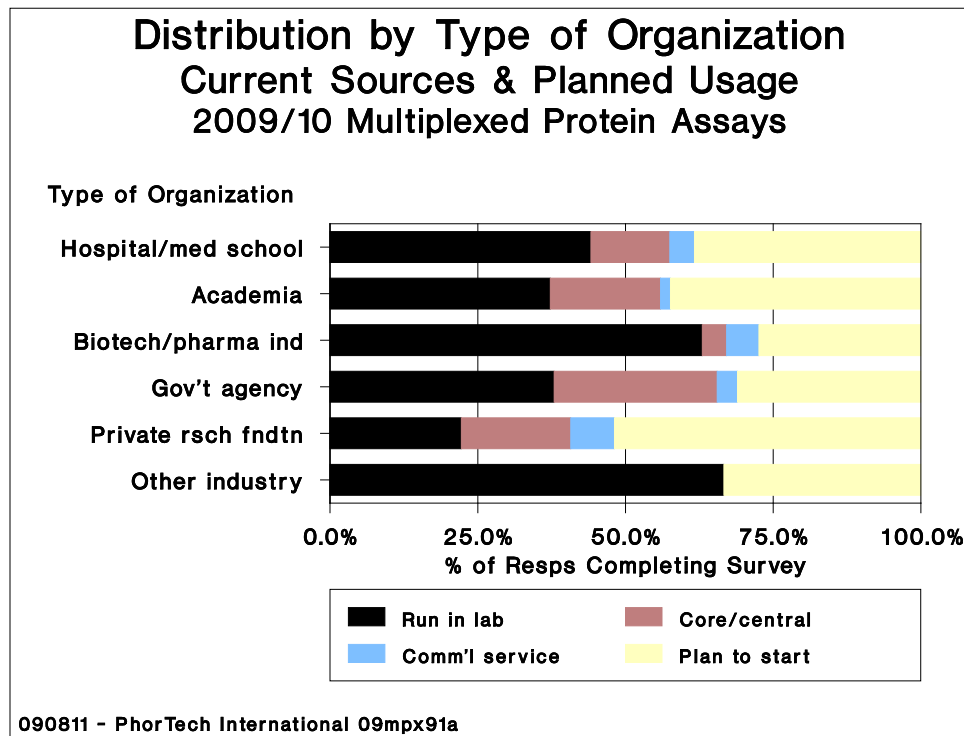
In the pie chart located at the top of the next page, we present the distribution profile for the 373 respondents who completed the survey and therefore answered this question. As shown here, the proportion of respondents working in a hospital or medical school is near equal to those working in academia, each representing approximately one third of both current and future users. Just over 21% are located in the industrial sector while the remaining 15% are split equally between researchers in government labs and privately funded research foundations.





#### Analysis:

In the following 100% bar graph, we present this distribution according to the source of data for current users with those planning to start using multiplexed protein assays within the next 18 months next.





Although typically well funded, private research organizations appear to be lagging behind the other types with regards to the proportion of current users.

The raw data upon which this graph is based is presented below. Note that the organizations in the previous graph and in this table are presented in descending order according to the number of respondents.

**Distribution by Type of Organization for Current Sources & Future Users of Multiplexed Protein Assays**

Type of Organization	All		Run in Lab		Core/central		Comm'l service		Planned	
	#	% Resps	#	% Resps	#	% Resps	#	% Resps	#	% Resps
Hospital/medical school	120	32.2%	53	32.3%	16	29.6%	5	36%	46	32.6%
Academia	118	31.6%	44	26.8%	22	40.7%	2	14%	50	35.5%
Biotech/pharma industry	73	19.6%	46	28.0%	3	5.6%	4	29%	20	14.2%
Govt agency	29	7.8%	11	6.7%	8	14.8%	1	7%	9	6.4%
Private research fndtn	27	7.2%	6	3.7%	5	9.3%	2	14%	14	9.9%
Other industry	6	1.6%	4	2.4%		0.0%		0%	2	1.4%
<b>Total</b>	<b>373</b>		<b>164</b>		<b>54</b>		<b>14</b>		<b>141</b>	

Finally, on the following pages we present the name of the over 260 institutions represented by respondents to this survey. These are grouped by organizational type with the type of organization with the greatest representation, hospitals and medical schools, listed first. Note that these are based on the 373 respondents who completed the survey and therefore, provided contact information.

**Organizations Represented by Survey Respondents**

Hospital/Medical School
Albany Medical College
AML
Baylor College of Medicine
Beth Israel Deaconess Medical Center
Boston University Medical School Cancer Research Center
Boston University School of Medicine
Brigham and Women's Hospital
Brown Medical School
Childrens Hospital Boston
Children's Hospital of Philadelphia (CHOP)
Childrens Mercy Hospital
Columbia University Medical Center
Dartmouth Medical School
Duke University Medical Center
Duke University Medical School
Eastern Virginia Medical School (EVMS)
Harvard University
Indiana University School of Medicine
Johns Hopkins University School of Medicine
Loyola University Medical Center





LSU Health Sciences Center (LSUHSC)  
LSU Neuroscience Center  
Mayo Clinic, Rochester  
Medical College of Wisconsin  
Medical University of South Carolina  
Mercer University School of Medicine, Savannah Campus  
Miami Children's Hospital  
Morehouse School of Medicine  
Mount Sinai Medical Center  
Mount Sinai School of Medicine  
New York Medical College  
Northeastern Ohio Universities Colleges of Medicine and Pharmacy (NEOUCOM)  
NYU School of Medicine  
Oregon Health Sciences University  
Penn State University College of Medicine  
RI Hospital  
Shriners Hospitals for Children  
Stony Brook University Medical Center  
Texas A&M Health Science Center Institute of Biosciences & Technology  
Tulane University School of Medicine  
University Health Network CANADA  
University of Alabama at Birmingham Medical School  
University of Arkansas for Medical Sciences  
University of Arkansas Medical School  
University of California, Davis, Center for Comparative Respiratory Biology & Medicine  
University of California, Los Angeles (UCLA)  
University of California, San Diego (UCSD)  
University of California, San Francisco (UCSF)  
University of California, San Francisco Medical Center  
University of California, San Francisco Medicine/Diabetes Center  
University of Cincinnati College of Medicine  
University of Colorado Health Sciences Center  
University of Iowa  
University of Kentucky  
University of Kentucky College of Medicine  
University of Louisville Health Science Center  
University of Maryland School of Medicine  
University of Medicine and Dentistry, New Jersey (UMDNJ)  
University of Medicine and Dentistry, New Jersey (UMDNJ) Medical School  
University of Michigan  
University of Michigan Comprehensive Cancer Center  
University of Minnesota  
University of Nebraska Medical Center (UNMC)  
University of North Carolina, Chapel Hill  
University of Pittsburgh Medical Center  
University of Rochester Medical Center  
University of Southern California  
University of Texas Health Science Center, Houston  
University of Texas Health Science Center, San Antonio





University of Texas Medical Branch (UTMB)  
University of Texas Southwestern Medical Center at Dallas  
University of Virginia  
University of Wisconsin, Madison  
University of Wisconsin, Madison School of Medicine  
UT Southwestern Medical Center at Dallas  
Wayne State University  
Weill Medical College of Cornell University  
Winthrop University Hospital  
Wright Medical Center

**Academia**

Albany State University  
Boyce Thompson Institute  
California State University, Northridge (CSUN)  
Caltech  
Case Western Reserve University  
Colorado State University College of Veterinary Medicine & Biomedical Sciences  
Cornell University  
Dartmouth College  
DePaul University  
D'Youville College  
Emory University  
Harvard University  
Life Sciences Institute, University of British Columbia (CANADA)  
Marian University  
Massachusetts Institute of Technology (MIT)  
Mayo Clinic, Jacksonville  
Michigan State University  
Mississippi State University College of Veterinary Medicine  
Montana State University  
North Carolina State University  
North Carolina State University College of Veterinary Medicine  
Ohio Agricultural R & D Center  
Oklahoma State University  
Penn State University  
Purdue University  
Queen's University CANADA  
Rutgers University  
Seton Hall University  
South Dakota State University  
Stanford University  
State University of New York (SUNY) Buffalo  
Stony Brook University  
Thomas Jefferson University  
Union University  
Universite du Quebec a Trois-Rivieres (UQTR) CANADA  
University Buffalo  
University of Arizona  
University of British Columbia CANADA





University of Calgary CANADA  
University of California, Berkeley  
University of California, Davis  
University of California, Irvine  
University of California, Los Angeles  
University of California, San Diego  
University of Chicago  
University of Colorado at Boulder  
University of Colorado at Denver  
University of Illinois at Chicago  
University of Iowa  
University of Louisiana at Lafayette, Center for Structural & Functional Materials  
University of Louisville  
University of Maryland, Baltimore  
University of Maryland, Silver Spring  
University of Michigan  
University of Minnesota, Minneapolis  
University of Minnesota, St Paul  
University of Missouri-Kansas City (UMKC)  
University of New Mexico  
University of North Carolina, Chapel Hill  
University of Pennsylvania  
University of Pittsburgh  
University of Rochester  
University of South Florida  
University of Southern California  
University of Texas at Austin  
University of Texas at San Antonio  
University of Toronto CANADA  
University of Virginia  
University of Washington  
University of Wisconsin-Madison  
University of Wisconsin-Milwaukee  
Vanderbilt University  
Virginia Commonwealth University  
Washington University at St Louis  
Wayne State University

**Biotech/Pharmaceutical Industry**

Abbott Bioresearch Center  
Abbott Molecular  
Abbott Nutrition  
Acorda Therapeutics  
Adnexus  
Agilent Technologies  
Allergan Inc.  
Amgen Inc, Newbury Park  
Amgen Inc, Seattle  
Amgen Inc, Thousand Oaks  
AstraZeneca R&D Boston







Autogenomics, Inc  
Baxter Healthcare Corp  
Bayer Pharmaceuticals  
Bayhill Therapeutics  
BD Diagnostics  
Bio-Rad Laboratories  
BMRN  
Bristol-Myers Squibb  
Eli Lilly  
EMD Chemicals  
EnVivo Pharmaceuticals, Inc.  
ENZO Life Sciences  
Genentech  
GenVec, Inc  
Genzyme Corporation  
Getsen Laboratories  
Glaxo Smith Kline  
IICC  
ImmVaRx, Inc and UC Davis  
Johnson & Johnson Pharmaceutical Research and Development, New Britain  
Johnson & Johnson Pharmaceutical Research and Development, San Diego  
KPL  
LI-COR  
Life Technologies  
MedImmune  
Merck & Co, Inc, Rahway  
Merck & Co, Inc, West Point  
Merrimack Pharmaceutical  
Millennium/Takeda  
Momenta Pharmaceuticals, Inc.  
Neostasis, Inc  
Otsuka  
PPD  
Precision Inc.  
Prolexys Pharmaceuticals Inc.  
Promega Corp  
Protea Biosciences  
Purdue Pharma, PKDM  
Regeneron Pharmaceuticals Inc  
Sanofi-Aventis  
Schering-Plough Corporation, Kenilworth  
Schering-Plough Corporation, Summit  
Sigma-Aldrich  
Syngenta Biotechnology Inc  
Tercica, Inc.  
Unigene Laboratories  
Vector Labs  
Wyeth  
Wyeth Vaccines





**Government Agency**

ACSA  
Brookhaven National Laboratory  
CDC Chronic Viral Diseases Branch  
CDC Newborn Screening Quality Assurance Program  
Centers for Disease Control & Prevention (CDC)  
National Animal Disease Center, Ames  
NIH Chemical Genomics Center  
NIH/National Heart, Lung, and Blood Institute (NHLBI)  
NIH/Nat'l Cancer Institute (NCI), Bethesda  
NIH/Nat'l Cancer Institute, Frederick  
NIH/Nat'l Institute for Occupational Safety and Health (NIOSH)  
NIH/Nat'l Institute of Environmental Health Sciences (NIEHS), Chapel Hill  
NIH/NCI/Center for Cancer Research  
Tennessee Wildlife Resources Agency (TWRA)  
UCSD/SD VA Healthcare System  
US Army  
US Army Medical Research Institute for Infectious Diseases (USMRIID)  
US Army Research Institute of Environmental Medicine (USARIEM)  
US Environmental Protection Agency (USEPA)  
US Food and Drug Administration  
USDA-ARS  
VA Medical Center at Wayne State University, Detroit  
VA Medical Center, Kansas City  
VA Medical Center, Long Beach  
VA Medical Center, Memphis  
VA Medical Center, Memphis  
VA Medical Center, UC San Francisco

**Private Research Foundation**

American Chemical Society  
Broad Institute at MIT  
Burke/Cornell Medical Research Institute  
Cleveland Clinic  
CNMC Research Center for Genetic Medicine  
Dana-Farber Cancer Institute  
Danforth Plant Science Ctr  
Doheny Eye Institute  
Lahey Clinic  
Lerner Research Institute  
MD Anderson Cancer Center  
Midwest Research Institute  
Moffitt Cancer Center  
Nathan Kline Institute Center for Dementia Research  
Population Council  
Prince Henrys Institute, Ovarian Cancer Group  
Roswell Park Cancer Institute  
St. Jude Children's Research Hospital  
Stowers Institute  
TransWorld Development Initiatives





UCSF Foundation	
UT M.D. Anderson Cancer Center	
	<b>Other Industry</b>
Charles River	
DuPont	
Labcorp	
Quest Diagnostics	





## QUESTION 94.

### Question:

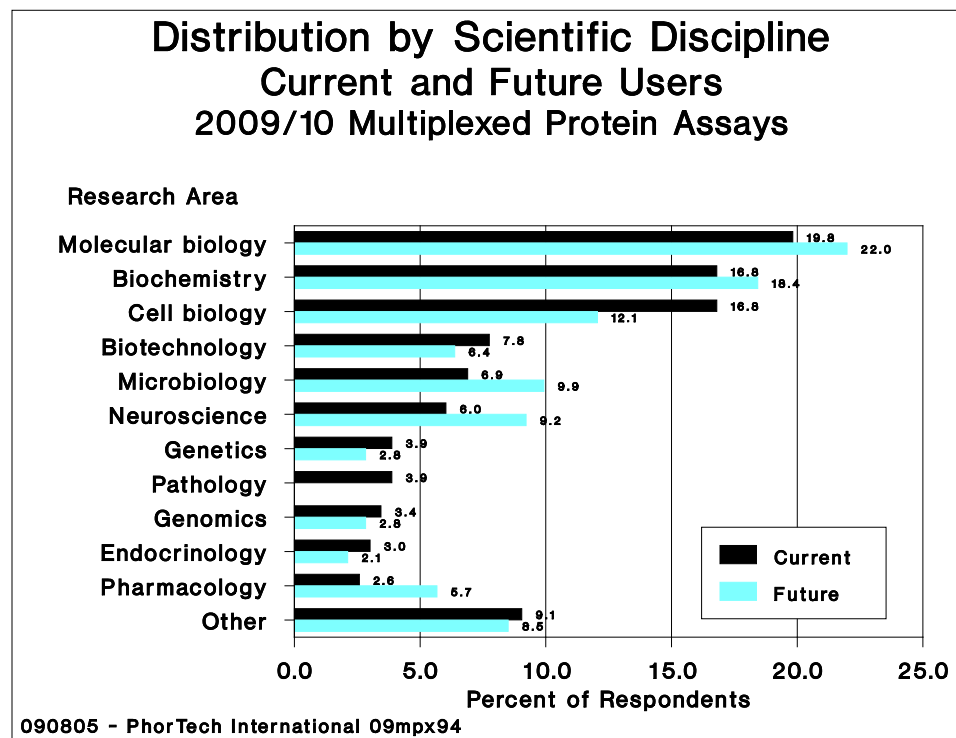
Please indicate below your primary scientific discipline: biochemistry, biotechnology, cell biology, endocrinology, genetics, genomics, microbiology, molecular biology, neuroscience, pathology, pharmacology or 'other'.

### Rationale:

This is one in the series of demographic questions shown at the conclusion of the survey questionnaire. This question provides a description of our respondents' primary scientific discipline. We would hope for a broad distribution of disciplines whose frequency should reflect areas in which multiplexing protein assays are used extensively.

### Results:

The following horizontal bar graph depicts the areas of research for the 232 current users and 141 future users separately. The areas are sorted according to the percentage of current users working in each research area.



### Analysis:

Molecular biology, cell biology and biochemistry are the primary areas in which multiplexed protein assays are currently used and will continue in the near future. Over half of the respondents currently running these assays or analyzing data are working in one of these three areas. Similarly, just over half





of those planning to start work in this area within the next 18 months identify with one of these three areas.

While these appear to be the primary research areas, it is also important to realize that current users of multiplexed protein assays are working in a wide variety of research areas. In fact, all 12 areas are represented by respondents to this survey.

Re-examining this graph to identify areas of expansion, new users are working in all areas except for pathology. By comparing the proportion of current and future users, it appears that microbiology, neuroscience and pharmacology are most likely to be areas of expansion. Combined, these three areas account for 24.8% of the 141 future users compared with 15.5% of current users of multiplexed protein assays.





## QUESTION 92.

### Question:

What most closely fits your job description?:

- Laboratory technician/research assistant
- Laboratory manager/director/supervisor
- Research assistant
- Postdoctoral fellow
- Graduate student
- Laboratory scientist
- Principal investigator
- Project manager
- Senior scientist
- Department head
- Vice president
- Core facility director
- Purchasing agent/buyer
- Scientific writer or journalist
- Sales or marketing specialist

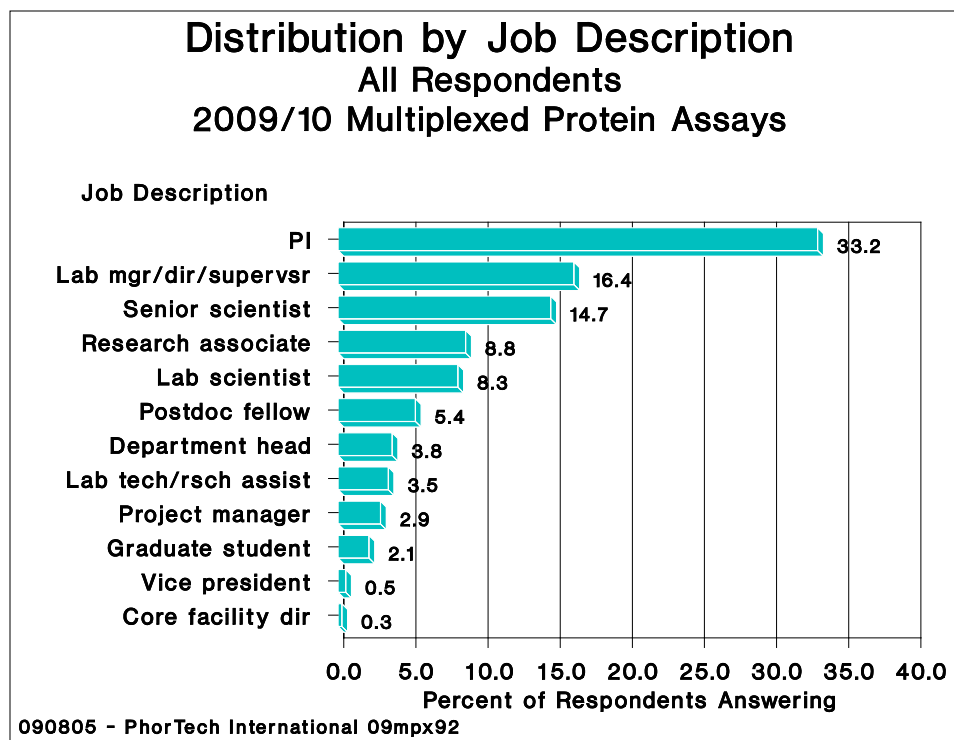
### Rationale:

This question will provide a description of our respondent's position in the lab. We would hope for a good cross-section of responses, to obtain feedback from those performing the hands-on lab work, such as laboratory technicians, research assistants, postdoctoral fellows and graduate students, as well as the principal investigators and senior scientists, who in general, have greater control over purchasing decisions. The final three job descriptions (purchasing agent/buyer, scientific writer or journalist and sales or marketing specialist) are included on the questionnaire to encourage respondents in these positions to correctly identify their job. Any potential respondents selecting one of these options are disqualified from continuing and therefore directed out of the survey.

### Results:

The horizontal bar graph located at the top of the next page depicts the distribution of the 373 respondents who completed the survey and therefore answered this question.





### Analysis:

These current and future users of multiplexed protein assays are distributed across all 12 of these positions. Upper-level scientists, including laboratory managers or supervisors, department heads, principal investigators, core facility directors, vice presidents, and senior scientists, comprise 68.9% of these respondents.

Lower-level scientists would include graduate students, research assistants, and laboratory technicians. This group comprises 5.6% of these respondents. We can say with confidence, that this group does not dominate the survey responses.

We define mid-level scientists as the remaining categories project managers, post-doctoral fellows, research associates and laboratory scientists. This group comprises approximately on quarter of all the scientists, or 25.5%.

We believe that we have obtained an excellent cross-section of professional positions with plenty of upper-level qualified respondents. In the table located at the top of the next page, we present the distribution of these job descriptions for 232 current users and separately, for 141 researchers who plan to start working with multiplexed protein assays within the next 18 months.




**Respondents' Job Description, Current vs. Future Users of Multiplexed Protein Assays**

Job Description	All Resps		Current Users		Future Users	
	#	%	#	%	#	%
Principal investigator	124	33.2%	75	32.3%	49	34.8%
Lab manager/dir/supervisor	61	16.4%	37	15.9%	24	17.0%
Senior scientist	55	14.7%	34	14.7%	21	14.9%
Research associate	33	8.8%	18	7.8%	15	10.6%
Laboratory scientist	31	8.3%	22	9.5%	9	6.4%
Postdoctoral fellow	20	5.4%	14	6.0%	6	4.3%
Department head	14	3.8%	8	3.4%	6	4.3%
Lab technician/rsch assistant	13	3.5%	10	4.3%	3	2.1%
Project manager	11	2.9%	9	3.9%	2	1.4%
Graduate student	8	2.1%	4	1.7%	4	2.8%
Vice president	2	0.5%		0.0%	2	1.4%
Core facility director	1	0.3%	1	0.4%		0.0%
	373		232		141	

These positions are represented nearly equally amongst both current and future users. Therefore, there are no significant differences in the positions represented in these two groups of respondents.







## QUESTION 95.

### Question:

Do you work in a core facility that provides multiplexed protein assays?

Yes, I work in a core facility that provides multiplexed protein assay services.

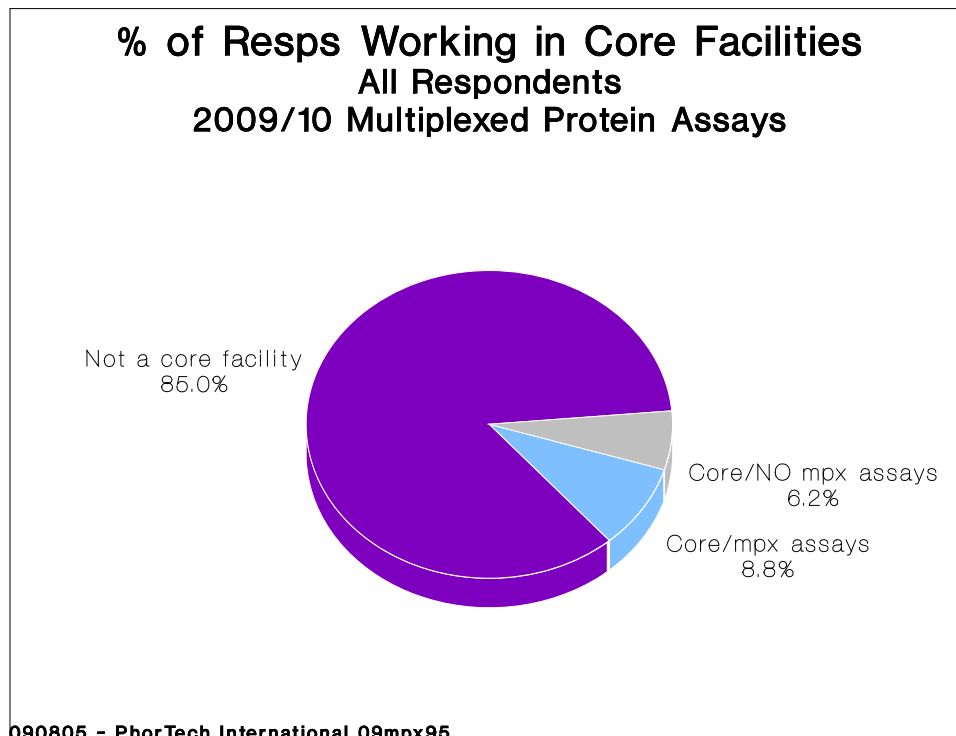
I work in a core facility which does not provide multiplexed protein assay services.

No, I don't work in a core facility.

Core facilities may have a different set of requirements to meet, demands and therefore priorities and needs when performing any type of bioresearch, including multiplexed protein assays. This question was designed to identify those respondents within our sample. Where applicable, we may examine the responses to some question for these core facilities separately from that for all respondents.

### Results:

The distribution of the 373 responses to this question is presented in the following pie chart.



Just 15%, equivalent to 55 respondents work in a core facility. It is interesting to see that close to half of the respondents in core labs don't





provide multiplexed assay services for other labs, only use this technique for their own needs.

### Analysis:

The following table depicts the responses of current and future users. It appears that the most of the expansion in multiplexed protein assay usage is expected in researchers' own labs and especially not in core facilities providing services.

Respondents Working in Core Facilities, Current vs. Future Users of Multiplexed Protein Assays

Type of Lab	All Resps		Current Users		Future Users	
	#	%	#	%	#	%
No, I don't work in a core facility	317	85.0%	192	82.8%	125	88.7%
Yes, I work in a core facility that <u>provides</u> multiplexed assays	33	8.8%	29	12.5%	4	2.8%
I work in a core facility which <u>does not provide</u> multiplexed assays	23	6.2%	11	4.7%	12	8.5%
	373		232		141	

Finally, comparing the share of current users in core facilities to other types of life science research instrumentation, we find a higher proportion of core facilities in this study. For example, in 2008, 9.9% of the respondents to our microplate reader study worked in a core lab that utilized microplate reader equipment. And, in 2006, 7.0% of respondents to the DNA amplification study (including thermal cyclers and real-time PCR systems) were located in a core facility which provided DNA amplification services.





## QUESTION 93.

### Question:

How many years of experience do you have with multiplexed protein assays?:  
\_\_\_\_\_ years

### Rationale:

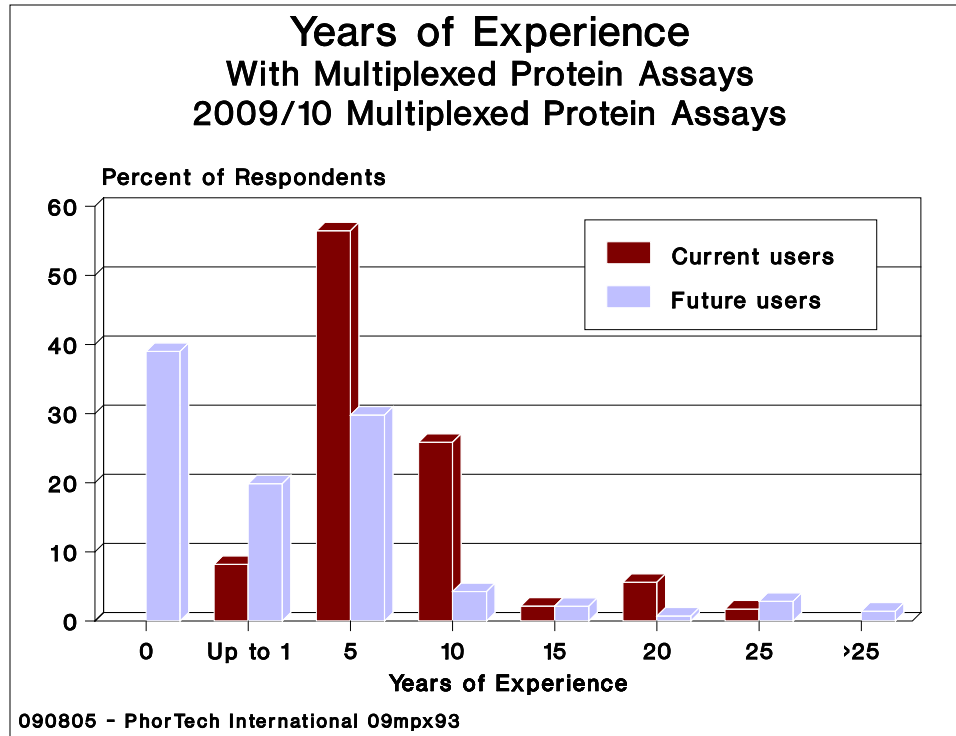
This next demographic question examines the amount of experience contained in our respondent pool. To obtain a variety of perspectives, we hope to obtain a range of responses from respondents who are just starting to those with several years of experience. Since this is a relatively new technique, we do not expect to see values in the 20-year average seen in traditional areas of bioresearch such as amplification and electrophoresis.

We will examine the level of experience for all respondents and separately, for respondents working in core facilities providing multiplexed protein assays.

### Results:

The 373 researchers who answered this question report from zero to 30 years of experience for a combined total of 1,812 years of experience with multiplexed protein assays. On average, these respondents have 4.9 years of experience with a median of 3 years and mode of zero. This latter group consists of future users according to Question #1. It makes more sense to examine the responses of current and future users separately. As shown in the following vertical bar graph, some future users already have a considerable amount of experience with multiplexed protein assays.





The following table shows the statistical experience level for current users and those not currently involved, although some of these have clearly worked with multiplexed protein assays in the past, perhaps referring to flow cytometry. Looking ahead, researchers reporting more than 15 years of experience appear to have embraced current methodology. Most have acquired new instrumentation in the past four years, and one-half are running bead-based arrays while the other half are using planar or positional arrays.

Years of Experience for Current and Future Users of Multiplexed Protein Assays

Usage	# Resps	Total	Mean	Median	Mode
Currently using/analyzing data	232	1,397	6.0	5.0	5.0
Planning to start in < 18 mths	141	415	2.9	1.0	0
Total	373	1,812	4.9	3.0	0

### Analysis:

Compared to the 10+ average experience level for more traditional areas studied recently, such as electrophoresis and molecular biology reagent usage, we would expect to see a relatively lower level of experience with this much newer technology of multiplexed protein assays.





# X. THE QUESTIONNAIRE





## 2009 Multiplexed Protein Assay Systems Survey

To begin, please enter the UserID and password from your survey invitation here:

User ID

Password

Next

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## 2009 Multiplexed Protein Assay Systems Survey

Thank you for taking time to answer our survey questionnaire. This survey is for researchers currently using (or planning to use) multiplexed protein assays. We estimate that completing this survey will take you 12 minutes or less.



We will be pleased to send your choice of a nice selection of free gifts as a thank you for taking part in the survey. You can choose between a new limited edition tee shirt with the message “When it comes to multiplexing, my opinion counts” (in M, L or XL). The specially commissioned graphic is shown at left.

You can also select a gift card good for a full pound of Starbucks coffee (House Blend), our quality laser pointer (a great gift item), an Inova brilliant LED keychain microlight, a crisp new 5 Euro banknote, a \$7 gift certificate good for on-line purchases at Amazon.com, or a \$7 gift card to Barnes & Noble, good towards a book, CD, or cup of coffee on us.

Alternatively, we are also offering the option to donate \$7 in your name to [Habitat for Humanity](#) instead of receiving a personal gift.

Please be sure to select your choice of free gift at the end of the survey. Thank you for participating.

Do you currently use or plan to start using multiplexed protein assays and do you run the assays in your lab?

- Yes, I currently use multiplexed protein assays that are run in our own lab.
- Yes, I currently use multiplexed protein assays but analyze results run by a core/central facility.
- Yes, I currently use multiplexed protein assays but analyze results provided by a commercial service company.
- No, I do not currently use multiplex assays, but I plan to start in the next 18 months
- No, I do not currently use, nor plan to use multiplexed protein assays.

Next

0%  100%



## 2009 Multiplexed Protein Assay Systems Survey

**In the first question, you indicated that your multiplex protein assays are run by an outside service vendor.**

Please identify the vendor performing your multiplexed protein assays.

Next

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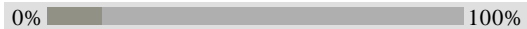
## 2009 Multiplexed Protein Assay Systems Survey

You can answer the following questions based upon your own personal multiplexed protein assay work or based upon the combined usage of your laboratory.

Will you be answering questions based upon your individual usage or based upon the combined usage of your laboratory?

individual     laboratory

Next

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## 2009 Multiplexed Protein Assay Systems Survey

**You indicated that you will be describing multiplexed protein assay usage based upon the combined usage of your laboratory.**

Please let us know how many researchers in your laboratory are currently using multiplexed protein assays and are covered by your laboratory's budget.

researchers currently using multiplexed protein assays and covered by the lab's budget

Next

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## 2009 Multiplexed Protein Assay Systems Survey

### Let's begin with a couple of questions about your research.

What best describes your broad area of research or testing? (*Best SINGLE answer, please*).

- Basic research
- Clinical diagnostics
- Clinical/translational research
- Clinical trials
- Diagnostic development
- Drug discovery
- Preclinical drug development
- Other (*Please specify*):

For which specific research activities do you use or plan to use multiplex protein assays? (*Please check ALL that apply*).


- ADME
- Biomolecule identification/development
- Isotyping
- Primary or secondary screening
- Protein expression profiling
- Protein-protein interaction
- Protein-small molecule interaction
- Target development
- Tissue typing
- Toxicology
- Other:

Next

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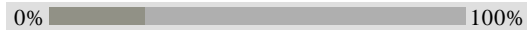
## 2009 Multiplexed Protein Assay Systems Survey

**Next, we would like to ask you about the multiplexed protein assays you currently use.**

Considering your  usage, what classes of proteins do you study? (*Please select ALL that apply*).

- Intracellular signal transduction protein
- Receptor and/or cell surface protein
- Secreted protein
- Globally expressed proteins
- Other:

Next

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## 2009 Multiplexed Protein Assay Systems Survey

Considering your **SCRIPT** usage, in which of the following application areas do you currently use multiplexed protein assays? (*Please select ALL that apply*).

- |   |  |
|---|--|
| <input type="checkbox"/> Adipokines/adipocytes              | <input type="checkbox"/> Growth factors                      |
| <input type="checkbox"/> Apolipoproteins                    | <input type="checkbox"/> Hormones                            |
| <input type="checkbox"/> Alzheimer's markers                | <input type="checkbox"/> Hypoxia markers                     |
| <input type="checkbox"/> Angiogenesis                       | <input type="checkbox"/> Inflammation (cytokines/chemokines) |
| <input type="checkbox"/> Apoptosis and caspase assays       | <input type="checkbox"/> Metabolic disease markers           |
| <input type="checkbox"/> Cancer biomarkers                  | <input type="checkbox"/> Neuropeptides                       |
| <input type="checkbox"/> Cardiovascular markers             | <input type="checkbox"/> Neurology markers                   |
| <input type="checkbox"/> Cell signaling/signal transduction | <input type="checkbox"/> Obesity                             |
| <input type="checkbox"/> Diabetes                           | <input type="checkbox"/> Pituitary hormones                  |
| <input type="checkbox"/> Endocrines                         | <input type="checkbox"/> Serum immunoglobulin assessment     |
| <input type="checkbox"/> Fertility markers                  | <input type="checkbox"/> Transcription factors               |
| <input type="checkbox"/> Glycoproteins                      | <input type="checkbox"/> Other: <input type="text"/>         |

Next

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## 2009 Multiplexed Protein Assay Systems Survey

What are your main reasons for using multiplexed protein assays? *(Please explain in detail in the space below).*

Are you satisfied with the results of these assays? Are you realizing the benefits you anticipated compared to single-plex ELISA assays?

Next

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## 2009 Multiplexed Protein Assay Systems Survey

Regarding the source of these samples, please identify the species of samples you are using for these multiplexed assays. (*Please check ALL that apply.*)

- Human
- Mouse
- Rat
- Non-human primate
- Other: (*Please specify*)

And, what types of samples are you using in this work? (*Please check ALL that apply.*)

- Cell culture supernatant
- Cell extract/lysate
- Plasma
- Serum
- Tissue
- Other (*Please specify*):

Next

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## 2009 Multiplexed Protein Assay Systems Survey

Again, considering your **[SCRIPT]** usage, please estimate the number of samples you assay per week for each application you indicated using and the typical plex level for each application. *(Please start with your most numerous application)*

	Application	Number of Samples Assayed per Week	Estimated Plex Level
a.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
b.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
c.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
d.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
e.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
f.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>

How do you expect your number of samples and/or plex level to change in the future?

Have you ever thought about drilling down from a high-content array to a highly specific low-content array - or vice versa?

Yes    No    Don't know

If yes, please explain.

Next

0%  100%

## 2009 Multiplexed Protein Assay Systems Survey

Considering your  usage, how much do you spend on multiplexed protein assay consumable products in a typical year? Please include assay kits and reagents plus associated media in your totals. **DO NOT include instrumentation costs.** *(Please specify both the amount and the currency.)*

per year on average in

What percent change do you foresee in your use of multiplexed protein assays over the coming 18 months? *(Please enter an estimate and indicate if positive or negative.)*

%  Increase  Decrease  No change

Next

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## 2009 Multiplexed Protein Assay Systems Survey

For each of your major multiplexed protein assay applications, please identify your major supplier(s), and indicate the percent of your budget for multiplexed protein assay consumables spent with that supplier. *(Please begin with your major applications and suppliers and continue to fill the table).*

	Application Used	Supplier	Percent of Budget
a.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
b.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
c.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
d.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
e.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>
f.	Select Application: <input type="text"/>	<input type="text"/>	<input type="text"/>

Why did you choose products from these suppliers for your multiplexed protein assay consumables? *(Please be as specific as possible and be sure we can tie the comment to a supplier and application).*

Next

0%  100%

## 2009 Multiplexed Protein Assay Systems Survey

Are there suppliers of multiplexed protein assay consumables from whom you refuse to buy?

Yes, the following:

No

If yes, please explain

because:

Next

0%  100%

## 2009 Multiplexed Protein Assay Systems Survey

Please list the improvements you would like to see in specific multiplexed protein assay consumables.

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

Now, we would like to ask you about the factors that are most important to you in performing your multiplexed protein assays and how various suppliers perform in these key areas.

From the following list, please rate the importance of each of the following factors in your decision to select a multiplexed protein assay product supplier. (Using a 10 point scale, where '1' means not at all important and a '10' means very important. You may use a rating value more than once).

	Not at all important 1	2	3	4	5	6	7	8	9	Very important 10
Multiplexing factor	<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"/>	<input type="radio"/>
Minimal hands-on time	<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"/>	<input type="radio"/>
Assay specificity/cross-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"/>	<input type="radio"/>
Affordability/value for money	<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"/>	<input type="radio"/>
Consistent quality/reproducibility	<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"/>	<input type="radio"/>
Application-specific assay panels	<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"/>	<input type="radio"/>
Reputation of supplier	<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"/>	<input type="radio"/>
Ease of ordering	<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"/>	<input type="radio"/>
Selection of available assays	<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"/>	<input type="radio"/>
Dynamic range of the assay	<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"/>	<input type="radio"/>
Time to result	<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"/>	<input type="radio"/>
User-friendliness/ease of use	<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"/>	<input type="radio"/>
Sensitivity/low signal to noise	<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"/>	<input type="radio"/>
Other: <input type="text"/>	<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"/>	<input type="radio"/>

From the alphabetic list of multiplexed protein assay product suppliers below, please indicate the suppliers you recognize. For example, you use their products on a regular basis or are familiar with their offerings. (Please select ALL that apply. Try to check a minimum of three. You may identify one additional company of your choice).

- ArrayIt Corporation
- BD Biosciences/Pharmingen
- Millipore Corporation
- MiraiBio

- ⊖ BioArray Solutions
- ⊖ Biomedical Diagnostics
- ⊖ Bio-Rad Laboratories
- ⊖ BioSource/Invitrogen
- ⊖ Clontech/Takara
- ⊖ EMD/Novagen
- ⊖ Full Moon Biosystems
- ⊖ Gentel Biosciences
- ⊖ Hypromatrix
- ⊖ Illumina
- ⊖ INDOOR Biotechnologies
- ⊖ INOVA Diagnostics
- ⊖ Inverness Medical
- ⊖ Invitrogen/Life Technologies
- ⊖ Luminex
- ⊖ Marligen
- ⊖ Meso Scale Discovery
- ⊖ Multimetrix GmbH
- ⊖ One Lambda
- ⊖ Panomics
- ⊖ Primorigen Biosciences
- ⊖ Protein One
- ⊖ Qiagen
- ⊖ Quansys Biosciences
- ⊖ R & D Systems
- ⊖ Randox
- ⊖ RayBiotech
- ⊖ Sigma
- ⊖ Thermo Fisher Scientific/Pierce
- ⊖ US Biomax
- ⊖ Zeptosens
- ⊖ Zeus Scientific
- ⊖ Other

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

From the alphabetic pull-down lists of multiplexed protein assay product suppliers, please mark the one you would rank highest for each of the following factors you considered important. (You may choose a supplier more than once).

	Highest Ranking Supplier
Affordability/value for money	Select supplier: <input type="text"/>
Minimal hands-on time	Select supplier: <input type="text"/>
Time to result	Select supplier: <input type="text"/>
Selection of available assays	Select supplier: <input type="text"/>
Application-specific assay panels	Select supplier: <input type="text"/>
Multiplexing factor	Select supplier: <input type="text"/>
User-friendliness/ease of use	Select supplier: <input type="text"/>
Ease of ordering	Select supplier: <input type="text"/>
Sensitivity/low signal to noise	Select supplier: <input type="text"/>
Consistent quality/reproducibility	Select supplier: <input type="text"/>
Reputation of supplier	Select supplier: <input type="text"/>
Dynamic range of the assay	Select supplier: <input type="text"/>
Assay specificity/cross-reactivity	Select supplier: <input type="text"/>
Other: <input type="text"/>	Select supplier: <input type="text"/>

Next

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## 2009 Multiplexed Protein Assay Systems Survey

Next, we would like to ask you about the instrumentation platform(s) you use for multiplexed protein assays.

What is the brand, model and year of acquisition of the instrument platform you use to analyze your multiplex protein assays?

I use a  instrument and  model for my multiplex protein assays which was acquired in the year .

What kind(s) of multiplexed protein arrays do you currently use?

- planar or positional array (e.g. slides, microtiter plates)
- suspension array (e.g. beads)
- other type of array:
- don't know

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

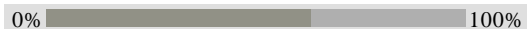
You indicated that use planar or positional arrays. Please identify the type of positional array you use.

- Slide-based positional array
- Microtiter-plate based positional array
- Other:
- Don't know

What analysis software are you using to analyze these results? Please provide the brand and product name in the space below.

Why did you choose this instrument platform and analysis software for your multiplexed protein assay work?  
(Please be as *specific as possible* and be sure we can tie the comment to a supplier).

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

Considering your **[SCRIPT]** usage, how likely are you to purchase a new instrument for use with multiplex assays within the next 12 months?

Select likelihood: ▼

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

Considering your [SCRIPT] usage, in the last question, you indicated that you are [SCRIPT] considering purchasing a new multiplex protein assay platform.

What brands and models are you considering and why? (Please explain in detail why you are considering these particular instruments in the space below).

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

Are there suppliers of multiplexed protein assay instrumentation platforms from whom you refuse to buy?

Yes, the following:

No

If yes, please explain

because:

Please list the improvements you would like to see in specific multiplexed protein assay instrumentation.

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

**In the next section, we will ask you about your future plans for new multiplexed protein assays.**

How likely are you to study new protein targets by multiplexed protein assays within the next 18 months?

Select likelihood:

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

What new applications are you considering adding? *(Please explain in detail in the space below).*

What suppliers are you considering for these new applications? *(Please be specific in the space below).*

Next


0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

Have you considered using a different assay methodology for your applications? Why or why not? Please explain below.

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

**In the next section, we will ask you about your future plans for multiplexed protein assays.**

How likely are you to purchase a multiplexed protein assay system within the next 18 months?

Select likelihood:

What applications are you considering using a new multiplexed protein assay system for? (*Please explain in detail in the space below*).

If you are planning to purchase a multiplexed protein assay system, what assay(s) and instrumentation platform supplier(s) are you considering? (*Please be specific in the space below*).

How many protein targets are you interested in analyzing simultaneously? (*Please explain in the space below*).

Next

0%  100%

## 2009 Multiplexed Protein Assay Systems Survey

Finally, please answer a few questions about your self.

How would you best describe your organization?

Select one:

What most closely fits your job description?

Select one:

How many years of experience do you have with multiplexed protein assays?

years

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

Please indicate below your primary scientific discipline.

Select one:

Do you work in a core facility that provides multiplexed protein assays?

- Yes, I work in a core facility that provides multiplexed protein assay services.
- I work in a core facility which does not provide multiplexed protein assay services.
- No, I don't work in a core facility.

Next

0%  100%

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## 2009 Multiplexed Protein Assay Systems Survey

OK. now please choose your free gift from the following list:

Select one:

**Please make sure we have your current contact information by completing the fields below:**

First Name, Last Name:	<input type="text"/>	<input type="text"/>
Organization:	<input type="text"/>	
Department:	<input type="text"/>	
Address:	<input type="text"/>	
City, State, Zip:	<input type="text"/>	<input type="text"/>
Country:	<input type="text" value="USA"/>	
Telephone:	<input type="text"/>	<i>(Not required, but helpful in case of problem delivering gift).</i>
E-mail:	<input type="text"/>	

Next

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## 2009 Multiplexed Protein Assay Systems Survey

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Sorry, but you must be currently using or planning to start using multiplexed protein assays to participate in this survey. Please stop now. We hope to invite you to a more appropriate survey in the future.

Best regards,

The PhorTech Team



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