

The role of competitive intelligence in biotech startups

Salvador Carlucci, Anthony Page & David Finegold

Competitive intelligence (CI) gathering is essential to developing a biotech firm's business strategy, but few startups have sufficient support systems in place to do CI effectively. This article, the first of two on the topic, addresses why it is important and how to do it.

All biotech startups gather competitive intelligence (CI), although often they are not aware they are doing so. When a scientist attends a professional conference to learn about emerging technologies and who is working on them, when an employee stops at a rival's booth at a trade show to pick up information about their products, when a business development expert reads a market report, or even when an executive chats with a friend about trends in their industry, they are gathering CI. The problem is that in most biotech startups no one manages this flow of information, nor is it organized in a systematic way¹. As a consequence, the firm does not maximize the value of these critical resources.

In this article, the first of a two-part series, we will describe the types of competitive intelligence and the benefits for a small startup, and provide some examples of CI both working well and not. In the next article, we will provide guidelines on structuring a framework for collecting and providing CI to the people in one's company who need it, and we will examine the legal and ethical considerations of gathering CI.

Competitive intelligence defined

Competitive intelligence is often mistakenly thought of in a narrow way, as a means of gathering 'secret' information that can be used to gain advantage over competitors². We adopt a much broader view of CI, defining it as the analytical process that transforms

disaggregated market and competitor data into relevant strategic knowledge that can be readily put to use by all relevant members of the company. From this broader perspective, CI is closely related to other core management concepts such as strategic planning, business intelligence, market analysis and knowledge management.

Competitive intelligence is an ongoing process that is useful at all levels of an organization (see **Box 1**). It allows forward-thinking business leaders to clearly define the marketplace, to ask disciplined questions, and to receive timely and reliable answers to them². It also can help scientists learn about new technologies in the market that could greatly benefit the company by improving discovery platforms or by reducing manufacturing costs. In addition, CI can be used to keep an organization functioning well when key employees leave, by ensuring that they do not take all of their knowledge with them. And it can be used to train new employees so that they more quickly understand the firm's strategy and competitive

marketplace and therefore become fully productive faster³.

For all these reasons, CI done well can enhance a company's probability of success in the highly risky biotech environment by reducing uncertainty and improving investment decisions, whereas a failure to obtain CI can threaten a firm's survival (see **Box 2**).

What types of intelligence are needed?

To begin creating a CI system, a company must determine what knowledge it needs to set its strategy and operate its business. The specific types of knowledge needed and the priority placed on them will vary according to the company's market, but companies generally should have knowledge in at least nine different areas:

1. *Intellectual property.* Depending on the company's resources, one should do a comprehensive patent literature search at least once a year. When searching for patents, it is useful to start with the European Patent Office, which publishes

Box 1 Potential benefits of competitive intelligence^{2,4}

- Identify opportunities and potential customers
- Gain competitive advantage by reducing reaction time
- Improve short- and long-term strategic planning
- Create company benchmarks and reveal how competitors do business
- Provide guidance on pricing, delivery, product development, outsourcing and clinical research decisions
- Anticipate changes in the regulatory and reimbursement environment that may profoundly affect the firm or its industry
- Identify emerging technologies and their potential impact on the competitive environment
- Assess merger and acquisitions candidates, joint-venture, academic and alliance partners
- Provide warning when key strategic assumptions are changing and prevent surprises

Salvador Carlucci and Anthony Page are at HealthIQ, 770 The City Drive South, Suite 7400, Orange, California 92868, USA and David Finegold is at the Keck Graduate Institute of Applied Life Sciences, 535 Watson Drive, Claremont, California 91711, USA.
e-mail: david_finegold@kgi.edu

Box 2 The benefits of CI and the costs of not doing it

Example 1: Bad. Company A, a small biotech firm, had its strategy consulting firm do a limited CI study of the market for migraine medications to support projections that would be presented to potential investors. To conserve resources, the company focused on immediate competitors with similar compounds. As they were preparing for presentations, it was learned that a competitor product already on the market would be approved for this indication and would offer comparable efficacy at a fraction of the cost. The company's market had disappeared. Retrospective analysis revealed that this competitive development was the result of a large clinical trial program (with over 6,000 patients) that had been going on for the past two years and that could have been easily detected by a more thorough CI program. The company subsequently abandoned the indication, laid off large numbers of employees, and saw its stock price plunge and its financial support evaporate.

Example 2: Better. Company B commissioned an in-depth CI study while its drug was in phase 2 clinical trials. The study confirmed

that a major pharma company had a compound that was far ahead. This company already had a dominant position in the market, which would be very difficult for Company B to overcome without clearly superior efficacy. When interim phase 2 data showed that this was not the case, the company terminated development and avoiding sinking additional investment into a dead-end indication. The company estimates it saved at least \$30 million.

Example 3: Best. Company C directed CI efforts at their competitor's product development program. Systematic discussions with dozens of researchers on the likely safety and efficacy benefits of products in development revealed that the competitor was including novel safety endpoints in their clinical trial. The company concluded that the competitor intended to use the resulting data to make an enhanced safety claim. The company refined its own protocol to one-up the competitor and was able to make even stronger safety claims that effectively differentiated its product and created a substantial competitive advantage.

all patent applications *within* 18 months of when they are filed, usually after one year, whereas the USPTO will not publish patents until 18 months after they are filed. This is valuable information, because most countries do not make a patent available to the public until it has been reviewed by the patent office.

2. **Market need and size.** Identifying target market segments will allow the company to know what markets competitors are planning to move into or are ignoring. During the long development periods required for most biotech products, the market needs

and size will change. It is therefore vital to keep CI up to date by regularly consulting with key people, such as members of a carefully chosen Scientific Advisory Board and a broad sample of experts in the relevant fields. Networking at professional or industry conferences is a good way to do this.

3. **Partnerships.** By monitoring new technologies entering the market and in development, the company can identify possible partnerships with other companies and academic institutions. Scientific journal and patent literature searches along with pro-

fessional conferences can all be potentially fruitful sources of new partners.

4. **Competitive environment.** It is important to continuously monitor the competition. Some players will drop out, while new, potentially disruptive technologies developed by small firms may enter the market that may not be readily apparent as competitors. The company has to be very expansive in thinking about the possible kinds of competitors. By attending conferences and examining relevant ads, the company can assess competitors' product strategies.

Box 3 Creatively using internal and external information

Internal information. Company Y hired a CI provider to determine why they were losing major accounts to a competitor. As a first step, the CI firm reviewed the company's internal data, including e-mail correspondence from its own sales force reporting rumors they'd heard from customers. This correspondence included references to a sequence of activities that clearly indicated what had happened. Over a four-month period, different company sales reps reported: (i) competitor sales reps visited the customer, (ii) the customer requested information on Company Y's discounting policy, (iii) the competitor was using "a cost-effectiveness outcomes trial" as a marketing tool, and (iv) the competitor had initiated an "outcomes trial" at the account's facility. One month later the account switched to the competitor. These pieces were not assembled and analyzed because the company did not have any internal resources dedicated to systematically keeping an eye on competitor activity.

External information. A large pharmaceutical company conducted a CI assessment of a competitor's product marketing strategy for a synthetically produced compound in development. An analysis of financial information revealed that the competitor had purchased a large volume of agricultural futures in a particular flower. A

review of the company's foreign marketing materials revealed that their product was being test-marketed in a European country using an "all-natural" direct-to-consumer (DTC) message. Finally, a personality profile of the senior marketing executive showed a history of innovative DTC campaigns. Based on this information, it was determined that the competitor intended to produce the compound using the more expensive natural production method in order to use the "all-natural" marketing position in the US market. The product's key market positioning strategy was thus identified 12 months before its scheduled US launch.

Creative thinking. While attending a symposium to collect intelligence, a CI analyst heard one of his client's trial investigators comment during his presentation that a particular treatment pathway (not the client's) was likely to be an area of "future development." On returning home, the analyst researched the speaker and found that he had an association with the president of a startup company focused on this pathway. This startup company was funded by a major rival and was working on a next-generation product to leapfrog the company's own product. Additional research revealed that this researcher also had an undisclosed financial relationship with the competing startup company.

5. *Marketing and distribution.* By talking with distributors' and competitors' sales forces, the company can determine how competitors are getting their products to market. This information can help the company develop its own more efficient and targeted strategy for product marketing and distribution. The company can, for example, look at how much competitors spend on advertising or how big competitors' sales forces are to create benchmarks for its own goals and performance. Although most people will decline to talk to a "competitor," many will talk to their "peers" in other companies if the questions are asked in the right way.

6. *Technology opportunities and risks.* By reading the publications of competitors' scientists and their academic partners and talking with them at conferences, the company can identify the bottlenecks that competitors have encountered when developing similar technologies.

7. *Regulatory and reimbursement issues.* Surveying the regulatory agencies is one way to determine the current regulatory requirements and identify new issues that might affect the approval of a product or the way it is labeled and marketed. With a CI process one can examine the various factors in the regulatory environment and anticipate changes that may profoundly affect the enterprise.

8. *Financing options.* One of the most vital tasks for the leader of any startup is ensuring

the resources that the firm needs to operate are available. CI can help determine which venture capitalists are investing in the firm's technology area and what organizations might be interested in acquiring those technologies. This data can better establish the value of a company during financing and can potentially strengthen a firm's negotiating position. In addition, CI can be used in examining merger and acquisition candidates, government grants and joint-venture partners that could provide alternative sources of funding, thereby increasing the firm's negotiation leverage.

9. *Human capital.* Salary surveys and analyses of job ads can provide important insights into competitors' staffing strategies. Likewise, recruiting agencies, while keeping their client information confidential, may be good sources for industry skill trends and the strategies of non-client firms. This kind of information can allow the company to determine the type of people it needs to succeed in a market niche and what it will take to attract and retain them.

Conclusion

Competitive intelligence is a vital part of creating a sound business strategy, and obtaining it effectively can bring multiple benefits to an organization. But small companies often do not have the expertise or systems in place to get the full value from CI. They must carefully identify their top CI priorities and the resources required to meet these specific intelligence needs, then track and control the allocation of

resources to achieve these tasks. As the company grows, the CI function should also grow to maintain its competitive advantage and exploit the opportunities that CI provides.

Although broad organizational involvement is important for gaining the full value of CI, there should always be one person accountable for clearly establishing and communicating the CI development objectives. This person should be responsible for ensuring the CI process is gathering the necessary information and then distributing it to the right people. Those employees directly involved in CI data-gathering and analysis need good industry and technical knowledge, especially at the tactical level, and a solid understanding of secondary research. In addition, CI staff should have strong interpersonal, problem-solving, written and oral communication skills, because they will be collating information from both internal and external sources (see **Box 3**). They should also have a thorough knowledge of ethical and legal implications of their activities, which will be discussed in the next article in this series.

This story was reprinted with some modification from the Building a Business section of the Bioentrepreneur web portal (<http://www.nature.com/bioent>), 21 March 2005, doi:10.1038/bioent850.

1. Hodgson, J. The headache of knowledge management. *Nat. Biotechnol.* 19, BE44–BE46 (2001).
2. Nolan J. *Confidential* (HarperBusiness, New York, 1999).
3. Stewart, T.A. *Intellectual Capital: The New Wealth Of Organizations* (Doubleday/Currency, New York, 1997).
4. Ashton, W.B. & Klavans, R.A. *Keeping Abreast of Science and Technology: Technical Intelligence for Businesses* (Battelle Press, Columbus, Ohio, USA, 1997).

How to conduct competitive intelligence in your biotech startup

David Finegold, Salvador Carlucci & Anthony Page

Turning competitive intelligence into knowledge is a multi-layered process. In this second of two articles on competitive intelligence, we outline the steps involved and point out some of the potential pitfalls.

Competitive intelligence (CI) is vital to the success of bioscience companies, yet most biotech startups have no systematic CI process in place. Last month we defined CI and identified the benefits to firms of adopting a strategic approach to CI, along with the different types of intelligence they require. Here we outline a process and surrounding support systems needed to make best use of this information. We conclude by exploring some of the legal and ethical issues associated with conducting CI.

Establishing a CI process and support systems

A successful CI process begins by identifying what the company needs to know (see Fig. 1). These needs are usually expressed as Key Intelligence Topics (KITs) and Key Intelligence Questions (KIQs). Once the CI needs have been defined, existing knowledge must be reviewed to determine where there are gaps in the company's knowledge. A collection plan is then developed to fill these gaps. The collection plan identifies what types of information need to be gathered and from what sources. Information collection has to be managed to ensure that all potential sources of information are used effectively, internal and external sources are integrated, and collection is cost effective. A great deal of useful CI can be obtained from readily available public sources such as the internet, journals and commercial databases. The goal is not

to gather copious amounts of information but produce highly relevant analysis, which translates directly into improved business results¹.

After carefully mining and organizing relevant public information, systematic collection of additional nonpublic information can provide competitive advantage through superior knowledge. Nonpublic information is gathered primarily through direct or indirect questioning of people. As discussed in the final section, this area is legally and ethically sensitive and not something all employees will be eager or well prepared to cover; it may therefore be an activity where the use of a professional CI firm is advisable¹. The information collected must be stored in a way that balances the need to protect sensitive data and sources, with the

need for key decision-makers to access it in as hassle-free a way possible.

Turning all of this information into knowledge requires several additional analytical steps. First, intelligence processing converts the information into a form that is useful for analysis. Processing might include validating data or writing summaries of key facts. Analysis then converts this raw information into intelligence that answers the company's questions (KIQs). Analysis often involves decomposing complex information into discrete variables that can then be recombined to answer questions. As a simple example, let's assume the company would like to know how much the competitor is going to spend next year marketing drug X. Clearly the answer to this

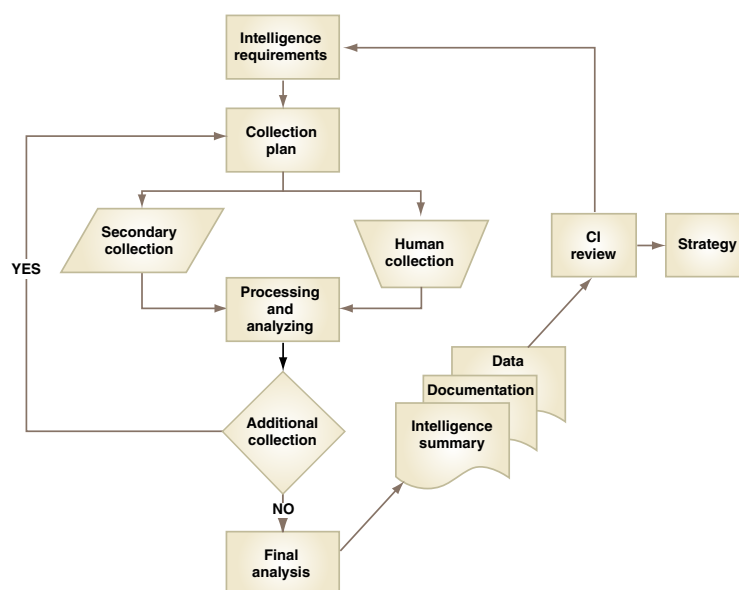


Figure 1 Overview of the competitive intelligence process.

David Finegold is at the Keck Graduate Institute of Applied Life Sciences, 535 Watson Drive, Claremont, California 91711, USA, and Salvador Carlucci and Anthony Page are at HealthIQ, 770 The City Drive South, Suite 7400, Orange, California 92868, USA. e-mail: david_finegold@kgi.edu

question would not be easily accessible to the public; however, it can be estimated by piecing together a variety of CI data. The competitor's annual report may reference the revenues of drug X. A broker's conference call may reveal that the competitor is planning to spend 10% of revenues on marketing. Combining these two data points yields an approximation of the marketing budget for drug X.

The final step in CI analysis is to determine if there is enough information to answer a specific question or whether additional information is needed. When CI has gathered sufficient information, an information product needs to be developed to communicate the conclusions. Outputs from CI may include presentations, documents and/or electronic media. Whatever the format, CI products should always be clear, concise, and organized to facilitate easy integration into the decision-making process. If there is extensive data, this should be provided separately or attached. The purpose of CI is to 'answer questions' and decision makers typically value brevity more than volume. Intelligence should also be distributed only to individuals who need to act on the information. Overdistribution of intelligence erodes its perceived value and increases the risk that strategic information will leak outside the company.

Building a supportive CI infrastructure

Even the best CI process is not likely to work well in isolation. Rather, it must be integrated into the entire organization's operations and knowledge processes to facilitate the integration of CI into decision making throughout the company. A well-designed CI process should be aligned with the company's people, its organizational structure and its reward system^{2,3}.

People. CI is fundamentally a human process that relies on a network of people within the company to be successful. Optimally, CI should have strong support from an internal champion at the top of the company who can influence acceptance and support of CI.

Employees throughout the company should be aware of what CI is and its value to the company. This awareness is needed at all levels, but is particularly vital among upper management since executive input is required for intelligence efforts to be proactive and optimized to support key decisions. In an effective CI system, senior management demands intelligence input to support decision making and planning, and a high level of interest and appreciation for CI is clearly visible at the executive level. At lower levels, employees should be motivated and empowered to discuss competitive issues and concerns with senior management and executives. Since con-

Box 1 How far would you go? A self-test of CI law and ethics

Which of the following would you consider appropriate for your firm? Which may be illegal? (Answers provided below)

1. Picking up a competitor's product and marketing information
2. Picking up a competitor's internal meeting notes (not marked confidential) left behind in a hotel conference room
3. Picking up a competitor document, clearly labeled 'Confidential,' left behind in a hotel conference room
4. Speaking with experts about competitor products at a trade or professional conference
5. Paying experts an 'honorarium' for information, including sensitive competitor information
6. Speaking with doctors conducting competitor clinical trials about their research and views on the product
7. Reading information about a competitor on a laptop of someone sitting next to you on a plane
8. Including competitive questions in job interviews with competitor employees
9. Hiring former competitor employees to learn about the competitor
10. Participating in online chats with competitor sales reps to learn about their activities
11. Asking questions without disclosing who you are or who you work for
12. Staying at the hotel where a competitor is having a meeting to 'mingle' with their sales reps

Answer key:

Items 3, 5, 8 and 9 are unethical and potentially illegal (in item 3, by leaving a 'Confidential' document in a public place, the owners may have given up their legal protection, but the issue could end up being determined in court). Items 2, 6, 7, 10, 11 and 12 are legal but may be considered unethical in some cases. Items 1 and 4 are the only ones that generally have no legal or ethical issues.

ducting CI requires a highly specialized set of skills, databases, and personal networks, internal staff can often be usefully supplemented with external CI experts.

Infrastructure. The CI team must also be adequately supported with information-related resources, including sufficient budget to achieve its objectives¹. Effective integration with existing resources is key to building a cost-effective process. For example, the CI process should have contacts throughout the organization that can provide access to specific information, including: legal (especially intellectual property), marketing, business development and R&D. These contacts help create a fuller definition of CI needs and also facilitate diffusion of CI across business units. Often 80% of the information required to answer a CI question resides within the company, but it takes a focused and well-networked CI effort to identify and analyze it.

Rewards. The importance a firm attaches to CI will be signaled to employees by the extent to which it is recognized through formal and

informal rewards that can include recognition, incentive compensation and promotions. Building an effective organization-wide CI system thus entails including CI responsibilities in job descriptions and the criteria used to evaluate employee skills and performance. The reward system should include clear performance measures for CI, such as standards to evaluate the CI gathered against the original requirements. This will allow the firm to incorporate quality improvement into the intelligence process to achieve the most value from CI.

Legal and ethical implications

Competitive intelligence is not an inherently illegal, immoral or unethical activity and should not be confused with industrial and economic espionage⁴. Properly done, CI respects laws governing trade secrets, fraud and privacy, and avoids wrongful acts such as hacking, wiretapping and bribery. Mismanagement, or non-management, of CI activities can create risks, however, it is important to be familiar with relevant laws and to recognize that laws and norms differ from country to country and that a person who gathers information from another

country can be subject to the jurisdiction of that country⁵. Major corporations, such as Procter & Gamble, have lost tens of millions of dollars as a result of inappropriate CI activities, which included such things as collecting confidential competitor documents or engaging in deliberate theft of intellectual property under the guise of 'executive recruiting'⁶. CI practitioners should be knowledgeable of relevant laws to avoid accidental violations such as paying 'honoraria' that might be construed as bribes, or engaging in inappropriate recruiting practices⁷.

Even if an organization has a rigorous legal compliance program, there are still likely to be gray ethical areas where there is no clear and absolute standard of right and wrong. It is useful for each organization to examine how far it is comfortable going in these gray areas and then to define guidelines for all employees on what behavior is considered acceptable and what is not. As an organization decides how to approach CI, it is important to recognize

that not having a CI program could itself be considered unethical because it would violate management's fiduciary responsibility to be aware of the competitive environment.

Posing a set of hypothetical CI questions (see **Box 1**) to employees is a good way to help communicate legal and ethical guidelines and also to help sensitize employees and strategic partners to the potential CI-gathering tactics of the company's competitors so that they will better protect the company's own sensitive information. Which ones are illegal? Which would you consider unethical?

Conclusion

Views on the appropriateness of CI activities will vary according to each individual's and company's ethical standards. The latter are highly variable by country and corporate culture. Wherever CI is being conducted, however, doing it well requires a carefully disciplined and professional process that can turn

the information collected into valuable knowledge, while avoiding the potential pitfalls of illegal or unethical CI activities.

This story was reprinted with some modification from the BioE Building a Business section of the Bioentrepreneur web portal (<http://www.nature.com/bioent>), 25 April 2005, doi:10.1038/bioent854.

1. Ashton, W.B. & Klavans, R.A. *Keeping Abreast of Science and Technology: Technical Intelligence For Businesses* (Battelle Press, Columbus, USA, 1997).
2. Galbraith, J., Downey, D. & Kates, A. *Designing Dynamic Organizations* (American Management Association, New York, 2002).
3. Maciariello, J.A. & Kirby, C.J. *Management Control System: Using Adaptive Systems to Attain Control* (Prentice Hall, New Jersey, 1994).
4. Nolan, J. *Confidential* (Harper Business, New York, 1999).
5. Ehrlich, C.P. A brief CI compliance manual. *Competitive Intell. Rev.* **9**, 28–37 (1998).
6. Serwer, A. P&G's covert operation; an intelligence-gathering campaign against Unilever went way too far. *Fortune* September 17 (2001), p. 42.
7. Klebe, L., Gary, T. & Weaver, R. Ethical issues in competitive intelligence practice: consensus, conflicts, and challenges. *Competitive Intell. Rev.* **8**, 1–23 (1997).