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EXECUTIVE SUMMARY

While universities engage with many outside entities, corporations may offer the widest range of engagement opportunities. Businesses serve as benefactors, research collaborators and sponsors, employers of graduates, and vendors—to name only a few examples.

Despite numerous instances of highly successful and productive partnerships, interactions between academic institutions and corporations have frequently been characterized as confusing, challenging encounters between two very different types of organizations that have contrasting missions, priorities, dynamics, and cultures. NACRO's 2019 Industry Survey was conducted to better understand this dynamic. Results highlight a number of strengths, gaps, and actionable opportunities for an academic institution seeking to enhance its competitiveness as an industry partner.

Survey findings include:

- A majority of survey respondents prefer having a single point of contact to facilitate their relationships and communications with universities
- Industry representatives rated their overall satisfaction with their academic relationships as 65/100 suggesting room for improvement.
- The most frequently-cited opportunities to improve were
 - » Tighten internal processes, especially communication
 - » Improve contract procedures, including Intellectual Property (IP) policies
 - » Articulate the value and benefits of a relationship to corporate partners
 - » Demonstrate knowledge and understanding of the strategies and goals of the company
 - » Prepare students for the recruiting process and the realities of the workplace

The survey revealed that modern, decentralized research universities can be complex and confusing to outsiders. This finding reinforces the role of dedicated corporate relations staff, and suggests that a centralized office can effectively coordinate industry engagement across departments and schools.

Four best practices were derived from the survey and from interviews with 16 survey respondents from industry:

1. Informed and customized relationships work best
2. Acknowledge institutional strengths and gaps
3. Enrich your value proposition with relevant data or tools
4. Develop a concierge service for corporate relations, but deploy it judiciously

Overall, industry respondents respect and appreciate the work done by corporate relations professionals. Industry counterparts value an advocate on university campus that understands and represents their interests. The NACRO Industry Survey confirms that corporations value their academic relationships but expect a demonstrable return from their investments. Companies are particularly interested in talent, corporate social responsibility impact, research results that can be translated into new or improved products and services, and enhanced brand recognition.

INTRODUCTION

Companies hire more college graduates than any other category of employer¹, invest more money in research and development than all federal and state agencies combined², and are major sources of philanthropic donations³. At the same time, industry funds account for only about 6% of academic R&D spending⁴, and university corporate relations officers often report that IP issues, prolonged contract negotiations, and a reluctance by companies to pay for overhead costs make foundations or other funding sources easier to work with. NACRO's first-ever industry survey was designed to close some of the gaps in understanding between university and industry, and to establish a benchmark for industry perspectives on issues of interest to university-corporate relations.

¹ Bureau of Labor Statistics. Economic News Release Table 13. <https://www.bls.gov/news.release/jolts.t13.html>

² National Science Foundation. National Patterns of R&D Resources, NSF 17-311 14 Mar 2017

³ GivingUSA. 2018. "Giving USA 2018: Americans Gave \$410.02 Billion to Charity in 2017, Crossing the \$400 Billion Mark for the First Time." <https://givingusa.org>

⁴ National Science Foundation. 2018. Higher Education Research and Development Survey. Fiscal Year 2017. Table 17. http://nsf.gov/herd/2017/html/HERD2017_DST_17.html

Since 2011, NACRO⁵ has published a series of white papers that collectively provide guidance and best practices around university-industry engagement, largely from the viewpoint of the university. In this report, we look at the relationship from the corporate perspective. NACRO launched “industry perspective” conversations, information gathering, and data collection efforts in 2017. The foundation of the report is NACRO’s 2019 Industry Survey, supplemented by a series of interviews with industry representatives who are responsible for aspects of university relations that range from recruiting, to research partnerships, to overall relationship management.

Our goal is to provide NACRO members, as well as our industry partners, with actionable insights that can lead to better understanding, organizational decision-making, and realistic expectations about goals and priorities of each party in an academic-corporate relationship.

Survey responses were collected in early 2019. The survey was completed by 149 respondents whose companies represented more than a dozen industry sectors. In addition, 16 selected survey respondents also participated in individual followup phone interviews that explored topics in greater depth. Industry participants in both the survey and the followup calls represented a variety of company sizes and job roles that included external research coordination, recruiting, and relationship management. The sample is representative, and is an appropriate size given the target population. We offer key findings and best practices first, with methodology and data analysis notes in the appendix.

Although the survey data set represents a solid cross-section of North American businesses (many with global operations), generalizations and conclusions are presented as observations and recommendations, not as ironclad rules or requirements. While distinct themes emerged from the NACRO Industry Survey, all of them have exceptions. Ultimately, a university-industry engagement consists of relationships between real people representing unique organizations. Partnerships involve negotiation, performance, and accountability—and they evolve over time. Readers should consider the themes in this report in the context of the organizations that they represent, without expecting perfect alignment in every instance.

⁵ NACRO was founded in 2007 by corporate relations professionals from research universities. Visit nacronline.org to learn more.

INDUSTRY PRIORITIES, PREFERENCES, & PROCESSES

What matters most to a corporation when it interacts with an academic institution?

Survey respondents ranked recruitment, brand awareness, and support of corporate social responsibility initiatives as their three highest priorities in academic relations. The lowest-ranked goals were supporting applied research, encouraging staff development, and driving economic development and commercialization (Figure 1).

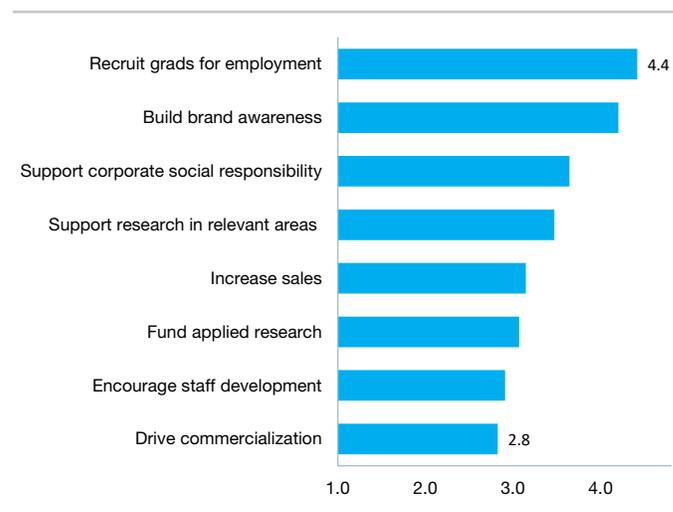


FIGURE 1. Corporations prioritize recruitment and brand awareness above other academic engagement goals⁶

The survey showed a correlation between corporate job function and priorities for academic relations: respondents who worked in research and development valued basic and applied research goals significantly higher than respondents who worked in human resources (HR) or corporate social responsibility (CSR), and HR respondents valued recruiting most highly⁷.

These findings illustrate the value of taking into account the responsibilities of a corporate counterpart when developing an engagement strategy.

Academic engagement goals also vary according to the respondent’s industry sector⁸. Respondents from Healthcare, Pharmaceuticals & Biotech, Software, and Computer and Electronics companies ranked supporting basic research and applied research more highly than respondents other industries.

⁶ Appendix, Survey Question 6

⁷ See detailed chart: <https://nacrocon.org/resources>

⁸ See detailed chart: <https://nacrocon.org/resources>

Campus recruitment was ranked highest by Financial Services, Business Services, and Energy industry respondents. Manufacturing, the largest sector represented in the survey, ranked building brand awareness the highest among all goals and among all industries. Manufacturing companies often struggle with a modern corporate identity as they are challenged to attract young talent inclined to work in the sectors perceived as technology-forward.

This response indicates an awareness of the challenge, and suggests a strategy for corporate relations professionals to strengthen engagement with manufacturing companies by identifying branding-related partnership opportunities.

Overall, the survey data shows that industry’s goals in academic relations are diverse and that a variety of goals for engagement matter to corporations. Universities should be attentive to a range of ways to partner.

How are corporations organized to support academic relations?

Survey respondents work in more than a dozen industry sectors (Figure 2) and represent several functional departments in their companies (Figure 3). Respondents mostly work for public companies (69%)⁹ with at least \$1 billion in annual revenue (73%)¹⁰. Many of the companies represented in the survey are global in nature, but all have North American operations.

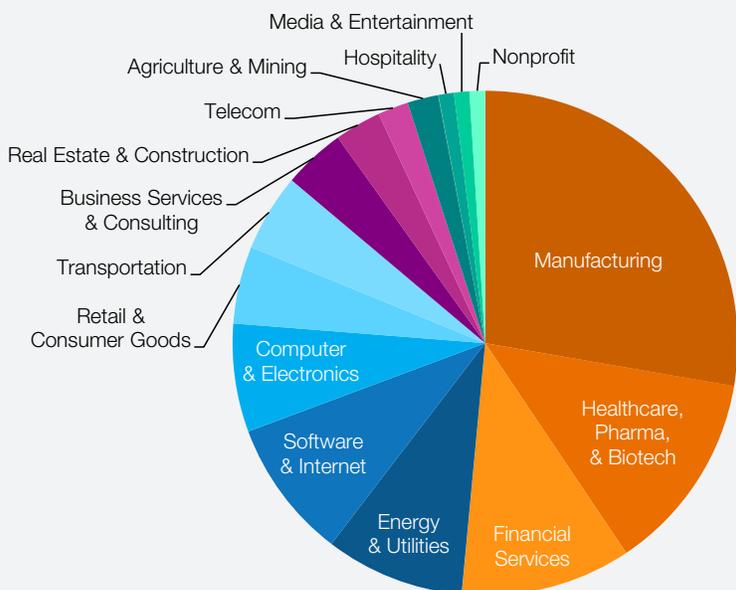


FIGURE 2. The NACRO Industry Survey included respondents from a diverse array of industries¹¹

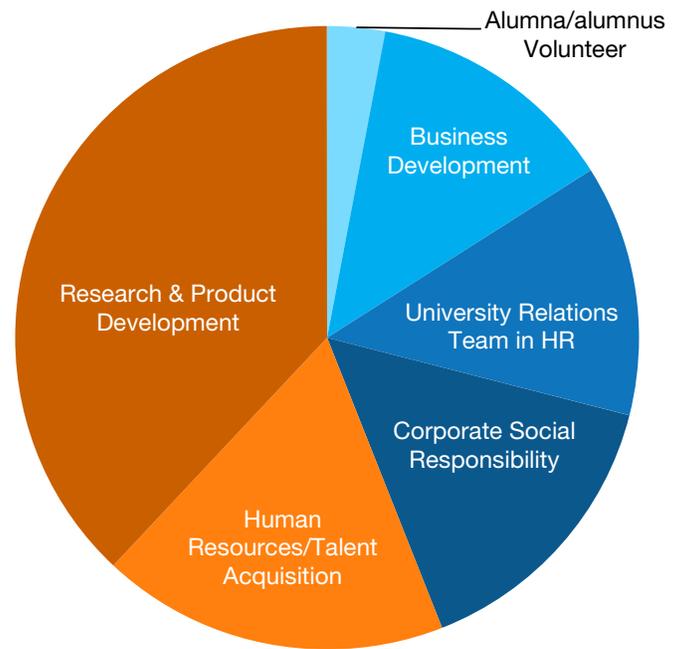


FIGURE 3. Industry respondents represented several different corporate departments¹²

Examining this cross-section, more than 50% of companies have a dedicated university relations coordinator, team, or office. Smaller percentages reported a less coordinated approach or the absence of an assigned responsibility for academic relations (Figure 4).

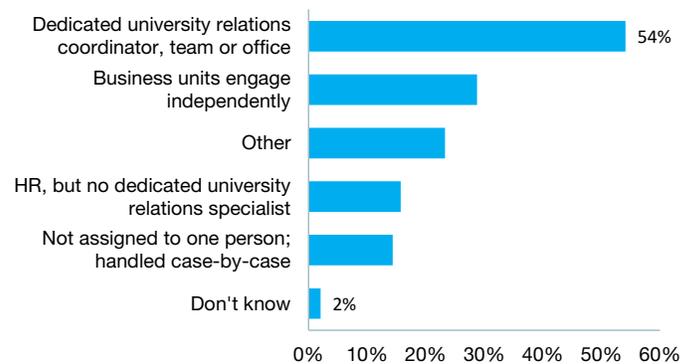


FIGURE 4. Corporations organize their academic relations function in various ways, but a dedicated person or office is by far the most common¹³

⁹ Appendix, Survey Question 1

¹⁰ Appendix, Survey Question 3

¹¹ Appendix, Survey Question 2

¹² Appendix, Survey Question 4

¹³ Appendix, Survey Question 5; more than one response allowed

Does industry care if universities have a central coordinator or concierge position facilitating corporate relations?

When asked if they preferred a single “primary relationship manager at a university to simplify communications and coordinate activities across campus” over “multiple lines of communication,” a distinct but not overwhelming majority (55%/45%) prefers a primary relationship manager.¹⁴

Comments on this binary choice were nuanced: respondents distinguished between the overall institutional relationship (for which a point person was welcome) and researcher-to-researcher contacts (“don’t want to preclude individual discussions;” “facilitating access to faculty is helpful, coming between our researchers is not”). While some respondents were wary of communications being funneled through a single person, others found a relationship manager critical to navigating a university.

One manager of partnerships at a Fortune 500 Company went so far as to say that competence in the corporate relations function at a university can be a difference-maker.

To this research manager, faculty research quality within a given tier of ranked universities in the field of interest was roughly interchangeable, and the skills and responsiveness of the corporate relations office was a point of differentiation in choosing an academic partner.

How does industry decide which universities to partner with?

Survey respondents represent companies that are managing a large number of academic partnerships: a strong plurality maintains ongoing relationships with more than 25 universities.¹⁵

To create these numerous engagements, only 32% of companies consider opportunities on a case-by-case basis; the remainder either have an established, systematic process for selecting partners (18%), or—most common of all—apply a combination of systematic and case-by-case processes depending on the circumstances.¹⁶ There are numerous variations on these themes—the systematic process may be applied only to larger, strategic relationships, for example.

In some instances, corporations have established institutions where they recruit, but maintain research collaborations based on individual relationships with researchers. In other cases, the opposite applies: the corporation attends numerous job fairs and recruits widely, but invests heavily in research collaborations with selected universities.

When presented with a smorgasbord of 11 potential criteria used to evaluate academic institutions for potential partnerships (Figure 5), all criteria received some level of support—but five were strongly favored. All five were identified as either “moderately” or “extremely” important by at least 80% of respondents:

- Alignment of degree programs with the company’s recruiting goals
- Alignment of university’s research strengths with the company’s product development roadmap
- Existing relationships with university faculty or administrators
- Proximity of the university to corporate headquarters or major facilities
- The university’s track record for managing industry relationships.

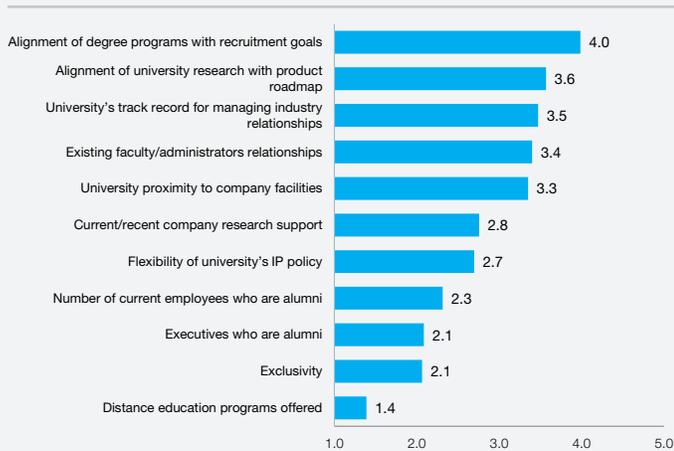
In contrast, criteria such as whether the university offers online programs, whether the university has relationships with competing companies, and the number or executive status of alumni working at the company were judged to be less important in making a partnership decision.

However, followup conversations revealed some strong themes within these overall results. For example, flexibility of the university’s Intellectual property (IP) policy was a highly polarizing option: 38% of respondents rated it “Not Important,” whereas 22% rated it “Extremely Important.” IP policy was rated “Moderately Important” less frequently than almost any other factor, underscoring the importance of preparation in understanding what matters to a potential partner, as well as exploring in advance the potential for negotiating roadblocks.

¹⁴ Appendix, Survey Question 17

¹⁵ Appendix, Survey Question 7

¹⁶ Appendix, Survey Question 8



Scores are weighted means of responses where partnership assessment criteria were scored by respondents as Not Important (1), Moderately Important (3) or Extremely Important (5)

FIGURE 5. Corporations prioritize a wide array of criteria by which they assess potential academic partners¹⁷

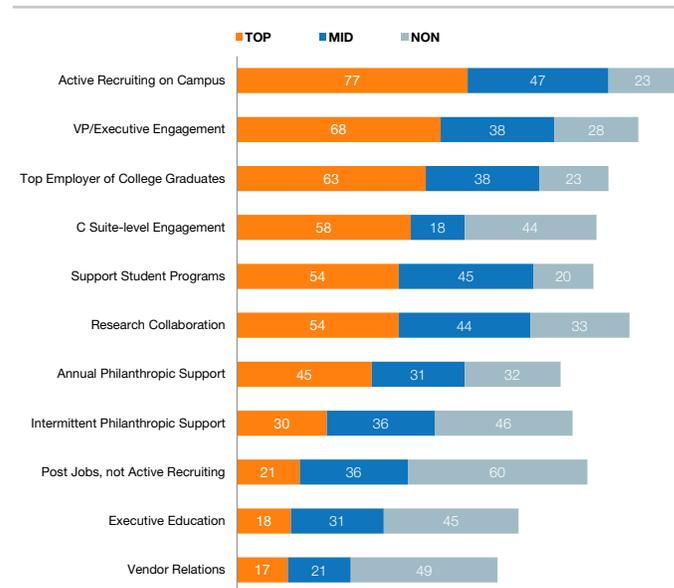
A deeper analysis found several significant differences in criteria as ranked by job function. Confirming what corporate relations officers already assume, research and development staff value flexibility of university's IP policy, alignment of a university's research strengths with company's product development roadmap, and current or recent level of research support with an institution more highly than their colleagues in other departments.

HR staff prioritized geographic proximity of a university to corporate headquarters or major regional facilities, and alignment of degree programs with company recruiting goals. Additionally, HR staff ranked criteria around alumni higher, including the number of current employees or executives who are alumni, providing insight into factors that will attract the attention of HR contacts as potential partners.¹⁸

How does industry categorize its corporate partnerships?

The survey asked industry respondents to identify the features of academic engagements at three levels of university partners: top-tier, mid-tier, and "non-partners"—institutions where the company has only occasional activity.¹⁹ When presented with a list of 11 types of engagement representing the partnership pillars of recruiting, research sponsorship, philanthropy, and executive involvement, respondents identified recruiting and executive engagement as the most consistent elements at their top-tier partnerships. At the other end of the spectrum, job postings without active recruiting and intermittent philanthropic support were the most frequently-cited activities at non-partner institutions (Figure 6).

The corporate perspective on which activities they associate with different kinds of university partners can serve as a roadmap for corporate relations professionals designing appropriate packages and for setting expectations for faculty and senior institutional administrators.



Scores are the number of respondents who rated each partnership activity as characteristic of universities who are Top-Level, Mid-Level, or Non-Partners.

FIGURE 6. Corporations associate different engagement activities with universities that they consider to be Top-Level, Mid-Level, or Non-Partners.

How does industry evaluate its academic partnerships?

External partnerships can be major investments of time and money. NACRO devoted an entire white paper²⁰ to the issue of identifying and applying metrics to corporate relations—what about the same issue as viewed from the industry perspective? Our survey revealed that the use of Return on Investment (ROI) metrics is the most frequent method of evaluating academic partnerships, followed closely by "periodic review but don't use quantitative measures of success."²¹

¹⁷ Appendix, Survey Question 9

¹⁸ See detailed chart: <https://nacron.org/resources>

¹⁹ Appendix, Survey Question 21

²⁰ NACRO Benchmarking Committee. 2012. Metrics for a Successful Twenty-First Century Academic Corporate Relations Program.

²¹ Appendix, Survey Question 14

In followup interviews, industry representatives provided examples of metrics applied to universities:

- Number of hires and subsequent success of hires (tenure at company, performance evaluations, promotions)
- Success in converting interns to employees
- Patents, papers, and material exchange agreements resulting from research collaborations
- Direct impact on sales or profitability.

To demonstrate how even stringent financial metrics can justify corporate investment in sponsored research, a manager from a transportation company described an academic collaboration that resulted in weight reduction on the company's vehicles, as well as an innovative design feature that gave their products a competitive advantage in the marketplace.

Several other managers shared the importance of joint applications with universities for federal funding, which may include joint research or utilizing their company's technology.

When asked about the length of their academic relationships, industry representatives described several variations: one-off research engagements (one global company has 600); renewable partnerships that are reviewed on a semi-regular basis, typically every 2-5 years; and major strategic partnerships that commit tens or even hundreds of millions of dollars and whose duration and renewal are decisions made at the top of the corporate hierarchy. Recruiting relationships typically involve a smaller dollar commitment than a research project or major gift, but are also subject to review as corporate personnel needs shift or university fortunes (typically rankings) rise and fall.

**Affiliate programs can be highly valued—
or lightning rods for resentment.**

“Industrial affiliate” programs, which were treated as synonymous with “corporate partner” programs in the Industry Survey, are popular engagement models at many institutions. In return for annual fees that frequently exceed \$10,000, participating companies receive benefits including access to academic leadership, ability to influence curriculum, preferred access to student resumes and interviews, customized or shared “industry days” on campus, and faculty research seminars and opportunities to network with other companies.

Such programs have proliferated and some institutions have dozens of them, ranging from university-wide to college- and department-level. In response to a question about participation in affiliate programs, we learned that 50% of responding companies participate, 25% do not, and 25% of respondents were uncertain.²²

We discovered in followup interviews that there are different interpretations of what such programs are designed to accomplish, and a variety of justifications for participating—or not—in them. The highest ranked priorities were access to talent and increased visibility of the corporate brand, but even a low-ranked reason (influence over curriculum development) had strong adherents from industry representatives who explained that they had found engineering graduates to be unprepared in areas of importance to their business (e.g. health and environmental safety), and were willing to put resources into addressing that gap.

A subset of respondents expressed the strong opinion that affiliate programs represent a “pay to play” model, which they resent. There are differences from institution to institution (and even across affiliate programs at the same institution) in the benefits that result from paying affiliate fees, and **universities should take care to plainly state their value proposition.** There are also differences between campus-wide partner programs and college-based industry affiliates programs.

Respondents favor and understand the value of the college affiliates program; they enjoy engaging in a college advisory council, providing input to a Dean, getting to know the faculty, and influencing curriculum—and they understand that their financial contribution provides access. In contrast, campus-wide programs where payment is seen as a cost of entry to the institution are a turnoff.

Some companies do not feel they should pay merely to have a corporate relations officer facilitate a phone call or other connection to a faculty member, for example. Others are unhappy when every activity has a price—if, for example, they are expected to pay for a research project, and again to access the resume or interview schedule of a student who worked on that research. Still others find affiliate programs “good value for the money,” reinforcing the importance of transparency and thoughtfulness in program design.

²² Appendix, Survey Question 12

Are there trends in size or number of academic partnerships?

Several dynamics have driven changes in how some corporations conduct research. These include a more cost-conscious attitude regarding the expense of in-house research conducted by well-compensated staff, innovations in open research competitions or crowd-sourced research, and an expectation of prompt translation of research results into product development.

Our survey found that among respondents who were familiar with the research strategy at their corporation, a plurality felt that both the number and size of academic partnerships were stable. Where the size of individual partnerships is changing, five times more respondents reported increases as opposed to decreases—albeit sometimes concomitant with reducing the *number* of partnerships.²³

OPPORTUNITIES AND BEST PRACTICES IN UNIVERSITY-INDUSTRY ENGAGEMENT

In the survey, as well as in each followup interview, we asked industry representatives the question, “What can universities do better to facilitate interactions with corporations?” Several themes emerged regarding partner satisfaction and opportunities for improvement.

Industry Partner Satisfaction

When asked to summarize their overall level of satisfaction with academic relations on a 0-100 scale, industry respondents gave their academic relationships an average score of 65.²⁴ Drilling more deeply into this single measure of satisfaction revealed that **survey respondents who work at companies with a position dedicated to university relations had a significantly higher level of satisfaction than companies without such a position.**²⁵ Responses to a followup prompt to identify specific areas of potential improvement generated a working list for corporate relations officers to consider for both tactical and strategic planning (see ‘Top 5’ in next column).

Additional opportunities for improvement identified:

- Collaborate *across* institutions, because corporate resources are limited & demand exceeds supply
- Improve institutional marketing of student, programs & collaborative opportunities
- Educate faculty on IP terms & obligations in sponsored research contracts

TOP 5 OPPORTUNITIES

Improve internal processes

- Coordinate better across departments
- Streamline engagement procedures
- Strengthen communications
- Address turf issues at the school vs institutional level

Improve contract procedures

- Adjust IP ownership expectations
- Enhance data-sharing language

Demonstrate value of partnership

- Identify ROI potential
- Share benchmarking data on student & faculty quality

Understand your partner

- Educate faculty on industry priorities & dynamics
- Communicate knowledge of partner strategies, product pipeline

Prepare students for recruiting process

- Educate about work life & compensation realities
- Create alternatives to conventional job fairs
- Optimize internship opportunities

FOUR BEST PRACTICES THAT INDUSTRY REPRESENTATIVES BELIEVE MAKE A DIFFERENCE

Distilled from Survey & Interview Responses

Best Practice 1. Informed & customized relationships work best

Take the time and devote the necessary resources to understand each corporate partner deeply. Know their product and service offerings, their priorities, and their strategies. Don’t oversimplify the “holistic approach” into a pathway of “research contracts + recruiting successes → philanthropic asks.” Don’t assume that companies know or care about the relationship continuum concept. While larger companies may have a high-ranking manager with a broad view of university relations, the majority of industry contacts have a narrower focus on research, on recruiting, or on philanthropic donations.

²³ Appendix, Survey Questions 18-20

²⁴ Appendix, Survey Question 22

²⁵ Satisfaction score was 68.5 for companies with dedicated university relations position vs 61.8 for companies without dedicated position; significant at 95% confidence level.

The level of communication within a company may vary widely: company research leads will often identify top talent from student projects to their colleagues responsible for recruiting, and recruiting leads may suggest gift opportunities to the philanthropic team—but individuals are not necessarily knowledgeable about the full breadth of engagements at each partner university.

Industry relationships are dynamic. Corporations differ from each other in what they want from a partnership with an academic institution, and their needs may change with time as well.

If a company is focused on recruiting, its academic relations representatives will want to talk to someone knowledgeable about graduation rates, see LinkedIn profiles of alumni, and hear about non-traditional (i.e., non-job fair) ways to promote their company's brand to students.

If a company wants to influence curriculum to address perceived gaps in skills or knowledge among new hires, connect them to faculty and help guide those conversations without overstepping academic boundaries.

If the company is focused on research, its scientific staff or academic relations manager will want to have a candid conversation about IP early on with a knowledgeable university representative, rather than waiting until the research plan and budget have been agreed upon before learning whether the parties' IP expectations are compatible.

We heard repeatedly that industry is hungry for information that can address their specific needs—don't assume that a company is all-knowing about how your institution can help them.

Effective academic corporate relations staff are as dynamic as the partnership; they respond to changing requirements and adjust engagement plans to meet industry priorities.

Best Practice 2. Acknowledge institutional strengths and gaps; know when it's a buyer's or a seller's market

Academic relations professionals in industry appreciate candor as well as information, and expressed frustration that they don't always get it. For example, can the corporate relations officer identify areas of research excellence at their institution, and present the evidence to back it up? Will that person acknowledge gaps in what their university does well?

Bringing on a new university partner can be a large cost and a resource-intensive process; to secure a commitment from a company, the benefit must be crystal-clear.

In addition, understanding the leverage in each university-industry relationship is a best practice. It's realistic to ask the question, "Who needs this partnership more—us or them?"

If a university is producing demonstrably-qualified graduates in an in-demand field, companies hiring in that area will accept the need to pay for preferred access to those résumés or receive privileged placement on recruiting days. Examples in the current job market include data analysts and data scientists, or artificial intelligence/machine learning graduates. Highly specialized roles may also mean more willingness to pay for access to limited supply.

For example, companies hiring petroleum engineers know that the number of institutions with petroleum engineering programs is limited. Similarly, a company might be willing to build an entire relationship around the opportunity to work with a specific researcher who can bring unique knowledge or skills to a problem of importance to the company's product roadmap.

However, if a university's programs are not highly ranked, its strengths don't align with a company's needs, or a company only needs to test or refine a product that already exists, then they may see research as a commodity to be obtained strictly on the basis of price or convenience.

Take the time to understand which situation applies, and be honest with your institution and candid with a potential partner.

Best Practice 3. Enrich your value proposition with relevant data or tools

Companies made it clear that they can use help with establishing and maintaining an academic partnership—do your homework and impress potential or current partners with how much you know and with ideas about how you can support their administrative needs, not just their recruiting targets or their research requirements.

Examples include:

Create and maintain a database of who does what at your university.

Organization charts, faculty lists with research specialties, recent publications, and topics of grant awards can all be valuable. Align your faculty strengths with information about a company's product development roadmap or their current academic partnerships. Provide concise, graphics-driven, user-friendly data on university rankings, faculty and student awards and prizes, and specialized equipment or facilities.

Offer relationship management tools. These may include a contact list, agendas for campus visits, an annual relationship report, an activity-tracking tool to manage the entire relationship, data on interns placed with the company, or data on your institution's graduates (e.g. graduates by major; alumni working for target company or its competitors from LinkedIn or your alumni database). Don't forget to offer information about your humanities graduates as well—companies are looking for critical thinkers with outstanding writing skills, not just data scientists.

Prepare data to help a company calculate its ROI from a relationship. Propose metrics, then ask if they meet the company's needs—don't ask your potential partner to come up with them. If you have data that may be used by a company for benchmarking purposes, include it. Suggest metrics that perhaps only the company can calculate, but which it might not have thought of.

Examples of metrics include interns placed with company; interns converted to full time hires; 3-year retention rate of your graduates; number of capstone projects sponsored; quality of your institution's alumni and faculty network; number and amount of research contracts; and numbers of patents, papers, IP licenses, or Material Transfer Agreements.

Best Practice 4. Develop a concierge service for corporate relations, but deploy it judiciously

As noted earlier, a majority of survey respondents found a single point of contact at a university to be desirable. However, the concierge should be a knowledgeable facilitator and communicator, not a gatekeeper.

Corporations seeking a relationship with a university can find the decentralized nature of many institutions to be confusing and intimidating, so an individual who follows up, responds promptly to phone calls and emails, and has a detailed understanding of their institution can be key to establishing or strengthening a relationship.

Your industry contacts know theirs is not the only company that your university's corporate relations staff is managing, but they want to feel that way. This insight suggests prioritizing quality over quantity when crafting a portfolio of company partners and potential partners.

Several respondents emphasized how complex and confusing universities can be to outsiders. The corporate relations office is crucial to translating between the languages and cultures of industry and academia, as well as serving as an advocate for corporate partners on their university campus. The person in this liaison role does not need to be a subject matter expert, although some experience working in industry was cited as helpful.

More important than technical expertise is institutional knowledge (for example, this person should be able to answer the question, "Who are your young faculty working in a given area?"—or know where to find the answer) and "emotional intelligence"—empathy and a positive attitude.

Be cautious about assigning a development officer with a fundraising target to this role, and making it a part-time responsibility is not a best practice.

Industry respondents expressed the opinion that corporate relations professionals should serve as advocates for industry at their university, not the other way around.

CONCLUSIONS

The survey and followup interviews may be seen as a collection of insights for further discussion rather than a set of definitive standards. Nonetheless, we gleaned several conclusions for consideration.

NACRO members have relationships with a broad cross-section of industry sectors. A small fraction (less than 10%) of NACRO members provided invitations to their corporate contacts for this survey, and yet we received responses from nearly 150 companies representing more than 20 industry sectors. This suggests a rich resource for deepening NACRO's organizational knowledge of its corporate partners.

Effective academic corporate relations staff can be a differentiator in partnership decisions, and industry academic relations representatives believe that corporate relations staff should represent their interests at the university, not (only) the reverse. We found a deep well of respect and appreciation for the hard work done by corporate relations professionals. At the same time, there is an expectation that industry priorities will be articulated and even championed on campus by the corporate relations team. Companies are wary of being seen as bottomless pockets of money, eager to pay top dollar for access to a star professor or a desirable crop of graduates.

Industry is looking for relationship data and for partnership tools. We heard that companies are extremely appreciative of information on topics like new faculty hires, joint funding opportunities, and opportunities to participate in relevant campus activities. They are also interested in comprehensive data on their partnership with an institution. Regular updates (like an annual summary) about a relationship seem to be the exception rather than the rule. Companies reported that they don't typically have the kinds of tools that would help them evaluate their academic partnerships and would like to have more. They asked whether there are applications that would help them manage their academic relationships.

While acknowledging the complexity of a modern academic institution, industry expects corporate relations professionals to be informed and responsive. Partnerships inevitably rely on relationships and trust between individuals, and we heard numerous stories about corporate relations officers whose attention to detail and communication skills made a real difference. We also heard about unreturned phone calls and relationships that foundered when a key person changed jobs and pending actions got dropped.

Responsibilities for academic relations may reside in several different departments at a company.

We learned that philanthropy is often disconnected from recruiting or research collaborations, and that it's wrong to assume that active recruiting will lead to interest in research, or vice versa.

IP is not always relevant, but when it is, it can make or break a partnership. Academic corporate relations officers are not typically experts, but they should know where the expertise is at their institution, and stay informed so that IP issues don't stall discussions. Industry has had mixed experiences with simplified IP menus. When a company anticipates relevant IP from a research collaboration, they expressed a clear expectation that it will be available to them through the terms of the contract.

NACRO's survey on industry perspectives has provided a long-needed baseline of information that can be extended by asking comparable questions of academic corporate relations officers, by adding additional questions to subsequent surveys, and by conducting case studies of successful as well as problematic relationships.

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Industry interviews: Anonymous, Anthony Agusti (Caterpillar Inc.), Gretchen Baier (Dow Chemical Corp.), Nathan Bales (General Dynamics Mission Systems), Ethan Berg (LyondellBasell), Lauren Faulkner (General Dynamics Mission Systems), Donna Gulezian (Taconic Biosciences), Ronda Hamm (Corteva Agriscience), Jacob Harrison (Samsung Strategy and Innovation Center), David Hays (Axis Capital), Christopher Hewitt (BASF), William Hunter (Chevron), Edward Krause (Ford Motor Company), Jill Macchiaverna (Exaptive, Inc.), Samuel McLaughlin (Volvo Group Truck Technology), Jack Wenstrand (Agilent), Lindsay Wilson (State Farm Insurance).

Survey Respondents: Anonymous, AAA, ADM, Adobe, Agilent, Alaska Airlines, Amazon, AMD, Amgen, Andersen Windows, ArcelorMittal, Ardent Mills, AT&T, ATB Financial, AXIS Capital, BASF, Bayer, BD, BECU, Bell, BenchSci, Blue Origin, Broward College, Campbell Soup, Canadian Natural, Capital One, Caterpillar, Chainalytics, Chevron, Cisco, Coke, Conformis, Corteva Agriscience, COUNTRY Financial Digitalab, Credit Suisse, Delta Air Lines, Diversified Maintenance, Eastman Chemical Company, Ecolab, Enterprise Holdings, Exaptive, Express Scripts, EY, Fabcon Precast, Facebook, Familia Dental, Fast Enterprises, Fidelity Investments, Ford Motor Company, Fox Chase Chemical Diversity Center, Futurewei Technologies, Gartner, General Dynamics Mission Systems, GSK, HM.CLAUSE Limagrain, HomeAdvisor, HP, Hyatt, IBM Corporation, Intel, IPG Photonics, J. F. Ahern Co, Lam Research, Land O'Lakes, Inc., LGS Innovations, LifeScan, Lincoln Electric, LyondellBasell, Magna International Inc., Medtronic, Mensor, Mercury Marine, Microsoft, MilliporeSigma, National Instruments, NEC Corporation of America, NFFPA, Norfolk Southern, Northrop Grumman, Novozymes Inc., Oasis Petroleum, ONEOK, Optum, Oshkosh Corporation, PepsiCo, Phillips 66, Pratt & Whitney, Prent Corporation,

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APPENDIX. SURVEY & SUPPLEMENTARY INTERVIEWS: METHODS, DATA, & ANALYSIS

Survey & Analysis Methodology

A set of 25 questions was prepared in SurveyMonkey. Potential respondents were identified by soliciting names from NACRO members based on existing relationships with industry professionals.

Additional participants were identified from data.com lists and LinkedIn profiles of professionals with job titles related to academic relations. Lists were de-duplicated to avoid multiple invitations. Approximately 600 invitations were sent by email to the data.com and LinkedIn lists, and approximately 350 invitations to the NACRO member-sourced list.

Additionally, an unknown number of invitations were issued by NACRO members who elected not to share the identities of their invitees. The solicitation campaign yielded 149 survey responses between 18 January 2019 and 10 April 2019. No questions mandated a response in order to complete the survey, but (excluding two administrative questions) average response rate per question was 95%.

An average of 16 comments were made on 18 questions that allowed text comments or explanations. A text-only question that prompted respondents to identify areas for improvement in university-industry relations received 46 responses. Results were exported from SurveyMonkey to Excel for analysis and graphing. Additional analysis to compare responses across industries or positions was conducted in the general-purpose statistical software Stata using an independent t-test to determine whether the mean difference between two groups is statistically significantly different to zero at a 95% confidence level.

Supplementary Interviews

Interviews lasting 30-60 minutes were conducted by videoconference or phone. Interview candidates were selected based on a positive response to a survey question asking if they would be willing to participate in such an interview and a goal of diverse industry sector representation. Twenty-two interviews were solicited; 16 were conducted in April and May 2019.

Question 1. What is the nature of your employer?

RESPONSE	#	%
Publicly traded company	101	69%
Privately held company	36	25%
Nonprofit organization	2	1%
Other	7	5%
Total responses	146	100%

Question 2. Which industry best describes your company's business? (See also Figure 2 in text)

RESPONSE	#	%
Manufacturing	41	28%
Healthcare, Pharmaceuticals, & Biotech	20	13%
Financial Services including Banking & Insurance	16	11%
Energy & Utilities	13	9%
Software & Internet	13	9%
Computer & Electronics	11	7%
Retail & Consumer Goods	7	5%
Transportation	7	5%
Business Services including Strategic Consulting	6	4%
Real Estate & Construction	5	3%
Telecom	3	2%
Agriculture & Mining	3	2%
Hospitality & Food Service	2	1%
Media & Entertainment	1	1%
Nonprofit	1	1%
Total responses	149	100%

Question 3. What is the annual revenue of your company?

RESPONSE	#	%
Greater than \$1 billion	106	73%
\$10 million - \$1 billion	23	16%
Less than \$10 million	6	4%
\$0 (pre-revenue startup)	1	1%
Don't know	10	7%
Total responses	146	100%

Question 4. In which department do you work? (See also Figure 3 in text)

RESPONSE	#	%
Human Resources/Talent Acquisition	27	18%
University Relations Team within HR	19	13%
Research & Product Development	57	38%
Corporate Social Responsibility/Community Relations	23	15%
Business Development	19	13%
Passionate alumna/alumnus working on University Partnerships beyond my day job	4	3%
Total responses	149	100%

Question 5. Where does responsibility for managing academic relationships reside in your company? (Select all that apply)

RESPONSE	#
Dedicated university relations coordinator, team or office	79
Business units engage independently	42
Other	34
HR, but no dedicated university relations specialist	23
Not assigned to one person; handled case-by-case	21
Don't know	3
Total responses	202

N = 149

Question 6. How important are the following goals for your company's academic engagement?

See also Figure 4 in text, where Not Important (NOT) was scored 1.0, Moderately (MOD) was scored 3.0, and Extremely (EX) was scored 5.0.

RESPONSE	NOT	MOD	EX	N/A	RES
Drive commercialization	31	61	38	13	143
Encourage staff development	32	68	36	7	143
Fund applied research	31	62	45	6	144
Increase sales	32	41	59	11	143
Support basic research in relevant areas	16	68	56	4	144
Support Corporate Social Responsibility	13	58	69	6	146
Build brand awareness	7	43	93	0	143
Recruit grads for employment	6	30	108	0	144

RES = RESPONDENTS n = 146

Question 7. With how many academic institutions does your company maintain ongoing relationships?

RESPONSE	#	%
More than 25	59	42%
11-25	34	24%
Fewer than 11	32	23%
Don't know	14	10%
Total responses	139	100%

Question 8. Does your company have an established systematic process to determine which universities it partners with, or does it consider opportunities on a case-by-case basis?

RESPONSE	#	%
Both	60	41%
Case-by-case	47	32%
Systematic	26	18%
Don't know	12	8%
Total responses	145	100%

Question 9. How important are the following criteria for selecting university partners?

See Figure 5 in text. Not: 1.0, Moderately: 3.0, Extremely: 5.0.

RESPONSE	NOT	MOD	EX	TOTAL
Distance/online education programs offered	113	25	1	139
Exclusivity (existing partnerships with competitors)	75	54	10	139
Executives who are alumni	75	54	11	140
Number of current employees who are alumni	63	62	15	140
Flexibility of university's intellectual property policy	52	55	31	138
Current/recent company research support	39	78	22	139
Proximity of university to headquarters or facilities	24	70	49	143
Existing faculty/administrators relationships	12	88	40	140
University's track record for managing industry relationships	13	81	46	140
University research aligned w/product roadmap	21	59	61	141
Alignment of degrees with recruitment goals	13	45	82	140

n = 144

Question 10. Overall, what is the balance between research funding and philanthropic donations in your company's support of universities?

RESPONSE	#	%
More research than philanthropy	46	32%
More philanthropy than research	38	26%
Don't know	51	35%
Other	10	7%
Total responses	145	100%

Question 11. NACRO is working to expand its membership beyond research universities. Does your company have active partnerships with academic or research institutions that are not research universities? (Select all that apply)

RESPONSE	#
Colleges (Primarily Undergraduate Institutions)	77
Community or Junior Colleges	47
Independent Research Institutions	38
Medical Centers/Research Hospitals	28
Total responses	190

n = 133

Question 12. There are several models for university-industry partnerships, including "Industrial Affiliate" or "Corporate Partner" programs, where companies typically pay an annual fee and derive a variety of benefits, including contact with researchers and students, access to recruiting opportunities, and insight into research trends. Does your company participate in such programs?

RESPONSE	#	%
Yes	72	50%
No	37	26%
Don't know	36	25%
Total responses	145	100%

Question 13. What are your priorities for participating in Corporate Partner/Industrial Affiliate programs?

RESPONSE	NOT	MOD	EX	N/A	TOTAL
Influence direction of research at university	55	45	13	24	137
Influence the curriculum	37	54	22	22	135
Keep up with competitors	26	49	37	24	136
Insight into research trends	23	57	38	20	138
Networking with researchers	17	65	37	20	139
Increased brand visibility	11	47	61	20	139
Access to talent	10	45	65	19	139

n = 140

Question 14. How does your company measure the success of academic relationships?

(Select all that apply)

RESPONSE	#
With ROI metrics	61
Periodic review but don't quantify success	55
Recommendation of corporate researchers	36
No formal process for evaluation	28
Other	16
Don't know	14
Total responses	210

n = 145

Question 15. What method(s) of outreach does your company prefer, to initiate a relationship?

(Select all that apply)

RESPONSE	#
Company researchers contact university researchers	78
Contact our university relations coordinator	71
University researchers contact company researchers	55
Don't call us; we'll call you	28
Contact our HR department	26
Contact local branch manager	17
Don't know	14
Total responses	289

n = 145

Question 16. Does your company have a formal competitive/RFP program for research collaborations with universities?

RESPONSE	#	%
Yes	17	12%
Yes, but only with selected or 'approved' universities	10	7%
No	72	50%
Don't know	44	31%
Total responses	143	100%

Question 17. Does your company prefer structured rules of engagement with universities?

RESPONSE	#	%
Yes, prefer one primary relationship manager at a university to simplify communication and coordinate activities across campus	78	55%
No, fine with multiple lines of communication	64	45%
Total responses	142	100%

Question 18. At your company, is there a trend toward increasing/decreasing the number of academic partnerships?

RESPONSE	#	%
About the same	62	43%
Increasing number	39	27%
Decreasing number	21	15%
Don't know	21	15%
Total responses	143	100%

Question 19. At your company, is there a trend toward increasing/decreasing the size (breadth, depth) of individual academic partnerships?

RESPONSE	#	%
About the same	59	41%
Increasing size	49	34%
Decreasing size	10	7%
Don't know	27	19%
Total responses	143	100%

Question 20. Is your company changing the way it conducts research in general?

RESPONSE	#	%
About the same	57	39%
Outsourcing research more	14	10%
Conducting open innovation competitions	11	8%
Outsourcing research less	6	4%
Don't know	57	39%
Total responses	143	100%

Question 21. Help us understand how your company categorizes, or ranks, university partners. Select all engagement features that are active with each level of partner. (Top-Level, Mid-Level, or Non-Partner.)

ENGAGEMENT TYPE	TOP	MID	NON
C Suite-level Engagement	61	20	45
VP or other Executive-level Engagement	71	40	30
Top Employer of College Graduates	66	41	23
Research Collaboration	56	46	35
Active Recruiting on Campus	81	50	25
Post jobs, but not active on Campus	22	28	63
Support Student Programs	58	47	20
Funding - Annual Philanthropic Support	50	32	32
Funding - Intermittent Philanthropic Support	33	38	47
Executive Education/Professional Development	18	31	45
Vendor Relations	17	21	45

n = 126