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“Lab Manager Magazine’s Annual Investment Environment Study Of The U.S. R&D Market: 2009”

January, 2009

Conducted By:

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**“Lab Manager Magazine’s
Annual Investment Environment Study Of The U.S. R&D Market: 2009”**

January, 2009

I. EXECUTIVE SUMMARY

This survey was prepared and conducted by Martin Akel & Associates at the request of the Publisher of Lab Manager magazine. It was based on lists drawn from Lab Manager’s subscribers and the visitors to the LabX Website.

The survey sought to determine:

- A. Respondents’ demographics.
- B. Researchers’ confidence in the 2009 R&D investment environment.
- C. 2009 R&D budgets: size; trends; drivers of change; budget allocations.
- D. Trends in investments in staffing.
- E. Trends in investments in outsourcing.
- F. Trends in investments in new/remodeled laboratories.
- G. Trends in investments in new technology.
- H. How R&D investments are being maximized.

A summary of the results begins on the next page.

Executive Summary, cont.

A. RESPONDENTS' DEMOGRAPHICS

- 1. Countries In Which Respondents Work:** 100% of the survey's respondents work in the United States.
- 2. Types Of Organizations:** Two-thirds (63%) of the respondents work for commercial firms. A third (32%) work for public organizations.

	% Respondents
• Pharmaceutical mfr.	4.4
• Biotechnology company	12.6
Subtotal, Pharma/Biotech	17.0
• Food and/or beverage mfr.	2.6
• Automotive mfr.	0.8
• Fine/specialty chemicals mfr.	3.6
• Petroleum company	1.0
• Security/forensics company	0.4
• Environmental company	4.0
• Energy company	2.2
• Other industrial/manufacturing company	16.0
Subtotal, Industrial - Non-Pharma/Biotech	30.6
Subtotal, Industrial	47.6
• Private research institution	9.2
• Contract research organization	6.0
Subtotal, Commercial Firms	62.8
• Hospital or medical center	8.8
• University or college	17.0
• Government	6.4
Subtotal, Public Organizations	32.2
• Other	5.2

3. Examples Of Respondents' Organizations: Many respondents provided their contact information to be eligible for the survey's incentives. Examples of their organizations ...

- Agilent Technologies.
- Alabama Department of Forensic Sciences.
- Analytical Food Labs.
- August Schell Brewing Co.
- Battelle.
- Baum Harmon Mercy Hospital.
- Bethesda North Hospital.
- Boston University Medical School.
- Burnham Institute for Medical Research.
- California Pacific Medical Center.
- Columbia University.
- Community Hospital.
- ConAgra Foods.
- ConocoPhillips Co.
- Elan Pharmaceuticals.
- Florida Department of Citrus.
- FMC Biopolymer.
- GE Analytical Instruments.
- General Motors R&D.
- Gulf Coast Biofuels, LLC.
- Honeywell Resins and Chemicals.
- Ironwood Pharmaceuticals.
- Johns Hopkins School of Medicine.
- Johnson and Johnson.
- Kansas State University.
- L'Oreal USA.
- Massachusetts General Hospital, Molecular Pathology.
- Merck Research Laboratories.
- Montana State Crime Lab.
- Nalco Company.
- New York Medical College.
- Nova Biotech.
- Novozymes Biologicals.
- Penn State
- PharmaNova.
- Public Health Madison & Dane County.
- Public Service Testing Laboratories, Inc.
- Purdue University.
- Salk Institute for Biological Studies.
- Sandia National Lab.
- Sanofi-Aventis.
- Sequoia Pharmaceuticals Inc.
- Susquehanna University.
- The Coca-Cola Company.

- The Woman's Hospital of Texas.
- Tulane University.
- UCLA.
- UMass Medical School.
- UNC -Pharmacy school.
- Univ. of Cincinnati, Molecular Genetics.
- Univ. TX Health Science Center.
- Universal Chemicals & Coatings, Inc.
- University of Florida.
- University of Michigan.
- University of Notre Dame.
- University of Texas at Dallas.
- VA Med Center.
- Vanderbilt University Medical Center.
- Velesco Pharmaceutical Services.
- Veterans Affairs Medical Center.
- Wyeth Research.
- Wyoming State Crime Laboratory.
- Zosano Pharma.

4. Annual Sales: Among the commercial organizations, the average annual sales revenues are \$1,477,580,000 (median = \$7,370,000).

% Respondents

• Less than \$1 mill.	26.5
• \$1 mill. - 4.9 mill.	18.8
• \$5 mill. - 9.9 mill.	9.6
• \$10 mill. - 24.9 mill.	8.9
• \$25 mill. - 49.9 mill.	5.8
• \$50 mill. - 99.9 mill.	8.0
• \$100 mill. - 499.9 mill.	6.4
• \$500 mill. - 999.9 mill.	3.2
• \$1 bill. - 1.9 bill.	2.2
• \$2 bill. - 4.9 bill.	3.2
• \$5 bill. - 7.4 bill.	0.6
• \$7.5 bill. - 9.9 bill.	0.6
• \$10 bill. - 14.9 bill.	0.3
• \$15 bill. - 19.9 bill.	0.3
• \$20 bill. or more	5.4

5. Job Titles: Two-thirds of the respondents (63%) hold management positions, and a quarter (24%) hold research staff positions.

	% Respondents
• Corporate management (CEO, president, VP, etc.)	11.8
• Lab supervisor/manager/director	36.7
• R&D supervisor/manager/director	8.2
Subtotal, Lab/R&D Management	44.9
• Core facility manager/director	1.8
• QA / QC manager/director	2.5
• Project manager/director	2.4
Subtotal, Management	63.4
• Research scientist	12.4
• Chemist	7.5
• Principal investigator	2.0
• Engineer	1.6
Subtotal, Research Staff	23.5
• Academic department head	0.0
• Academic - faculty	5.5
Subtotal, Academic Titles	5.5
• Purchasing agent	1.1
• Other	6.5

6. Whether Respondents Have Subscriptions To Lab Manager Magazine: Almost two-thirds (60%) have subscriptions to Lab Manager magazine.

7. Whether Respondents Visit LabX: Two-thirds (66%) have visited the LabX Website.

% Respondents

• Within the last 3 months	41.9
• 3 - 6 months	11.5
Subtotal, Within Last 6 Months	53.4
• 7 - 12 months	7.0
Subtotal, Within Last 12 Months	60.4
• 13 - 24 months	2.7
• 25 - 36 months	0.6
• Longer than 36 months ago	2.7
Subtotal, Have Visited LabX	66.4
• Never	33.6

CONCLUSIONS: The survey respondents were drawn from the audiences of Lab Manager magazine and the LabX Website. They work for both public and commercial U.S. organizations that conduct R&D ... including organizations of all sizes. The majority hold management positions within their organizations.

Therefore, the respondents are well qualified to respond to questions regarding their organizations' current investments in R&D.

Executive Summary, cont.

B. CONFIDENCE IN THE 2009 R&D INVESTMENT ENVIRONMENT

- 1. Confidence In The 2009 R&D Investment Environment:** Professionals indicated their level of confidence they have in the ability of their markets and their organizations to make investments in R&D in 2009. They rated 10 different environmental factors.

The areas professional have the greatest confidence in are *“senior management’s understanding and appreciation of the role of R&D in the organization’s success”, and “confidence that there will be sufficient funds to maintain the proper work space and environment.”*

The areas professional have the least confidence in are *“sufficient funds to properly staff R&D initiatives” and “sufficient funds to acquire the technology necessary to achieve R&D objectives.”*

However, within each of the 10 factors, two-thirds or more demonstrate a degree of confidence that there will be adequate commitments and resources to enable them to conduct their work properly in 2009.

(Ranked based on Very Confident + Confident + Somewhat Confident)

	% Respondents					
	Very Confident	Confident	Sub-Total	Somewhat Confident	Sub-Total	Not Very Confident
a. Confidence that your organization’s senior management understands/ appreciates the role of R&D in the organization’s success.	41.6	30.4	72.0	16.0	88.0	11.9
b. Confidence there will be sufficient funds to maintain the proper work space and working environment.	14.7	35.5	50.2	34.0	84.2	15.8
c. Confidence that investments will be made to gain access to the proper background information for the R&D process (e.g., databases of research papers, patents, standards, chemical reactions, books, etc.).	16.9	34.6	51.5	31.4	82.9	17.1
d. Overall confidence that your organization will support or attract the required funding for R&D initiatives.	14.6	35.9	50.5	31.7	82.2	17.8

(continued)

(Ranked based on Very Confident + Confident + Somewhat Confident)

	% Respondents					
	Very Confident	Confident	Sub-Total	Somewhat Confident	Sub-Total	Not Very Confident
e. Confidence that your organization's senior management is willing to make the necessary investments to achieve research objectives.	26.2	31.3	57.5	23.0	80.5	19.5
f. Confidence that investments will be made to outsource work when required to achieve your R&D objectives.	15.4	29.1	44.5	33.5	78.0	22.0
g. Confidence that your market sector will be robust enough to support or attract significant R&D investments.	15.7	26.7	42.4	34.9	77.3	22.7
h. Confidence that the proper investments will be made in the training/continuing education of R&D management and staff (courses, professional meetings, etc.).	11.8	26.4	38.2	35.2	73.4	26.6
i. Confidence there will be sufficient funds to acquire the technology necessary to achieve your R&D objectives (i.e., equipment, systems and instruments).	9.2	25.6	34.8	34.6	69.4	30.6
j. Confidence there will be sufficient funds to properly staff R&D initiatives (appropriate compensation, additional staff if necessary, etc.).	7.8	21.6	29.4	34.2	63.6	36.5
k. Average Combined Confidence Percentages (All 10 Factors Combined)	20.0	28.6	48.6	30.4	79.0	21.0

Note: Those indicating "does not apply" to any factor were not tabulated for that factor.

2. **“2009 R&D Investment Environment Confidence Index”:** The above results were used to create the first-ever *“R&D Investment Environment Confidence Index.”* To calculate the index scores, a value was assigned to each respondent’s answer for each of the 10 factors ...

- Very Confident = 100 points
- Somewhat Confident = 50 points
- Confident = 75 points
- Not Very Confident = 25 points

In addition to confidence index scores for each of the 10 factors, all scores were consolidated to determine a single, “Combined Average Confidence Index Score.”

The maximum score for any factor is 100 points. The index shows that in 2009 professional’s confidence ranges between 50 points and 75 points on any given factor ... i.e., between “Somewhat Confident” and “Confident” that they will have the support and resources to properly conduct their R&D projects.

Of special note is the respondents’ confidence in their organizations’ senior management ... that they understand/appreciate the role of R&D, and that senior management is willing to make the necessary investments to achieve research objectives.

**Average
R&D Investment Environment
Confidence Index Score
(Out Of A Maximum Score
Of 100 Points)**

- | | |
|---|-------------|
| a. Confidence that your organization’s senior management understands/appreciates the role of R&D in the organization’s success. | 75.5 points |
| b. Confidence that your organization’s senior management is willing to make the necessary investments to achieve research objectives. | 66.0 points |
| c. Confidence that investments will be made to gain access to the proper background information for the R&D process (e.g., databases of research papers, patents, standards, chemical reactions, books, etc.). | 62.8 points |
| d. Confidence there will be sufficient funds to maintain the proper work space and working environment . | 62.3 points |
| e. Overall confidence that your organization will support or attract the required funding for R&D initiatives. | 61.8 points |

(continued)

(continued)

**Average
Investment Environment
Confidence Index Score**
(Out Of A Maximum Score
Of 100 Points)

f. Confidence that investments will be made to outsource work when required to achieve your R&D objectives.	59.5 points
g. Confidence that your market sector will be robust enough to support or attract significant R&D investments.	58.9 points
h. Confidence that the proper investments will be made in the training/continuing education of R&D management and staff (courses, professional meetings, etc.).	55.9 points
i. Confidence there will be sufficient funds to acquire the technology necessary to achieve your R&D objectives (i.e., equipment, systems and instruments).	53.4 points
j. Confidence there will be sufficient funds to properly staff R&D initiatives (appropriate compensation, additional staff if necessary, etc.).	50.2 points
k. Combined Average Confidence Index Score (All 10 Factors Combined)	60.6 points

(continued)

When we look at the Combined Average Confidence Index by various demographics, we see that commercial organizations are more confident in the investment environment than public organizations. There is no major difference in confidence based on size of organization. And, corporate management is more confident than management overall or research staff members. University/college faculty members are the least confident.

**Combined Average
Investment Environment
Confidence Index Score***
(All 10 Factors Combined)

a. Total (All Respondents) **60.6 points**

b. By Type Of Organization

• Pharma/biotech companies	67.1 points
• Industry (non-pharma/biotech)	60.1 points
• All industry	62.8 points
• All commercial firms (incl. private/contract research)	63.3 points
• Hospitals/medical centers	57.5 points
• Universities/colleges	53.9 points
• Government agencies	46.7 points
• All public organizations (hospitals/colleges/gov't.)	53.4 points

c. By Size Of Organization (R&D Budget)

• Less than \$250K	62.2 points
• Less than \$500K	62.4 points
• \$500K or higher	61.9 points
• \$1 mill. or higher	60.9 points
• \$5 mill. or higher	60.3 points

d. By Job Title

• Corporate management	70.7 points
• All management	61.9 points
• Research staff	59.9 points
• University/college faculty	47.9 points

*Out of a maximum score of 100 points.

2. Comments On Organization's Ability/Willingness To Invest In R&D: Professionals commented on their overall level of confidence in their organization's ability and willingness to properly invest in R&D in 2009. Shown below are sample comments. See the body of this report for all remarks.

a. Positive Comments

- Budgets are set with sufficient funds and will not be changed
- Very Confident that R& D efforts will continue, but the priorities may change to projects with less capital expense.
- Confidence is high.
- At this time the indications are positive for 2009
- According to internal statements from senior management we should be OK in the near future. But one can never, ever fully trust such statements. They can be self-serving.
- Approved & good to go, taking risk despite tight cash
- As a small business we can move and adapt very quickly. This makes me more confident of our success. We have also partnered successfully with a local university to support our efforts.
- CONFIDENT MORE THAT THE COMPANY WILL FUND IDEAS WITH A QUICKER LIFE CYCLE THAN THEY USED TO. A QUICKER ROI NEEDED THESE DAYS.
- Confident we will maintain present levels
- Current levels of activity should provide a stable base of revenue to support new programs.
- Even though the economy is tough right now, our R&D budget for 2009 was increased by 10%.
- Given the grant agency funding outlook, somewhat confident over the next 3-4 years.
- Guarded confidence
- Hard but the support is there
- Highly confident that we will be able to attract investments for R&D
- I am confident that we will do everything possible not to downsize the R&D department in 2009; however, I do not expect increases in funding, or purchasing new equipment.
- I am confident that sufficient investments are forthcoming; however, the present global economy will make it very difficult.
- I am very positive about it.
- I am reasonably confident that carefully planned, measured investment steps will be taken, based on purchases and other planning that has already begun.
- Our organization excels in bringing in the investors needed to continue our unique types of R&D. We have a Biosafety Level 4 lab.

- Our organization is positioned to take full advantage of trends in R&D in 2009.
- Our organization is very careful about resource funding. We prioritize and allocated accordingly. We may have to scale back if the market dictates, but we will meet our overall objectives.
- Our organization will give us the necessary tools, equipment and R&D support when we put together a legitimate business case.
- Our overall confidence level for our ability to invest in R & D is high to very high provided we are able to gather enough information that supports investment in R & D is a wise business decision.

b. Negative Comments

- 2009 will be funded, beyond 2009 is an issue.
- Credit crunch is having a severe impact
- I believe my organization will not focusing or allocating as much funds as in the previous years. Due to the economy we have taken many cuts throughout the past year, which will continue through the first half of this year.
- American business is based on quarterly earnings, impossible to make significant R&D advancement in that atmosphere
- Current state revenues are eliminating funding for applied research and severely impacting the availability to add the proper work spaces to meet the growing demand.
- Company knows the urgency and important of investing in R&D but no funds available due to economy down turn in 2009
- Despite the cutback from 2008, in 2009 I believe that the funding will be sustainable.
- Only projects with direct and short term payoffs are being considered for continuation.
- Given the current fiscal situation very little will be spent on R&D in 2009 and possibly in 2010 as well.
- I am confident in my organization's willingness to invest in R&D, but not confident that there is enough fund to support it.
- I am not confident that smaller biotechs will survive through 2010
- My organization understands the importance of R&D. However, the market for our products is depressed, the credit markets are closed, so the funding simply may not be there.
- Our endowment has taken a hit, just like everyone else's. The will is there, but the way may not be.

- Our management is in cut mode to meet quarterly financial objectives. I have no confidence that we will properly support R&D in 2009.
- Overall, confidence rather low. Administration "wait-and-see" rather than "go-and-get". Too afraid to gamble a little and put faith in their own people.
- The organization is doing intensive R&D, but for the next level investment is needed and it is hard to come by these days.
- Though this University supports R& D Objectives, I doubt very much that something will be done due to CUNY (City University of New York) budget cut backs.
- We are a public university. The state has already mandated 2 rounds of across the board cuts.
- We are already in the process of dealing with a 25% budget cut
- We are willing to invest if we had the capital, capital is scarce
- With public or venture money more difficult to access confidence has to be low.

c. Neutral Comments

- The funding markets look tight. but there is usually money looking for good return in basic understandable endeavors. dietary supplements and functional foods look to remain strong or even strengthen during the current downturn.
- 2009 is going to be a challenging year for business survival, never mind business profit; however, as we ramp up to a "green economy," I have every confidence that our R&D investment decisions will produce measurable ROI.
- Due to the changes on the automotive industry my opinion we are looking at some very lean years in my automotive work. My hope is that my oil work will offset the loss of OEM business.
- As a government agency R&D lab, we will always lag behind private industry due to the extended time between planning and allocation of funds.
- Due to the economic downturn and the effect it has had upon sales, a somewhat shaky confidence is in order. Will see what happens come June.
- Fingers crossed
- More and More institutions will be applying for fewer and fewer research grant dollars. Therefore, it will be rough going for a while. One must be creative in finding funding.
- Organization is willing to properly invest in R&D when there is a reasonable pay back.
- While spending is being curtailed, there is still money available to support specific project work.

CONCLUSIONS: This survey was conducted deep into a major recession. But based on the results, the confidence shown by most R&D professionals is remarkably positive.

Approximately eight of ten professionals (79%) are Very Confident/Confident/Somewhat Confident that they will have the commitment, support and resources to effectively achieve their R&D objectives. While we would obviously like to see an even higher level of confidence, the results are nevertheless encouraging given the environment.

Certainly -- there are those who recognize that their organizations are in harm's way ... and that the recession will have a more severe impact on their R&D efforts and their ability to succeed. Those with more negative expectations represent a fifth of the market (21% Not Very Confident) ... which is of course a significant segment, and their concerns are not to be minimized.

Executive Summary, cont.

C. THE R&D BUDGET: SIZE; TRENDS; DRIVERS OF CHANGE; BUDGET ALLOCATIONS

- 1. 2009 R&D Budgets:** On average, each organization's total 2009 R&D budget* is \$24,040,000 (median = \$300,000, recognizing that the survey respondents represent organizations of all sizes).

*Including all staffing costs and expenditures for products, equipment, systems, raw materials, services, facilities, new/upgraded labs, etc.

% Respondents

• Less than \$25K	14.5
• \$25K - 49K	10.2
• \$50K - 99K	9.2
• \$100K - 249K	15.4
• \$250K - 499K	8.0
• \$500K - 749K	5.2
• \$750K - 999K	5.2
• \$1 mill. - 1.9 mill.	7.4
• \$2 mill. - 2.9 mill.	4.0
• \$3 mill. - 3.9 mill.	2.2
• \$4 mill. - 4.9 mill.	2.2
• \$5 mill. - 9.9 mill.	6.5
• \$10 mill. - 14.9 mill.	0.6
• \$15 mill. - 19.9 mill.	0.9
• \$20 mill. - 29.9 mill.	0.9
• \$30 mill. - 39.9 mill.	0.0
• \$40 mill. - 49.9 mill.	0.9
• \$50 mill. - 99.9 mill.	0.9
• \$100 mill. - 249.9 mill.	2.2
• \$250 mill. - 499.9 mill.	0.6
• \$500 mill. or more	3.1

2. Changes In R&D Budgets Vs. 2008: Compared to 2008, a quarter (24%) of the 2009 R&D budgets have increased, half (54%) have remained the same, and a quarter (22%) have decreased. The average overall net change in R&D budgets = +1.3%.

% Respondents

• Increased	23.8
• Remained the same	54.0
• Decreased	22.2

**Average Net Change
In R&D Budgets
2009 Vs. 2008**

a. Total (All Respondents) **+1.3%**

b. By Type Of Organization

• Pharma/biotech companies	+7.7%
• Industry (non-pharma/biotech)	-0.8%
• All industry	+2.3%
• All commercial firms (incl. private/contract research)	+3.4%
• Hospitals/medical centers	+0.9%
• Universities/colleges	-2.8%
• Government agencies	-6.7%
• All public organizations (hospitals/colleges/gov't.)	-2.5%

c. By Size Of Organization (R&D Budget)

• Less than \$250K	+5.6%
• Less than \$500K	+5.9%
• \$500K or higher	-2.2%
• \$1 mill. or higher	-1.2%
• \$5 mill. or higher	-2.0%

3. Likely Change In R&D Budgets For 2010: And at this point in time (January '09), 28% of the professionals predict increases in their overall R&D budgets for 2010, 47% predict no change and 25% foresee decreases. (29% indicate that it's too early to estimate ... those respondents are not included in the data below.)

Among those with predictions, the average overall net change will be +4.9%.

% Respondents

• Likely increase	28.1
• Likely remain the same	47.4
• Likely decrease	24.5

4. How The Economic Recession Is Impacting R&D Investments: Three-quarters (74%) of the researchers indicate that the economic recession is having a significant impact on their organization's R&D investments. A quarter (26%) are finding there is no significant impact.

The most conspicuous effects -- “no new hires” (50%), “funding for new R&D equipment/systems has been reduced/is on hold” (40%), and “funding for new labs or lab renovation has been reduced/is on hold” (36%).

% Respondents

• No new hires for R&D	49.8
• Funding for new R&D equipment/systems has been reduced/is on hold	40.2
• Funding for new labs or lab renovation has been reduced/is on hold	36.2
• Funding for training/industry meetings has been reduced/is on hold	31.0
• Raises in R&D have been frozen/postponed	28.9
• We are conducting fewer R&D projects	25.9
• Funding for outsource services has been reduced/is on hold	20.3
• There have been or will likely be layoffs in R&D	16.5
• Other significant impact	7.1
Subtotal, Being Impacted By Economic Recession	74.1
• No significant impact	25.9

5. Comments On The Drivers Causing Change In R&D Investments: Researchers commented on whether their organizations' R&D investment trends show growth, decline or no change, and the "drivers" that are causing that trend. Shown here are selected comments. See the body of this report for all remarks.

a. Positive Comments

- A small amount of growth due to the current interest in alternative fuels for aerospace.
- Business is growing. I am small and get projects by networking and referrals. Perhaps the "Big Boys" are cutting back on customer support and small volume product development, and I pick up what they turn down.
- Currently there is no change. If the product is moderately successful then I believe upper management will increase the budget in 3rd and 4th quarters of 2009.
- Definite growth.
- Definitely there's an increasing trend. Market competitiveness drives this trend.
- Government and defense requirements dictate an increase in program support.
- Growth - competition.
- Growth - gaining new customers.
- Growth. Many companies outsource their specialty needs to us. As companies downsize, the need for outsourced specialty support increases. We have high projected sales this year due to the downsizing trend.
- Growth as more customers are approaching.
- Growth due to partners and clinical trial results.
- Growth because of better technology.
- Growth in the molecular diagnostics field is happening at an outstanding rate. Our organization has committed to keeping up with that trend.
- Growth, new market opportunities.
- Growth. Driven by the aging population.
- Increase growth, drivers - moving into preclinical trials.
- Increased R&D investment driven by increase in venture capital awarded.
- Investment trend shows no change for 2009. Successful launch of several new products for key markets that are currently in late development phase is the reason for no change in the budget for 2009. New CEO places heavy emphasis on R&D also.
- It should increase at the rate of inflation only.
- It shows a no change presently and is mainly due to present availability of funds.

- Likely to be growth - main driver is NIH funding levels.
- Need to open new markets, so R&D is critical.
- Our companies R&D investment trend shows growth. The primary driver for this is, in a slow economy we need to find faster, more efficient methods for producing our end products as well as producing newer and more innovative solutions.
- Our growth is on the rise. This is because our company is a growing company. The more investments we procure, the more moneys go to R&D. Its a waiting game. Even though my own thoughts are that the more we invest in R&D the faster our growth would be.
- Predict growth due to larger companies outsourcing their R&D efforts to companies such as mine.

b. Negative Comments

- Profit margins rule. No incentive to perform R and D.
- Due to inflation, there will be a net decrease in buying power, although the budget itself is relatively stable.
- 2009's R+D will be substantially less than 2008 because of reduced corporate profitability.
- A decline is anticipated due to the delay in project activity by our clients.
- Decline is evident based on the automotive industry.
- Decline for 2009. Capital investments drying up.
- Decline. Driven by no immediate return on R&D investment.
- Decline for 2009 - global recession.
- Decline! Stock price and credit availability put a premium on keeping current infrastructure in place and functioning properly. R&D projects present a risk to capital unless a project can be completed quickly with a high probability of success.
- Funding agencies, federal, state, and philanthropic organization curtailed budgets.
- Likely decline with economy and less company capital as the main driver.
- Most likely a decline. Most of money going into sales of existing products.
- Most likely there will be a decline in R&D for 2009. The single largest driver is the fiscal health of the company.
- Our state is in a budget crisis and they will cut the education budget first.
- Overall economic downturn mandated cuts by state.

c. Neutral Comments

- Decline in "soft" spending for travel, education, conferences etc. Money available for product R&D.
- No change. most agencies are flat funding for the coming year.
- No change. Drivers being possible new applications suggested by clients for existing products.
- No change. We're waiting on the rest of the world.
- No change. Funded by the principle investor/president.
- No change with private supporters compensating for federal and state declines.
- Decline initially for 2009 but expect to end in growth.
- Fully depends on government spending and grants to nat'l. Labs and Universities.

6. How R&D Budgets Are Allocated By Area Of Expenditure: 2009 R&D budgets are allocated as shown below. The largest areas are "Management & Staff Compensation" (36%) and "Raw Materials/Commodities/Consumables/Technology" (37%).

	<u>% Budgeted For This Area Of Investment</u>	<u>% Of Total Budget</u>
a. Management & staff compensation	89.8	35.7
b. Facilities (lab construction/modernization, lab furniture, utilities, etc.)	88.3	12.9
c. Raw Materials (chemicals, reagents, metals, other materials)	90.3	13.2
d. Commodity/Consumable Products (glass & plasticware, filtration membranes, pipettors, gloves, racks, etc.)	90.3	9.2
e. Technology (equipment/instruments/systems, including related service & maintenance)	87.4	14.3
Subtotal, Raw Materials, Commodities, Technology	-	36.7
f. Education (training, industry meetings, information databases, etc.)	100.0	5.3
g. Outsourced services	50.5	4.9
h. Other	30.1	4.5
		100%

7. Comments On Significant Changes In The 2009 R&D Budget: Among organizations that have recently experienced significant changes in their R&D budgets, professionals described the changes. Shown here are selected comments. See the body of this report for all remarks.

a. Positive Comments

- As the profile of our company increases throughout 2009, we will be in a position to increase our R&D and hire more staff.
- Awarded additional programs that require corporate wide expansion.
- Increase across the board.
- Increase in R&D in preparation for new clinical product evaluation.
- Increased R&D investment driven by increase in venture capital awarded.
- Increases in staffing costs due to acquisition of new senior research staff.
- Our funding is up from last year. We expect our funding to be up for next year. This is due to the growth of this new company.
- We added a Lab Manager to our staff.
- We've just won a grant, a first for the company so there will be a large influx of funds.

b. Negative Comments

- All organizational budgets, including our R&D budget, will be slashed by 4.5 % this year.
- Budget reduced by 8%.
- 30% decrease overall. Early retirements. Loss of knowledge base. 50% reduction in operating budget.
- 50% decrease in funding.
- We have been asked to reduce consumable costs by 10%.
- Staffing (newly created positions) has been frozen.
- Cutbacks in people and travel.
- No instrument service contracts; no technical support for research; reduced spending on instruments and chemicals.
- Downsizing and reducing the project load.
- Money saving is up. Delaying purchases and reducing expenses to play it safe for the short term future.
- There is a freeze on hiring, travel, and spending of any sorts.
- The future is so blurred that we can't accurately project at this time.
- Entire change in "chain of command" eliminating Assistant Manager all together.

- Budget items related to staffing, (compensation, overtime, hiring, & training), recently received a \$137,000.00 decrease in funding.
- Expansion of facilities scheduled to begin in spring 2009 has been put on hold indefinitely. Big projects cut, people laid-off, capital investment postponed.
- Consolidation of facilities from two to one.
- Contracts for 2009 OEMs automotive on hold or eliminated from the opportunities for this lab.

c. Neutral Comments

- No changes just orders to conserve if possible, and ordering capital equipment requires a few more signatures.
- Tighter budget controls.
- Looking for angel investors to fund research and commercialize technology.
- No significant changes - just more careful about selecting the projects that require funding.
- CEO has to prove any expenses over \$1000.
- Freeze on new hires (support staff - grant supported hiring O.K.) Cut in state share of health benefits.
- No increase in R&D personnel.
- More in house R&D.
- No changes in the R&D budget from the better part of last year.
- New positions have been approved but will not be filled until confidence in economy is restored.

CONCLUSIONS: Compared to 2008, overall 2009 R&D budgets are in a state of flux ... with half remaining the same, a quarter increasing and a quarter decreasing. Smaller organizations are seeing minor budget increases and larger ones are seeing minor budget decreases.

Expectations for budgets in 2010 are showing only a minor increase. In today's economic climate, approximately "flat" is likely to be accepted by most as adequate.

The primary effect of the recession is "no new hires" ... with a relatively small number (17%) having seen or expecting to see layoffs. While 17% is significant to those affected, it is nevertheless less than one-fifth of the organizations taking that action.

And although a number of organizations are seeing "*funding for new R&D equipment/systems reduced/on hold*" (40%) and "*funding for new labs or lab renovation reduced/on hold*" (36%), the actual reductions do not appear to be extremely severe in the market overall (see sections F and G below).

Executive Summary, cont.

D. TRENDS IN INVESTMENTS IN STAFFING

- 1. Number Of Professionals Working In R&D:** On average, 1,477 managers and staff members work in R&D in each respondent's organization (median = 19). This wide spectrum is of course reflective of the wide range and types of organizations responding.

Number Working In R&D ...

	<u>At Respondent's Location</u>	<u>Throughout Entire Organization</u>
a. Managers		
• Average:	32	150
• Median:	2	4
b. Staff Members		
• Average:	145	1,302
• Median:	6	15
c. Total (Managers + Staff)		
• Average:	168	1,477
• Median:	8	19

2. Percent Of Staff Turnover In 2008: In 2008, 44% of the organizations experienced turnover of R&D managers/staff members (i.e., the number of people replaced due to resignations, terminations, promotions, retirements, graduations, etc.). The average turnover per organization overall was 6.0% of employees.

	% Respondents
• 0%	56.1
• 1 - 10%	31.0
• 11 - 20%	6.1
• 21 - 30%	2.5
• 31 - 40%	1.8
• 41 - 50%	1.0
• 51 - 60%	0.0
• 61 - 70%	0.3
• 71 - 80%	0.3
• 81 - 90%	0.0
• 91 - 100%	1.0
Subtotal, Number With Employee Turnover	43.9

3. Change In The Number Of R&D Professionals - 2009 Vs. 2008: Compared to 2008, 16% of the respondents' locations expect increases in R&D managers/staff members in 2009; 72% expect no change; and, 12% expect a decrease. The overall average number of employees will likely decline by 2.2%.

• Likely increase	16.4
• Likely remain the same	71.9
• Likely decrease	11.7

4. Change In The Compensation Budget - 2009 Vs. 2008: Compared to 2008, 22% of the locations are experiencing increases in the total R&D compensation budget for all managers/staff members. 2009 budgets remain the same at 70% of the locations, and are decreasing at 8% of the locations.

All totaled, compensations budgets have increased by an average of 2.6%.

% Respondents

• Increased	22.2
• Remained the same	70.0
• Decreased	7.8

5. Changes In Compensation Packages: Compared to 2 - 3 years ago -- when new R&D hires are now made, 25% of the compensation packages are now higher, 15% are lower, and 60% are about the same.

% Respondents

• Much higher	2.4
• Moderately higher	22.8
Subtotal, Much Higher + Moderately Higher	25.2
• About the same	59.9
• Moderately lower	10.5
• Much lower	4.4
Subtotal, Moderately Lower + Much Lower	14.9

6. Comments On Whether Recruiting For R&D Is Now Easier Or More Difficult: Respondents commented on whether, compared to 2 - 3 years ago, it is now easier or more difficult to hire qualified professionals. Sample comments are shown here. See the body of this report for all remarks.

a. "Easier"

- Better, more competitive market.
- A bit easier. More people looking for work.
- Easier better economy more money allocated to that purpose
- Easier - more qualified people available
- Easier as the talent pool seems to have increased
- Easier because of layoffs at other companies
- Easier due to number of formulation scientist currently looking for work
- Easier, more out on the market to choose from.
- Easier, so many good people are out of work
- Easier, there is a larger pool of potential employees with experience, however these are not the cream of the crop.
- Easier, with the downturn there has been a influx of CV's with great qualifications and minimal income requirements
- I have found it very easy to recruit highly qualified professionals to be a part of our lab due to the struggle of other business sectors.
- It is becoming increasingly easier as more qualified individuals are seeking at least some manner of employment even if the reimbursement is not what they have previously been accustom to.
- Easier to find applicants, harder to get them approved

b. "Harder"

- It's much harder to hire anyone, because inflation has gone up and the amount of pay that we offer has not moved.
- More difficult because finding committed, hard working people at a reasonable salary range is time consuming and challenging to determine if they will be a good member of the team.
- More difficult - Lack of training in this specialized area
- More difficult because they fall short of minimum requirements/expertise needed.
- It is harder to bring people in from elsewhere since most own a house and can't sell in the current climate. If they can't sell the old house, then they can't buy a new one here--hence they don't accept the job offer.
- Much more difficult to recruit scientists to our faculty, due to demand for Ph.D. chemists, and lack of a tenure track position in a joint government/academic position.
- More difficult because the most qualified personnel tend to pursue their own business ventures.
- More difficult - remote location, shallow labor pool
- Difficult - Fewer applicants with specialized experience
- Difficult. more opened position than (good)candidates
- Harder due to competition with private sector
- Harder, the compensation expectations are higher than what is being offered.
- Harder-less competent people available
- Harder. More people but less experience and qualifications.
- Harder. People really have to wonder about security of leaving a job for another that is not as secure.
- Impossible. No one wants to work in a depressed industry.

7. Whether Programs Have Been Initiated To Improve Staff Productivity: In the last 2 - 3 years -- a quarter (25%) of the organizations have initiated investments or programs to increase the productivity of their R&D managers/staff members.

Examples of such initiatives and their results are shown below. See the body of this report for all comments.

- Total Rewards based on customer satisfaction.
- Raises are based on productivity.
- Percent of profits on invented products.
- Redefining how the bonus program is calculated.
- Structured safety, "borrowing" Toyota Operating System, Improved the visualization of the workplace, know more about the status of projects, decrease in safety incidents, decrease in clutter.
- Additional stock options.
- Better training.
- Bought duplicate lab equipment to get 2 batches running at once. Boosted productivity maybe 20%.
- Implemented time accounting procedures.
- Improved feedback on lab costs to staff. Better tracking of resource allocation.
- Improved time management, project management, and project reporting procedures.
- Increase education conferences attendance - worthwhile.
- Increased the usage of Laboratory Automation.
- New automated equipment, new training, collaboration with other organizations.
- New equipment.
- Upgraded equipment and added a lab manager.
- Upgraded software and computers.
- We build a new lab. We up date and up graded our equipment. We sent people to train on the new equipment. We are now able to do more inside our organization-less out sourcing.
- Increased training and mentoring initiatives.
- Investments are being made in process simulations software to reduce the amount of experimentation required to bring new products to market.
- Management classes.
- Management training courses, software.
- Project and agile management training.

- Project management software. Greater reliance on SOP.
- Requiring people to fill the breach when somebody retires or leaves. The results of this are an overworked scientific staff and poorer quality products.
- Seminars, and visits to different sites to show the new technology.
- Teamwork seminars. Project seminars. Efficiency stressed.
- We continuously conduct workshops and other exercises to improve business processes and improve productivity.

CONCLUSIONS: In 2008, less than half the organizations experienced turnover in R&D management/staff ... an overall change of 6% in employees. Three-quarters of the organizations project no change in staff for 2009* ... with the minorities that are increasing and decreasing basically canceling out one another.

Almost three-quarters are seeing no change in compensation budgets for 2009. A quarter are seeing increases and only 8% decreases.**

The trend over the last 2 - 3 years gives a slight edge to organizations seeing moderate increases in compensation packages for new R&D hires. Many organizations that are hiring are seeing more candidates and candidates who are well qualified, due to the economic conditions. However, some organizations are finding that potential candidates are now more resistant to relocating or to leaving secure jobs for new ones.

A quarter of the organizations have initiated programs in the last 2 - 3 years to increase staff productivity ... including offering compensation based on productivity, better time management, and upgrading technology to enhance productivity.

*As indicated earlier, 50% have now have a “no new hires” policy in place.

**As indicated earlier, 29% are seeing “raises in R&D have been frozen/postponed.”

Executive Summary, cont.

E. TRENDS IN INVESTMENTS IN OUTSOURCING

1. Activities Being Outsourced: Respondents indicated the percent of specific R&D-related activities their organizations will likely outsource in 2009. These are led by “routine testing” (47% outsourcing), “information technology” (29%), and “production” (26%).

	% Of All Respondents Outsourcing This Activity	Average % Of The Total Activity Being Outsourced*	Median % Of The Total Activity Being Outsourced*
a. Routine testing	47.4	21.0	10.0
b. Information technology	29.2	43.3	30.0
c. Production	25.7	48.6	50.0
d. Research	24.7	19.7	10.0
e. Development	23.1	25.3	15.0
f. Finance functions	19.0	36.7	25.0
g. Human resources	16.1	56.2	50.0
h. Facilities management	15.5	58.1	60.0
i. Purchasing	5.2	47.0	25.0

*Among those outsourcing each activity; those not outsourcing were eliminated from the average and median.

- 2. Trend In Outsourcing:** Among organizations that outsource R&D-related activities -- compared to 2 - 3 years ago, 21% have increased their outsourcing, and 16% have decreased outsourcing.

	% Respondents	
	All Respondents	Among Respondents Who Have Outsourced In The Last 2 - 3 Yrs.
• Significant increase	3.9	5.0
• Increase	12.3	15.5
Subtotal, Significant Increase + Increase	16.2	20.5
• No change	50.7	63.8
• Decrease	9.3	11.7
• Significant decrease	3.2	4.1
Subtotal, Decrease + Significant Decrease	12.5	15.8
• Have not outsourced in the last 2 - 3 years	20.6	--

- 3. Regions To Which Activities Are Being Outsourced:** Respondents indicated which regions their activities are outsourced to and how outsourcing is allocated across those regions. Virtually all (95%) outsource to U.S. organizations ... and that represents 86% of all their outsourcing activities. Only 14% of all outsourcing is conducted outside the U.S.

	% Of Organizations Outsourcing To <u>To This Region*</u>	% Of All Outsourcing Going <u>To This Region*</u>
a. United States	95.3	85.7
b. Europe	18.2	4.5
c. Canada	12.4	2.5
d. South Asia (e.g., India)	10.6	3.2
e. China	10.6	2.8
f. Southeast Asia (e.g., Singapore)	5.3	0.5
g. Latin/South America	2.9	0.4
h. Middle East	1.2	0.2
i. Elsewhere	3.5	0.3
		100%

*Among organizations that have outsourced any activity within the last 2 - 3 years.

CONCLUSIONS: As shown earlier, half the organizations (51%) are budgeted for outsource activities. Those activities represent 4.5% of overall budgets (among all respondents).

Compared to 2 - 3 years ago, there has only been a slight overall increase in outsourcing R&D activities ... with two-thirds experiencing no change.

The activities that are most frequently outsourced are routine testing and information technology.

Executive Summary, cont.

F. TRENDS IN INVESTMENTS IN NEW/REMODELED LABORATORIES

- 1. Investments In New Laboratories:** Almost half (47%) the organizations have recently invested in the construction of new laboratories, and/or have labs under construction or expect construction to begin within 24 months.

	% Respondents
• Have <u>completed</u> new lab construction within the last 12 - 18 months	24.1
• Project underway - completion within 6 months	12.2
• Project underway - completion within 12 months	5.8
• Project underway - completion within 24 months	3.5
• Project underway - completion beyond 24 months	3.1
Subtotal, Projects Underway	21.7
• We anticipate construction to <u>start</u> within 24 months	9.5
Subtotal, Projects Underway Or Are Anticipated	30.3
Subtotal, Projects Recently Completed, Underway Or Anticipated	47.1
• No recent, current, planned new lab construction	52.9

- 2. Investments In Modernizing/Renovating Laboratories:** And more than half (54%) have recently invested in lab modernization/renovation, and/or have labs under renovation or expect renovation to begin within 24 months.

	% Respondents
• Have <u>completed</u> modernization/renovation within the last 12 - 18 months	25.3
• Project underway - completion within 6 months	12.4
• Project underway - completion within 12 months	5.8
• Project underway - completion within 24 months	2.7
• Project underway - completion beyond 24 months	2.4
Subtotal, Projects Underway	21.7
• We anticipate modernization/renovation project(s) to <u>start</u> within 24 months	14.0
Subtotal, Projects Underway Or Are Anticipated	35.3
Subtotal, Projects Recently Completed, Underway Or Anticipated	53.9
• No recent, current, planned lab modernization/renovation	46.1

3. Reasons For Investing In New/Modernized Labs: Professionals offered the key reasons why their organizations are investing in new labs and/or modernization of existing labs. Sample comments are shown here. See the body of this report for all remarks.

- Additional lab space needed due to fast growth of company in 2006 through 2008.
- Advances in technology dictate that we modernize.
- Aging equipment and stricter regulations.
- Aid in development of new product lines.
- Ancient facilities.
- Current facilities are outdated.
- Attract new customers.
- Better use of space and equipment.
- Biocontainment and biosecurity.
- Clean rooms and better equipment are needed for projects.
- Company growth from Corporations outsourcing projects. We build new labs to handle the increased workload.
- Compliance with FDA and cGMP.
- Consolidation of buildings/facilities.
- Current building was not designed for R&D. Much of the space was intended for manufacturing-needs to be remodeled for research.
- Decontamination issues in cell culture --new suite.
- Enlarging school.
- Expand technology platform.
- Expanding our capabilities and reducing outsourcing.
- Globalization. We need R&D in locations where we sell products.
- Grow R&D revenue.
- Growth and change of focus require different kinds of lab space.
- Increase production capacity. Replace aging equipment.
- Increase projects developmental speed, increase loads.
- Anticipation of more business.
- Keep competitive.
- Lack of work space and buildings no longer suitable for the type of work.
- Market expansion.

- Modernized existing lab to perform special tasks.
- More space required for larger equipment and increase in laboratory personnel.
- Need for more lab space with state of the art technology.
- Need more energy-efficient equipment.
- Need more space, new equipment and environmental controls.
- Need to accommodate new staff and new technologies.
- New business, realized they needed to support.
- New capability development.
- New mission.
- New product line and new production facility. Old lab was too crowded to allow numerous people to work in it at same time.
- Obsolete equipment is removed and we are scaling up.
- Previous building was worn out.
- Proposed increase in overall R&D activity.
- Reorganization of department, trying to attract good scientists/faculty.
- The company has grown that we need more laboratory space in order to maintain the status quo in the industry.
- The modernization will be focused on the purchase of new equipment. As we grow, we are able to direct more money to the betterment of our research/analyses lab.
- To increase efficiency.
- To increase productivity.
- We are a college. Our investment in our new science building is to attract students and to provide a quality education.
- We are updating to more modern systems based on obsolete software and standard requirements.
- Were expecting on growth and add more staff.

CONSTRUCTION & MODERNIZATION COMBINED:

- 4. Lab Construction Plus Modernization Activities:** 62.1% of the respondents indicated that they have recently completed, are working on or planning new laboratory construction and/or lab modernization/renovations.
- 5. Future Aggressiveness In Investing In New/Modernized Labs:** For 2010 and 2011 -- a quarter (23%) of respondents indicated that their organizations will definitely or likely initiate new investments in lab construction and/or modernization projects. Another 18% will possibly do so (41% definitely/likely/possibly).

	% Respondents
• Will definitely initiate new investments	8.5
• Likely to do so	14.8
Subtotal, Definitely + Likely	23.3
• Will possibly do so	17.6
Subtotal, Definitely + Likely + Possibly	40.9
• Definitely not investing	13.0
• Uncertain at this time	46.1

CONCLUSIONS: Half of all R&D organizations have recently had or will have lab construction activities ... and half have or will have modernization activities. And almost half foresee such activities in 2010/2011.

Issues that are driving these activities includes aging technology that needs to be upgraded, facilities that are simply outdated, organizational growth, and the need to upgrade in order to attract customers.

Therefore, despite the recession, many labs continue to invest in construction/modernization, and many will continue to do so into the future. While the level of activity might be slower than in the past, there are nevertheless ongoing initiatives.

Executive Summary, cont.

G. TRENDS IN INVESTMENTS IN NEW TECHNOLOGY

DEFINITION: “Technology” was defined to respondents as R&D-related products, equipment, instruments or systems.

1. Change In Overall Technology Expenditures Vs. 2008: Compared to 2008, 25% of the organizations anticipate increased expenditures in R&D-related technology in 2009, 57% expect it to remain the same, and 18% expect such expenditures to decrease.

The overall expected change in spending for products, equipment, instruments or systems is +3.9%.

	% Respondents
• Likely increase	25.2
• Likely remain the same	57.0
Subtotal, Increase + Remain The Same	82.2
• Likely decrease	17.8

2. Trends In Investments In Specific Types Of Technology Vs 2008: Respondents indicated the budget trends they are experiencing in 2009 vs. 2008 in specific product categories. (Note -- each statistic is representative of organizations currently using each type of product.)

In some categories, budget “increases” are balanced out by “decreases” for a net of flat spending patterns (e.g., analytical instruments, sample prep, basic lab equipment). However, in other categories there are slight overall budget gains (software, consumables, chemicals, antibodies and various services). Only “furniture” shows a very modest overall decline.

	% Respondents*						
	Significant Increase	Increased	Sub-Total	No Change	Decreased	Significant Decrease	Sub-Total
a. Analytical Instruments/ Separation	5.6	16.9	22.5	56.5	16.0	5.0	21.0
b. Basic Lab Equipment	3.6	20.3	23.9	58.5	14.5	3.1	17.6
c. Sample Prep	2.5	15.1	17.6	71.3	9.9	1.2	11.1
d. Software	3.0	21.0	24.0	61.1	11.7	3.3	15.0
e. Lab Furniture	2.7	13.4	16.1	63.3	14.6	6.0	20.6
f. Consumables/Supplies	3.7	26.0	29.7	57.4	12.0	0.9	12.9
g. Chemicals & Biochemicals	4.1	24.8	28.9	60.9	9.3	0.9	10.2
h. Antibodies, RNA, Microarrays, PCR, Assays, etc.	3.8	17.6	21.4	69.7	7.1	1.7	8.8
i. Systems Service & Maintenance	2.4	17.9	20.3	67.9	9.4	2.4	11.8
j. Contract Research Services	2.8	11.9	14.7	72.3	11.1	2.0	13.1
k. Outsourcing Services	3.8	15.5	19.3	67.9	10.6	2.3	12.9

*Among those where products are used by their organizations.

3. Investments In Specific Types Of Technology: Respondents also indicated their likely 2009 expenditures for the same product categories.

	% Respondents		
	<u>% With 2009 Expenditures</u>	<u>Average Expenditures Per Organization*</u>	<u>Median Expenditures Per Organization*</u>
a. Analytical Instruments/Separation: particle analyzers; thermal analyzers; chromatography/spectroscopy equipment; microscopy; etc.	71.0	\$142,000	\$29,000
b. Basic Lab Equipment: balances; shakers/stirrers; centrifuges; freezers/ refrigerators; incubators; glove boxes; water purification equipment; meters & monitors; testing equipment; etc.	85.1	\$73,000	\$10,000
c. Sample Prep: extraction; liquid handling; robotic systems; autosamplers; etc.	43.4	\$109,000	\$8,000
d. Software: data acquisition; visualization; informatics; process control; image analysis; etc.	64.8	\$61,000	\$9,000
e. Lab Furniture: benches; cabinets; casework; counters, etc.	43.5	\$63,000	\$8,000
f. Consumables/Supplies: glassware; plastic ware; sample containers; tubes; pipettes; microscope slides; syringes; etc.	93.1	\$95,000	\$11,000
g. Chemicals & Biochemicals: reagents; solvents; acids/bases; buffers catalysts; etc.	92.4	\$90,000	\$12,000
h. Antibodies, RNA, Microarrays, PCR, Assays, etc.	42.0	\$110,000	\$9,000
i. Systems Service & Maintenance	79.8	\$73,000	\$10,000
j. Contract Research Services	32.7	\$158,000	\$13,000
k. Outsourcing Services	45.9	\$167,000	\$12,000

*Among organizations indicating expenditures.

4. Whether There Are Changes In What Is Required From Vendors: One out of five (21%) stated that in the last two years they've changed what is required from vendors of R&D technology.

Examples of such changes are shown here. See the body of this report for all comments.

- Greater pre-sales support (verification of system performance).
- Improved Quality Assurance Programs.
- Additional vendor support.
- We demand more on site training and increase service agreements.
- Hands-on support of operation and training on new equipment and reconditioning.
- Better service after the sale, tech support, methods development.
- Better deals.
- Better prices.
- Just better pricing, compare pricing.
- Lower priced options, leased equipment, rentals.
- Improved pricing.
- To lower or eliminate shipping/handling/transportation costs.
- Consumables pricing was reevaluated or buying "off brand."
- Discount pricing and lower shipping charges.
- Bidding is now required for many purchases.
- ISO certification.
- ISO related documentation.
- I'm shopping--and my manager is shopping--for price as well as service, and negotiating much harder.
- Limit on price increases yr. to yr., discounts on higher volume supplies, more staff training by vendor for new product methods/instrumentation.
- Look closer at stability of the organization.
- More accountability and monitoring/feedback/updates as part of plans.
- Need for increased ROI.

5. Investments In “Green” Technology: When investing in R&D-related products and equipment, two-thirds of the organizations (61%) specifically direct their buyers to take environmental/“green” issues into account during their purchases.

% Respondents

• Yes; we are <i>required</i> to purchase green technology where possible	9.0
• Yes; we are <i>encouraged</i> to purchase green technology where possible	29.5
• Yes; we are asked to <i>take “green” into account</i> as part of our overall evaluation	22.6
Subtotal, Organization Recognizes The Importance Of Green Issues	61.1
• No; there is <i>no real organizational direction</i> in terms of investing in “green”	38.9

6. Whether Current Technology Was Purchased New Vs. Used: Of the existing R&D-related equipment and instruments in respondents labs, two-thirds (67%) was initially purchased new and one third (33%) was purchased used. Currently, three-quarters of the organizations own used technology (73%).

	% Of Organizations Purchasing This Type Of Technology	% Of All Technology Purchased
a. Equipment/instruments purchased <u>new</u>	96.4	66.6
b. Equipment/instruments purchased <u>used</u>	73.1	<u>33.2</u>
		100%

7. Future Trend In Purchasing New Vs. Used Technology: Over the next 1 - 2 years, four out of ten respondents (41%) expect to see an increase in their purchase of used R&D-related technology. Only 6% expect to see declines in such purchases.

% Respondents

**Among Respondents
Who Purchase Used Equip.**

• Significant increase in used equipment/instruments	10.0
• Moderate increase	31.4
Subtotal, Significant + Moderate Increase	41.4
• No change	52.3
• Moderate decrease	4.1
• Significant decrease	2.2
Subtotal, Significant + Moderate Decrease	6.3

8. Reasons For Purchasing Used Technology: Those purchasing used technology gave the following reasons for doing so -- *"seeking to save money/stretch our budget"* (90%), *"buy used when we have a small or moderate level of usage"* (43%), and *"used is usually just as good as new"* (38%).

	% Respondents
• Seeking to save money/stretch our budget	89.6
• Buy used when we have a small or moderate level of usage	43.3
• Used is usually just as good as new	38.1
• New equipment/instruments often comes with "bells & whistles" we don't need	23.8
• Buy used when we have a short-term need for the equipment/instruments	21.2

9. Examples Of Used Technology Recently Purchased And The Resulting Experience:

Respondents listed the major types of used equipment/instruments they've purchased in the last two years, and their resulting experiences. Examples are shown below. See the body of this report for all examples.

a. Positive Experiences

- ABI 7700 - excellent old sorval centrifuge - good has some problems
- Air filtration, refrigerator, centrifuge, ultrasonic cleaner ... all good experience
- Analytical instruments - no problems so far
- Autosamplers, concentrators. Good experience.
- Balances, centrifuges, basic lab equipment - all good
- Balances, water baths, freezer, incubators, spec, plate reader, vortexer, centrifuge, heat block; so far, so good, although there is a significant time investment finding service and parts for these older models.
- Basic lab equipment (centrifuges, pcr machines, rocking tables, etc.). have had good luck with all.
- Basic lab equipment - incubators, balances, hot plates, centrifuge, autoclaves, shakers, etc. It has been GREAT!
- Bench top centrifuge - excellent

- Centrifuge, rotors, flow cytometer good experience with all
- Chromatography and spectroscopy equipment. Experience generally good.
- Dionex IC - some trouble, but great value
- Electronic drive systems - good experience.
- Electronic test and measurement equipment, material characterization. Overall, good experience.
- Excimer lasers (2) Solid state laser (1) Happy all the way around
- Fume Hood. Very pleased
- Gas chromatographs: for student use they are adequate
- GC/MSD- works fine, no problems
- GCMS - good purchase saved over 30K and runs great
- Lab benches/fume hoods - they work great. Balances - excellent. Paper Testing Instruments- work well, saved over 50% off of new.
- Microarray plate reader - had to invest in upgrades but worth it.
- Microscopes, monitors. Purchases were carefully researched and yielded significant savings
- Microwaves, chromatography gear and other lab ware. We are mostly happy, but have had a few duds, but even so worth the time and risk overall.
- Purchased a "lot" of balances. Most worked fine; one could never be calibrated.
- Refurbished microscopes for areas that receive lower levels of usage. Equipment was functional and we have experienced no problems in this area.
- Sample prep; excellent. Analysis; excellent. Microscopy; excellent. Chromatography; excellent. Instrumentation; excellent.
- Several HPLC systems-very good 2 Vanox microscopes one good, one super good
- Spectrophotometers and microscopes were a huge savings; although, the restorations add significantly to the cost. Overall, they were great bargains.
- UV-visible spectrophotometer: sudden increase in use of scanning instrument and sample throughput. Offered some relief to R&D people.
- XRF, Works great, 50% savings Balance, Cahn microbalance, 80% savings, works perfect

b. Negative Experiences

- Calorimeter, circular dichroism spectrometer. Instruments perform to expectations, but can't get support or service from manufacturers.
- Sample separation equipment. I didn't read the ad well enough and ended up spending just as much to get the last piece as I did on the original unit.
- Centrifuges, rockers, liquid handling systems, freezers mixed experience; some equipment defective; have grown more cautious
- HPLCs, Balances good Millipore systems - not in good shape
- Inverted microscopy, FTIR, and GC's. Overall no difference in quality of results between new and used, however some consumables and replacement parts are more difficult to find.
- Platform MS - problems with shipper and insurance policy when damaged in transit
- We buy mainly small pieces. Generally we have to put some time into validating them and/or rebuilding parts.
- We have purchased blending, furnacing, and various vacuum equipment and have been displeased with the problems associated with those purchases. Don't know if it is bad luck or the type of people involved in the industry but we now prefer to avoid used as much as is possible. Perhaps just bad purchases, but we don't like to throw money away.

c. Other

- AKTA Explorer-one became available from a former employee's company and we were able to get it at a reasonable price with good understanding of the instrument's history. If this turns out to be a favorable acquisition, then it is likely we will look closer in the future to used equipment. also the timing and availability matched.
- Centrifuges, pipettors, electrophoresis equipment, screen eraser, deli case, dot blotter, liquid nitrogen freezer, water purification For the most part everything worked well. One centrifuge which was under warranty had to be replaced and the water purification equipment
- GC - good working condition digital balance - good working condition autoclave - good working condition hanging balance - poor working condition PCR recycler - good working condition Eppendorf centrifuge - poor working condition, needed significant rebuilding.

CONCLUSIONS: Although 40% of respondents indicate that “funding for R&D equipment/systems has been reduced/is on hold” (see section C above), substantial spending on technology is nevertheless taking place. Across all types of products and equipment, we see 82% either increasing their spending (25%) or spending at the same level as in 2008 (57%). Overall, by the end of the year, expenditures are expected to increase slightly (+3.9%).

Individual categories of technology are experiencing slight increases or decreases in 2009 budgets ... there are no dramatic declines.

Additionally, there is a definite trend toward purchasing used equipment, especially as organizations seek to save money and stretch their budgets. And most buyers of used equipment report positive experiences with that type of technology.

Executive Summary, cont.

H. HOW R&D INVESTMENTS ARE BEING MAXIMIZED

1. Whether Pressure Is Being Applied Regarding R&D Investments: Over the last year, as national economic conditions have declined -- a third of all professionals (39%) have felt increased pressure from their organization's senior management regarding R&D investments and the ROI from those investments.

	% Respondents
• Significant increase in pressure	10.9
• Moderate increase	16.5
Subtotal, Significant + Moderate Increase	27.4
• Small increase	11.2
Subtotal, Significant + Moderate + Small Increase	38.6
• No increase	61.4

2. Types Of Pressure Being Placed On Researchers & The Resulting Outcomes: Those who are feeling increased pressure described what is being asked of R&D and what the outcomes are likely to be. Sample comments are shown below. See the body of this report for all remarks.

- Get this going; all hands on deck
- A greater emphasis on measuring and reporting ROI for R&D investment
- Basically it can be summed up by "Do more with less." The outcome has been simply less.
- Be certain you need the equipment prior to purchase
- Better utilization of core resources, looking for overall cost savings.
- Business case including ROI has always been required for new instruments.
- New forms must be completed indicating ROI and what revenue-generating projects would benefit from it.
- ROI is justification for spending R&D money.
- Justification and prolonging life of instruments.
- Justification for the extent of use and comparison with outsourcing
- Justify purchases, relating to benefits.
- Business outcome for the company from buying equipment
- Calculate ROI

- Cut out waste, plan better, be less experimental, limit testing to what's absolutely necessary
- Decrease costs, increase productivity, decrease Overtime ... hasn't been realistic
- Do more for less
- Deliver on time.
- Do more on somewhat reduced budget and take advantage of the instruments already purchased.
- Do more with less is the mantra
- Equipment Model- any equipment must pay of itself within 3 months
- Every investment expects a return
- Everyone has been asked to be conservative and evaluate the long term picture
- Faster project completion, higher ROI
- Faster ROI
- Faster turn around rate
- Faster turn around time and more accuracy in development. This has improved and will continue to be a focus.
- If there is not any immediate return on purchasing new equipment it does not happen.
- Greater research productivity
- Make sure that there is sufficient use demand for requested items, shop around for less costly substitutes.
- Make purchases only absolutely required
- Make do with present technology
- Management is primarily concerned with cost and getting the job done.
- More pressure to perform, moderate success.
- More technology for the price.
- Must be pertinent to product line and getting new products to sales quickly.
- Not to spend money that was previously budgeted. We have been asked to evaluate and select companies in China and India that can do some of our tasks.
- Of course we've been encouraged to reduce/restrict expenditures to only those that are absolutely necessary.
- Prediction of degree of certainty of success
- Pressure - more like threats
- Produce returns on shorter terms

- Questions arise about timing and application of R&D. Don't want to do R&D too far ahead of when data is required.
- Quicker results, increased pressure normally speeds results for awhile.
- Shorten pipeline timeline - Quicker ROI
- Simply do more with less
- Want to invest in "Big Bet" projects that will deliver "blockbuster" products.
- We've trimmed fat, and increased accountability.

3. Ideas/Approaches Being Implemented To Maximize ROI From R&D Investments:

Respondents provided specific ideas or approaches they've implemented or plan to implement to maximize the return on their R&D investments. Examples are shown below. See the body of this report for all examples.

- Generate new performance metrics.
- ROI- 3 months or less
- Better understanding of the contributions of R&D to the commercial activities
- Target only those projects that show a good chance of short term success (24-36 months)
Acquired new technology to meet expanding current/future needs, updated current technology with new, implemented staff training
- Adding new technology to get more work
- Cutting edge technology is being utilized to compensate for a smaller staff.
- New technology is offered and provided to other government agencies/offices, sometimes doubling or tripling our expected ROI.
- Investment in automation software/hardware to permit 24/7 use of existing equipment without adding staff
- More automated instruments or robots in the laboratory to complete the work with equal or less lab support.
- We are buying standards that are programable so we can automate and speed up a process.
- New equipment to meet research needs for development of new products.
- Continue to investigate and invest in new technology
- Keep equipment operating longer, if possible, before replacement.
- Select equipment that is good enough to get the job done, but without lots of extras we may never use. Could be new or used instruments
- Buying used where possible and where practical

- Purchasing used equipment when possible
- Maximize use of the equipment
- Keep the old equipment functioning. Train personnel on efficient use of resources.
- Leveraging partners to purchase equipment as part of payments for contract research.
- Recruit staff with wider range of development experience.
- Hiring 1 or 2 "jack of all trades" for more money instead of multiple experts. Usually this results in outsources at some point if the needed expertise is missing.
- Hired employee with great experience in sophisticated equipment and a good capacity and desire to teach others.
- All investments must be tied to economic returns and not future applications.
- All research activities must be closely aligned to market segments that are targets for our systems.
- Automation and training
- Budget for major equipment purchases must include service contracts.
- Build a need for our products
- Building new collaborations
- Eye is on the return, whatever the cost to get there
- Collaborating with other researchers and institutions
- Coordinating work with like laboratories where the other lab has resources that we do not.
- Cross training of personnel for staffing all areas of lab.
- Cross-training of selected staff to maximize productivity & staff scheduling flexibility.
- Entering into a different market that we can use our existing equipment.
- Gain credibility and clients through ISO accreditation.
- Equipment automation and LIMS within two years.
- If you were spending your own money, would this be a worthwhile investment
- Looking to hire post doctorate candidates.
- More education and training
- Training of staff
- Training personnel to get the most out of the investment
- Screen projects more thoroughly and drop those less promising when more promising ones are at hand
- Simple but effective: Decreasing the time the the hood sashes are up when not in use has saved money.

CONCLUSIONS: In this decade, it's well recognized that most professionals, to one degree or another, are under pressure to enhance the return on the investments they make. However, in the last 12 months, four of ten R&D professionals have felt increased pressure to seek out higher levels of ROI.

These pressures include: the call to maximize productivity from existing resources; having to justify investments more intently; calculating the ROI/business outcomes from investments; and, pressure to deliver R&D's results faster.

Approaches professionals are initiating in response to pressure include: adding new technology to attain greater productivity, such as adopting automated instruments; purchasing used equipment; hiring staff members who can perform multiple types of activities; being sure that research activities are properly targeted; and, enhanced training of staff members.

II. METHODOLOGY

A. The Research Organization: Martin Akel & Associates of Chester, New Jersey was responsible for development of this project and the questionnaire, supervision of the tabulations, and preparation of this report. For 30 years, Martin Akel has been involved in marketing and research, as both a corporate executive and as president of his own firm. He has conducted projects for:

- 101 Communications
- Advanstar Communications
- Advantage Business Media
- The American Academy of Family Physicians
- ABM -- American Business Media's Agri Council
- Aegis Communications
- The American Ceramic Society
- The American Express Publishing Company (Food & Wine Magazine)
- The American Pharmaceutical Association
- The American Psychological Association
- The Association of Medical Publishers
- Ascend Media (Medical World Communications)
- Aventis Pharmaceuticals
- The Axon Group
- Beta Research Corporation
- Boucher Communications (Cardinal Business Media)
- Capital Publishing Company (Fidelity Investments - Worth Magazine)
- Chilton Publishing
- Ciba-Geigy Pharmaceuticals (Novartis)
- CME Inc. (The Psychiatric Times)
- Cowles Business Media
- Dental Learning Systems
- Dun & Bradstreet
- Dux Dental Products
- Edgell Communications
- Elsevier Business Press
- Elsevier
- Epson
- Excerpta Medica
- Farm Journal Media
- Fujitsu ICL

- Glaxo Smith Kline
- Global Marketing Solutions (CeBIT; Hannover Fairs)
- Goldhirsch Publishing
- Golf Publishing Enterprises
- Hammock Publishing
- Healthcare Communications, Inc. (now PERQ/HCI)
- Health Monitor Network
- Hearst Publishing (Connoisseur)
- IDG (InfoWorld Media Group)
- ITT
- Jobson Publishing
- Lakewood Publications
- Lippincott Williams & Wilkins (Wolters Kluwer)
- Marketplace Publications
- Mary Ann Liebert Publications
- McKnight Medical Communications Company
- McNeill Group, Inc.
- Medical Economics Publishing Company
- Nielsen Business Media (AdweekMedia, Travel & Performance Group, Commercial Real Estate Group)
- OAG Official Airline Guide
- PCS Health Systems
- The Philadelphia Inquirer (PhillyTech Magazine)
- Prescribing Reference Inc. (Monthly Prescribing Reference)
- Primedia/Intertec Corporation
- Professional Media Group LLC
- Reed Business Information (Cahners Publishing Company; Gordon Publications)
- Reed Construction Data
- Reed Elsevier Medical Publishers
- Slack, Inc.
- The Society Of Manufacturing Engineers
- Springhouse Corporation
- Symbol Technologies
- Time Ventures
- Thomas Publishing Company
- Vance Publishing
- Veterinary Learning Systems
- Veterinary Medicine Publishing Company

II. METHODOLOGY, cont.

B. Fielding And Tabulating The E-Mail Survey

Lab Manager magazine was responsible for sending out the e-mail invitations.

The online questionnaire was produced and tabulated by the Wilson Research Group of San Carlos, CA.

C. The E-Mail List

- The recipients for this survey were based on the following lists:
 - Subscribers to Lab Manager magazine (24,000 names).
 - Visitors to the LabX Website (54,000 names).
- Types Of Businesses: All businesses except those working at clinical labs, vendors to the lab market, consulting companies or others not working at laboratories or organizations that are engaged in research.
- Titles: All titles except students, consultants, sales reps, marketing professionals and those not involved in research decisions or the related purchasing process.

D. E-mail Invitations/Online Questionnaire

E-mail invitations were sent to all survey recipients. One group mailed over the Lab Manager logo. Another group mailed over the LabX logo. All invitations were linked to the same online survey. Three waves of invitations were used in total.

E. The Incentives

The following incentives were offered:

- E-mail invitation wave #1 - respondents were entered into a drawing for a Rice Lake Breeze Pipette Starter Kit worth \$449.
- E-mail invitation wave #2 - respondents were entered into a drawing for one of five Viaflow Vision pipettors, each worth \$600.
- E-mail invitation wave #2 - respondents were entered into a drawing for one of five Viaflow Vision pipettors, each worth \$600, as well as a Viaflo tee-shirt.
- Respondents were also able to receive a free executive summary of the survey's results.

F. Survey Dates

The announcement e-mail was sent to all names on January 7, 2009. Returns were cut off on January 19, 2009.

G. Response

As of the cutoff date, 510 qualified returns* were received.

Based on the 510 returns, there is an overall maximum sampling tolerance/margin of error of +/-4.4% at the 95% confidence level.

*Those who worked outside the U.S., were students, consultants or worked at clinical labs were not qualified and removed from the survey. They are not counted in the 510 qualified returns.

III. RESULTS

A. ABOUT RESPONDENTS AND THEIR ORGANIZATIONS

1. In which country do you work?

	% Respondents
• United States	48.3
• Other	51.7
Total	100

Note: Respondents who worked outside of the U.S. were exited from the survey.

A. ABOUT RESPONDENTS AND THEIR ORGANIZATIONS

2. Which best describes your **title** (check ONE only):

	% Respondents
• Corporate management (CEO, president, VP, etc.)	11.8
• Lab supervisor/manager/director	36.7
• R&D supervisor/manager/director	8.2
Subtotal, Lab/R&D Management	44.9
• Core facility manager/director	1.8
• QA / QC manager/director	2.5
• Project manager/director	2.4
Subtotal, Management	63.4
• Research scientist	12.4
• Chemist	7.5
• Principal investigator	2.0
• Engineer	1.6
Subtotal, Research Staff	23.5
• Academic department head	0.0
• Academic - faculty	5.5
Subtotal, Academic Titles	5.5
• Purchasing agent	1.1
• Other	6.5
Total	100

Note: Respondents who were students or consultants were exited from the survey.

A-2, cont.**Other:**

- Academic post-doc.
- Academic support staff.
- Animal care supervisor.
- Animal Research Training Coordinator.
- Biomedical Equipment Technician.
- Facilities Associates.
- Financial Planner.
- Instrument repairs.
- Instrument Calibration Specialist.
- Lab Leadman.
- Lab Tech.
- LIS Admin.
- Market Research.
- Marketing.
- Marketing.
- Medical Technologist.
- Metrologist.
- Mineralogist.
- Numismatic researcher.
- Pharmacy director.
- Process development entrepreneur.
- Proprietor.
- QC Analyst.
- Regulatory affairs.
- Regulatory specialist.
- Research Assistant.
- Research Associate.
- Reseller.
- Retired.
- Retired Professor, supervising research documents.
- Sales.
- Self employed-lab inst. service.
- Service.
- Service Specialists / Owner.
- Technical Associate.

A. ABOUT RESPONDENTS AND THEIR ORGANIZATIONS

3. Which best describes the **type of organization** you work for (check ONE only):

	% Respondents
• Pharmaceutical mfr.	4.4
• Biotechnology company	12.6
Subtotal, Pharma/Biotech	17.0
• Food and/or beverage mfr.	2.6
• Automotive mfr.	0.8
• Fine/specialty chemicals mfr.	3.6
• Petroleum company	1.0
• Security/forensics company	0.4
• Environmental company	4.0
• Energy company	2.2
• Other industrial/manufacturing company	16.0
Subtotal, Industrial - Non-Pharma/Biotech	30.6
Subtotal, Industrial	47.6
• Private research institution	9.2
• Contract research organization	6.0
Subtotal, Commercial Firms	62.8
• Hospital or medical center	8.8
• University or college	17.0
• Government	6.4
Subtotal, Public Organizations	32.2
• Other	5.2
Total	100

A-3, cont.

Note: Respondents who worked at clinical labs were exited from the survey.

Other:

- Biotech Service Co.
- Blood Bank/Tranfusion
- Blood center
- Cancer systems biology
- Consultant
- Cord blood bank
- Currently Unemployed
- Display
- Distribution
- Equipment Surplus Co
- Field Service
- Financial Planning
- High reliability
- Information Provider
- K-12 School
- Pesticide Screening
- Private individual
- Repair Company
- Research & Development
- River Authority Environment
- Secondary education
- Self Employed (2)
- Support Services
- Winery

A. ABOUT RESPONDENTS AND THEIR ORGANIZATIONS

4. What are your organization's approximate **annual sales revenues**?

	% Respondents
• Less than \$1 mill.	26.5
• \$1 mill. - 4.9 mill.	18.8
• \$5 mill. - 9.9 mill.	9.6
• \$10 mill. - 24.9 mill.	8.9
• \$25 mill. - 49.9 mill.	5.8
• \$50 mill. - 99.9 mill.	8.0
• \$100 mill. - 499.9 mill.	6.4
• \$500 mill. - 999.9 mill.	3.2
• \$1 bill. - 1.9 bill.	2.2
• \$2 bill. - 4.9 bill.	3.2
• \$5 bill. - 7.4 bill.	0.6
• \$7.5 bill. - 9.9 bill.	0.6
• \$10 bill. - 14.9 bill.	0.3
• \$15 bill. - 19.9 bill.	0.3
• \$20 bill. or more	5.4
Total	100

• **Average: \$1,477,580,000**

• **Median: \$7,370,000**

A. ABOUT RESPONDENTS AND THEIR ORGANIZATIONS

5. Do you have a **subscription to Lab Manager magazine**, sent to you in your name?

% Respondents

• Yes	59.8
• No	40.2
Total	100

A. ABOUT RESPONDENTS AND THEIR ORGANIZATIONS

6. When was the last time you visited the **Website “LabX”** (check “Never” if appropriate)?

	% Respondents
• Within the last 3 months	41.9
• 3 - 6 months	11.5
Subtotal, Within Last 6 Months	53.4
• 7 - 12 months	7.0
Subtotal, Within Last 12 Months	60.4
• 13 - 24 months	2.7
• 25 - 36 months	0.6
• Longer than 36 months ago	2.7
Subtotal, Have Visited LabX	66.4
• Never	33.6
Total	100

B. ABOUT CONFIDENCE IN RESEARCH INVESTMENTS

1. Listed below are 10 different factors related to today's **R&D environment**. Please tell us **how CONFIDENT you are** regarding each factor for **2009**. Select your answer for each from the scroll-down lists.

	% Respondents					
	Very Confident	Confident	Sub-Total	Somewhat Confident	Sub-Total	Not Very Confident
a. Confidence that your market sector will be robust enough to support or attract significant R&D investments.	15.7	26.7	42.4	34.9	77.3	22.7
b. Confidence that your organization's senior management understands/ appreciates the role of R&D in the organization's success.	41.6	30.4	72.0	16.0	88.0	11.9
c. Confidence that your organization's senior management is willing to make the necessary investments to achieve research objectives.	26.2	31.3	57.5	23.0	80.5	19.5
d. Confidence there will be sufficient funds to properly staff R&D initiatives (appropriate compensation, additional staff if necessary, etc.).	7.8	21.6	29.4	34.2	63.6	36.5
e. Confidence that the proper investments will be made in the training/continuing education of R&D management and staff (courses, professional meetings, etc.).	11.8	26.4	38.2	35.2	73.4	26.6

(continued)

B-1, cont.

	% Respondents					
	Very Confident	Confident	Sub- Total	Somewhat Confident	Sub- Total	Not Very Confident
f. Confidence that investments will be made to gain access to the proper background information for the R&D process (e.g., databases of research papers, patents, standards, chemical reactions, books, etc.).	16.9	34.6	51.5	31.4	82.9	17.1
g. Confidence there will be sufficient funds to acquire the technology necessary to achieve your R&D objectives (i.e., equipment, systems and instruments).	9.2	25.6	34.8	34.6	69.4	30.6
h. Confidence there will be sufficient funds to maintain the proper work space and working environment .	14.7	35.5	50.2	34.0	84.2	15.8
i. Confidence that investments will be made to outsource work when required to achieve your R&D objectives.	15.4	29.1	44.5	33.5	78.0	22.0
j. Overall confidence that your organization will support or attract the required funding for R&D initiatives.	14.6	35.9	50.5	31.7	82.2	17.8
k. Average Combined Confidence Percentages (All 10 Factors Combined)	20.0	28.6	48.6	30.4	79.0	21.0

Note: Those indicating “does not apply” to any factor were not tabulated for that factor.

B-1, cont.

**Average Investment Environment
Confidence Index Score**
(Out Of A Maximum Score
Of 100 Points) *

- | | |
|--|-------------|
| a. Confidence that your market sector will be robust enough to support or attract significant R&D investments. | 58.9 points |
| b. Confidence that your organization's senior management understands/ appreciates the role of R&D in the organization's success. | 75.5 points |
| c. Confidence that your organization's senior management is willing to make the necessary investments to achieve research objectives. | 66.0 points |
| d. Confidence there will be sufficient funds to properly staff R&D initiatives (appropriate compensation, additional staff if necessary, etc.). | 50.2 points |
| e. Confidence that the proper investments will be made in the training/continuing education of R&D management and staff (courses, professional meetings, etc.). | 55.9 points |

(continued)

*The Average Index Score was calculated by assigning a value to each respondent's answer for each of the 10 factors, as follows ...

- | | |
|-------------------------------|----------------------------------|
| • Very Confident = 100 points | • Somewhat Confident = 50 points |
| • Confident = 75 points | • Not Very Confident = 25 points |

B-1, cont.

**Average Investment Environment
Confidence Index Score**
(Out Of A Maximum Score
Of 100 Points) *

f. Confidence that investments will be made to gain access to the proper background information for the R&D process (e.g., databases of research papers, patents, standards, chemical reactions, books, etc.).	62.8 points
g. Confidence there will be sufficient funds to acquire the technology necessary to achieve your R&D objectives (i.e., equipment, systems and instruments).	53.4 points
h. Confidence there will be sufficient funds to maintain the proper work space and working environment .	62.3 points
i. Confidence that investments will be made to outsource work when required to achieve your R&D objectives.	59.5 points
j. Overall confidence that your organization will support or attract the required funding for R&D initiatives.	61.8 points
k. Combined Average Confidence Index Score (All 10 Factors Combined)	60.6 points

*The Average Index Score was calculated by assigning a value to each respondent's answer for each of the 10 factors, as follows ...

- Very Confident = 100 points • Somewhat Confident = 50 points
- Confident = 75 points • Not Very Confident = 25 points

B. ABOUT CONFIDENCE IN RESEARCH INVESTMENTS

2. Please **comment** on your overall level of confidence ... i.e., your organization's ability and willingness to properly invest in R&D in 2009:

Very Confident that R& D efforts will continue, but the priorities may change to projects with less capital expense.

Will be confident.

2009 is going to be a challenging year for business survival, never mind business profit; however, as we ramp up to a "green economy," I have every confidence that our R&D investment decisions will produce measurable ROI.

2009 will be funded, beyond 2009 is an issue.

90%.

According to internal statements from senior management we should be OK in the near future. But one can never, ever fully trust such statements. They can be self-serving.

Although the value of R&D is appreciated, the uncertainty of economic stability in a global market dictates caution.

American business is based on quarterly earnings, impossible to make significant R&D advancement in that atmosphere

Approved & good to go, taking risk despite tight cash; preventing otherwise pending layoffs

As a government agency R&D lab, we will always lag behind private industry due to the extended time between planning and allocation of funds.

As a local county government testing laboratory, there is not much of a requirement for R&D locally.

As a private researcher working independently, very few of these questions are pertinent for they assume the existence of an academic or industrial research organization. My confidence is based on my personal finances.

As a reseller of Lab items and equipment, I am hoping that labs will invest in used lab equipment.

As a small business we can move and adapt very quickly. This makes me more confident of our success. We have also partnered successfully with a local university to support our efforts.

As a small rural hospital laboratory, we do not do R & D.

B-2, cont.

As a startup company, it is not a question of willingness, it is a question of being able to raise the funds to support the desired levels of r&d activity. Today's economic climate has made it considerably harder to raise seed and angel capital, much less venture capital or business loans. As confident as I can be concerning the market...

As I don't really know much about the R&D side here, I can't comfortably comment on it.

As part of a public institution our college will suffer funding cuts. Thus my overall level of confidence is low.

As we continue to import skilled bench level scientists, outsource screening overseas and demand more from US scientists who work at the bench while forcing them to choose between career or family in order to compete with more populated regions of the world, our research dollars will slowly be wasted in favor of training foreign workers our skills. In essence we will have given our talent, careers (jobs) and wealth to other regions of the world.

At the present time we are just trying to get the job done by spending as little as possible. There has been a commitment to keep all employees on the payroll and sacrifice in other areas. R & D will have to wait until the economy makes a rebound and the agency has more funds to work with.

At this time the indications are positive for 2009

Attracting and paying necessary salaries for personnel a concern. Getting new equipment is a concern. Maintaining staff at existing level is not an issue at present. Have been unable to acquire equipment unless it directly affects product to sales bottom line.

Available space is a limitation on space size. We are also making major purchases in manufacturing equipment which will somewhat limit R&D budget.

Based on customer needs, we will react to satisfy their expectations.

Because we are state educational funded. We can not comment.

Because of the recession there is upcoming layoffs in education.

Budgets are set with sufficient funds and will not be changed

Capital budget for technical/R&D reduced to critical needs basis only. This is defined as maintaining existing processes and/or retaining customers. No funds available for new product development outside of specific customer requests. All equipment purchases > \$5K US require upper management review and approvals.

B-2, cont.

Company know the urgency and important of invest R&D but no fund available due to economy down turn in 2009

Confidence is high.

Confident. (5)

CONFIDENT MORE THAT THE COMPANY WILL FUND IDEAS WITH A QUICKER LIFE CYCLE THAN THEY USED TO. A QUICKER ROI NEEDED THESE DAYS.

Confident we will have support but not much new money.

Confident we will maintain present levels

Credit crunch is having a severe impact

Current levels of activity and new surgical providers should provide a stable base of revenue to support new programs.

Current state revenues are eliminating funding for applied research and severely impacting the availability to add the proper work spaces to meet the growing demand.

Current "buzz" is that funding will be cut, and "proration" will be put into effect giving me "not so confident" rating overall.

Currently operating on minimal r r&d support to allow for improvements in mfg.

Currently, it appears that the future for our company is promising. Many projects are anticipated, but, as seen in the past, it is possible that some projects will be canceled due to budget shortfalls.

Dependent on revenue. directive to ensure we're in business by being conservative in spending

Depends on venture capital and strategic partnering.

Despite the cutback from 2008, in 2009 I believe that the funding will be sustainable.

Difficult to gauge the level of investment necessary and if the company will support the initiatives.

Due to additions to senior management, I am somewhat confident that there will be willingness to invest, however, due to market swings and downsizing, those investments may not be included in the 2009 budgets.

Due to the changes on the automotive industry my opinion we are looking at some very lean years in my automotive work. My hope is that my oil work will offset the loss of OEM business.

Due to the current economic condition companies are not investing much.

Due to the current economic downturn, anything can happen.

B-2, cont.

Due to the economic downturn and the effect it has had upon sales, a somewhat shaky confidence is in order. Will see what happens come June.

Due to the economy and the funding also tied to the education process, education will receive most of the funding from the institution, research and development will have to rely heavily on outside funding

Due to the mandatory reduction of all government funded organizations in the state of Texas, it is highly unlikely that any non-budgeted research or study will be allowed for the next couple of years.

Economic downturn has caused seemingly continuous revisions of 2009 budget. A final budget has yet to be approved!

Economics dictated a slow down in the research initiatives since they do not generate revenue. Even though the economy is tough right now, our R&D budget for 2009 was increased by 10% for 2008.

Extremely proactive in training

Fair

Fingers crossed

For public health not very confident that R&D is even thought about.

For R&D appropriate funds will be allocated however tightening will occur in all other areas.

Funding for new projects and new technology will be very limited.

Funding for our fiscal year 2008-2009 R&D projects were approved last April 2007. Around September significant reductions/restrictions were placed on spending. They are not wanting to spend the funds that were allocated and have significantly reduced this next years R&D spending. Only projects with direct and short term payoffs are being considered for continuation.

Funding is too uncertain to be confident

Funding is very tight, most of the industry that we are involved in has suffered massive losses; too many have closed their doors. Maintaining position is unfortunately too great a part of the challenge.

Given the current fiscal situation very little will be spent on R&D in 2009 and possibly in 2110 as well.

Given the grant agency funding outlook, somewhat confident over the next 3-4 years.

B-2, cont.

Given the track record of the last 17 years at my institution, the senior management of the University has spoken that they want to be a major research University, however they have always cut corners and repeatedly refused to put the funds forward to do that.

Given we are a commercial laboratory, we have many patents with several pending coming as a direct result of R & D efforts to meet our customers needs. Granted this is development applied research not "pure" research.

Good. (2)

Good for our needs

Government funding being as scarce as it is, cannot be very confident. However, good support on the organization level can give a good boost for investing as appropriate.

Government funding of research in the area of cultural resource preservation has been and continues to be a low priority. We struggle to perform our mission with the tools at hand.

Growth should be robust in the 2008-2009 academic year

Guarded confidence

Hard but the support is there

Highly confident that we will be able to attract investments for R&D

Hope it happens and they allow hungry, competent, and ambitious young investigators to rise enabling them with the manpower to do productive research

Hospitals are limited: must have grants

I am confident that we will do everything possible not to downsize the R&D department in 2009; however, I do not expect increases in funding, or purchasing new equipment.

I am confident in my organization's willingness to invest in R&D, but not confident that there is enough fund to support it.

I am confident that my organization has proper measures regarding investments in R&D for the organization.

I am confident that sufficient investments are forthcoming; however, the present global economy will make it very difficult.

I am mostly confident that my organization will appropriately invest in R&D in 2009 - the only thing that bothers me is the potential for institutional and business overdrafts, that will draw down the total funds for the company.

B-2, cont.

I am mostly somewhat confident

I am not confident that smaller biotechs will survive through 2010

I am optimistic and confident that my lab within the university will meet our 2009 goals.

I am reasonably confident that carefully planned, measured investment steps will be taken, based on purchases and other planning that has already begun.

I am somewhat confidence about this

I am very positive about it.

I believe my organization will fund as much as possible but may still fall short of what is really needed.

I believe my organization will not focusing or allocating as much funds as in the previous years. Due to the economy we have taken many cuts throughout the past year, which will continue through the first half of this year.

I believe that the priority will not be in the Laboratory.

I believe that this organization does not always realize what is necessary to keep R&D moving forward and are more preoccupied with where monetary cuts can be made.

I consider R&D being the ability and will to bring in more of the communities lab work through outreach programs but because of budget and space constraints these will not happen in 2009.

I do not see the interest of our organization in R&D

I feel confident that the area of research (biomedical)we are involved in will be sustained at a reasonable level.

I feel fully confident that senior management understands and is prepared to arrange for the capital to ensure we meet our strategic R&D initiatives.

I have a high level of confidence, however we are grant driven as a university.

I just received a grant for three years. I am confident

I think our organization will continue to support R & D research in 2009

I work at a small company with fabulous people. I think we have the correct priorities for investment for 2009

I work at a state university faced with large and continuing budget cuts for the next year-hence not very confident about anything for 2009

I work at a state university that relies heavily on tuition to support university programs. We're really feeling the economic downturn already, and I fear it will get worse before better.

B-2, cont.

I work for myself and run my own company. I do what I need to do to make projects work.

Failure is NOT an option!

In the midwest manufacturing is linked one way or another to automotive and automotive is in the tank. That puts everything on Hold for at least 3 months.

In these bleak economic times, we find ourselves, like so many, robbing Peter to pay Paul. I trust my team to advise me how best to trim costs.

In this economy ... anything could happen. I have little confidence it will be back to normal anytime soon.

Investing in R&D will be fundamental for our process development

Investments will only be made upon completion of ROI studies that indicate a significant return can be realized in a short period of time.

Investor happy with current project and goals

It is a high priority.

It is a matter of how many dollars can be acquired from the services we offer.

It will be a rough year for attracting investors, but the BioTech industry is well positioned and our company has unique, breakthrough technology.

It will be about the same as in 2008.

I don't know

Lab is going through renovation and purchasing new equipment.

Lack of any information about company performance and R&D budgeting

Less confident because of the bad economy

Management does not really support R&D, though it says it does.

Management has not enough knowledge about the every day technical needs

Management's only objective is profit - ignore R and D. If it cannot support itself with outside investment ... it's gone.

Matter of survival. R&D usually sacrificed first to keep expensive clinical developments running

Minimal. might expect downsizing in research

Money is tight but now is a good time to invest in R&D to hold on to staff

More and More institutions will be applying for fewer and fewer research grant dollars.

Therefore, it will be rough going for a while. One must be creative in finding funding.

vMore effort is being given by the company to increase the profile of the company to the public. Mostly economy driven. Don't have clear sense on overall impact of downturn on federal and private sector funding in the coming years.

Mostly my views are based on funding. the times they are uncertain

My company depends solely on R&D. The support is there to progress this year at a slower, less risky pace and further cutbacks in staff, equipment purchases, and delays in outsourcing.

My company is small enough that R&D needs are actually understood by upper management.

Unfortunately we are very diverse in our project so any investment has be cross-project. This can be limiting at times, and does cause lack of equipment.

My company puts the right amount of emphasis on R&D initiatives.

My company understands the need for R&D but is not able to fund much of the work at this point. We have people, we have space, we have half the equipment and chemicals we need. This is a new company (2.5 yrs. old) and moneys go to marketing right now.

My company will spend money in something that is needed for the development of our company

My organization is a County Hospital & it is unable to invest in R & D right now

My organization understands the importance of R&D. However, my ideas about what's important don't always coincide with the ideas of top management.

My organization understands the importance of R&D. However, the market for our products is depressed, the credit markets are closed, so the funding simply may not be there.

My organization, like most other government agencies generally funds activities designed to get the work done based on statistical information that is years old. Research and Development usually don't enter the picture much, if at all.

My overall level of confidence in my organization's ability and willingness to properly invest in R&D in 2009 is, moderate.

My workplace is in a college laboratory. Obtaining research grants is our primary source of funding and the college is highly supportive of our efforts.

New company in last 2 months. Confident that we are willing to invest. All employees are owners.

Not sure. It greatly depends on market.

Not very confident. We are an automotive supplier. The market and subsequently our sales are down. We expect the market to be down all of '09.

B-2, cont.

Not very confident. (2)

Not very confident because of economic downturn

Not very confident there will be any increase in R&D investment in 2009

Oil prices are expected to rebound mid-2009 ... I don't see us cutting back on R&D...

Organization dedicated to research and improvement of public health - their reason for existence.

Organization has always supported R&D. Economy has made money tight for investment.

Organization is willing to properly invest in R&D when there is a reasonable pay back.

Our budget is significantly tied to state funding.

Our company is willing spend money for new equipment when we new opportunities. Spending money for less tangible things such as training is more difficult.

Our department at the university is continually passed over for investments in new equipment and supplies. While the university is requiring us to be more involved in research, they are not making any investments to further research in our department.

Our endowment has taken a hit, just like everyone else's. The will is there, but the way may not be.

Our group has historically invested in R&D. However with the current recession/depression it is very worrisome to forecast performance in the coming year.

Our lab is struggling to find funds to support our work

Our learning center is in it's first year. We hope for more outside investments.

Our management is in cut mode to meet quarterly financial objectives. I have no confidence that we will properly support R&D in 2009.

Our organization is not in the mindset of R&D, nor do they allocate proper budgets to accommodate such things. They have not invested time or man power to allow for R&D.

Our organization does a very good job of supporting needed R and D

Our organization does not perform R&D.

Our organization excels in bringing in the investors needed to continue our unique types of R&D. We have a Biosafety Level 4 lab.

Our organization has invested within the last month 5% of last years total revenues in building infrastructure for increased business.

B-2, cont.

Our organization invests a majority of capital in R&D

Our organization is a nonprofit medical research institute with our primary goal to support basic and translational research. We are very successful in acquiring grants and attracting top talent so I have high confidence that investment will continue.

Our organization is based on differentiation rather than a low cost supplier and as such R&D is our main product.

Our organization is currently > 3 Million dollars in the RED from operations. (YTD december 2008) We are struggling to avoid another round of layoffs at this point.

Our organization is positioned to take full advantage of trends in R&D in 2009.

Our organization is very careful about resource funding. We prioritize and allocated accordingly. We may have to scale back if the market dictates, but we will meet our overall objectives.

Our organization will be directing all available funds to expansion by acquisition. The financial crisis means many businesses are for sale cheap.

Our organization will give us the necessary tools, equipment and R&D support when we put together a legitimate business case.

Our overall confidence level for our ability to invest in R & D is high to very high provided we are able to gather enough information that supports investment in R & D is a wise business decision.

Overall I would have to guess that R&D will take the biggest hit as a result of a bad fiscal year.

Overall, confidence rather low. Administration "wait-and-see" rather than "go-and-get". Too afraid to gamble a little and put faith in their own people.

Overall, we are only being asked to be prepared for companywide cost saving measures but haven't been asked to take any such measures thus far. Everything depends on the trajectory of the economy in the next few months. If the economy continues to get worse, there will undoubtedly be cuts in R&D along with every other part of the organization.

Overall confident.

Past has indicated ample support, but definition has been questionable, and strategy for negotiating a slowing economy is not yet verbalized

Penn State University has always had a commitment to support R&D efforts.

B-2, cont.

Projects will be hindered by level of funding

Proposals are being made for venture capital, with confidence.

R & D investment is quality improvement

R&D at our institution will have little or no effect with economic.

R&D is always driven by revenue. The significance of the R&D can be driven with advanced \$\$\$ if important enough. Stockholders must be convinced.

R&D work will only be performed on tract for specific sales requirements for our existing customers.

Received FDA approval for a product late in 2008 which many potential customers were waiting for.

Resources are present however not fully confident that top management understands the benefit of new markets

Shaky economic times do not bode well towards buying more stuff to feed the lab.

Since we are nonprofit and we do basic research we are dependent on grants and donations.

Neither of these is increasing, so overall if nothing changes we will definitely be in a negative space.

Since we are Research organization, I am confident that we invest in R&D for new products and development

Since we have launched 3 different bioanalytical instruments, we have not had the needed support to successfully staff our lab and meet the necessary time requirements for R&D projects. My confidence in the success of the project is low for 2009.

Skeptical due to the economy

Some aspects that affect my organization's plans and abilities to properly invest in R&D are outside anyone's control. Aside from that uncertainty, there are many challenges over which the company has choices.

Some what confident. (7)

Somewhat confident, we shall wait and see

Start up company which has to invest in R&D in 2009 even more than in 2008.

Start up company with limited funds. If sales grow the money for R&D will follow (of course).

Start up organization, so difficult to get funding.

B-2, cont.

Support has been strong in past years, concerned with the economy for 2009

Thanks to Dr. Craig Mello winning the Nobel prize for Life Science in 2006, the UMass Medical Center has attracted quite a bit of interest and funding in the past 2 years. I expect that this trend will continue in 2009.

The American Red Cross is a nonprofit organization

The background research funding is where my confidence is lacking. Exec management does not always see the value.

The company must be willing to continue R&D investment (more on the D side of the equation) in order to bring products to market and be able to position them for rapid adoption.

The environment is changing and we are currently in the process of making decisions on R&D Funding for 2009

The funding markets look tight. but there is usually money looking for good return in basic understandable endeavors. dietary supplements and functional foods look to remain strong or even strengthen during the current downturn.

The general economy will dictate the future of our R&D investments linearly.

The management requests are usually bigger than what is practical.

The market place is very weak now. We are not sure 2009 will be robust enough to make up for 2008. We see 2010 before it gets better.

The Medical School does not "invest" but it accepts research grant money to conduct R&D. More than 300 professors and postdocs write grants. The University has a course in grant writing and an entire department to assist in writing, procuring, and managing research money. Of course, if the NIH cuts back its monies - we may have to worry.

The nature of our R&D has great potential and support both from private non-profits and public sources.

The only area of weakened confidence I have in my organization is their ability to staff their initiatives properly

The organization clearly see the importance of R&D but financial set backs have diminished the ability of the organization to maintain 2006-2008 support levels. Therefore my confidence regarding proper or appropriate investments levels is low.

B-2, cont.

The organization is doing intensive R&D, but for the next level investment is needed and it is hard to come by these days.

The organization is willing to invest in research as best fits its goals.

The R&D we get involved in is performed by outside companies (third parties) in conjunction with our multifaceted areas of process development.

The willingness is there but the ability is not at all certain

There are always areas of improvement needed. The company will progress but also reflect current economic conditions to prevent over extension that cannot be supported.

There is a definite push at the university to encourage more research. However, there is insufficient support staff and insufficient funding toward safety needs.

They are somewhat supportive R & D if we can use our existing instrumentation & space. Until the economy & regulatory legislation gives them more confidence that there will be a better chance and opportunity for growth going forward, they will be more reluctant to invest in R & D.

They get the big picture, but the rub will be in making specific decisions.

THEY REALIZE IT IS IMPORTANT - BUT IT HAS TO FIT THE BUDGET

They will fund critical items which are considered essential for our mission

Things are tough, but there is tremendous potential.

This confidence level is low for 2009 and until the economy begins to recover .

This facility is small and part of a larger organization. Any investment decisions for R&D would be made at the corporate level.

This hospital does not participate in R & D

This is a University Research lab. We do not INVEST money, only pay salaries to our staff.

Money comes from NIH.

This is academic, extremely, if not overly, reliant on federal funding for support of research resources, so level of confidence is low as more loose funding.

Though this University supports R& D Objectives, I doubt very much that something will be done due to CUNY (City University of New York) budget cut backs.

Upper management's fixation with stock performance tends to result in dramatic shifts in the resources made available for R&D especially when it comes to the hiring or firing of staff.

B-2, cont.

Very confident. (3)

Very confident - provided that NIH funding levels do NOT decline or stay flat in FY2010

Very Confident in 2009 outlook and investments. 2008 growth was 60% and 2009 projection is 75-100% growth.

Very Confident in the future of 2009

Very confident, funding has been arranged for 2009

Very high

Very much confident of the necessary support from management.

Very open to new advances

Very tight budgets

Very willing

Very willing to invest in new equipment and technology to meet our goals

We are a community hospital that doesn't have the ability or staffing to do R&D.

We are a public university. The state has already mandated 2 rounds of across the board cuts. 90% of the university funding comes from grants (federal, state, industry). As those sources dry up, the ability to invest in R&D will decrease.

We are a research organization. There has to be research done here.

We are already in the process of dealing with a 25% budget cut

We are always willing to invest but we must make money from customers to invest in additional research.

We are committed to developing and making drugs to help people. We plan ahead so we have a little cushion. Our managers are protecting us so we can work.

We are committed

We are healthy

We are mainly concerned with direct patient care and basic research

We are not a r&d facility but i am quite confident that all necessary funding will be met to accomplish all our goals and objectives for 2009

We are not a R&D facility.

We are not in the R & D aspect of the Medical Field.

We are primarily r&d so we will invest

B-2, cont.

We are R&D stage. 2009 will be tough going, but 2010 should be better for grant-funded R&D, given a new political administration

We are willing to invest if we had the capital, capital is scarce

We have a pretty tight budget and a number of researchers have not gotten funded with recent grant applications, thus the level of confidence portrayed.

We have been mandated to minimize purchases of equipment for 2009.

We have made all necessary arrangements

We have not invested in R&D as far as I know. I will ask my PI about what it means to invest in R& D and if our University would ever do so? Not sure What R&D does other than the brief description before filing out the survey.

We have survived this dismal economy just barely, by being able to diversify, and by taking on projects from a wide variety of sources (and by extreme belt-tightening). I am still somewhat confident in our long-term future.

We try to stay committed but it is getting harder every mo.

We will continue to support R&D especially if we obtain some grants that were applied for in 2009

We will support R & D at all times.

We will use what funds we have to support R&D in 2009.

We're not afraid of the numbskulls

While spending is being curtailed, there is still money available to support specific project work.

Willing to invest in equipment but not staff

Willing to make marginal investments

Willingness is there, but present economy may cause sr. mgmt. to hold back on new hires until an improvement is noted

With company's trying to cut down on costs, training, expense and all related accounts are kept to the minimum.

With international investments, the company saw a 37% increase in sales last year.

With public or venture money more difficult to access confidence has to be low.

Within the restraints of small company resources, I am reasonably confident that the resources required will be available. I recognize that there are limitations.

Without a product on the market, R&D will be asked to closely monitor overall spending.

B. ABOUT CONFIDENCE IN RESEARCH INVESTMENTS

3. What is your organization's approximate **total 2009 R&D budget** (including all staffing costs and expenditures for products, equipment, systems, raw materials, services, facilities, new/upgraded labs, etc.)?

% Respondents

• Less than \$25K	14.5
• \$25K - 49K	10.2
• \$50K - 99K	9.2
• \$100K - 249K	15.4
• \$250K - 499K	8.0
• \$500K - 749K	5.2
• \$750K - 999K	5.2
• \$1 mill. - 1.9 mill.	7.4
• \$2 mill. - 2.9 mill.	4.0
• \$3 mill. - 3.9 mill.	2.2
• \$4 mill. - 4.9 mill.	2.2
• \$5 mill. - 9.9 mill.	6.5
• \$10 mill. - 14.9 mill.	0.6
• \$15 mill. - 19.9 mill.	0.9
• \$20 mill. - 29.9 mill.	0.9
• \$30 mill. - 39.9 mill.	0.0
• \$40 mill. - 49.9 mill.	0.9
• \$50 mill. - 99.9 mill.	0.9
• \$100 mill. - 249.9 mill.	2.2
• \$250 mill. - 499.9 mill.	0.6
• \$500 mill. or more	3.1
Total	100

• **Average: \$24,040,000**

• **Median: \$300,000**

B. ABOUT CONFIDENCE IN RESEARCH INVESTMENTS

4. Compared to **last year**, what is the approximate **change** in your organization's **2009 R&D budget**?

	% Respondents
• Increased	23.8
• Remained the same	54.0
• Decreased	22.2
Total	100
• Average Percent Change: +1.3%	
• Median Percent Change: +/-0.0%	

B. ABOUT CONFIDENCE IN RESEARCH INVESTMENTS

5. And at this point in time, what will likely be the change in the overall budget **from 2009 to 2010?**

	% Respondents
• Likely increase	28.1
• Likely remain the same	47.4
• Likely decrease	24.5
Total	100
• Average Percent Change: +4.9%	
• Median Percent Change: +/-0.0%	

Note: 28.9% indicated that it is “too early to estimate” the budget change from 2009 to 2010.

B. ABOUT CONFIDENCE IN RESEARCH INVESTMENTS

6. Please comment on whether your organization's R&D investment trend shows **growth, decline or no change** for 2009, and the **"drivers" that are causing that trend.**

No change

2008 was 60% 2009 expect 75-100% 2010 expect 100-200%

2009's R+D will be substantially less than 2008 because of reduced corporate profitability.

A decline is anticipated due to the delay in project activity by our clients.

A small amount of growth due to the current interest in alternative fuels for aerospace.

A steady and rapid decline in funds to perform research has been seen since 1995. Government lacks interest in developing sound policy based on research.

About the same.

Administration reverting to so called "tried-and-true" approach rather than an effort to slowly re-key and become more competitive.

Again we are not a r&d facility but our overall growth has been between 12 - 15% yearly, we are a wastewater testing laboratory and the drivers for growth are technology changes in the wastewater industry and the addition of new sampling sites and analytical parameters

As an environmental testing organization, acquiring appropriate technology and methods is intrinsic to the success of the organization.

Because we are state educational funded. We can not comment.

Business is growing. I am small and get projects by networking and referrals. Perhaps the "Big Boys" are cutting back on customer support and small volume product development, and I pick up what they turn down.

Cash flow

Clinical trials will take up R&D growth money for a couple of years, but we have a new facility, a robust staff so we don't need to grow right now.

Company success is pushing growth, but economic conditions are modifying it. We may grow but reorganization is still necessary to ensure efficiency.

Confident

CONFIDENT MORE THAT THE COMPANY WILL FUND IDEAS WITH A QUICKER LIFE CYCLE THAN THEY USED TO. A QUICKER ROI NEEDED THESE DAYS.

Currently there is no change. If the product is moderately successful then I believe upper management will increase the budget in 3rd and 4th quarters of 2009.

B-6, cont.

Customer request

Decline is evident based on the automotive industry.

Decline. (5)

Decline - economy. (2)

Decline Quarterly earnings

Decline Slow economy

Decline - lower sales

Decline based on current market conditions and related income

Decline due to economy. Hiring Freeze.

Decline for 2009 - global recession.

Decline for 2009. Capital investments drying up.

Decline for 2009. If no money is generated then none can be spent

Decline in 2009

Decline in "soft" spending for travel, education, conferences etc. Money available for product R&D.

Decline initially for 2009 but expect to end in growth

Decline of about 8%

Decline owing to environment.

Decline! Stock price and credit availability put a premium on keeping current infrastructure in place and functioning properly. R&D projects present a risk to capital unless a project can be completed quickly with a high probability of success.

Decline, economy

Decline, generally

Decline, slowing economy, less funding from NIH

Decline--due to ongoing budget cuts from the state

Decline. Drivers are interest rates on endowment funds.

Decline. The driver is the automotive market.

Decline. Bad economy

Decline. Driven by no immediate return on R&D investment.

Decline. Lack of funding from the state and lack of opportunities to pursue external funding.

Declined by savings and delays due to the harsh economic environment and the difficulty of obtaining new and additional funding sources.

B-6, cont.

Declined, we abolished direct marketing through trade shows

Definite growth

Definitely there's an increasing trend. Market competitiveness drives this trend.

Depends on the number of students

Does not apply, new company

Don't expect them to change

Don't know. (8)

Don't know, probably declining considering the economy, industry, etc.

Don't think this is applicable to my employer.

Drivers are economy and government funding

Drivers for R&D investment are opportunities to attract outside investment

Due to everyone tightening up, grants haven't been funded, yet prices have skyrocketed in the areas that we need products from. As the gas prices have gone down, the prices have remained constant since increase and are not likely to decrease. Overall we saw about a 10% increase in prices for products, some as much as 20%. This means we are having to spend more on supplies and equipment and cut back in other areas that are less important.

Due to inflation, there will be a net decrease in buying power, although the budget itself is relatively stable.

Due to the population growth in South Central Texas our water sales could see an increase, however all other areas will see a decrease ... this includes research and studies in our regional lab.

Economic conditions and new products

Economics are the primary driver as with most things this year.

Economics driving slow down in research initiatives.

Economy. (2)

Expect a 10% growth

External funding is always the driving force. In fact most academics have expanded way beyond their needs if one takes education as the funding source and research funding as ancillary

Fully depends on government spending and grants to nat'l. Labs and Universities.

Funding agencies, federal, state, and philanthropic organization curtailed budgets

Funding stable, but no growth, unless state has unexpected increase in revenue.

B-6, cont.

General economy

Government and defense requirements dictate an increase in program support.

Grant funding

Growth. (7)

Growth - competition

Growth - gaining new customers

Growth - metal in the ground will hold its value, R&D can help increase recovery and production

Growth - product potential fills gaps for product replacement, keep manufacturers busy;
justifying raise over fold - staying in the game

Growth and great faculty

Growth as more customers are approaching.

Growth because of better technology

Growth driven by the need to attract further R&D investment

Growth due to introduction of a new technology program

Growth due to partners and clinical trial results

Growth if we can attract capital

Growth in the molecular diagnostics field is happening at an outstanding rate. Our organization has committed to keeping up with that trend.

Growth is required but will not be funded to the level required.

Growth new products

Growth of student knowledge!

Growth will continue as we prepare students for professional positions.

Growth, depending on funding activity

Growth, new market opportunities

Growth. Driven by the aging population

Growth. Many companies outsource their specialty needs to us. As companies downsize, the need for outsourced specialty support increases. We have high projected sales this year due to the downsizing trend.

Growth. Need for new, innovative products.

Growth. We are new company.

Growth. FDA approval received for a product late in 2008.

B-6, cont.

Growth ... we are an early stage startup

Hold to decline.

Hopefully growth! We are a new company, so hopefully marketing will drive us further in 2009.

I am not sure. The overall economic picture does not bode well for any expenditures beyond those absolutely necessary to continue to do business.

I do not know.

I don't believe there has been much change in trends and that this is due to the slowing economy.

I really can't say since our organization consists of one laboratory system in about ten different locations. I can only see my budget so I don't know what the others have.

I would guess a decline in R&D investment due to the economy. Our organization will choose to save jobs and stay the course until economic times improve. We will still invest in R&D when needed.

If we have enough fund, the trend will show growth.

Increase growth, drivers - moving into preclinical trials

Increase, the economy will drive all decisions

INCREASED PHYSICIAN & PATIENT VOLUMES = NEED

Increased R&D investment driven by increase in venture capital awarded

Investigation for next year will at qa low level due the retrenchment of the economy

Investment trend shows no change for 2009. Successful launch of several new products for key markets that are currently in late development phase is the reason for no change in the budget for 2009. New CEO places heavy emphasis on R&D also.

It appears to be growth.

It has been hard to secure funding. We work with a hospital and a university. The hospital would like us to be self supporting in 2010

It is too early to tell but so far we are not able to make any investment in extra research or tools for the research. Decreased customer need has driven this.

It should increase at the rate of inflation only

It should remain high based on our success at getting companies to outsource their testing work with us.

It shows a no change presently and is mainly due to present availability of funds.

It shows decline -- a roughly 4.5 % decline.

B-6, cont.

It's probably on the decline.

I'd err on the side of caution and assume that there will be no change due to the economy.

Lack of revenue

Likely decline due to change in strategy -- but not yet vocalized

Likely decline with economy and less company capital as the main driver.

Likely to be growth - main driver is NIH funding levels

Little change

Little change but depends on income from contract work

More equipment is available for purchase.

Most likely a decline. Most of money going into sales of existing products.

Most likely there will be a decline in R&D for 2009. The single largest driver is the fiscal health of the company.

Much of effort is to reformulate products to meet new market demands.

My former employer is growing by cannibalizing other companies' and their compound libraries', eliminating "now redundant" operations and associated employees and limiting imagination and risk to fund only billion dollar return projects. Don't contract a CNS condition or rare illness, it's likely there will not be a suitable drug in the future.

Need to open new markets, so R&D is critical.

New products

No change. (24)

No Change - Economic Downturn

No change - economic shortfalls

No change - economy

No change at best, likely decline. raising funds from private source

No change at present. Drivers being possible new applications suggested by clients for existing products.

No change based on end of year ordering patterns.

No change because no new money is on the horizon

No change due to expenditures going more toward technology which will sell itself.

No change due to the small increase in revenue budgeted

No change foreseeable

B-6, cont.

No change hopefully

No change or decline, due to losses in the endowment.

No change or slight decline due to cutbacks

No change with in a year

No change with private supporters compensating for federal and state declines

No change, because of low income families, and the economy.

No change, driver is loss of customers.

No Change, due to economic climate of our customers

No change, revenue may remain the same

No change. We're waiting on the rest of the world.

No change. Funded by the principle investor/president.

No change. The project is established and the fundamental engineering and chemistry applications are operational, with fine tuning needed. The fine tuning of the components are the driving factor for R&D in the coming year.

No change... most agencies are flat funding for the coming year and we will maintain reduced operations

No change ... Need for data

No change; budget was set earlier in the year

No change; new lab will be in place in 2010.

No growth or slight change due to economy.

Not much change, 25%. We are a nonprofit.

Not sure. (2)

Not sure about that

Not sure yet. The 2009 plans shows slight growth from previous years.

Not very likely.

Oil price, funding, DOE policies

Once I have the equipment I need then I do not expect to be spending very much more.

Our applied R & D is increasing with the drivers being our customer's needs.

Our companies R&D investment trend shows growth. The primary driver for this is, in a slow economy we need to find faster, more efficient methods for producing our end products as well as producing newer and more innovative solutions.

B-6, cont.

Our company does not do formal budgets but spending will probably remain fairly constant. Our growth in 2009 is being driven by the addition of senior research staff, and maturation of previously developed technologies which are attracting new large customers.

Our growth is on the rise. This is because our company is a growing company. The more investments we procure, the more money goes to R&D. It's a waiting game. Even though my own thoughts are that the more we invest in R&D the faster our growth would be.

Our investment trend shows growth in R & D due to our further expansion of services and an increased knowledge of where our business fits into industry needs.

Our organization has grown little in the past 15 years and I expect little change.

Our product pipeline is strong and we are targeting growth, but have contingencies if we are flat or show decline

Our R&D investment shows no growth; management trying to be conservative with funds due to economic downturn, while still trying to maintain R&D output.

Our R&D involvement is related to the needs of our clientele over a large spectrum of industries.

Our state is in a budget crisis and they will cut the education budget first

Overall economic downturn mandated cuts by state.

Pending approval of device

Perhaps small growth

Predict growth due to larger companies outsourcing their R&D efforts to companies such as mine

Prior inertia in the R&D investment will carry us into 2009, but the overall depressed economy will cause a decline.

Private sector and Medical demands will drive the growth.

Probably grow due to new products we will be releasing.

Probably no change, although a physical move and expansion of the laboratory last year may cause the investment trend to appear to decrease this year.

Profit margin continues to shrink.

Profit margins rule. No incentive to perform R and D.

R&D does not have consistent growth. It is year-to-year.

R&D investment trend shows decline, which depends on business opportunity levels.

R&D investment will decline in 2009. Focus is on supporting existing customer products.

R&D is being cut back due to economic slowdown and forecasts.

B-6, cont.

R&D is growing here if the number of grants approved is anything to go by.

R&D spending is going to decline significantly. Our major customers have stopped much of their development, and in turn we have had to stop ours. The new projects/products that our customers are recently requesting are "older" products and are willing to settle for less cutting edge performance. Our customers are not willing/able to pay for the next "new" product.

R&D trends is modest growth beyond inflation Federal, state, and nonprofit grant agencies, as well as services sold to other institutions.

Recession

Remain the same because increase not yet needed.

Remains static, since anticipated deficits in the state actually decrease funding for projects.

Roughly no change. Incentive to bring more work in-house, ability to offer services to more markets.

Should remain about the same, with old project phasing out and new more applicable ones phasing in

Shows a significant increase due to a new investment in the company.

Shows decline mostly because of government budget

Shows growth

Shows not change, for the reasons described above

Slight growth due to new product lines.

Slight increase in investment, Business is good but a conservative approach re: spending is mandated until positive signs are noted in overall global economy

Slight to Moderate growth based on the estimates we are seeing for 2009

Some growth is expected as the jurisdiction of the organization is getting larger increasing the need for investment.

Some growth, required to attract research faculty and students. The competitive job market drives this trend.

Somewhat of a decline due to consolidations within the Ag Industry.

Stay decreased due to economic and competitive pressure.

The amount of monies available is declining and this is definitely due to the huge federal budget deficit and the declining economic growth is slowing philanthropic gifts

B-6, cont.

The biggest change is that the organization plans on being "smarter" about how we conduct R&D - less money spent on achieving the same results. The drivers are primarily the downturned economy.

The dean is adding influence to increased research. more more more

The development of more genetic tests will play a very important role in the increase of R&D of the company.

The final decision on R&D investments is dependent upon the rate of growth (or decline) of the economy in the next three months. If the overall global economy is still in decline in the next three months, we will undoubtedly be asked to reduce our spending for the remainder of 2009.

The growth expected is due to divestment of other programs and a more central focus.

The investments will not change, although they may be placed into more diverse product development. New uses for industrial and apparel fabrics are forcing marketing efforts into new arenas, which will drive R&D efforts.

The maturity of our market will require us to keep pace with the advancements in our industry

The only "driver" at this point is financial gain or loss from operations.

The overall R&D investment is clearly showing significant declines with the driving force occurring in the decrease in revenue within various state income sources. In our area, the primary decrease is in the energy, manufacturing, and tourism sectors.

The R&D side is in great decline as research project orders have dropped by 70%. The biggest drivers have been work shifting to overseas for the last several years and now just a nearly total meltdown of work. We have observed a great pull away from R&D project outsourcing from the large companies which themselves have shut down projects.

The same as last year

The trend for 2009 is slightly negative and the forecast is for flat growth. This of course all depends on the economy, access to credit and the performance of endowments.

There has been no change in our departmental budget in the past four years.

There is a decline in the amount of funding for research at our public institution. The drivers are lower tax resources.

There is need for growth, but due to the current economic crisis we need to make sure that the products that have been developed will be used in the same volumes as last year.

There may be a slight growth from US driven sources.

B-6, cont.

Too early to estimate, hope to grow

Trend toward manufacturing scale-up, which will deplete the total amount of dollars available for R&D.

Uncertainty about annual sales.

Until the economy & regulatory legislation changes are more favorable, a decline in R & D is forecast.

We are a liberal arts college.

We are a new company so our R&D investments shows growth. However, demand is very strong for our type of analytical laboratory.

We are a new startup company, and are applying for grant funds 2-3 times what we received in our first go of it.

We are growing. Downsizing of larger energy industry companies are certainly the growth factor for us due (due to their increased outsourcing).

We are in a growth mode, but that growth has slowed, waiting on award of new contracts already proposed.

We are looking to expand our R&D. Due to the expected growth of the whole dietary supplement functional food market. Also we have new technologies and products coming on line.

We are not a R&D facility.

We are not in the R & D aspect

We are reorganizing for 2009 with new management and a new (small)lab, so we hope we can get enough contracts to stay afloat.

We are trending growth. The institute has been a designated cancer center since 1989 and has recently become a comprehensive national screening center as part of the NIH roadmap (see MLPCN). This and additional private investment in translational research is driving our growth. We basically maintain if not get smaller. Researchers that bring in larger research dollars are not attracted to our facility because of the lack of support.

We continue to grow in staff and equipment although I don't know the value amount invested for the future.

We have invested in certain areas perhaps at the expense of others but we do what we think we need most. Investment will probably not decline but,if necessary, if may remain the same.

Consumer buying habits determine our revenue and, hence, our investment.

B-6, cont.

We have to grow to support the needs. If we stagnate the work slows down and the plan is not achieved.

We recently went through a hurricane but our R&D survived intact.

We should have growth.

We show no change as far as projected growth but this is a very conservative approach and based on all factors and the new products that have been approved recently, we actually expect growth for 2009 of at least 10%.

We will likely increase as we increase the number of faculty and research areas for this program.

We're experiencing a strong growth trend in R&D, driven by both public and corporate awareness of new "green initiatives" vital to achieving energy independence.

Will grow

Will remain the same. the weak economy

Yes

B. ABOUT CONFIDENCE IN RESEARCH INVESTMENTS

7. Please check ALL the ways the **current economic recession** is having a **significant impact** on your organization's R&D investments (if appropriate, check "No Significant Impact"):

	% Respondents
• We are conducting fewer R&D projects	25.9
• No new hires for R&D	49.8
• There have been or will likely be layoffs in R&D	16.5
• Raises in R&D have been frozen/postponed	28.9
• Funding for new R&D equipment/systems has been reduced/is on hold	40.2
• Funding for new labs or lab renovation has been reduced/is on hold	36.2
• Funding for training/industry meetings has been reduced/is on hold	31.0
• Funding for outsource services has been reduced/is on hold	20.3
• Other significant impact	7.1
Subtotal, Being Impacted By Economic Recession	74.1
• No significant impact	25.9

(Totals to more than 100% due to multiple answers.)

(continued)

B-7, cont.**Other:**

Delayed equipment investments

Don't know

Economy

Funding has been diverted to R&D due to fall off of traditional production

Hurricane IKE (Galveston)

I really wouldn't know

Increased needs in mfg.

Infrastructure (new buildings) on hold

I'm still unemployed after 4.5 years.

Less risks taken in go no go decisions

Make it without corporate help or leave.

Merger

Money is always tight.

Moral ... the unknown

Only customer support travel allowed but still requires upper management approval.

Our stress and anxiety over receiving further grant funding have greatly increased.

Real estate is looking to be much more affordable

Reduction in staff hours

Sales of equipment are down due to less demand

State share of health benefits cut/repair work to labs now charged to PIs rather than to overhead/other costs shifted to PIs (shipping, office supplies)

Testing has been to move to China (outsourced)

Travel is decreased

Travel is severely restricted.

VC funding is slower

We are in the let's get really cheap mode.

We have actually grown during this period.

We will not be able to expand as quickly as desired

B. ABOUT CONFIDENCE IN RESEARCH INVESTMENTS

8. Please indicate approximately how your organization's 2009 R&D budget is **allocated** across these **eight** areas of expenditure (if you don't know, skip the question):

	<u>% Budgeted For This Area Of Investment</u>	<u>% Of Total Budget</u>
a. Management & staff compensation	89.8	35.7
b. Facilities (lab construction/modernization, lab furniture, utilities, etc.)	88.3	12.9
c. Raw Materials (chemicals, reagents, metals, other materials)	90.3	13.2
d. Commodity/Consumable Products (glass & plasticware, filtration membranes, pipettors, gloves, racks, etc.)	90.3	9.2
e. Technology (equipment/instruments/systems, including related service & maintenance)	87.4	14.3
Subtotal, Raw Materials, Commodities, Technology	-	36.7
f. Education (training, industry meetings, information databases, etc.)	100.0	5.3
g. Outsourced services	50.5	4.9
h. Other	30.1	4.5
		100%

B. ABOUT CONFIDENCE IN RESEARCH INVESTMENTS

9. If your organization has recently experienced **significant changes** in any part of the R&D budget, please describe the change(s):

I am not certain how you are using R&D in our circumstance

- 5%

30% decrease overall. Early retirements. Loss of knowledge base. 50% reduction in operating budget

50% decrease in funding

90% of staff laid off buildings / labs / projects closed.

All organizational budgets, including our R&D budget, will be slashed by 4.5 % this year.

Almost no budget for new equipment.

Already described above.

As the profile of our company increases throughout 2009, we will be in a position to increase our R&D and hire more staff.

Awarded additional programs that require corporate wide expansion

Because we are state educational funded. We can not comment.

Big projects cut, people laid-off, capital investment postponed

Budget items related to staffing, (compensation, overtime, hiring, & training), recently received a \$137,000.00 decrease in funding.

Budget reduced by 8%

CAUTION DUE TO DOWN MARKET AND TIGHT FUNDS

CEO has to prove any expenses over \$1000

Consolidation of facilities from two to one.

Contracts for 2009 OEMs automotive on hold or eliminated from the opportunities for this lab.

Cut backs due to the economy

Cut budget on 1 product moving to back ups

Cutbacks in people and travel.

Decline due to Quarterly earnings

Decreases for first half of 2009

Down sizing

Downsizing and reducing the project load

Entire change in "chain of command" eliminating Assistant Manager all together.

B-9, cont.

Everything has been cut across the board - not just R&D

Expansion of facilities scheduled to begin in spring 2009 has been put on hold indefinitely.

Staffing (newly created positions) has been frozen.

Freeze in recruitments

Freeze on new hires (support staff - grant supported hiring O.K.) Cut in state share of health benefits.

Frozen budget funds

Grants have been reduced each year and some grants have not been renewed even though productivity has been very good.

Head count reduction

Head count reductions

Immediate Freezes on everything !!

Increase across the board

Increase in R&D in preparation for new clinical product evaluation

Increased R&D investment driven by increase in venture capital awarded

Increases in staffing costs due to acquisition of new senior research staff.

Introduce new equipment

Layoffs

Limited financial resources available

Looking for angel investors to fund research and commercialize technology

Lowered expectations for sales overall and significant reduction in budgets.

Massive cuts

Money saving is up. Delaying purchases and reducing expenses to play it safe for the short term future

More in house R&D

My small request for exploratory research was cut by 30%

New investor

New positions have been approved but will not be filled until confidence in economy is restored

No changes have occurred as of now

No changes in the R&D budget from the better part of last year.

B-9, cont.

No changes just orders to conserve if possible, and ordering capital equipment requires a few more signatures

No changes not already captured.

No changes.

No changes. We are building turn key production plants.

No funding

No increase in R&D Personnel

No instrument service contracts; no technical support for research; reduced spending on instruments and chemicals.

No new equipment purchase

No significant changes

No significant changes - just more careful about selecting the projects that require funding.

No significant changes at the present time.

No significant changes in R&D budget.

No significant changes, but steady growth.

None, Except trying to do the same projects with less personnel.

None, same as last year

Only things of extreme importance

Orders have come down to watch all expenses, other things are "temporarily" suspended>>>>no travel or education help charitable matches, etc.

Our budget follows government spending proportionately.

Our funding is up from last year. We expect our funding to be up for next year. This is due to the growth of this new company.

Overall decrease in capital

Personnel reduction

Projects have been dropped.

Reorganizing for 2009 with new management and a new (small)lab

Re-orgaqnization, 5% layoffs

Really do not have R&D budget - ours are for equipment, technology upgrades, catch area work...

Reduced number of active projects and wait for more data before making go/no go decision.

B-9, cont.

Speed up and focus on projects with clear and achievable milestone payments. Huge reduction on contract staff. Very significant decrease in new equipment purchases. Reduced budgets for outsourcing (30% or more). Focus on well established core activities.

Scope shrinkage

Several projects have closed down and all expenditures have been directed into one major project.

Significant cost cutting involving laying off most of the staff.

Since I have not been there since 2004, I can not comment.

Smaller capital available for instrument improvement or purchase in regards to changes in a business segments profitability

Still waiting

Stop plans for new facilities and two buildings for at least one year

The budget has been significantly cut due to the economic downturn.

The college opened a new chemistry & biology building in August 2008.

The overall budget is dollars is down by over \$400K as new equipment and expansion has been put on hold indefinitely. The future is so blurred that we can't accurately project at this time.

There have been no significant changes

There is a freeze on hiring, travel, and spending of any sorts.

There is very little extra money

There were two major R&D technology areas. One was sold off also with some employees. Now there is one business unit.

Tighter budget controls

Two projects have been placed on hold.

We added a Lab Manager to our staff

We anticipate increased revenue due to FDA approval and collaborations that came through 12-08

We are expanding to complete end stage research and pilot work.

We are opening a new Galveston National Laboratory to our campus.

We have been asked to reduce consumable costs by %10

We have had to layoff people.

We've just won a grant, a first for the company so there will be a large influx of funds.

C. ABOUT INVESTMENTS IN STAFFING

1. How many **total people** work in R&D at **your location** and in your organization **overall**, including full and part-time personnel? (Please type in six numbers.)

	% Respondents	
	<u>Number Working In R&D ...</u>	
	At Respondent's Location	Throughout Entire Organization
a. Managers		
• Average:	32	150
• Median:	2	4
b. Staff Members		
• Average:	145	1,302
• Median:	6	15
c. Total (Managers + Staff)		
• Average:	168	1,477
• Median:	8	19

C. ABOUT INVESTMENTS IN STAFFING

2. Compared to **last year**, what will likely be the percent **change** in 2009 in the total number of R&D managers/staff members at your location?

• Likely increase	16.4
• Likely remain the same	71.9
• Likely decrease	11.7
Total	100

- **Average Percent Change: -2.2%**
- **Median Percent Change: +/-0.0%**

C. ABOUT INVESTMENTS IN STAFFING

3. In **2008**, what percent of the R&D managers/staff members at your location **“turned over”** ... i.e., the number of people who were **replaced** due to resignations, terminations, promotions, retirements, graduations, etc.?

% Respondents

• 0%	56.1
• 1 - 10%	31.0
• 11 - 20%	6.1
• 21 - 30%	2.5
• 31 - 40%	1.8
• 41 - 50%	1.0
• 51 - 60%	0.0
• 61 - 70%	0.3
• 71 - 80%	0.3
• 81 - 90%	0.0
• 91 - 100%	1.0
Subtotal, Number With Employee Turnover	43.9
Total	100

- **Average: +6.0%**
- **Median: +/-0.0%**

C. ABOUT INVESTMENTS IN STAFFING

4. Compared to **last year**, what is the **change** in 2009 in the total R&D **compensation budget** for all managers/staff members at your location?

% Respondents

• Increased	22.2
• Remained the same	70.0
• Decreased	7.8
Total	100

- **Average Percent Change: +2.6%**
- **Median Percent Change: +/-0.0%**

C. ABOUT INVESTMENTS IN STAFFING

5. Compared to 2 - 3 years ago -- when new R&D hires are made, are the **compensation packages** generally higher, lower or about the same?

	% Respondents
• Much higher	2.4
• Moderately higher	22.8
Subtotal, Much Higher + Moderately Higher	25.2
• About the same	59.9
• Moderately lower	10.5
• Much lower	4.4
Subtotal, Moderately Lower + Much Lower	14.9
Total	100

C. ABOUT INVESTMENTS IN STAFFING

6. Compared to 2 - 3 years ago -- in **recruiting** for your R&D department, is it **easier or more difficult** to hire qualified professionals, and why?

more difficult

A bit easier. More people looking for work.

A little easier

About the same. (13)

About the same, although we are seeing increased availability of staff members.

About the same, maybe a bit easier

About the same. scientists with experience in crystal growth few and far between

Because we are state educational funded. We can not comment.

Because we are a small public institution we have no change in recruiting qualified people.

Better, more competitive market.

Company founded in 2007.

Depends - easier in the process; difficult to wait for the right one

Difficult

Difficult area of country

Difficult - census restrictions

Difficult - Fewer applicants with specialized experience

Difficult to hire. Finding personnel with the proper training and education. Employees must have skills for Customer Service and technical applications.

Difficult. more opened position than (good)candidates

Difficult. We don't have the facilities to attract highly qualified professionals or salaries that are competitive with the national average.

Easier. (14)

Easier better economy more money allocated to that purpose

Easier - fewer new hires, more quality people are available

Easier - more out-of work

Easier - more qualified people available

Easier - People are available.

Easier as the talent pool seems to have increased

C-6, cont.

Easier at lower cost

Easier because of layoffs at other companies

Easier because more qualified professionals are looking for work in our sector

Easier because of more applicants

Easier because of out of work professionals from industry.

Easier because the talent pool is larger.

Easier due to location, high unemployment rate.

Easier due to more candidates

Easier due to number of formulation scientist currently looking for work

Easier more available

Easier since cheaper

Easier since there are so many individuals out there from being laid off at our COs

Easier to find applicants, harder to get them approved

Easier to hire qualified professionals now

Easier, More people are available because of the layoffs over the last year.

Easier, because everyone is out of a job.

Easier, because of the number of layoffs in the industry. Good people are available and are looking for new jobs

Easier, greater pool of candidates

Easier, more applicants

Easier, more available applicants.

Easier, more looking

Easier, more out on the market to choose from.

Easier, more people apply

Easier, more qualified applicants

Easier, more recruits are in the job market

Easier, more supply of qualified applicants.

Easier, qualified professionals have been laid off from other companies and are looking for work.

Easier, so many good people are out of work

Easier, there appears to be more individuals looking for employment in the biotechnology sector.

C-6, cont.

Easier, there is a larger pool of potential employees with experience, however these are not the cream of the crop.

Easier, unemployment rate is up

Easier, with the downturn there has been a influx of CV's with great qualifications and minimal income requirements

Easier- in our niche, our work is very specialized, and we hire without this niche.

Easier-More talent available due to layoffs in the industry

Easier-relocation and salary packages are better

Easier. Layoffs at University near us.

Easier. More qualified people are on the market.

Easier. more scientists looking

Easier. Multiple layoffs in R&D in Research Triangle, NC area

Easier. There have been a lot of layoffs here in the Detroit area. Therefore, there are a lot of job candidates.

Easier. There seems to a greater pool of qualified people.

Easier. Less graduates in the lab field.

Easier. More and better people a re available and want to work.

Easier. More availability of qualified people due to layoffs in other companies

Easier. PhDs grow on trees. They're now graduating without the skills taught in freshman chemistry labs, though. So, I suppose they're about as smart as trees, too.

Easier. The market is flooded with layoff and employees

Easier. The UMass system encompasses 5 campuses and 128 majors. Science or engineering majors are at all 5 campuses. The Medical School receives hundreds of unsolicited CVs for postdoctoral positions. The word is out that we received \$5 billion from the state in a biomedical funding initiative.

Easier. There is a greater amount to choose from because of the job market.

Easier... more qualified people job hunting

Easier ... job market tougher!

Easier ... more people looking for jobs

Easier ... Lots of suitable candidates on the market!!

Easy, there are plenty of them in this city.

C-6, cont.

Economic downturn makes more qualified people available.

Harder due to competition with private sector

Harder to hire for less money and tenuous position, even if position 1.0 FTE.

Harder, aging MT, no one entering profession

Harder, Homeland Security issues eliminates a lot of qualified candidates.

Harder, the compensation expectations are higher than what is being offered.

Harder-less competent people available

HARDER-non competitive salary

Harder. More people but less experience and qualifications.

Harder. Partly due to location and partly due to pay.

Harder. People really have to wonder about security of leaving a job for another that is not as secure.

Harder. Qualified personnel do not want to work in Western Oklahoma at the prevalent wages offered.

Harder. Can't find qualified applicants.

Hasn't changed

Have not done any recruiting in this time frame.

Have not hired

Have not hired during this time period so don't know.

Haven't recruited

Haven't recruited any.

I don't know

I have found it very easy to recruit highly qualified professionals to be a part of our lab due to the struggle of other business sectors.

I have no idea

I have not been involved in recruiting this year.

I haven't hired anyone in the past 12 months so I wouldn't know.

Impossible

Impossible. No one wants to work in a depressed industry.

Impossible

It has to be more difficult, relying on what I've experienced.

C-6, cont.

It increasingly gets harder for out specific area of expertise. The OEM fallout may change this in the future if we open to hire.

It is becoming increasingly easier as more qualified individuals are seeking at least some manner of employment even if the reimbursement is not what they have previously been accustom to.

It is difficult.

It is easier to hire more qualified professionals. Our company has increased projects and product placement which has allowed staffing growth.

It is harder to bring people in from elsewhere since most own a house and can't sell in the current climate. If they can't sell the old house, then they can't buy a new one here--hence they don't accept the job offer.

It is more difficult. Less qualified applicants in the area.

It seems about the same.

It seems harder to get the most qualified more experienced researchers

It seems there is more of a shortage of qualified professionals.

It was harder to recruiting but seemed like we got higher quality of persons.

Its much harder to hire anyone, because inflation has gone up and the amount of pay that we offer has not moved.

It's been a little easier as there is a lot of talent on the market due to layoffs

I've only been on staff for 1 year.

Less difficult due to more people in the job market

Less funds available

Many more applicants of varying experience resulting in more time spent wading through the process.

More difficult, the layoff in the industry opened the market to a lot of good people

More difficult. (8)

More difficult Limited budget.

More difficult - funding for research too high.

More difficult - more qualified staff attracted to larger organizations with "deeper" financial pockets of salaries and project funding.

More difficult - candidates are unwilling to work full time

C-6, cont.

More difficult - Lack of training in this specialized area

More difficult - not enough qualified applicants.

More difficult - remote location, shallow labor pool

More difficult as there are greater opportunities for new hires and more choices of institutions to work at.

More difficult because administration has a very tight hold on new hires ... even though the administration has nobody scientifically qualified. All decisions are business oriented.

More difficult because finding committed, hard working people at a reasonable salary range is time consuming and challenging to determine if they will be a good member of the team.

More difficult because it is hard to find qualified people within salary range

More difficult because of frozen funds.

More difficult because of the low salary of SD compared to other states.

More difficult because the most qualified personnel tend to pursue their own business ventures.

More Difficult because there are very few trained teachers for biotechnology

More difficult because they fall short of minimum requirements/expertise needed.

More difficult because we have a hiring freeze

More difficult due to lack of experience and education.

More difficult due to lack of qualified Medical Technologists.

More difficult due to relocation expenses.

More difficult for our organization because they do not compensate R&D techs appropriately.

More difficult Management is unwilling to pay for staffing

More difficult to find personnel with proper qualifications.

More difficult to find qualified people with the correct match.

More difficult to find trained personnel that can do the job as well as can do what the resumes say they can do

More difficult to hire. Substantially smaller applicant pool, especially of merit and experience.

There seems to be more inexperienced and entry level applicants.

More difficult, qualified professionals seem to already have jobs

More difficult, because we don't offer competitive salary and benefits.

More difficult, due our specialized area

More difficult, due to market shares shifting overseas, which has made the talent pool shallower.

C-6, cont.

More difficult, location, and pay scale

More difficult, no funds available

More difficult, there is a declining number of qualified medical lab personnel to recruit.

More difficult- activity justification

More difficult-low salaries in competitive market for skilled labor

More difficult. Approved positions are not being filled until global economy shows improvement

More difficult. Plant is in remote location. Interviewees typically are from outside plant community. Relocation packages have been reduced placing more burden on potential hires to sell their existing homes.

More difficult. There are more people that seem to be trying to get positions with less qualifications. They apply for jobs they are not qualified for.

More difficult. Management is trying to reduce total workforce.

More Difficult. People are just not out there.

More job opportunities in the past

Much more difficult

Much more difficult to recruit scientists to our faculty, due to demand for Ph.D. chemists, and lack of a tenure track position in a joint government/academic position.

Much more difficult, as there are fewer graduates willing to start at lower salaries offered in the research arena.

Much more difficult. Reason - the intellectual capacity was not at the standard that it should have been.

No change

No change because the two of us are dedicated to making our new process work.

No data on this subject yet.

No direct comparison

No formal R&D function in my Division.

No funds available to increase staffing

NO HOSPITAL RECRUITING DESIGNATED FOR R & D.

NO new hires on the horizon.

No new members.

C-6, cont.

No recruiting

No recruitment past, present or future.

NO TURN OVER OF STAFF

No "qualified" professionals were ever hired.

Not hiring atm

Not recruiting new people so DNA

Not sure. we have a hiring freeze on.

Our location is in a small town with poor shopping facilities, only ~1,500 students in body, but it is a great place to raise family. Faculty salaries are lower than average. Young promising professors come and after 2-3 years too many leave for another more attractive opportunity. However, there are several excellent professors in terms of their ability to procure grants and conduct meaningful research.

Overall hiring and interview process has improved. Doing a significantly better job of hiring the right individual. A stronger focus on the individual away from credentials.

Perhaps easier to recruit to the academic environment since industry positions are rarer

Recruitment has remained the same.

Right now easier due to RIFs in larger companies.

Same. (11)

Slightly difficult. Fewer open positions to fill with specific needs and many more applicants to review.

Sorry, new company

Static funding yields no budget for newer hiring, although the qualified potential applicants appear to be available.

The company started two years ago.

The current economic situation has resulted in significant numbers of highly qualified research scientists looking for employment. We were able to replace an entry level position vacancy with an experienced doctorate level scientist. The entry level position received over 100 applicants with five of the applicants holding Ph.D. academic degrees and having a total of over 85 years of research experience.

The most desired people are staying put. Lots of entry level or inexperienced

The personnel seem to be available, but the quality and work ethics are decreasing with time.

C-6, cont.

The same. If we need them, we get them.

There are many more scientists that are looking for jobs than previously due to lay offs in industry resultant from the downturn of the global economy.

There are more candidates available in the market due to the increase in unemployment.

There is not difference.

There isn't a shortage of qualified professionals but there is in funding.

They have not hired anyone.

Unknown

We are a college.

We are all volunteers.

We are careful about filling positions and never go for "a warm body." Even when we were rapidly expanding we had little trouble finding the right fit for us. Not much has changed except more people answer our ads.

We are not hiring.

We have not needed to hire recently.

We have not recruited any new hires since 2004.

C. ABOUT INVESTMENTS IN STAFFING

7. In the last 2 - 3 years -- has your organization initiated any investments or programs to increase the **productivity** of its R&D **managers/staff members**?

	% Respondents
• Yes	24.6
• No	75.4
Total	100

7a. If "Yes", please describe that **initiative and its results**:

% of profits on invented products

401b; TSA; Total Rewards based on customer satisfaction

5-S, structured safety, "borrowing" Toyota Operating System, Improved the visualization of the workplace, know more about the status of projects, decrease in safety incidents, decrease in clutter

Additional stock options

Attracting more customers

Because we are state educational funded. We can not comment.

Better training

Better training, better SW controls

Bought duplicate lab equipment to get 2 batches running at once. Boosted productivity maybe 20%.

Bought few small companies and outsourced basic work like synthesis of compounds

Capital campaign to raise funds were successful.

Continuous improvement (Lean + 6 sigma), results have been positive, but small

Developed new product lines

Education

Equipment, new software, and Lab upgrades

Extensive work life programs, free college courses (at all campuses), other types of training (Office, grant writing, presentations, working with animals, etc.)

Getting new businesses

C-7a, cont.

Goals to achieve increase in percent utilization

Grants

Hire new researcher and liquidated some assets

I don't know

If software training for common Microsoft packages becomes available, the personnel is allowed to attend. Some of the training helps to update use of Word, Excel, etc.

Implemented time accounting procedures

Improved feedback on lab costs to staff. Better tracking of resource allocation.

Improved instrumentation

Improved time management, project management, and project reporting procedures

Improved work areas and equipment

Increase education conferences attendance - worthwhile

Increase PhD staff and R&D results become more clear

Increased automation

Increased the number of staff in the research grants office.

Increased the usage of Laboratory Automation.

Increased training and mentoring initiatives.

Investments are being made in process simulations software to reduce the amount of experimentation required to bring new products to market.

IT and centralization of data services

It is simply an increased focus on determining what is important and how to bring about desired changes. We do this as a leadership group.

K/T Training

Lean

Learn and confirm

Major diversion of resources to R&D; spirits are up, layoffs postponed

Management classes

Management training courses, software

More lab equipment and new parameters, new River Studies

More training and other tools

C-7a, cont.

New analytical equipment procurement. Milestone Microwave Solvent Extraction Lab station, Perkin Elmer (PK) Spectrum RXI FTIR, PK Clarus 600 & 500 Gas Chromatographs, PK Lambda 40 UV/VIS Spectrometer.

New automated equipment, new training, collaboration with other organizations.

New capital investments which increased accuracy and improved process speed.

New equipment. (3)

New equipment has been purchased, however the equipment has not been qualified for use

New equipment to add dimensions to the research data acquisitions

New hire

New owner provides capital for projects with large benefit prospect in short term

New product lines

New senior hires and new large scale production placements.

Not applicable

One new employee

PPI - in the works

Project and agile management training

Project management software. Greater reliance on SOP.

Provide self funding through outside sources or leave.

Purchase equipment utilizing latest technology.

Purchase of a LIMS system. We are still learning it but probably will increase productivity somewhat.

Raises are based on productivity

Recruiting people

Redefining how the bonus program is calculated.

Requiring people to fill the breach when somebody retires or leaves. The results of this are an overworked scientific staff and poorer quality products.

Research plays a larger role in attaining tenure

Sales Seminars

Seminars, and visits to different sites to show the new technology.

Set standards for researcher productivity

Software and instrumentation

C-7a, cont.

Solucient

Streamlining manufacturing processes

Teamwork seminars. Project seminars. efficiency stressed.

Tech training.

Training -- They know more of what they do. Reorganization -- Better allocated resources

Upgraded equipment and added a lab manager

Upgraded software and computers

Various approaches from greater centralization of authority at the top levels, swinging back to a "hands off" approach with more control in the hands of the "R&D Team".

We build a new lab. We up date and up graded our equipment. We sent people to train on the new equipment. We are now able to do more inside our organization-less out sourcing.

We continuously conduct workshops and other exercises to improve business processes and improve productivity.

We have hired people with higher degrees and more experience in research. This has doubled the income in those departments due to more productivity.

We have increased the amount of continued education that most individuals in the organization may complete and offer incentives in some instances.

Work Process Redesign

Working on ISO 17025

D. ABOUT INVESTMENTS IN OUTSOURCING

1. What percent of each of these R&D-related activities will your organization likely **outsource in 2009** (type in 0% if appropriate; if you don't know please skip the question)?

	% Of All Respondents Outsourcing This Activity	Average % Of The Total Activity Being Outsourced*	Median % Of The Total Activity Being Outsourced*
a. Research	24.7	19.7	10.0
b. Development	23.1	25.3	15.0
c. Routine testing	47.4	21.0	10.0
d. Production	25.7	48.6	50.0
e. Human resources	16.1	56.2	50.0
f. Facilities management	15.5	58.1	60.0
g. Finance functions	19.0	36.7	25.0
h. Information technology	29.2	43.3	30.0
i. Purchasing	5.2	47.0	25.0

*Among those outsourcing each activity; those not outsourcing were eliminated from the average and median.

D. ABOUT INVESTMENTS IN OUTSOURCING

2. Compared to 2 - 3 years ago, what **trend** is your organization experiencing regarding **outsourcing** of R&D-related activities?

	% Respondents	
	All Respondents	Among Respondents Who Have Outsourced In The Last 2 - 3 Yrs.
• Significant increase	3.9	5.0
• Increase	12.3	15.5
Subtotal, Significant Increase + Increase	16.2	20.5
• No change	50.7	63.8
• Decrease	9.3	11.7
• Significant decrease	3.2	4.1
Subtotal, Decrease + Significant Decrease	12.5	15.8
• Have not outsourced in the last 2 - 3 years	20.6	--
Total	100	100

Note: Respondents who had not outsourced in the last 2 - 3 years were skipped to section E.

D. ABOUT INVESTMENTS IN OUTSOURCING

3. Of the R&D activities that your organization will outsource in 2009, what percent is likely to go to each of these **regions** (if you don't know please skip the question)?

	% Of Organizations Outsourcing To <u>To This Region</u>*	% Of All Outsourcing Going <u>To This Region</u>*
a. United States	95.3	85.7
b. Canada	12.4	2.5
c. Latin/South America	2.9	0.4
d. Europe	18.2	4.5
e. China	10.6	2.8
f. Southeast Asia (e.g., Singapore)	5.3	0.5
g. South Asia (e.g., India)	10.6	3.2
h. Middle East	1.2	0.2
i. Elsewhere	3.5	0.3
		100%

*Among organizations that have outsourced any activity within the last 2 - 3 years.

E. ABOUT INVESTMENTS IN NEW/REMODELED LABORATORIES

1. Check ALL the ways your organization is investing in the construction of **NEW laboratories** (check the last choice if appropriate):

	% Respondents
• Have <u>completed</u> new lab construction within the last 12 - 18 months	24.1
• Project underway - completion within 6 months	12.2
• Project underway - completion within 12 months	5.8
• Project underway - completion within 24 months	3.5
• Project underway - completion beyond 24 months	3.1
Subtotal, Projects Underway	21.7
• We anticipate construction to <u>start</u> within 24 months	9.5
Subtotal, Projects Underway Or Are Anticipated	30.3
Subtotal, Projects Recently Completed, Underway Or Anticipated	47.1
• No recent, current, planned new lab construction	52.9

(Totals to more than 100% due to multiple answers.)

E. ABOUT INVESTMENTS IN NEW/REMODELED LABORATORIES

2. Check ALL the ways your institution is investing in **lab modernization/renovation**:

	% Respondents
• Have <u>completed</u> modernization/renovation within the last 12 - 18 months	25.3
• Project underway - completion within 6 months	12.4
• Project underway - completion within 12 months	5.8
• Project underway - completion within 24 months	2.7
• Project underway - completion beyond 24 months	2.4
Subtotal, Projects Underway	21.7
• We anticipate modernization/renovation project(s) to <u>start</u> within 24 months	14.0
Subtotal, Projects Underway Or Are Anticipated	35.3
Subtotal, Projects Recently Completed, Underway Or Anticipated	53.9
• No recent, current, planned lab modernization/renovation	46.1

(Totals to more than 100% due to multiple answers.)

CONSTRUCTION & MODERNIZATION COMBINED: 62.1% of the respondents indicated that they have recently completed, are working on or planning new laboratory construction and/or lab modernization/renovations.

E. ABOUT INVESTMENTS IN NEW/REMODELED LABORATORIES

3. If your organization is investing in new labs and/or modernization of existing labs, please **describe the key reasons** for the investment(s):

100 year old building, too big, too expensive. Want modern building

Added mercury testing

Adding new disciplines to laboratory

Additional lab space needed due to fast growth of company in 2006 through 2008

Advances in technology dictate that we modernize.

Aging equipment and stricter regulations.

Aid in development of new product lines

Ancient facilities

Appearances

As a startup company, we anticipate moving into space that will require installation of an appropriate laboratory.

Attract new customers

Awaiting funding

Because we are state educational funded. We can not comment.

Better evaluation of new technology

Better use of space and equipment

Biocontainment and biosecurity

Building new hospital.

Built new building for hospital and moved lab to a more convenient location

Classified

Clean rooms and better equipment are needed for projects

Clearing out the old, bringing in the new; should have done this years ago

Company Growth

Company growth from Corporations outsourcing projects. We build new labs to handle the increased workload.

Compliance with FDA and cGMP.

Consolidation of buildings/facilities

Consolidation of locations

Converting organic chemistry lab to become an additional microbiology lab

E-3, cont.

Cramming more people into the existing offices to free up lab space.

Current building was not designed for R&D. Much of the space was intended for manufacturing- needs to be remodeled for research. Initial budget estimates have been obtained but will likely require multiyear phasing.

Current facilities are outdated.

Current projects will require increases in production, testing, and development efforts.

Anticipated 2009 projects will continue this trend requiring lab modernization to increase efficiency, production, and enhance new project development.

Customer demand for the testing of raw materials

Decontamination issues in cell culture --new suite.

Demand for environmental and regulatory laboratories.

Demand for services in a new area of the state.

Don't know

Enlarging school

Expansion activities in soil testing and feed testing.

Expand technology platform

Expanding mission.

Expanding our capabilities and reducing outsourcing

Expansion

Expansion of lab space for newer facilities

Expansion toward new biotechnology laboratories.

General updating, repair

Get more patients

Globalization. We need R&D in locations where we sell products.

Government and defense requirements dictate an increase in program test and qualification support.

Grow R&D revenue.

Growth

Growth and change of focus require different kinds of lab space. More developed company requires expanded DMPK and CMC efforts.

E-3, cont.

Growth of staff

In order to keep up with workflow issues and a lack of staff.

Increase efficiency.

Increase production capacity. Replace aging equipment.

Increase projects developmental speed, increase loads

Increased safety regulations.

Anticipation of more business.

Introduction of Organics

Investing in testing new technologies that would increase our competitive edge...

Keep Competitive

Laboratory efficiency improvement. Increase in space.

Lack of work space and buildings no longer suitable for the type of work.

Little or no investment is being made in this area; certain researcher offices have been converted into a small amount of lab space. The researchers felt that the additional space would be useful for chemical storage and experimental space.

Make more usable

Market expansion.

Mfg. and some r&d are relocating to a new facility do to lease termination

Modernization of the lab occurred last year. No plans for the coming year.

Modernized existing lab to perform special tasks

More efficient use of floor space and consolidation of labs.

More production space

More space needed for new grant PI's coming

More space required for larger equipment and increase in laboratory personnel.

Moved to smaller facility

Necessary to vacate our current building. Also, expanding.

Need for expansion of sections and desire by land owner to renovate buildings.

Need for more lab space with state of the art technology

Need more energy-efficient equipment.

Need more space, new equipment and environmental controls

E-3, cont.

Need to accommodate new staff and new technologies

New assistant professorship filled.

New bio/chem lab/ 40 x 40

New building to move to as current lease it up.

New business

New business, realized they needed to support.

New capability development.

New company, new lab

New construction allowed labs vacated to take on new uses.

New faculty

New Faculty recruitment incentives

New hires.

New instrumentation

New instrumentation; front end automation decrease FTE, increase standardize TAT

New manufacturing and sales support.

New manufacturing space

New mission

New product line and new production facility. Old lab was too crowded to allow numerous people to work in it at same time.

New products

New research direction

New researcher and beginning a new graduate program that needs lab space and equipment

NEW SITE LOCATION

New technologies, new researchers, expansion of current departments (school & hospital)

New technology

Obsolete equipment is removed and we are scaling up

Old out of date equipment is being replaced with better modern technology.

Only replacing worn out equip

Operation of new pilot facility will require formal lab capacity to support it with new feedstocks, and analyze the result.

E-3, cont.

Opportunity to expand into new research areas and take advantage of seed monies offered by the state of Florida

Our new dietary ingredient and supplement projects

Out of date

Out of date facilities and instrumentation.

Outdated facilities

Outdated facility per code. 1950 building, plans are drawn, waiting funding

Pilot plant area is getting crowded with equipment and needs to expand for safety concerns, power constraints and available space.

Previous building was worn out.

Process flow, update antiquated labs

Proposed increase in overall R&D activity

Provide space for new equipment and more efficient space utilization of existing equipment.

Reorganizing company & moving to new facility (offices & lab)

Relocation & improvement of quality lab anticipated

Relocation of our Lab. The location we are in now will be taken over by the Emergency Department

Renovate and build new lab for added capability.

Renovation

Reorganization of department, trying to attract good scientists/faculty

Replace out dated facilities.

Replace outdated facilities

Replacing old lab furnishings.

Site location of lab buildings is in the blast zone of an operating unit.

Space and better control over different departments and process. This is all dependent upon what happens in the next 12 months. We were forced to put the expansion on the back burner with so many delays or outright cancellation of projects.

Space tightness

Startup -- no previous facility

Started molecular testing

E-3, cont.

Starting new business

Starting up a nursing program in the Science Center Jan. 2009.

Startup R&D New company.

Support process & technology development

Sustained growth

Test units

The company has grown that we need more laboratory space in order to maintain the status quo in the industry.

The hospital is adding additional space for the whole diagnostic departments including the ED. This is due to the growth in the surrounding community.

The increasing demand for services is resulting in substantial production delays due to a lack of space to conduct the work. The available space issues are also a limiting factor in our ability to add additional staffing although that is on hold due to the declining revenue situation. Adding to this is a deteriorating building that is resulting in increased maintenance costs.

The modernization will be focused on the purchase of new equipment. As we grow, we are able to direct more moneys to the betterment of our research/analyses lab.

The need for more space in order to offer new future services and provide space for research and meetings

The previous lab was water flooded

The project to increase size of our animal facility, to add two new animal rooms, has ceased due to funding.

The reasons for these investments is to prepare for growth.

They are not

Three of our labs were remodeled four years ago. One research lab acquired two new fume hoods in the past year.

To accommodate faculty and students

To attract new funding

To increase efficiency

To increase productivity

To keep our equipment and procedures current

To remain competitive in higher education

E-3, cont.

Trying to bring everything in house...

Trying to draw more external funding

Update

Update and use new equipment than a dated building

Upgrading of aging facilities (25+ yr. old), and a need to accommodate institutional growth

We are a college. Our investment in our new science building is to attract students and to provide a quality education.

We are building a new plant facility and part of that includes pilot plant and R&D facilities.

We are building new lab's on our campus. The specifics are unknown to me but I hear other principle investigators making changes and adding new spaces for additional labs.

We are growing and expanding the scope of our business, that required a "makeover" of sorts.

We are updating to more modern systems based on obsolete software and standard requirements.

We had a new science building in the works (both state and private funding) and it was supposed to begin construction 6 months ago--as soon as the budget cutting started, there has been complete silence on this project--don't know if it is canceled, on hold, or what. We hope that it has just been delayed a year or two.

We have secured new contracts for outsourced testing from clients

We moved to a new lab and needed to purchase most-all equipment, supplies.

We needed a lab for our project that was moved into a renovated building.

We plan to reallocate resources and some labs need to be converted to accommodate new requirements. It is not really an expansion of overall lab facilities.

Were expecting on growth and add more staff

With rapid advances in technology and a lull in the economy it is essential that our facilities be maintained.

Workspace is inside a private residence. Questions about construction and renovation don't really apply.

Yes, but not in the US only overseas

E. ABOUT INVESTMENTS IN NEW/REMODELED LABORATORIES

4. For 2010 and 2011 -- how **aggressive** will your organization be in **initiating new investments** in lab construction and/or modernization projects?

% Respondents

• Will definitely initiate new investments	8.5
• Likely to do so	14.8
Subtotal, Definitely + Likely	23.3
• Will possibly do so	17.6
Subtotal, Definitely + Likely + Possibly	40.9
• Definitely not investing	13.0
• Uncertain at this time	46.1
Total	100

F. ABOUT INVESTMENTS IN TECHNOLOGY

DEFINITION: “Technology” is defined as R&D-related products, equipment, instruments or systems.

1. At all the locations your decisions influence, approximately how much will your organization **likely spend** in 2009 on each of the following types of technologies? Choose “\$0” if appropriate. Skip the technology if you don’t know.

	% Respondents		
	<u>% With 2009 Expenditures</u>	<u>Average Expenditures Per Organization*</u>	<u>Median Expenditures Per Organization*</u>
a. Analytical Instruments/Separation: particle analyzers; thermal analyzers; chromatography/spectroscopy equipment; microscopy; etc.	71.0	\$142,000	\$29,000
b. Basic Lab Equipment: balances; shakers/stirrers; centrifuges; freezers/refrigerators; incubators; glove boxes; water purification equipment; meters & monitors; testing equipment; etc.	85.1	\$73,000	\$10,000
c. Sample Prep: extraction; liquid handling; robotic systems; autosamplers; etc.	43.4	\$109,000	\$8,000
d. Software: data acquisition; visualization; informatics; process control; image analysis; etc.	64.8	\$61,000	\$9,000
e. Lab Furniture: benches; cabinets; casework; counters, etc.	43.5	\$63,000	\$8,000

(continued)

*Among organizations indicating expenditures.

F-1, cont.

	% Respondents		
	<u>% With 2009 Expenditures</u>	<u>Average Expenditures Per Organization*</u>	<u>Median Expenditures Per Organization*</u>
f. Consumables/Supplies: glassware; plastic ware; sample containers; tubes; pipettes; microscope slides; syringes; etc.	93.1	\$95,000	\$11,000
g. Chemicals & Biochemicals: reagents; solvents; acids/bases; buffers catalysts; etc.	92.4	\$90,000	\$12,000
h. Antibodies, RNA, Microarrays, PCR, Assays, etc.	42.0	\$110,000	\$9,000
i. Systems Service & Maintenance	79.8	\$73,000	\$10,000
j. Contract Research Services	32.7	\$158,000	\$13,000
k. Outsourcing Services	45.9	\$167,000	\$12,000

*Among organizations indicating expenditures.

F. ABOUT INVESTMENTS IN TECHNOLOGY

2. At all the locations your decisions influence -- compared to 2008, how has your organization's budget for each of the following changed in 2009? Select one answer for each.

	% Respondents*						
	Significant Increase	Increased	Sub-Total	No Change	Decreased	Significant Decrease	Sub-Total
a. Analytical Instruments/ Separation	5.6	16.9	22.5	56.5	16.0	5.0	21.0
b. Basic Lab Equipment	3.6	20.3	23.9	58.5	14.5	3.1	17.6
c. Sample Prep	2.5	15.1	17.6	71.3	9.9	1.2	11.1
d. Software	3.0	21.0	24.0	61.1	11.7	3.3	15.0
e. Lab Furniture	2.7	13.4	16.1	63.3	14.6	6.0	20.6
f. Consumables/Supplies	3.7	26.0	29.7	57.4	12.0	0.9	12.9
g. Chemicals & Biochemicals	4.1	24.8	28.9	60.9	9.3	0.9	10.2
h. Antibodies, RNA, Microarrays, PCR, Assays, etc.	3.8	17.6	21.4	69.7	7.1	1.7	8.8
i. Systems Service & Maintenance	2.4	17.9	20.3	67.9	9.4	2.4	11.8
j. Contract Research Services	2.8	11.9	14.7	72.3	11.1	2.0	13.1
k. Outsourcing Services	3.8	15.5	19.3	67.9	10.6	2.3	12.9

*Among those where products are used/purchased by their organizations.

F. ABOUT INVESTMENTS IN TECHNOLOGY

3. At all the locations your decisions influence -- compared to **2008**, what is likely to be the percent **change** in 2009 in the total expenditures for R&D-related **products, equipment, instruments or systems**?

% Respondents

• Likely increase	25.2
• Likely remain the same	57.0
• Likely decrease	17.8
Total	100

- **Average Percent Change: +3.9%**
- **Median Percent Change: +/-0.0%**

F. ABOUT INVESTMENTS IN TECHNOLOGY

4. In the last two years -- in working with **vendors** of R&D technology, has your organization **changed what it requires** of those vendors in areas such as pricing, commitment, support, ROI, etc.?

	% Respondents
• Yes	21.3
• No	78.7
Total	100

4a. If "Yes", please describe what your organization is **now requiring**:

support

\$\$\$

3 quotes on all capitol purchases

Additional vendor support

Better deals

Better equipment and service at competitive prices.

Better leasing services along with aggressive pricing or valuable add-ons

Better prices. (5)

Better prices on solvents and shipping.

Better pricing or trade-in adjustment

Better service after the sale, tech support, methods development.

Bidding is now required for many purchases.

Bundling of services

CGMP Certified

Consumables pricing was reevaluated or buying "off brand"

Discount pricing and lower shipping charges

GLP standard

Greater pre-sales support (verification of system performance).

Hands-on support of operation and training on new equipment and reconditioning equipment when needed

F-4, cont.

High quality, technical support, vendor's relevant experience in technology, user references, competitive pricing

Improved pricing

Improved Quality Assurance Programs

IQ, OQ, PQ on all instrumentation. Vendor qualification and secondary vendor on equivalent supplies

ISO certification. (2)

ISO certification. Vendor surveys, vendor audits, etc. Lower pricing, lower lead times.

ISO related documentation

I'm shopping--and my manager is shopping--for price as well as service, and negotiating much harder.

Just better pricing, compare pricing

Less over all cost

Less service from each supplier.

Limit on price increases yr. to yr., discounts on higher volume supplies, more staff training by vendor for new product methods/instrumentation.

Look closer at stability of the organization

Lower priced options, leased equipment, rentals

LOWER PRICING

Lower pricing! Improved technology, smaller footprints

Lower pricing, more support

More accountability and monitoring/feedback/updates as part of plans.

More competitive price from each vendor and services

More competitive pricing

More quotes and discounts

Need for increased ROI

Price quotes.

Pricing. (3)

Pricing and support

Pricing, shipping support

F-4, cont.

Pricing, support, ROI, reliability, validation packages

Proprietary information

Reduction in pricing

Reduction in pricing or we search for other vendors, tough times

Requesting GSA contracts or TXMAS Contracts ... any discounts or sole source

Require lower prices and better service

Require more support.

Responsive tech service

Site visits; technical support

Support

The absolute "tightest" package possible.

Tighter QC standards, support, quicker turn around time.

To lower or eliminate shipping/handling/transportation costs.

Vendors to hold parts longer and ship as needed

We are requesting better pricing from the companies with which we do business.

We ask for better deals.

We demand more on site training and increase service agreements.

We do a lot of quotes

We have requested our vendors to hold price increases

We try to get better pricing and much more service for our dollars

Work with sister groups first

F. ABOUT INVESTMENTS IN TECHNOLOGY

5. When investing in R&D-related products and equipment, does your organization require or encourage you to take **environmental/"green" issues** into account?

	% Respondents
• Yes; we are <i>required</i> to purchase green technology where possible	9.0
• Yes; we are <i>encouraged</i> to purchase green technology where possible	29.5
• Yes; we are asked to <i>take "green" into account</i> as part of our overall evaluation	22.6
Subtotal, Organization Recognizes The Importance Of Green Issues	61.1
• No; there is <i>no real organizational direction</i> in terms of investing in "green"	38.9
Total	100

F. ABOUT INVESTMENTS IN TECHNOLOGY

6. What percent of your **existing** R&D-related equipment and instruments was initially purchased **new versus used**?

	% Of Organizations Purchasing This Type Of Technology	% Of All Technology Purchased
a. Equipment/instruments purchased <u>new</u>	96.4	66.6
b. Equipment/instruments purchased <u>used</u>	73.1	33.2
		100%

F. ABOUT INVESTMENTS IN TECHNOLOGY

7. Over the next 1 - 2 years, what **change** will likely occur in your organization's purchase of **USED** R&D-related equipment/instruments (check the last choice if appropriate)?

% Respondents

Among Respondents Who Purchase Used Equip.

• Significant increase in used equipment/instruments	10.0
• Moderate increase	31.4
Subtotal, Significant + Moderate Increase	41.4
• No change	52.3
• Moderate decrease	4.1
• Significant decrease	2.2
Subtotal, Significant + Moderate Decrease	6.3
Total	100

Note: Respondents who do not purchased used equipment/instruments were skipped to section G.

F. ABOUT INVESTMENTS IN TECHNOLOGY

8. If your organization purchases **used** equipment/instruments, please check ALL the **reasons why**:

	% Respondents
• Seeking to save money/stretch our budget	89.6
• New equipment/instruments often comes with “bells & whistles” we don’t need	23.8
• Used is usually just as good as new	38.1
• Buy used when we have a small or moderate level of usage	43.3
• Buy used when we have a short-term need for the equipment/instruments	21.2
• Other	5.5

(Totals to more than 100% due to multiple answers.)

Other:

0.01 cents on the dollar

Auction: get relatively new equipment for cents on the dollar

Buy used we are not really sure if we need the instrument long term

Buy used when perceived value is greater than new

Chipper Price

Don't know

EBay is convenient.

Equipment is no longer available

For Parts

From sister company

If the new does not come with financing option

Keeps our guys busy fixing & retrofitting

Local service/support

Look for forgotten gems

F-8, cont.

Replace instrument with same models

We can add more capabilities this way.

Will transfer equipment between labs

F. ABOUT INVESTMENTS IN TECHNOLOGY

9. Please list the **major types of USED equipment/instruments** you've purchased in the last two years, and your resulting **experience**:

-80 C freezer, heating blocks, centrifuges, glass ware.

2 HPLC systems, 2 balances and Nikon microscope -- none have been delivered yet (purchased just before christmas on auction)

AA unit, consumables, glassware, lab equipment

ABI 7700 - excellent old sorval centrifuge - good has some problems

AFIS terminal, live scan system

Air filtration, refrigerator, centrifuge, ultrasonic cleaner ... all good experience

AKTA Explorer-one became available from a former employee's company and we were able to get it at a reasonable price with good understanding of the instrument's history. If this turns out to be a favorable acquisition, then it is likely we will look closer in the future to used equipment. also the timing and availability matched.

AKTA FPLC, no problems, works fine.

Analytical balance: Acceptable. Reactor accessories: Unknown.

Analytical instruments - no problems so far

Animal caging

Atomic absorption; hasn't been used yet.

Autoclave Incubator

Autoclaves - seemed functional

Autosampler, fraction collectors, centrifuge, HPLC

Autosamplers, concentrators. Good experience.

Autosamplers, sterilizers. Some good, some bad.

Autosamplers---good experience

Autostainer good results Label maker good results

Balances

Balances, centrifuges, basic lab equipment - all good

Balances, rotavapor

Balances, smaller type of equipment

F-9, cont.

Balances, water baths, freezer, incubators, spec, plate reader, vortexer, centrifuge, heat block; so far, so good, although there is a significant time investment finding service and parts for these older models.

Basic lab equipment (centrifuges, pcr machines, rocking tables, etc.). have had good luck with all. Basic lab equipment - incubators, balances, hot plates, centrifuge, autoclaves, shakers, etc. It has been GREAT!

Bench top centrifuge - excellent

Biosafety cabinets, fume hoods, centrifuge, autoclave, freezers, frigs, microscopes, balances,

Bone mills, lyophilizers, sterilizers, heaters

Calorimeter, circular dichroism spectrometer. Instruments perform to expectations, but can't get support or service from manufacturers.

Centrifuge

Centrifuge and heating blocks

Centrifuge, glassware, clamps

Centrifuge, rotors, flow cytometer good experience with all

Centrifuge-okay results dryer-okay results

Centrifuges. (2)

Centrifuges - Good experience Rotor for Sorvall Centrifuge - Good experience

Centrifuges, autoclave, fume hood . Good experience.

Centrifuges, incubators

Centrifuges, no problem with purchasing used.

Centrifuges, pipettors, electrophoresis equipment, screen eraser, deli case, dot blotter, liquid nitrogen freezer, water purification For the most part everything worked well. One centrifuge which was under warranty had to be replaced and the water purification equipment needed significant rebuilding.

Centrifuges, refrigerators, sterilizers, some small bench equipment

Centrifuges, rockers, liquid handling systems, freezers mixed experience; some equipment defective; have grown more cautious

Chromatography and spectroscopy equipment. Experience generally good.

Chromatography equipment resulting in sales growth of 60%.

CO2 incubator, refrigerated high speed centrifuge,

F-9, cont.

Corcking and abrasion equipment

Cryostat , good

Cx5 rebuild

Digital micrometer, fume hood

Dionex IC - some trouble, but great value

Donated computers and parts tend to work well. Upgrading is very needed. Lab equipment for hands on experiments must be done with care, because reordering is not always hopeful.

Electronic drive systems - good experience.

Electronic test and measurement equipment, material characterization. Overall, good experience.

Electrophoresis power supply, hplc equipment

Evaporators

Everything

Excimer lasers (2) Solid state laser (1) Happy all the way around

Facs Scan Machine -- Good Autoclaves -- Good computers -- so, so Waterbaths -- Good Centrifuge -- Good

Fermentors, shakers, analytical

Filler capper

Filling machines, compressors,

FPLC, centrifuge

FTIR - Proved useful for some specific projects GC-FID - have not put into use yet Pyrolysis - have not put into use yet Bomb Calorimeter - added some capabilities, used some spare parts Ion Chromatography - ordering supplies now to begin using Analyzers for specific ASTM tests - resolving problems that developed after we acquired them HPLC components - acquiring enough to put system together Overall, have spent 5% to 25% of the cost of new items. It is taking time to bring some online, in part, because of other priorities.

Fume hood

Fume Hood. Very pleased

Gas chromatograph, UV/Vis.

Gas Chromatographs and High Performance Liquid Chromatographs

Gas chromatographs: for student use they are adequate

GC & GCMS. Both positive.

F-9, cont.

GC - good

GC - good working condition digital balance - good working condition autoclave - good working condition hanging balance - poor working condition PCR recycler - good working condition Eppendorf centrifuge - poor working condition

Gc, furnace, oven

GC, HPLC MS-TOF

GC, HPLC, Robot

GC/MS - No problems

GC/MS - some moderate problems keeping it running

GC/MS, GC, detectors, software - overall good experience

GC/MSD- works fine, no problems

GCMS - good purchase saved over 30K and rus great

GCMS's

GCs - they work fine.

GCs, GC-MS, Computers

GC's, HPLC's, Headspace/Transfer line

Gel Electrophoresis, Fluorescent Microscope. Good experience.

General lab equipment.

Generators, glassware

Have not done so but do look for buys

High resistance ohmeter for surface resistivity, it works fine

HPLC

HPLC GC LC/MS/MS

HPLC pumps, autosampler

HPLC, balances, GC-MS

HPLC, pumps, conveyors, glass ware

HPLC, Gamma Counter, Oven, Autoclave, Fume hood, Vortexer etc. In general the experience was good.

HPLC; worked fine

HPLCs, Balances good Millipore systems - not in good shape

Incubators, plate readers, other...

F-9, cont.

Inverted microscopy, FTIR, and GC's. Overall no difference in quality of results between new and used, however some consumables and replacement parts are more difficult to find.

Ion laser, great Spectrophotometer, good

Kilns

Kilns conveyors, particle size analyzers etc.

Lab And R&D

Lab balances, Taber stiffness tester, rub/abrasion testers (some of the purchases didn't work as expected)

Lab benches/fume hoods - they work great. Balances - excellent. Paper Testing Instruments-work well, saved over 50% off of new.

Laminar flow hoods, magnetic stir plates, environmental chambers. We are buying them this spring, so we don't have any experience yet.

Laminar flow hoods-good experience, needed to fumigate and replace filters in one, but still saved significantly Equipment Racks-Good especially for the price

LC/MS

LC/MS; demo model - good experience

LCMSMS

Light microscope. It works fine.

Matteson FTIR, good; Branson IPC Plasma Asher, bad; Corning pH meter, good; Fisher centrifuge, good; Thermowell, good.

Meters - good experience

Microarray plate reader - had to invest in upgrades but worth it.

Microscopes Microplate readers Hoods We have not had any bad experiences...

Microscopes, centrifuges, autoclaves

Microscopes, centrifuges. Stuff works great, nearly good as new.

Microscopes, incubators, Very good experience

Microscopes, monitors. Purchases were carefully researched and yielded significant savings compared with new equipment. Some instruments were built in-house.

Microscopes, refrigerators, HPLC, deep freezers, furniture, Ph meters... and happy with it.

Microscopes---good hplc--good

F-9, cont.

Microwaves, chromatography gear and other lab ware. We are mostly happy, but have had a few duds, but even so worth the time and risk overall.

Multiple parameter field analysis system: fine.

Nitrogen evaporator: good

NMR

No equipment purchases the last two years

Oscilloscopes, spectrum analyzers, beakers, test tubes, evaporation dishes, etc.

Oven, balance, mixers, glassware, pumps

Oven, spectrometers, and so on.

PCR machine, refrigerated circulator

PCR, serology

Peristaltic pumps, cleaner baths, incubators

Photopolymerization equipment

Physical testing, good

Pipettors, Flasks and other glass wear, water baths, incubators, coolers

Plate readers, plate washers, autosamplers, LC detectors, centrifuges, water baths. thermal cyclers

Platereader: good result Microfuge: good result

Platform MS - problems with shipper and insurance policy when damaged in transit

Platform shakers, systems have a short expected lifetime new or used under our use conditions.

Purchased a "lot" of balances. Most worked fine one could never be calibrated.

Purchased several water baths/recirculators and some viscometers. Overall experience has been good with only one issue where the instrument did not function. Currently working through that and expect it to be resolved favorably.

Purchased used field research equipment with good experience. Purchased used lab color sorters for corn/soybeans - very poor experience - did not work well and had lots of problems.

QPCR/centrifuge, PCR

Refrigerators Shakers centrifuges Freezers

Refurbished microscopes for areas that receive lower levels of usage. Equipment was functional and we have experienced no problems in this area.

F-9, cont.

Research grade TEM, installed and operating. Dual beam FIB/SEM. Waiting on site preparation/remodeling since July 2008. Currently in process.

Robotics, luminometers, reagent broadcasters

Rubber mixing equipment

Running a small operation I have about use small item equipment in the past with no problems. A colleague bought an expensive piece and saved a lot of money he then used for research supplies.

S02 calibrator

Sample introduction/preparation for gas chromatography. Sampler performed as if new, unit is more-or-less bulletproof. Autosampler upgrades for Atomic Absorption Spectrophotometers.

Two generation old autosampler is proven technology and do not need latest, bestest, newest for simple unattended operation.

Sample prep and analytical instrumentation

Sample prep; excellent. Analysis; excellent. Microscopy; excellent. Chromatography; excellent. Instrumentation; excellent.

Sample separation equipment. I didn't read the ad well enough and ended up spending just as much to get the last piece as I did on the original unit.

Scales balances microscopes refrigerators centrifuges incubators shakers

Several HPLC systems-very good 2 Vanox microscopes one good, one super good

Spectrometers, Ball mills, sieve/screen equipment,

Spectrophotometer, ICP, autoclave - We found them to work well

Spectrophotometers (IR, GC/MS)

Spectrophotometers and microscopes were a huge savings; although, the restorations add significantly to the cost. Overall, they were great bargains.

Spectrophotometers, reactors, evaporators, mixing equipment.

Sterile hoods; very good

Tanks pumps heaters all performed well in limited service. the remainder of our operation is cutting edge so limited used usage is seen based on the need for innovation.

Temp cycle chamber

TGA 7 Perkin-Elmer Moisture Analyzer

Thermal cyclers, plate rockers, pipettes, centrifuges

Thermal, Rheometric, Controllers, Chillers

F-9, cont.

Too long to list; major plastics processing machinery, lab equipment, presses, etc. 10% duds

Try out its usefulness in lab - been ok

Ultra-low Freezers, good

Used GC, good results

UV cabinet good experience

UV Vis Spec, Water bath, incubator All working fine

UV-Vis - so far it is working well.

Uv-vis-fluor plate readers. They worked quite well

UV-visible spectrophotometer: sudden increase in use of scanning instrument and sample throughput. Offered some relief to R&D people.

UV/Vis Spectrometer Works well enough for our uses FTIR works, slightly outdated HPLC System more servicing required than anticipated

Uv/Vis Spectrophotometers - good HPLC - good Micro Plate Readers - fair FPLC - good PCR - good Calibration equipment - good

UV/Vis spectrophotometers, good experience for the most part

Vacuum pumps // storage cabinets // fume hoods // electrical cabinets //

Vis/UV, GC Reasonable, but some out of date and have to replace with new.

Water baths, balances, pH meters, hot plates, magnetic stirrers. Resulting experience: good.

Water purification (not good), balances (good), ovens (good)

We buy mainly small pieces. Generally we have to put some time into validating them and/or rebuilding parts.

We have purchased blending, furnacing, and various vacuum equipment and have been displeased with the problems associated with those purchases. Don't know if it is bad luck or the type of people involved in the industry but we now prefer to avoid used as much as is possible. Perhaps just bad purchases, but we don't like to throw money away.

We have purchased refurbished microtomes and cryostats with mixed results.

We purchased a used PCR machine and balance last year and expect to buy a second PCR machine later this year.

XRF, Works great, 50% savings Balance, Cahn microbalance, 80% savings, works perfect

G. HOW INVESTMENTS ARE BEING MAXIMIZED

1. Over the last year -- has there been any **increase in pressure** by your organization's senior management regarding R&D **investments** or the **ROI** from those investments?

% Respondents

• Significant increase in pressure	10.9
• Moderate increase	16.5
Subtotal, Significant + Moderate Increase	27.4
• Small increase	11.2
Subtotal, Significant + Moderate + Small Increase	38.6
• No increase	61.4
Total	100

G. HOW INVESTMENTS ARE BEING MAXIMIZED

1a. If there has been an increase in pressure regarding investments, please describe **what is being asked** of R&D and what the **outcome** has been (or is likely to be):

A greater emphasis on measuring and reporting ROI for R&D investment

Always a strong ROI focus.

Basically is can be summed up by "Do more with less." The outcome has been simply less.

Be certain you need the equipment prior to purchase

Better utilization of core resources, looking for overall cost savings.

Business case including ROI has always been required for new instruments.

Business outcome for the company from buying equipment

Calculate ROI

Capital expenditures above \$10,000 are difficult to get approved.

Clinical trial

Confidential

Cut out waste, plan better, be less experimental, limit testing to what's absolutely necessary

Decrease costs, increase productivity, decrease Overtime ... hasn't been realistic

Decrease staff

Deliver on time.

Do more for less

Do more of it and publish more papers

Do more on somewhat reduced budget and take advantage of the instruments already purchased.

Do more with less is the mantra

Encouraged to become "entrepreneurial"

Equipment Model- any equipment must pay of itself within 3 months

Every investment expects a return

Everyone has been asked to be conservative and evaluate the long term picture

Faster project completion, higher ROI

Faster ROI

Faster turn around rate

Faster turn around time and more accuracy in development. This has improved and will continue to be a focus.

G-1a, cont.

Get this going; all hands on deck

Greater research productivity

I do not work directly in R&D

If there is not any immediate return on purchasing new equipment it does not happen.

Increase day-to-day utilization (improved through shift work, etc.)

Increased ability to use applied research for increased productivity.

Increases in Revenue!

It's a complete mystery. More Education (but how, now unemployed, can I fund it)? Will "they" (any research opportunity) hire me? Etc.???

Justification and prolonging life of instruments.

Justification for the extent of use and comparison with outsourcing

Justify purchases, relating to benefits.

Looking to increase throughput though use of newer tools and automation.

Make do with present technology

Make purchases only absolutely required

Make sure that there is sufficient use demand for requested items, shop around for less costly substitutes.

Management is primarily concerned with cost and getting the job done.

More consistency in products is expected.

More emphasis is placed on acquiring grant funding. Some have received it; others have not.

More pressure to perform, moderate success.

More research, publications, and grants are expected of faculty, but with little to no time or monetary investment by the university.

More results but less instrumentation

More significant results. Outcome- probably no change.

More technology for the price.

More use of the tech to accomplish projects.

More work with the same number of people

Mostly thought of as a development cost.

Must be pertinent to product line and getting new products to sales quickly.

G-1a, cont.

New forms must be completed indicating ROI and what revenue-generating projects would benefit from it.

Not to spend money that was previously budgeted. We have been asked to evaluate and select companies in China and India that can do some of our tasks.

Of course we've been encouraged to reduce/restrict expenditures to only those that are absolutely necessary.

Pay with outside investment money.

Prediction of degree of certainty of success

Pressure - more like threats

Produce returns on shorter terms

Projects must meet required sales thresholds to become funded. This will likely result in fewer niche products.

Quantitate commercial success of research projects

Questions arise about timing and application of R&D. Don't want to do R&D too far ahead of when data is required.

Quicker results, increased pressure normally speeds results for awhile.

R&D is now expected to operate under GLP compliance and so far have been willing to do so

Reduction in equipment budgets

RIO's have been both shortened and reconsidered. The key factor that is under heavy scrutiny is what the cost of having it outsourced really is. Whether this be more money or longer turn around time. Often these days turn around time is being lengthened to reduce costs.

Risk analysis, design inputs, and overall ROI.

Roi

ROI has always been a key business metric

ROI is justification for spending R&D money.

Select more likely success areas - lower risk and increase potential for success.

Shorten pipeline timeline - Quicker ROI

Simply do more with less

Something is and will be able to do.

Start creating patentable processes.

G-1a, cont.

Streamline and find "green" solutions which will ultimately save money.

Strictly cutting costs for R&D.

There is research that is under pressure to be completed, but, no funds to buy the necessary equipment to finish it. Difficult situation.

To get the project completed and self sustaining.

Want better efficiencies on our production

Want to invest in "Big Bet" projects that will deliver "blockbuster" products.

We are a wastewater testing facility not r&d

We are being asked to be sure that we really need it. We are then able to obtain it.

We are always seeking to improve ROI; Outcome = we are still in business!

We can't purchase anything without MGMT overseeing the expenditure

We do not do R&D

We've trimmed fat, and increased accountability.

Work harder with less!

Work longer and harder.

"More bang for the buck."

G. HOW INVESTMENTS ARE BEING MAXIMIZED

2. Please tell us of one or two **specific ideas or approaches** you've implemented or plan to implement to **maximize the return** on your R&D investments (e.g., in staffing, technology, operations, facilities, training, outsourcing, etc.):

1. Use SPC to evaluate lab performance. 2. Generate new performance metrics

Acquired new technology to meet expanding current/future needs, updated current technology with new, implemented staff training

Adding new technology to get more work New web site to get more work

After full development and implementation for specific government agencies, new technology is offered and provided to other government agencies/offices, sometimes doubling or tripling our expected ROI.

All investments must be tied to economic returns and not future applications.

All research activities must be closely aligned to market segments that are targets for our systems.

Attract more users to generate support income. Provide workshops to educate and attract users.

Automation and training

Automation line

Because of the size of the business we are looking at the possibility of some contract employees to handle some of the day to day operations/HR sort of thing to allow the chemist (me) more time to work on R&D.

Best technology applicable to our needs Good service

Better tracking of costs of R&D

Big push on training and biosecurity with video surveillance

Budget for major equipment purchases must include service contracts.

Build a need for our products

Building new collaborations

Buy existing technology for our industry

Buy more used stuff.

Buy used equipment

Buy used equipment whenever possible

Buying used equipment, outsourcing whenever possible, suspend training

Buying used where possible and where practical

G-2, cont.

Cannot plan for more than a fiscal year

Careful about targeted products and customers -> eye is on the return, whatever the cost to get there

Changing our test methods to reduce the amount of testing materials that we use.

Collaborating with other researchers and institutions using the newest approaches in transcriptomics, sequencing etc.

Conduct annual plant audits by outside firm.

Construction of instruments and housings in-house.

Continue to investigate and invest in new technology

Coordinating work with like laboratories where the other lab has resources that we do not.

Cross Training

Cross training of personnel for staffing all areas of lab.

Cross training of Staff

Cross-training of selected staff to maximize productivity & staff scheduling flexibility.

Performance Improvement committees for methods, processes, problem-solving for various projects.

Cutting edge technology is being utilized to compensate for a smaller staff.

Decrease routine staffing by 6%, Improve productivity by 6%

Delegating work to support staff

Develop and employ world class level analytical techniques

Development of brochures.

Emphasis on R&D project approval system where the individual business units accept "ownership" of projects

Ensuring, through pre-sales, the system arrives "dialed-in", methods, etc., sorted out by supplier.

Stronger commitment to staff training.

Entering into a different market that we can use our existing equipment.

Equipment automation and LIMS within two years.

Expand our operations and services

Experience

Facilities

Forums on innovation

G-2, cont.

Forward thinking projects

Gain credibility and clients through ISO accreditation.

Greater emphasis has been placed on research and R&D investments for those faculty in the tenure track.

Greater oversight of new student researchers to guard against needless waste

Greater utilization of equipment and personnel. New equipment to meet research needs for development of new products.

Hired employee with great experience in sophisticated equipment and a good capacity and desire to teach others.

Hiring 1 or 2 "jack of all trades" for more money instead of multiple experts. Usually this results in outsourcing at some point if the needed expertise is missing.

Hiring direct from phd programs

Hiring new individuals with better qualifications and more motivation. Encouraging individuals to continue with education to be a more effective team member.

Honestly, the pressure is to spend less. R&D outsourcing is more expensive, so we just don't do a lot of it.

I don't know

I have always run a tight operation. The most specific idea was the purchase of used equipment.

In general, this laboratory is run as only support for local county government ordinance enforcement. As such, the department head(s) I have to report to do not know about the analytical aspects of the lab, only the dollar bottom line. Buying used looks good.

I have contacted the state of Tennessee to see if funds for an online Masters degree in Regulatory affairs are available for me. They are not! Note that "funds" are the keyword here.

I wish I could but once again it is classified.

If you were spending your own money, would this be a worthwhile investment

Implementing a stage-gate approach to project selection.

Improve method used and technology. increase training.

Improved customer satisfaction in results.

Increase Cross Training and internal training/ go green and recycle when possible, use reagents until expired etc.

Increase staff, technology, and equipment

G-2, cont.

Increase volume and decrease staffing

Increased productivity

Increased publications per scientist

Increased usage.

Initiated a couple small capital improvement projects that will increase efficiency (reduce labor costs) and thus reduce overall costs.

Interns from local university.

Investment in automation software/hardware to permit 24/7 use of existing equipment without adding staff

Investments in R&D depend on commitments from customers in a joint development effort.

Just to make sure we are able to sell the products that are developed.

Keep equipment operating longer, if possible, before replacement.

Keep the old equipment functioning. Train personnel on efficient use of resources.

Keeping projects in line with our core business (clinical laboratory).

Less staff during the holidays so now we must "double up" on animal husbandry care to be able to decrease technicians other days of the week.

Less staffing and stretching of equipment and in-house training

Leveraging partners to purchase equipment as part of payments for contract research.

Limit down time of systems keeping the testing queues full and drive communications to eliminate any future problems with data or testing. Give the customer what is required clearly and without confusion.

Looking to hire post doctorate candidates.

Looks like unpaid overtime

Make an effort to purchase used or refurbished equipment whenever possible especially when applications are limited. For situations which involve heavy use, buy new.

Matching faculty capabilities with the defense contracting industry.

Maximize use of the equipment

Minimum staffing for what needs to be done.

More automated instruments or robots in the laboratory to complete the work with equal or less lab support.

More education and training

G-2, cont.

More sales.

More web time.

Narrower focus on particular research areas, emphasis on efficiency through training of project management

New design

New R & D staffing

No changes

No comment

No ideas

No new strategies.

None

Operations maximized with lease negotiations.

Our purchasing department is very aggressive in locating the most economical source for our requested items. They have started notification of labs if they find a great discount on products that many departments are using. If possible I try hard to locate used equipment in good condition or try to find ways to use our existing equipment in new applications.

Plan in early stages - nothing to report as of yet.

Plan to do more with less Also plan to sell off some unneeded equipment to supplement for research supplies.

Praying

Purchasing used equipment when possible

Purchasing used equipment when possible has so far worked well. We are considering a LIMs system for documentation. Operations, we will only generate patents on products once their proof of operation has been established.

Purchasing used equipment in good to excellent condition. getting better purchase terms on new and used equipment.

QBD,

Reintroduced design array, make sure that we've established control of the prerequisite process inputs before going forward

Recruit staff with wider range of development experience.

Re-negotiate out source contracts

G-2, cont.

Rent space in an incubator where we share much of the equipment

Reorganization of the R&D department, fused teams.

Retain the trained people that we already have

ROI- 3 months or less

Screen projects more thoroughly and drop those less promising when more promising ones are at hand

Share cost between labs, training so as to increase usage rate

Simple but effective: Decreasing the time the the hood sashes are up when not in use has saved money.

SPC computer software

Staff, staff and staff

Staffing

Staffing, training

Staffing, where possible, covers larger/broader areas, so staff are overloaded, but return seems greater.

Target only those projects that show a good chance of short term success (24-36 months) Select equipment that is good enough to get the job done, but without lots of extras we may never use.

Could be new or used instruments

Technology, Staffing

There has been some reorganization of staff-new hires more appropriate for new demands and elimination of other positions/people

Training. (2)

Training in self maintenance. Equipment with multi detection (Mass Specs).

Training mainly. More back up for common chemistry bench work.

Training of staff

Training personnel to get the most out of the investment

Training, communication regarding instrument/resource availability

Training. I have implemented AALAS certification classes for this year to help my technicians.

Try to bring sales numbers up to support more staffing & overall growth

Use more high throughput screenings.

Watch budgets

G-2, cont.

We have improved training.

We are already have maximum return on investments; so, it isn't possible to get much more. We rely on total procedure optimization at the beginning.

We are buying standards that are programable so we can automate and speed up a process.

We are focusing on marketing of our superior tests.

We are in the process of doing more in-house so that our outsourcing costs decrease over the next year.

We buy things that we need that we feel will increase productivity or fill an existing business need. It is part of our justification process.

We do much of the service and calibration verification in house.

We do not do R&D

We hope with a new lab (affiliated with a major medical center research center) we can utilize some student manpower in training/technology transfer.

We plan on increasing our ROI by utilizing more in-house knowledge than an individuals job title entails. Some of our chemists are also electronics engineers which allows us to repair a great deal of our own equipment. Similar situations exist throughout our company.

We use used equipment where it is available and is still supported by OEM's or other reputable firms

Weekly updates of staff

We're not worried about maximizing r&d investments, we're working our butts off to get make our phase III clinical supplies.

We've been working with local colleges to get student to help with specific projects. For us this has worked well, the students get experience in a "real" lab and we get help with basic skills that we build upon.

We've embarked on a training program with the goal of increasing R&D staff utilization efficiency through departmental collaboration.

Work as a team on projects to get them done in a more efficient manner

Work harder with less!

Working with China and India labs.

Workstation consolidation via technology

Write more grants

G-2, cont.

Apply different processing methods to raw product stream to come up with innovative products.

Better understanding of the contributions of R&D to the commercial activities

Buy surplus equipment when needed

Buying reagents that are not from standard manufacturers (e.g., not buying restriction enzymes from NEB, but from an unknown manufacturer)

Continue to develop new products based on new green raw materials.

Cut the budget by firing lower level staff and make sr staff broaden their scope of work

Expand our technology used and develop new workspaces

Expanding the versatility of the machine for other applications.

Higher throughput in sample evaluations.

Highest quality of r&d output

Increase client base through additional marketing efforts.

Increased training to make best use of computer software already in place.

I've invested the majority of my free time now for close to 5 years writing cover letters, sending emails, improving my CV & resume, to no avail.

LIS upgrade to windows base

Looking for best prices on what needs to be purchased.

Monitor the work quality of each employee and provide additional training/education

More careful oversight of staff (students) in the lab

More of the same

New chromatography software and additional project tracking spreadsheets.

New facilities are being provided at the tax payers expense. THis should allow for more production, but those numbers are not yet in.

New technology for mfg. maximizing returns

Our research is geared toward products that will enable our company to excel by offering our customers services above and beyond our competitors.

Outsource maintenance

Profit sharing with staff based on the specific project and overall profit sharing to encourage innovative cost savings. this initiative has lead to some significant cost savings and increased drive by our staff.

Purchasing used equipment

G-2, cont.

Shared location with another startup company with shared common spaces, canteen, lab, utilities

Some partners asked to fund FTE's for dedicated technicians

Technology

Tend to maximize returns by looking to collaborative studies, where prudent.

These questions are not appropriate for a teaching University

Time weighted study of staff duties

Train other labs our techniques

Training students in the most recent techniques in biotechnology and computer analysis

Training.

Use of in house resources of shared equipment instead of buying new

Used or demo equipment purchases

Using oil free pumps have been a cost effective solution compared to oil pumps.

We do not do R&D

We have improved sample preparation capability.

Work longer hours.

Working with technology transfer to support faculty.

(Final)

('08 Lab Manager Annual Investment Study)

(Web site Welcome Screen)

VISUAL: Two different Lab Manager covers + screen shot of LabX home page.

(logo) Lab Manager

(logo) LabX

**"Annual Investment Study
Of The R&D Market: 2009"**

- **Once You Complete This Survey You'll Be Entered Into Our Contest.**
- **You'll Also Receive A FREE EXECUTIVE SUMMARY Of This Research Project.**

Start The Survey

A. ABOUT YOU AND YOUR ORGANIZATION

1. In which country do you work?

___ United States

___ Other **(EXIT THESE RESPONDENTS FROM THE SURVEY)**

2. Which best describes your **title** (check ONE only):

___ Corporate management (CEO, president, VP, etc.)

___ Lab supervisor/manager/director

___ R&D supervisor/manager/director

___ Core facility manager/director

___ QA / QC manager/director

___ Project manager/director

___ Research scientist

___ Chemist

___ Principal investigator

___ Engineer

___ Academic department head

___ Academic - faculty

___ Academic - student **(EXIT THESE RESPONDENTS FROM THE SURVEY)**

___ Purchasing agent

___ Consultant **(EXIT THESE RESPONDENTS FROM THE SURVEY)**

___ Other (specify): _____

3. Which best describes the **type of organization** you work for (check ONE only):

___ Pharmaceutical mfr.

___ Biotechnology company

___ Food and/or beverage mfr.

___ Automotive mfr.

___ Fine/specialty chemicals mfr.

___ Petroleum company

___ Security/forensics company

___ Environmental company

___ Energy company

___ Other industrial/manufacturing company (specify): _____

___ Private research institution

___ Contract research organization

___ Clinical laboratory **(EXIT THESE RESPONDENTS FROM THE SURVEY)**

___ Hospital or medical center

___ University or college

___ Government

___ Other (specify): _____

4. What are your organization's approximate **annual sales revenues**?

- ☐ Less than \$1 mill.
- ☐ \$1 mill. - 4.9 mill.
- ☐ \$5 mill. - 9.9 mill.
- ☐ \$10 mill. - 24.9 mill.
- ☐ \$25 mill. - 49.9 mill.
- ☐ \$50 mill. - 99.9 mill.
- ☐ \$100 mill. - 499.9 mill.
- ☐ \$500 mill. - 999.9 mill.
- ☐ \$1 bill. - 1.9 bill.
- ☐ \$2 bill. - 4.9 bill.
- ☐ \$5 bill. - 7.4 bill.
- ☐ \$7.5 bill. - 9.9 bill.
- ☐ \$10 bill. - 14.9 bill.
- ☐ \$15 bill. - 19.9 bill.
- ☐ \$20 bill. or more
- ☐ Does not apply

(photo of one cover of Lab Manager magazine)

5. Do you have a **subscription to Lab Manager magazine**, sent to you in your name?

☐ Yes ☐ No

(screenshot of LabX home page)

6. When was the last time you visited the **Website "LabX"** (check "Never" if appropriate)?

- ☐ Within the last 3 months
- ☐ 3 - 6 months
- ☐ 7 - 12 months
- ☐ 13 - 24 months
- ☐ 25 - 36 months
- ☐ Longer than 36 months ago
- ☐ Never

B. ABOUT YOUR CONFIDENCE IN THE RESEARCH ENVIRONMENT

1. Listed below are 10 different factors related to today's **R&D environment**. Please tell us **how CONFIDENT you are** regarding each factor for **2009**. Select your answer for each from the scroll-down lists.

(pull-down list)

Very confident

Confident

Somewhat confident

Not very confident

Does not apply

- a. Confidence that your **market sector will be robust enough** to support or attract significant R&D investments.
- b. Confidence that your organization's **senior management understands/appreciates** the role of R&D in the organization's success.
- c. Confidence that your organization's senior management is **willing** to make the necessary investments to achieve research objectives.
- d. Confidence there will be sufficient funds to properly **staff** R&D initiatives (appropriate compensation, additional staff if necessary, etc.).
- e. Confidence that the proper investments will be made in the **training/continuing education** of R&D management and staff (courses, professional meetings, etc.).
- f. Confidence that investments will be made to **gain access to the proper background information** for the R&D process (e.g., databases of research papers, patents, standards, chemical reactions, books, etc.).
- g. Confidence there will be sufficient funds to acquire the **technology** necessary to achieve your R&D objectives (i.e., equipment, systems and instruments).
- h. Confidence there will be sufficient funds to maintain the proper **work space and working environment**.
- i. Confidence that investments will be made to **outsource work** when required to achieve your R&D objectives.
- j. **Overall confidence** that your organization will **support or attract** the required funding for R&D initiatives.

2. Please **comment** on your overall level of confidence ... i.e., your organization's ability and willingness to properly invest in R&D in 2009:

3. What is your organization's approximate **total 2009 R&D budget** (including all staffing costs and expenditures for products, equipment, systems, raw materials, services, facilities, new/upgraded labs, etc.)?

- ☐ \$0
- ☐ Less than \$25K
- ☐ \$25K - 49K
- ☐ \$50K - 99K
- ☐ \$100K - 249K
- ☐ \$250K - 499K
- ☐ \$500K - 749K
- ☐ \$750K - 999K
- ☐ \$1 mill. - 1.9 mill.
- ☐ \$2 mill. - 2.9 mill.
- ☐ \$3 mill. - 3.9 mill.
- ☐ \$4 mill. - 4.9 mill.
- ☐ \$5 mill. - 9.9 mill.
- ☐ \$10 mill. - 14.9 mill.
- ☐ \$15 mill. - 19.9 mill.
- ☐ \$20 mill. - 29.9 mill.
- ☐ \$30 mill. - 39.9 mill.
- ☐ \$40 mill. - 49.9 mill.
- ☐ \$50 mill. - 99.9 mill.
- ☐ \$100 mill. - 249.9 mill.
- ☐ \$250 mill. - 499.9 mill.
- ☐ \$500 mill. or more
- ☐ Don't know

4. Compared to **last year**, what is the approximate **change** in your organization's **2009 R&D budget**?

- ☐ Increased by (fill in): _____ %
- ☐ Remained the same
- ☐ Decreased by (fill in): _____ %
- ☐ Don't know

5. And at this point in time, what will likely be the change in the overall budget **from 2009 to 2010**?

- ☐ Likely increase by (fill in): _____ %
- ☐ Likely remain the same
- ☐ Likely decrease by (fill in): _____ %
- ☐ Too early to estimate
- ☐ Don't know

6. Please comment on whether your organization's R&D investment trend shows **growth, decline or no change** for 2009, and the **"drivers" that are causing that trend.**
-

7. Please check ALL the ways the **current economic recession** is having a **significant impact** on your organization's R&D investments (if appropriate, check "No Significant Impact"):

- ☐ We are conducting fewer R&D projects
☐ No new hires for R&D
☐ There have been or will likely be layoffs in R&D
☐ Raises in R&D have been frozen/postponed
☐ Funding for new R&D equipment/systems has been reduced/is on hold
☐ Funding for new labs or lab renovation has been reduced/is on hold
☐ Funding for training/industry meetings has been reduced/is on hold
☐ Funding for outsource services has been reduced/is on hold
☐ Other significant impact (specify): _____
☐ No significant impact

8. Please indicate approximately how your organization's 2009 R&D budget is **allocated** across these **eight** areas of expenditure (if you don't know, skip the question):

Should Total To 100%

- | | |
|---|---------|
| a. Management & staff compensation | _____ % |
| b. Facilities (lab construction/modernization, lab furniture, utilities, etc.) | _____ % |
| c. Raw Materials (chemicals, reagents, metals, other materials) | _____ % |
| d. Commodity/Consumable Products (glass & plasticware, filtration membranes, pipettors, gloves, racks, etc.) | _____ % |
| e. Technology (equipment/instruments/systems, including related service & maintenance) | _____ % |
| f. Education (training, industry meetings, information databases, etc.) | _____ % |
| g. Outsourced services | _____ % |
| h. Other | _____ % |
| | 100% |

9. If your organization has recently experienced **significant changes** in any part of the R&D budget, please describe the change(s):
-

C. INVESTMENTS IN STAFFING

1. How many **total people** work in R&D at **your location** and in your organization **overall**, including full and part-time personnel? (Please type in six numbers.)

Number Working In R&D*

	Managers	Staff Members	Total
a. Your Location:	_____	_____	_____
b. Entire Organization:	_____	_____	_____

*Regardless of title or function.

2. Compared to **last year**, what will likely be the percent **change** in 2009 in the total number of R&D managers/staff members at your location?

____ Likely increase by (fill in): ____ %
 ____ Likely remain the same
 ____ Likely decrease by (fill in): ____ %
 ____ Don't know

3. In **2008**, what percent of the R&D managers/staff members at your location "**turned over**" ... i.e., the number of people who were **replaced** due to resignations, terminations, promotions, retirements, graduations, etc.?

_____ % of existing managers/staff turned over in 2008

4. Compared to **last year**, what is the **change** in 2009 in the total R&D **compensation budget** for all managers/staff members at your location?

____ Increased by (fill in): ____ %
 ____ Remained the same
 ____ Decreased by (fill in): ____ %
 ____ Don't know

5. Compared to 2 - 3 years ago -- when new R&D hires are made, are the **compensation packages** generally higher, lower or about the same?

____ Much higher
 ____ Moderately higher
 ____ About the same
 ____ Moderately lower
 ____ Much lower
 ____ Don't know

6. Compared to 2 - 3 years ago -- in **recruiting** for your R&D department, is it **easier or more difficult** to hire qualified professionals, and why?
-

7. In the last 2 - 3 years -- has your organization initiated any investments or programs to increase the **productivity** of its R&D **managers/staff members**?

____ Yes ____ No

- 7a. If "Yes", please describe that **initiative and its results**:
-

D. INVESTMENTS IN OUTSOURCING

1. What percent of each of these R&D-related activities will your organization likely **outsource in 2009** (type in 0% if appropriate; if you don't know please skip the question)?

- | | |
|---------------------------|--------------------|
| a. Research | _____ % outsourced |
| b. Development | _____ % outsourced |
| c. Routine testing | _____ % outsourced |
| d. Production | _____ % outsourced |
| e. Human resources | _____ % outsourced |
| f. Facilities management | _____ % outsourced |
| g. Finance functions | _____ % outsourced |
| h. Information technology | _____ % outsourced |
| i. Purchasing | _____ % outsourced |

2. Compared to 2 - 3 years ago, what **trend** is your organization experiencing regarding **outsourcing** of R&D-related activities?

- ____ Significant increase
 ____ Increase
 ____ No change
 ____ Decrease
 ____ Significant decrease
 ____ Have not outsourced in the last 2 - 3 years **(SKIP RESPONDENTS TO SECTION E)**

3. Of the R&D activities that your organization will outsource in 2009, what percent is likely to go to each of these **regions** (if you don't know please skip the question)?

Should Total To 100%

a. United States	_____	%
b. Canada	_____	%
c. Latin/South America	_____	%
d. Europe	_____	%
e. China	_____	%
f. Southeast Asia (e.g., Singapore)	_____	%
g. South Asia (e.g., India)	_____	%
h. Middle East	_____	%
i. Elsewhere	_____	%
	100%	

E. ABOUT NEW/REMODELED LABORATORIES

1. Check ALL the ways your organization is investing in the construction of **NEW laboratories** (check the last choice if appropriate):

- ☐ Have completed new lab construction within the last 12 - 18 months
☐ Project underway - completion within 6 months
☐ Project underway - completion within 12 months
☐ Project underway - completion within 24 months
☐ Project underway - completion beyond 24 months
☐ We anticipate construction to start within 24 months
☐ No recent, current, planned new lab construction

2. Check ALL the ways your institution is investing in **lab modernization/renovation**:

- ☐ Have completed modernization/renovation within the last 12 - 18 months
☐ Project underway - completion within 6 months
☐ Project underway - completion within 12 months
☐ Project underway - completion within 24 months
☐ Project underway - completion beyond 24 months
☐ We anticipate modernization/renovation project(s) to start within 24 months
☐ No recent, current, planned lab modernization/renovation

3. If your organization is investing in new labs and/or modernization of existing labs, please **describe the key reasons** for the investment(s):

4. For 2010 and 2011 -- how **aggressive** will your organization be in **initiating new investments** in lab construction and/or modernization projects?

- ___ Will definitely initiate new investments
- ___ Likely to do so
- ___ Will possibly do so
- ___ Definitely not investing
- ___ Uncertain at this time

F. INVESTMENTS IN TECHNOLOGY

DEFINITION: "Technology" is defined as R&D-related products, equipment, instruments or systems.

1. At all the locations your decisions influence, approximately how much will your organization **likely spend** in 2009 on each of the following types of technologies? Choose "\$0" if appropriate. Skip the technology if you don't know.

(pull down list)

- \$0
- Up to \$9.9K
- \$10K - 24K
- \$25K - 49K
- \$50K - 99K
- \$100K - \$249K
- \$250K - \$499K
- \$500K - \$749K
- \$750K - \$999K
- \$1 mill. - \$1.4 mill.
- \$1.5 mill. - \$1.9 mill.
- \$2 mill. - 2.4 mill.
- \$2.5 mill. - \$2.9 mill.
- \$3 mill. - \$3.9 mill.
- \$4 mill. - \$4.9 mill.
- \$5 mill. or more

(see next page for list of products)

Products/Equipment/Systems/Services

- a. Analytical Instruments/Separation:** particle analyzers; thermal analyzers; chromatography/spectroscopy equipment; microscopy; etc.
- b. Basic Lab Equipment:** balances; shakers/stirrers; centrifuges; freezers/refrigerators; incubators; glove boxes; water purification equipment; meters & monitors; testing equipment; etc.
- c. Sample Prep:** extraction; liquid handling; robotic systems; autosamplers; etc.
- d. Software:** data acquisition; visualization; informatics; process control; image analysis; etc.
- e. Lab Furniture:** benches; cabinets; casework; counters, etc.
- f. Consumables/Supplies:** glassware; plastic ware; sample containers; tubes; pipettes; microscope slides; syringes; etc.
- g. Chemicals & Biochemicals:** reagents; solvents; acids/bases; buffers catalysts; etc.
- h. Antibodies, RNA, Microarrays, PCR, Assays, etc.**
- i. Systems Service & Maintenance**
- j. Contract Research Services**
- k. Outsourcing Services**

2. At all the locations your decisions influence -- compared to 2008, how has your organization's budget for each of the following changed in 2009? Select one answer for each.

(pulldown list)

Significant increase

Increased

No change

Decreased

Significant decrease

Does not apply/don't know

- a. Analytical Instruments/Separation
- b. Basic Lab Equipment
- c. Sample Prep
- d. Software
- e. Lab Furniture
- f. Consumables/Supplies
- g. Chemicals & Biochemicals
- h. Antibodies, RNA, Microarrays, PCR, Assays, etc.
- i. Systems Service & Maintenance
- j. Contract Research Services
- k. Outsourcing Services

3. At all the locations your decisions influence -- compared to **2008**, what is likely to be the percent **change** in 2009 in the total expenditures for R&D-related **products, equipment, instruments or systems**?

___ Likely increase by (fill in): ___ %

___ Likely remain the same

___ Likely decrease by (fill in): ___ %

___ Don't know

4. In the last two years -- in working with **vendors** of R&D technology, has your organization **changed what it requires** of those vendors in areas such as pricing, commitment, support, ROI, etc.?

___ Yes ___ No

- 4a. If "Yes", please describe what your organization is **now requiring**:

5. When investing in R&D-related products and equipment, does your organization require or encourage you to take **environmental/"green" issues** into account?

- ☐ Yes; we are *required* to purchase green technology where possible
☐ Yes; we are *encouraged* to purchase green technology where possible
☐ Yes; we are asked to take "green" into account as part of our overall evaluation
☐ No; there is *no real organizational direction* in terms of investing in "green"

6. What percent of your **existing** R&D-related equipment and instruments was initially purchased **new versus used**?

Write In % (Should total to 100%)

- | | |
|--|---------|
| a. Equipment/instruments purchased <u>new</u> | _____ % |
| b. Equipment/instruments purchased <u>used</u> | _____ % |
| | 100% |

7. Over the next 1 - 2 years, what **change** will likely occur in your organization's purchase of **USED** R&D-related equipment/instruments (check the last choice if appropriate)?

- ☐ Significant increase in used equipment/instruments
☐ Moderate increase
☐ No change
☐ Moderate decrease
☐ Significant decrease
☐ We do not purchase used equipment/instruments **(SKIP RESPONDENTS TO SECTION G)**

8. If your organization purchases **used** equipment/instruments, please check ALL the **reasons why**:

- ☐ Seeking to save money/stretch our budget
☐ New equipment/instruments often comes with "bells & whistles" we don't need
☐ Used is usually just as good as new
☐ Buy used when we have a small or moderate level of usage
☐ Buy used when we have a short-term need for the equipment/instruments
☐ Other (specify): _____
☐ Do not purchase used equipment

9. Please list the **major types of USED equipment/instruments** you've purchased in the last two years, and your resulting **experience**:

G. MAXIMIZING RETURN ON INVESTMENTS

1. Over the last year -- has there been any **increase in pressure** by your organization's senior management regarding R&D **investments** or the **ROI** from those investments?

- ☐ Significant increase in pressure
☐ Moderate increase
☐ Small increase
☐ No increase

1a. If there has been an increase in pressure regarding investments, please describe **what is being asked** of R&D and what the **outcome** has been (or is likely to be):

2. Please tell us of one or two **specific ideas or approaches** you've implemented or plan to implement to **maximize the return** on your R&D investments (e.g., in staffing, technology, operations, facilities, training, outsourcing, etc.):

a. _____

b. _____

THANK YOU FOR PARTICIPATING!

Please fill in the information below to ...

- Receive a free Executive Summary of this project.
- Be entered into our contest.

Name _____
 Title _____
 Organization Name _____
 Street Address _____
 City _____
 State _____
 Zip _____
 Telephone (including area code) _____
 E-mail Address _____

To complete the survey please select "Finish" below.