

Research Strategies for Academic Medical Centers: A Framework for Advancements Toward Translational Excellence

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ABSTRACT

This review article presents a simplified framework for thinking about research strategy priorities for academic medical centers (AMCs). The framework can serve as a precursor to future advancements in translational medicine and as a set of planning guideposts toward ultimate translational excellence. While market pressures, reform uncertainties, institutional economics, and the move to a value-based environment have firmly pushed clinical strategy to the forefront of AMC planning, research strategic planning remains vitally important, especially for AMCs with significant research enterprises.

A “research strategy DNA” framework can help leadership and faculty toward a shared understanding of their current position and help inform their future strategic priorities in light of rapidly changing environments. Six common strategic elements are outlined in the framework: (1) research faculty, (2) research infrastructure and space, (3) research organizations, (4) research focus areas, (5) research teams, and (6) research partnerships. AMC thinking along these elements is guided by two strands: (1) pursuit of excellence, and (2) strategic stewardship.

Building on this framework, three areas of emerging strategic attention (yet underrepresented in current AMC research strategies) are introduced: research business models, translational organizational structures, and philanthropic agility.

INTRODUCTION

While healthcare market competitive pressures and reform uncertainties—and the move to a value-based environment—have firmly pushed clinical strategy to the forefront of academic health planning, research strategic planning remains vitally important, especially for academic medical centers (AMCs) with significant research enterprises. The intertwined scientific, organizational, and financial intricacies of clinical and research enterprises are complex, and their combined strategies will play important roles in AMC sustainability and differentiation. Increasingly, the effectiveness of research strategic planning is having an impact on patient choice, outcomes, and translational excellence.

This review article presents a simplified framework for organizing and focusing AMC research enterprise priorities—a framework that can be thought of as the “research strategy DNA” of AMCs. While a number of articles have been written about AMC research enterprise management (Mallon, 2007), overbuilding (Alberts, 2010), right-sizing (Lee, 2013), and related topics, this framework offers a means of organizing the many elements that AMC leadership and faculty should consider as they chart their future research enterprise trajectories. Increasingly, these trajectories must demonstrate progress along translational medicine fronts to ensure continued

institutional investment in research enterprise development, align with persistent patient care priorities, and prevent a decoupling of clinical and research enterprise finances.

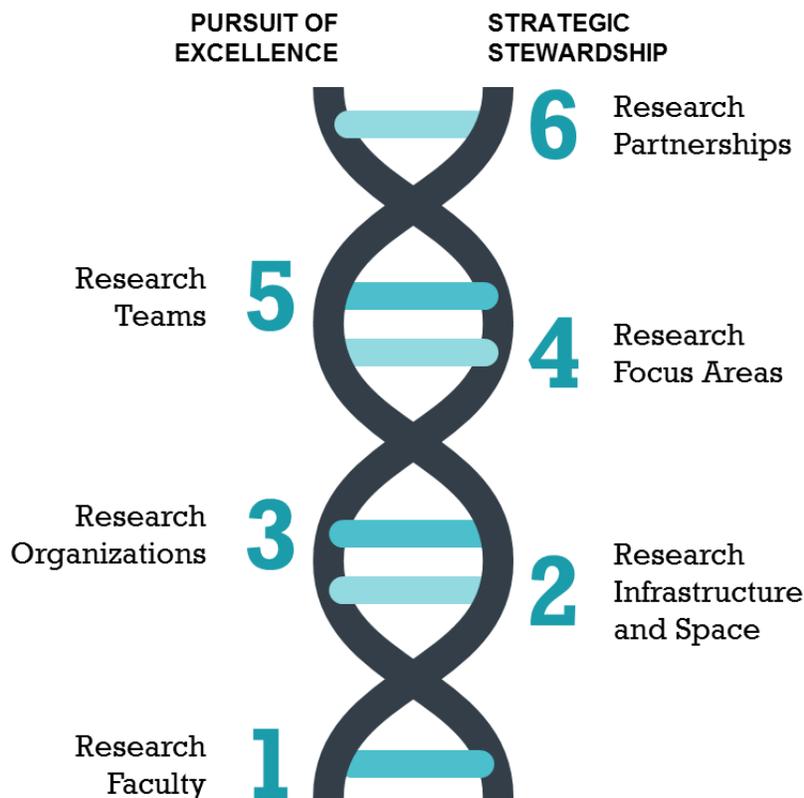
Research Strategy DNA Framework

The introduced framework combines the authors’ AMC research strategy experience with review of selected strategic plans from AMCs with major research enterprises.¹ The common, central strategic elements found across these and other plans have been extracted into a simplified framework along which research investments have been focused. However, with significant mission and economic pressures bearing down on research enterprises, these central elements, while still required, will not be sufficient as AMC leadership and faculty develop future research strategies. In particular, three additional areas for future strategic attention are identified alongside the framework—areas that are underrepresented in current plans: research business models, translational organization structures, and the importance of philanthropy.

Six common strategic elements are outlined in the framework (Figure 1), with these elements forming the “base pairs” of research strategy DNA. The base pairs are structurally supported by two “strands” that guide AMCs’ research thinking: the pursuit of excellence and strategic stewardship. Pursuit of translational research excellence is a fundamental tenet of

AMCs and one that continues to promise the opportunity to differentiate AMCs relative to other healthcare providers in the market. Strategic stewardship refers to the increasing emphasis on research effectiveness and efficiency alongside the realization that while

research is an inherently nonlinear, inefficient activity, there are limited resources for investment in the enterprise—investments that are made in an environment of numerous competing interests.



AREAS FOR FUTURE STRATEGIC ATTENTION:

- I. Research Business Models
- II. Translational Organizational Structures
- III. Philanthropic Agility

Figure 1. Research Strategy DNA Framework. The six base pairs define common strategic elements of AMC research enterprises. The two strands define the goals structurally supporting these strategic elements. Three important areas for future strategic attention are also identified.

1. Research Faculty

Support for faculty over the duration of their careers—from recruitment and start-up to

junior faculty development to funding gap challenges—is a central element across AMC research strategies and deserves this pole

position. AMCs recognize the importance of recruiting and retaining high-performing research faculty, and faculty with strong team-building capabilities are increasingly valued. The competitive external research funding environment, and the lack of clear, sustainable solutions to address prolonged research funding gaps, is a challenge driving AMCs to emphasize faculty return on investment and ability to compete for larger-scale, complex, and team-based funding opportunities.

Successful AMCs are devoting attention to coordinating faculty recruitment, and their strategic plans characterize junior faculty as investments and describe programs designed to support junior faculty development. Examples include linking junior faculty with experienced faculty possessing strong National Institutes of Health (NIH) funding histories, offering competitive internal seed grants, and establishing clinical scholar awards that provide release time for junior clinical faculty with demonstrated research abilities.

A limited number of AMCs are also exploring the extension of performance-based faculty metrics and compensation approaches from the clinical realm to research. Elements include developing metrics to measure faculty research performance (at the individual investigator and academic unit levels), connecting these metrics to commonly-used clinical RVUs (Relative Value Units), integrating tracked research metrics into

performance evaluation, and revising faculty compensation plans to reward research performance across the basic, translational, and clinical sciences.

Other increasingly strategic elements for faculty success are comprehensive faculty mentoring programs—programs that intend to help recognize early strengths and research interests that can be complementary to an AMC's research strategy. Also, faculty committee service models, tenure designs, instruction/teaching modalities, and other forms of faculty citizenship are gaining strategic importance as AMCs continue to maneuver among the challenges of a demanding landscape.

2. Research Infrastructure and Space

Shared research infrastructure and core research facilities are a strategic focus of many AMCs. Plans reveal emphasis on enhanced research infrastructure investment in concert with improved management of cores along organizational, governance, and financial dimensions. The following description from one plan highlights some of the challenges and opportunities (University of North Carolina, 2012, p. 17):

While this infrastructure has enabled our faculty to engage in cutting-edge and innovative research, the proliferation of cores and lack of central oversight have led to resource duplication, unnecessary administrative burden and an environment in which cores are often only evaluated in a reactive manner (e.g., efforts to save a core which has run continued annual

deficits) rather than proactively. In order to streamline core facilities and platforms and shift institutional attention from putting out fires to evaluating core investments strategically, a process of centralization and consolidation of research core facilities will be initiated.

Investment areas span the basic, translational, and clinical research domains and include biomedical research cores, enhanced imaging cores, tissue procurement capabilities, clinical and laboratory repositories (including biobanks or biorepositories), animal models, and clinical trials infrastructure.

Extending from infrastructure to research space, plans are increasingly attentive to more data-driven research space allocation, re-allocation, and utilization approaches. While a number of AMCs have overbuilt their research enterprises, others have ambitious plans to construct additional research space. Institutions have also begun to evaluate the merits of co-owning/developing research spaces, along with the economic viability of continuing research “incubators” and other scaling facilities. Despite these differences, a constant focus remains: the need for more strategic understanding and decision-making related to available research space and its contribution to impactful, economic, and productive research.

3. Research Organizations

The organization of some AMC research activities into centers, institutes, or other organizational structures represents another key element observed across strategic plans,

with a focus on how well-designed organizational structures can enhance research productivity, effectiveness, and efficiency.

Multiple plans identify centers and institutes as important to linking basic and clinical research and to improving the translation of research into improved clinical care. Plans call for establishing or enhancing organizational structures to target these and other research goals. Successful plans are also increasingly focused on objective, transparent, and formal review of research centers and institutes as well as traditional academic departments. As summarized in one plan (University of Pennsylvania, 2013, p. 11):

Sustained success requires ongoing realignment of priorities and flexibility to invest in developing areas of scientific inquiry and clinical medicine. To this end, we will undertake a rigorous and metric based review of the current center and institutes’ activities, impact, and governance to ensure continued alignment with the institution’s strategic priorities and objectives.

4. Research Focus Areas

Almost universally, leading AMC strategic plans identify a select number of research focus areas for institutional investment and development. Efforts typically focus on strengthening existing competitive research niches, areas of critical faculty mass, and areas of emerging research opportunity in the funding landscape that simply cannot be ignored.



Figure 2. Research Focus Areas

Specific areas identified in the sampled plans range from the basic sciences to population health research (Figure 2). Cutting across research domains, a number of AMC plans focus on areas such as establishing leadership positions in bioinformatics or

biomedical informatics. Other cross-cutting research areas receiving attention include data-intensive science and personalized or individualized medicine. Per the sampled plans, selected research focus areas include those listed in Table 1:

**Table 1
Example Research Focus Areas from Leading AMC Strategic Plans**

Basic Sciences	Translational	Clinical	Population Health
Genomics Stem cells Bioengineering	Biostatistics Computational sciences in support of translational research	Personalized diagnostics Degenerative and regenerative medicine Clinical decision-making research	Outcomes research Comparative effectiveness research Research related to the delivery and financing of healthcare

All of these research areas of concentration tend to impact research strategic planning within AMCs. Additionally, fiscal realities, clinical priorities, and the previously mentioned limited resource availability all have

undeniable influences on the strategic priorities and planning processes for AMCs.

5. Research Teams

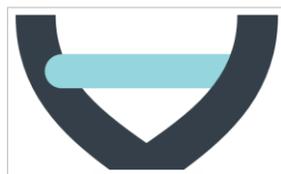
Proactive investment in supporting research teams is an institutional priority across a

number of AMC plans. These plans often call for developing and improving research development offices and functions. Within these offices, support is provided to help identify and bring together teams of complementary investigators (from the basic, clinical, and/or population health research domains) and help the teams more effectively identify, plan, and compete for complex, large-scale, and often multidisciplinary funding opportunities. Mentoring programs, young investigator forums, grantsmanship training, and incentive programs that reward teams (over individual investigator-initiated activities) are all additional strategic opportunities that widen and deepen the corpus of research excellence at institutions.

6. Research Partnerships

Research partnerships are positioned in strategic plans as ways to both strengthen

research capabilities and attract external funding from sources beyond the NIH and other federal funding streams. Partners include state and local organizations, industry, and international collaborators (Figure 3). At the state and local levels, identified partnership opportunities include other schools in the university, other academic institutions in the area, AMC-affiliated hospitals and health systems, and independent research institutes. On the industry side, stated partnership goals include support for clinical research and assistance with the translation of research discoveries into technologies that will benefit future patient care. Whether their clinical operations are globally engaged or not, some AMC plans call for research-focused international partnerships, ranging from basic research collaborations to partnerships focused on clinical research and/or public health.



6 Research Partnerships

- » Local organizations
 - › Academic institutions
 - › Affiliated hospitals and research institutes
- » Industry
- » International collaborators

Figure 3. Research Partnerships

CONCLUSION AND AREAS FOR FUTURE STRATEGIC ATTENTION

The research strategy DNA framework presented here can help leadership and faculty toward a shared understanding of their current position and help inform their future

investments in light of rapidly-changing research, clinical, and academic environments. As AMCs continue their research strategy explorations, there are three areas that are of great importance yet underrepresented in current research strategic plans: research

business models, translational organizational structures, and philanthropic agility (including the important role philanthropic efforts can play in plan design, flexibility, and ultimate achievement). Introduced below, these areas are expected to be key considerations for AMCs over the next several years.

1. Research Business Models

The traditional business models of AMC research enterprises, characterized by significant support from clinical revenue-sharing, are simply not sustainable. AMCs are facing increasing demands for institutional resources to support research enterprises struggling in a period of extremely competitive external funding. These demands include resources to support faculty and other researchers who have lost grant support, shared research infrastructure, and other elements. At the same time, AMCs are experiencing or expecting significant pressures on resources from the clinical operations on which they have historically relied on to support their research missions.

While improved strategic stewardship of research (for example, efficiencies gained from consolidating overlapping core research facilities) can be helpful, major changes will be needed to craft innovative, new research business models within AMCs (e.g., shared services). Research incentives, including enhanced funds-flow/change-in-net-asset models for research budgeting, creative release-

time models, and an increased institutional appetite for loss-leading exploratory research, will all have to be considered. Finally, while financial pressures are particularly challenging for the basic sciences, the new business models must span research domains. The blueprints for these changes are at best in their infancy; a combination of creativity and strong leadership will be needed to reshape academic healthcare research business models in truly productive, sustainable ways.

2. Translational Organizational Structures

More rapid translation of research discoveries into improved patient care has the potential to become a valuable differentiator for AMCs' clinical enterprises. Translational medicine can allow AMC research enterprises to demonstrate their key institutional importance to both mission and financial contribution. This said, the pace and success of translation have not yet achieved their potential: discoveries are slow to market, patent prosecution is complex, and innovation pipelines are continuously pressured by time and expectations for returns on investment. Future attention must be dedicated to experimenting with more innovative organizational structures and incentive systems for linking researchers and clinicians and improving translational medicine. AMCs are particularly well-positioned for these efforts (Brenner, 2012, p. 4282):

Translational medicine is an opportunity that we cannot miss. This is truly a unique niche for academic medical centers and clinician scientists. It requires the intensive analysis and treatment of well-phenotyped patients, which is something that neither freestanding research institutions nor community hospitals can do.

There are promising glimpses of this at a number of AMCs, including centers and institutes supported by NIH-funded Clinical and Translational Science Awards. However, greater creativity and willingness to experiment with novel organizational structures—even if some of these attempts fail—will be required to make measurable impacts on AMC research and clinical distinction.

3. Philanthropic Agility

Increasingly, the role of philanthropy is being prioritized in the strategic planning requirements of AMCs. Today's strategic plans assuredly include derived financial plans to support the intended efforts; increasingly, financial plans provide a key role for

philanthropy and fundraising. Successful research strategic plans place a portion of the strategic priorities “at risk” and subject to the institution's ability to raise unrestricted (or limited restriction) funding. This serves to enhance plan agility and allow higher risk (and more rewarding) components to be developed within research strategic plans.

Philanthropic efforts can be valuable to all AMC entities and research missions. For example, grateful patients can seed clinical research efforts with bequests, industry investments can fiscally support new devices closer to market launch, and other forms of industry partnership can bring needed laboratory equipment in-house. Successful philanthropic roles in the strategic planning process can also infuse flexibility into research efforts, relax expectations to make room for creativity, and provide a fiscal backstop for managing unexpected, sometimes expensive research program contingencies.

ENDNOTE

1. **Methodology:** A qualitative review of strategic plans from AMCs with leading research enterprises was conducted. Publicly available strategic plans from seven AMCs and/or schools of medicine (SOMs) were accessed from universities whose SOMs ranked in the top 15 in fiscal year 2014 research expenditures. While the explored plans varied in format and level of detail, a number of commonalities emerged relating to their research enterprise strategies. Among the seven plans, all written in 2011 or later, six were developed at the AMC level and one at the SOM level. Four of the plans were from private institutions, and three were from public institutions. The sample of seven research strategic plans represented the following universities: University of California, San Francisco; Johns Hopkins University; University of Pennsylvania; University of Michigan; University of North Carolina at Chapel Hill; Northwestern University; and University of California, Los Angeles.

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