A partnership by: Ipsos Healthcare | DEMY-COLTON Life Science Advisors | Kineticos Life Sciences Consulting

Kineticos Biopharma CEO Confidence Index

2015 Q3 RESULTS

Biotech CEOs Remain Confident in Future Growth

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The Value of Measuring CEO Confidence in the Biopharma Industry

In the last decade, the biotech industry has delivered unusually high returns. The NASDAQ Biotechnology Index has risen from 773 points on July 1, 2005 to an apex of 4,166 on July 20, 2015. In 2014 alone, there were 84 biotech IPOs, outstripping the previous record of 63 IPOs set in 2000 during the height of the genomics era. Additionally, the FDA approved 41 drugs in 2014, the most since the industry's all-time high in 1996.

While it's helpful to analyze previous trends to predict future results, industry dynamics and a CEO's ability to navigate them are equally important.

From our perspective, the life science industry is an evolving ecosystem. This ecosystem is defined by the network of interactions between biopharmaceutical companies, services firms, and diagnostics companies as well as the patients, providers, payers, and regulators that influence market dynamics.

Within the ecosystem, the biopharma segment operates in a relative state of conflict. While the path of bringing new products to market is highly regulated through a semi-predictable FDA approval process, the industry also weathers an ongoing series of changes from one decade to the next.

RESULTS SUMMARY

- 100% of CEOs are very or somewhat confident in their companies and overall industry
- Single largest risk to their companies is capital stability (35%) and clinical results (33%)

SIX KEY INDICATORS

1. **Capital Markets – 86% Confident in Fund-Raising Prospects**
   - 86% confident in ability to raise capital within 18 months
   - 14% not looking to raise capital
2. **Deal Landscape – 82% Confident in M&A and Partnering Market**
   - 74% confident in out-licensing within 18 months
3. **Clinical Development – 100% Confident in their Clinical Differentiation**
   - 68% outsourced 50-100% of clinical studies
4. **Regulatory Affairs – 84% Confident in Regulatory Environment**
   - 53% to 69% very confident in filing NDA/BLA in 4-5 years
5. **Commercialization – Less than 50% Confident in Commercial Capabilities**
   - Only 28% plan to commercialize independently
6. **Business Model and Workforce – 94% Confident in Current Internal Resources**
   - 78% plan to increase staff by more than 10%

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As market dynamics shift, a company's ability to succeed is dependent upon its CEO's ability to navigate these changes, while remaining on course toward commercializing its products. The C-suite—along with the industry overall—would benefit from an ongoing mechanism to measure confidence in the market in a consistent manner.

The questions of confidence and the sustainability of growth are at the heart of our research. The teams at Kineticos, Ipsos Healthcare, and Demy-Colton Life Science Advisors asked the CEOs of leading, high-growth, and emerging biopharmaceutical companies for their perspective.

The Kineticos Biopharma CEO Confidence Index is the first and only forward-looking indicator designed to measure C-suite sentiment and confidence in the biopharma industry's economy. This confidence—or lack thereof—is defined by the degree of optimism within six key business indicators, including:

1. **Capital Markets**
2. **Deal Landscape**
3. **Clinical Development**
4. **Regulatory Affairs**
5. **Commercialization**
6. **Business Model and Workforce**

Measuring confidence through these indicators over time will demonstrate an ebb and flow of market dynamics and confidence in the future success of companies and growth in the overall market.

The following white paper reviews results of the first Biopharma CEO Confidence Index. This paper includes conclusions that are relevant to C-suite executives and cross-functional leaders in the industry, as well investors and service providers supporting the industry.

RESPONDENT PROFILE

- 51 CEOs from US Companies
- Surveyed during Q3 2015
- 63% privately held
- 18% market cap <$250M
- 12% market cap $250M-$1B
- 6% market cap $1B-$5B
- 1% market cap >$5B

Respondent Profile

Company Size and Type

In this initial wave, 51 US-based CEOs provided their commentary and perspectives. It's important to note that CEOs were surveyed between mid-August and early-September, prior to a 27% drop in the NASDAQ Biotechnology Index, which wiped out all of its gains for the year at the end of September. We'll explore this event along with the impact of renewed drug pricing pressures and weakening global economies in the Q4 Index.

Over half of the respondents (63%) represented privately held companies. The remaining 37% were from publicly traded companies, including 18% with a market cap below $250 million, 12% with a market cap between $250 million and $1 billion, 6% with a market cap between $1 billion and $5 billion, and 1% with a market cap over $5 billion.

Pipeline and In-line Products

CEOs reported that their companies had an average of 1.6 pipeline products treating rare diseases, 7.1 products treating specialty conditions, and 2.2 products treating chronic conditions.

Of the CEOs that responded, 21% said that their companies currently had marketed products of which 30% treat rare diseases, 42% treat specialty conditions, and 28% treat chronic conditions.

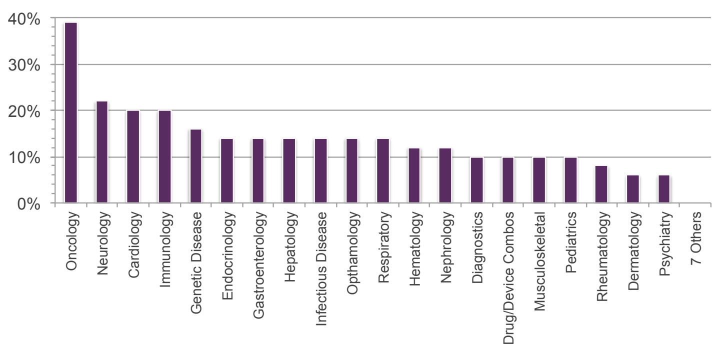
Therapeutic Focus

When asked about the therapeutic focus of their pipeline assets, not surprisingly, 39% mentioned oncology. Neurology (22%), cardiovascular diseases (20%), and immunology (20%) were also big targets, with 23 other areas of focus (see Figure 1).

Given the early stage focus of many companies, few reported having marketed products. In fact, 84% of respondents did not have marketed products at all. Only 4% had marketed products in oncology, genetic diseases, and respiratory diseases respectively. 2% of respondents had marketed products in 11 other areas of focus (see Figure 2).

Figure 1

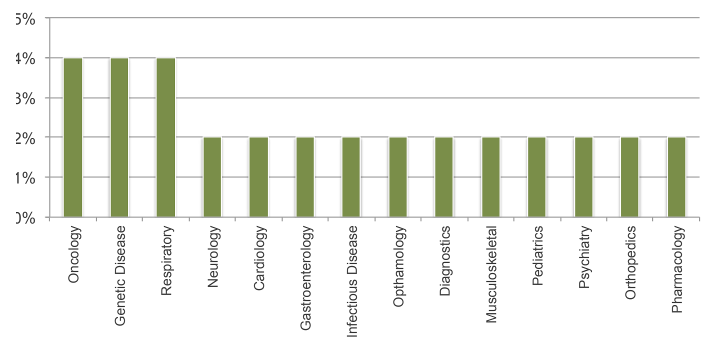
% of Pipeline Assets by Therapeutic Area



Source: Kineticos Biopharma CEO Confidence Index - Q3 2015
Analysis by Kineticos and Ipsos Healthcare

Figure 2

% of Marketed Assets by Therapeutic Area



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A High Level of Overall Confidence in the Market

Of the CEOs surveyed, 73% reported they were very confident in their companies and the biopharmaceutical industry overall, while the remaining 37% said they were somewhat confident. When asked about the single largest risk to their business, 35% referenced the capital markets and 33% mentioned clinical results.

This mindset aligns with remarks made during the first Biotech CEO Summit, a private think tank-style meeting of biotech CEOs hosted by Demy-Colton Life Science Advisors this past July in Napa. One CEO commented during the meeting that, “a CEO’s primary responsibility is to make certain that the company is properly funded in order to conduct its clinical trials in a timely manner.”

Additional dynamics within the ecosystem influenced CEO sentiment in the Index as well. Of the CEOs whom did not point to either capital markets or clinical results as their largest risk, 16% listed the FDA and regulatory outcomes, 8% the global economy, 4% technical execution, and 4% noted payer uncertainty.

Six Key Indicators of the Kineticos Biopharma CEO Confidence Index

1. Capital Markets – 86% are Confident in their Fund-Raising Prospects

The capital markets seem to be wide open for pharma and biotech companies in 2015. According to the National Venture Capital Association, the biotech industry brought in $2.3 billion worth of venture capital investments during the second quarter of this year—a 32% increase over the prior quarter—and $3.8 billion in the first half overall.

Clearly, venture capitalists are starting to open their coffers again, and with a renewed interest in early stage assets and technologies. During the second quarter alone, about $1.5 billion of VC cash went into early stage companies, and $733 million of that went to startups receiving venture money for the first time. The top (publicly disclosed) recipient on that list is Denali Therapeutics, a San Francisco company that brought in $217 million to support its neurology pipeline. Later in the year, Editas Medicine raised $120 million to advance its genome editing technology.

Following 2014's record year of 84 biotech IPOs, 2015 has continued to be strong, with 37 companies hitting the public markets through the third quarter, raising $3.3 billion according to Ernst & Young. In fact, Axovant, a company focused on treating dementia, raised $315 million in June, making it the largest biotech IPO ever, according to Renaissance Capital. To further support this theme of strength, and despite the IPO malaise in the broader market, BioCentury reported that as of October 5th, 19 companies have announced plans to go public since the start of 3Q15, bringing the current IPO queue to at least 28.

There's a continued sense of optimism in the future capital markets for biotech companies in the near-term as seen in Figure 3. Overall, 86% of CEOs were confident in their ability to raise capital in the next 18 months, while the remaining 14% were simply not looking to raise additional funds at all within that time period.

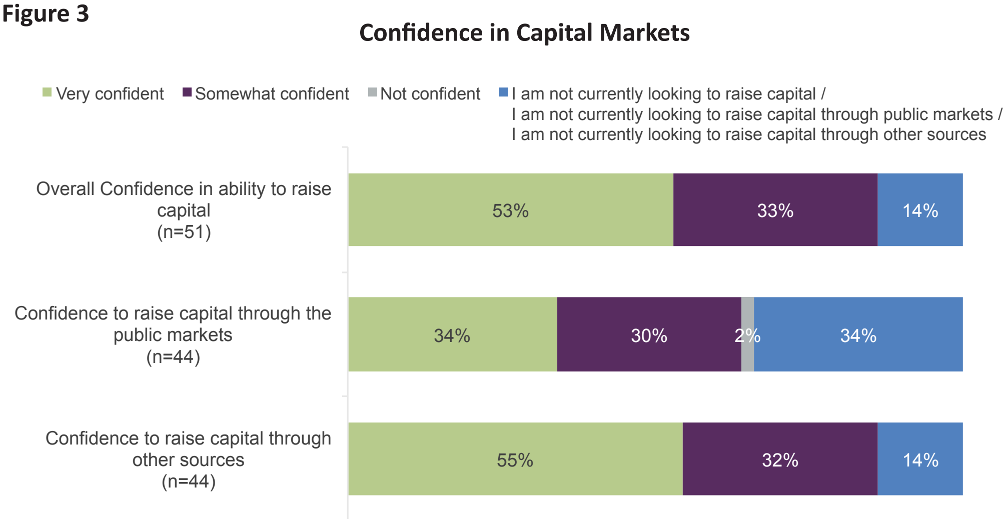
In comparing the public and private capital markets, 34% of CEOs were very confident they could raise funds in the public markets; however, an equal percentage of executives said that they weren't looking to leverage the public markets to raise money to any extent. Upon a closer look, many executives who responded as such represented publicly traded companies, which signals that public companies feel they have the capital needed to get to their next inflection point, whether it is to advance to the next clinical phase or to take product(s) to market.

In terms of the IPO market, 74% of CEOs were confident that they would go public, or at least file to do so, demonstrating the sustainable trend we've observed in IPOs over the past few years. After 41 IPOs in 2013, we saw a significant surge in 2014, where 84 biotech companies went public.

In the private markets, 55% were very confident that they could raise funds through a combination of angel investors, venture capital, private equity, corporate venture funds, and similar private means.

What is the source of this confidence? A combined 66% of respondents pointed to confidence in the overall economic environment, ongoing discussions with investors, and the strength of their clinical pipelines. Overall, that mix of sentiments signals that CEOs feel they have the assets and access to realize the potential of the capital markets.

Figure 3



Source: Kineticos Biopharma CEO Confidence Index - Q3 2015 / Analysis by Kineticos and Ipsos Healthcare

There are several critical success factors for emerging biotechs looking to raise capital. It's important for a company to understand its investor audience in terms of their investment priorities, typical deal structures, and portfolio interests. Also, while it's important to sell the science behind early stage technologies, companies should ensure that they have realistic valuations of their companies and assets, as well as a timeline for mitigating the inherent risk built into their product portfolios.

2. Deal Landscape – 82% are Confident in the Market for M&A and Partnering Deals

Broadly speaking, there were a total of 165 worldwide pharma and biotech deals in 2014—this included 76 M&A transactions valued at $317 billion and 89 strategic alliances valued at $4.6 billion, according to GlobalData. This is nowhere near the all-time high of 2010, in terms of volume, when there were 287 worldwide deals, including 101 M&A transactions, valued at $124 billion and 186 strategic alliances valued at $9.4 billion. Although it's painful for some to recall, this bubble was propelled by the 2008 market seizure and the associated rush for many development stage companies to find a safe harbor with a larger partner in order to maintain commercial viability. The balance of value and sustainability has now been restored, as evidenced by the significant increase in M&A deal values now averaging $5.5 billion per acquisition in 2014, versus only $1.7 billion per acquisition in 2010.

2015 has already been a landmark year through the third quarter, especially for M&A activity. Worldwide, GlobalData cites 64 M&A transactions valued at $398 billion and 84 strategic alliances valued at $12 billion. Again, megadeals have influenced the average.

AbbVie paid $21 billion to buy Pharmacyclics early in the year, followed by Valeant, who went on a buying spree, acquiring Salix for $14.5 billion in February, and Sprout Pharma for $1 billion in August, an announcement that came just one day after Sprout received approval for the first drug to treat low sexual desire in women. In between those activities, Celgene acquired Receptos for roughly $7.2 billion in July.

While we could offer more examples, there is a clear trend here. Large pharma and biotech companies are actively looking to fill their product pipelines, have plenty of cash on-hand, are far less risk-adverse, and are actively competing for more specialized therapies. 2015 has been another seller's market for most emerging companies.

Our Index echoed that feeling in the responses from CEOs. 82% of CEOs described a positive landscape for deals with 18% pointing to a rise in M&A activity, 16% indicated their confidence in the quality and quantity of available assets, 16% citing the interest of large pharma and biotech companies in new technologies, and 16% referencing the high volume of deals.

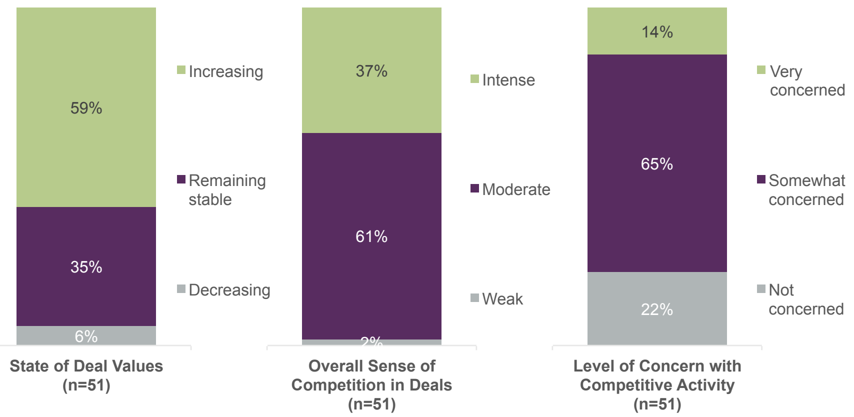
Not surprisingly, 74% of CEOs are confident that they will successfully out-license one or more products in the next 18 months. While 57% of CEOs said that they are not planning to in-license in the near-term, 42% stated that they were somewhat or very confident in their in-licensing efforts.

Whether in- or out-licensing, therapeutic areas of interest for deals closely matched those of companies' current pipelines with the top 10 areas of interest, including oncology (35%), neurology (18%), genetic diseases (12%), infectious disease (12%), cardiovascular (10%), hepatology (10%), immunology (10%), respiratory (10%), endocrinology (10%), and gastroenterology (8%).

As seen in Figure 4, 59% of CEOs mentioned that deal values—whether licensing or M&A—were increasing, while only 37% felt that competition for deals was intense. In fact, only 14% were very concerned about the activity of their competitors; However, 55% of CEOs said that they would react to, or make a competitive move in the next 18

Figure 4

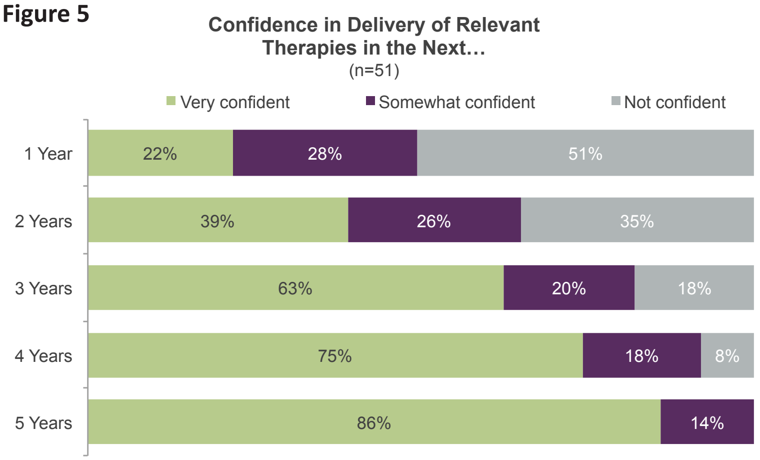
Confidence in Deal Landscape



Source: Kineticos Biopharma CEO Confidence Index - Q3 2015 / Analysis by Kineticos and Ipsos Healthcare months. Deals often take several months or more to materialize, which means that most of the competitive moves assumed by CEOs above are already in progress.

The dynamics of successfully landing a deal—a clear value proposition to potential partners in terms of pipeline fit and commercial viability—aren't ones to change much from one year to the next. The major difference-maker in the deal landscape will be how the robust comparator deals dictate the deal size and structures moving forward. Companies need to make certain that they have clearly thought through their strategy when sitting down across the deal table from potential partners or acquisition suitors.

Figure 5



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3. Clinical Development – 100% are Confident in their Clinical Differentiation

Industry Standard Research suggests that the worldwide R&D market hit $251 billion in 2015 with revenue for contract research organizations (CROs) sitting around 10.2% of that figure. In the US, according to ClinicalTrials.gov, the number of clinical trials registered in the US has increased from around 25,000 in 2005 to nearly 200,000 to date in September 2015. We should look for the growth trend in the number of clinical trials and clinical outsourcing to continue.

65% of CEOs expressed that they are very confident their assets are clinically differentiated, while 35% indicated they were somewhat confident. As seen in Figure 5, we asked further about their confidence in delivering relevant therapies over the next five years. While short-term confidence is low—this is understandable given the early stage assets of many biotech companies—there's a significant level of confidence three to five years out. This confidence suggests that their clinical products are unique therapies, possibly first-in-class agents.

69% of CEOs reported that their clinical development functions were productive, although 80% said their in-house capabilities were limited or adequate at best. This points to a continued trend in clinical outsourcing. In fact, 68% of CEOs reported that they outsourced between 50-100% of their clinical studies.

Industry Standard Research also projects that the CRO market will grow at an annual rate of 7.4% between 2015 and 2019, and will reach the $34 billion mark by that point. Given CEOs' confidence in their pipelines and the anticipated growth in the clinical trials market, we can expect that patient recruitment will continue to be challenging for many companies. This challenge will be compounded by the specialty nature of product pipelines as many biotech companies look to recruit similar patients in the evaluation of their therapies. The relationship between biotech companies and their CRO partners will continue to increase in importance as a result.

4. Regulatory Affairs – 84% are Confident in Regulatory Environment

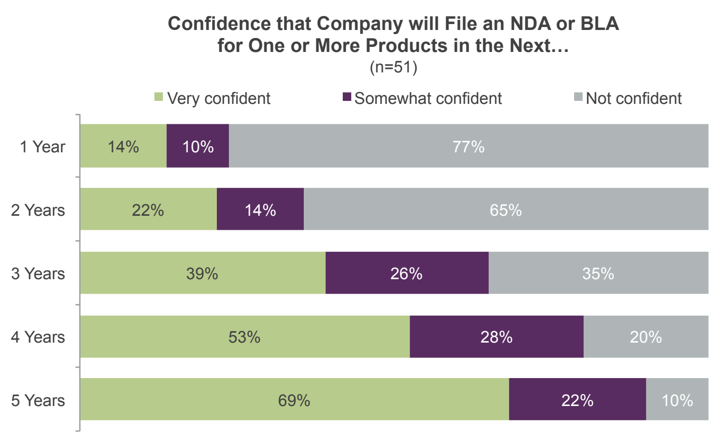
The industry is on track for another breakout year of product approvals in the US following 2014. According to BioMedTracker, through September the FDA has approved 25 new molecular entities and rejected only 3—an approval rate of 89%. The level of optimism of our CEO respondents seemed to match that with 84% somewhat or very confident in the regulatory environment. CEOs cited improved interactions with the FDA (22%) and historically high approval rates (18%) as well as their past experience managing the FDA (18%) as reasons to be confident in this indicator. In fact, 71% of CEOs also indicated that they believed the frequency of FDA approvals would remain stable over the next 18 months. This optimism is somewhat surprising given that there was a vacancy in the FDA Commissioners office during the time in which we surveyed CEOs.

As seen in Figure 6, we further asked about their confidence in filing a new drug application and/or biologic license application over the next five years. While short-term confidence is low at between 14% to 22% over the next two years, 53% to 69% of CEOs said they were very confident that they would file in the next four to five years.

Although managing the FDA is critical to the success of most every US-based biopharma company, the regulatory landscape is truly global for many. Of the CEOs surveyed, 90% are conducting clinical trials in the US while 57% are conducting trials in Europe and 16% in Japan. Activities in emerging markets were evidence in the Index with 41% of CEOs reporting that they are conducting trials outside the top three major regions.

While companies are operating globally, their confidence in the regulatory processes outside the US is limited. In the US and Europe respectively, 41% and 37% of respondents were very confident in the regulatory processes in those geographies. However, only 12% were very confident in the processes in Japan and the rest of the world (see Figure 7).

Figure 6



Source: Kineticos Biopharma CEO Confidence Index - Q3 2015
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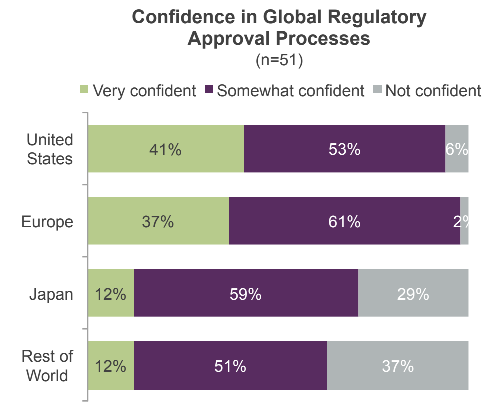
Figure 7



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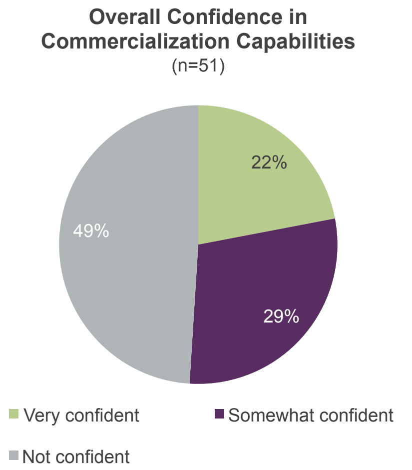
A biotech company's relationship with the FDA is critical. It's important to approach the administration with a positive mindset and maintain multiple lines of communication from reviewers all the way up to the Director responsible for review in that therapeutic area. Also, while companies should be consistent in how they communicate their development strategy to the FDA, it's equally important to remain flexible and open to feedback as companies advance down the path to market.

5. Commercialization – Less than 50% are Confident in their Commercial Capabilities

Given the early stage pipelines of many emerging biotech companies, it's not surprising that 49% of the CEOs we surveyed mentioned that they are not confident in their commercial capabilities (Figure 8). In fact, 31% said they have no commercial infrastructure at all. Only 28% said that they planned to commercialize on their own and 47% planned to commercialize through external partners. 26% went as far as saying they would outsource more than 50% of their commercialization efforts.

This CEO feedback reflects the reality that many development stage companies are not prepared for, or confident

Figure 8



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in their full commercialization capabilities. High valuations and an attractive deal landscape, combined with the hunger of large pharmaceutical and biotech companies to fill their late stage pipelines, all equate to a higher likelihood that emerging companies will be able to secure the commercial partner needed to get their products to market, and therefore de-emphasize the need for robust commercialization capabilities.

6. Business Model and Workforce – 94% are Confident in their Current Internal Resources

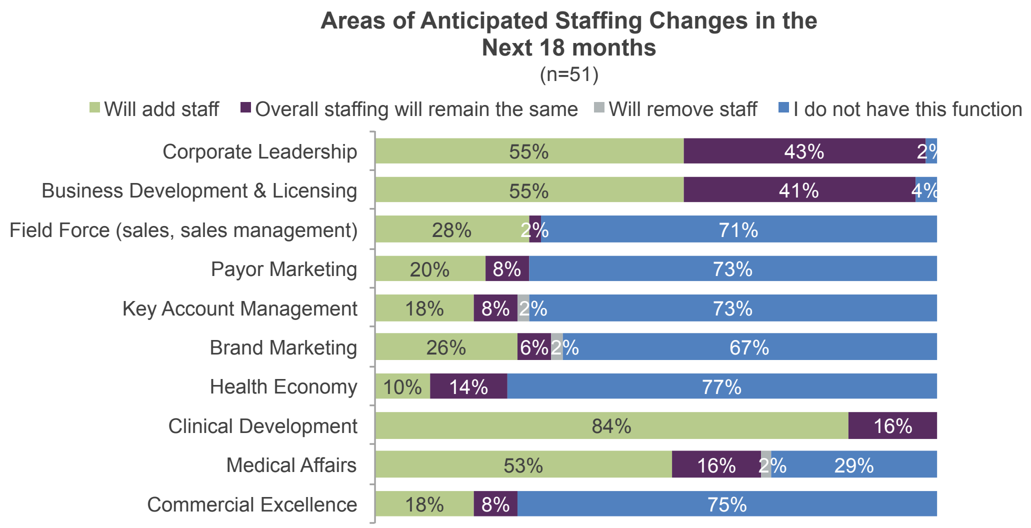
Overall, 94% of CEOs said they were confident in their current clinical and commercial staffing resources. Looking ahead, 78% said they would increase staff by more than 10%, despite intense competition for hiring.

As seen in Figure 9, the highest areas of interest are clinical and medical affairs, which makes sense given the specialty pipelines of many development stage companies. Corporate leadership, as well as executives with business development and licensing expertise, are naturally in high demand given the out-licensing focus of many companies. Staffing for commercial functions are a limited priority, given the equally low interest that companies expressed in commercializing products on their own.

Despite these hiring plans, 57% plan to outsource non-core functions, and only 14% will build internal capabilities.

Overall, it's clear that companies are remaining lean and determined to outsource to meet their commercialization needs. This is an important take-away as companies look to maximize return on the funds they've raised and deals they've secured.

Figure 9



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Conclusions and Implications for the Market

The biopharma industry maintained a steady growth trend for the first two and a half quarters of 2015. Even with a bit of uncertainty added to the mix in Q3, the Kineticos Biopharma CEO Confidence Index indicates CEOs of emerging companies are confident in the continued growth of the industry and the prospects for their companies to flourish on the path to commercialization.

In summary:

- CEOs are either generally comfortable with the current capital they have on-hand or expect to raise the capital they need to execute on their strategies.
- CEOs are confident that they will find a good match in their pursuits for a strategic partner as they advance toward commercialization and few have aspirations to commercialize on their own.
- CEOs are confident that their pipelines are full of clinically differentiated assets and many plan to file an NDA and/or BLA within the next five years.
- CEOs are looking to increase staff in strategic areas and are confident in their hiring, although many will continue to outsource a high percentage of clinical studies.

It has been an exciting endeavor for Kineticos, Ipsos Healthcare, and Demy-Colton Life Science Advisors to share the Q3 2015 results of the industry's first and only Biopharma CEO Confidence Index. Please look forward to the results of next quarter's Index at the start of 2016.

In addition to measuring confidence across our six key indicators, we will also dive into the impact of three emerging trends, including:

1. The strengthening US economy versus the weakening economies across Europe and China
2. The biotech stock sell-off that occurred as the NASDAQ Biotech Index experienced its worst weekly decline in four years, dropping 27% in late September following an all-time high in late July
3. Renewed pressures to reduce drug pricing

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6. Business Model and Workforce

Measuring confidence through these indicators over time will demonstrate an ebb and flow of market dynamics and confidence in the future success of companies and growth in the overall market.

About the Partners

The Kineticos Biopharma CEO Confidence Index is a partnership between:

Kineticos LIFE SCIENCES CONSULTING

Kineticos is a specialized management consulting firm serving the life science industry.

Ipsos Healthcare

Ipsos Healthcare is a fact-based research, consulting and strategy specialist in the global biopharmaceutical industry.

DEMY-COLTON Life Science Advisors

Demy-Colton Life Science Advisors produces highly specialized investor and business conferences exclusively for the biopharmaceutical and life sciences industry.

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About Kineticos

Kineticos is a specialized management consulting firm serving the life science industry. The firm is focused on identifying opportunities to drive strategic growth and achieve operational excellence for it clients.

Through its three practice areas - Biopharmaceutical, Biopharmaceutical Services, and Diagnostics - Kineticos has experience working with companies across the life science industry ecosystem.