THEME 4
Creating Innovative Approaches to Local and Global Challenges
Embracing complex issues with a critical and creative eye is central to Tufts’ place in the world, and marshaling our own complexity across schools and disciplines is the linchpin of that innovative potential. Our ability to approach local and global societal and scientific challenges in unique, effective ways will be contingent on sustaining a culture and structure that enables and fosters creative collaboration across the university, our local communities, and the world.

For example, some of today’s greatest challenges are in the areas of water, climate change, and global health. Tufts is a world leader in helping to resolve these challenges, and one vehicle through which it accomplishes this is the Tufts Institute of the Environment (TIE), which connects, facilitates, and supports cutting-edge interdisciplinary research in these areas. TIE has catalyzed projects that recently attracted grant funding from the National Institutes of Health (NIH) and the National Science Foundation (NSF), addressing global challenges ranging from water and food security to tropical diseases. TIE has also contributed to educational programs including the Masters of Conservation Medicine that was initiated at the Cummings School and the internationally recognized Tufts Environmental Literacy Institute.

Tufts also has a tradition of innovative collaborations, such as the 2011 partnership between the Cummings School of Veterinary Medicine and the Feinstein International Center that led to rinderpest (commonly known as cattle plague) becoming the first animal disease to be eradicated by human intervention. Rinderpest had killed millions of cattle for millennia and was a cause of human famine, particularly in Sub-Saharan Africa. Our juxtaposition of researchers from veterinary medicine and international development ameliorated this global scourge.

Innovative initiatives can be focused around the world or very close to campus. One local initiative is the Poincaré Institute. It seeks to reduce educational achievement gaps by bringing together expertise from mathematics, mathematics education, and physics to help middle school teachers deepen and broaden their understanding of middle school mathematics through a broad, unified framework. With support from the NSF, Tufts works in partnership with local communities in Massachusetts, New Hampshire, and Maine to improve students’ learning and teachers’ understanding of mathematics and how children think and learn.

As a research university with manifold strengths, Tufts is committed to enabling world-class research, both within and across disciplines.
For example, the cognitive science program, an interdisciplinary effort to understand and explain the mind, draws on perspectives from such fields as psychology, computer science, philosophy, linguistics, anthropology, neuroscience, and biology. With the involvement of some of Tufts’ most-accomplished humanists, social scientists, and engineers, cognitive science is a paradigmatic research and educational program with enormous potential for scientific and global impacts.

In the coming years, disciplinary depth and rigor combined with interdisciplinary breadth and fluidity will be viewed as mutually reinforcing, not mutually exclusive. The local and global challenges of today require scholarly insights and entrepreneurial thinking that transcend disciplinary boundaries. Demand for attention to the real-world impacts and consequences of discovery emanate from academic communities, funding agencies, and the public. One of the many Tufts responses is the annual Tufts Energy Conference, organized by a diverse mix of undergraduate and graduate students from the Fletcher School of Law and Diplomacy, the Department of Urban and Environmental Policy & Planning in the School of Arts and Sciences, and the School of Engineering. The conference provides a platform to engage industry experts, policymakers, professionals, and the new generation of energy leaders in thought-provoking and solution-based discussions of the pertinent challenges and opportunities facing today’s energy sector.
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Through this interconnected world, we will inspire and cultivate an environment of innovation and entrepreneurship across Tufts. Innovation and entrepreneurship are areas of significant and increasing intensity across American higher education. From Tufts’ perspective, innovation is the ability to create extraordinary new value across the realm of social, commercial, aesthetic, and intellectual venues. Entrepreneurship is the relentless pursuit of opportunities to solve problems; entrepreneurs combine a vision to see new processes or products with the execution skills to bring them to life.

In a departure from previous trends in innovation and entrepreneurship, our programs proceed from the assumption that entrepreneurship is a perspective that can be applied to challenges far beyond typical business applications. These concepts can have a palpable impact on the social sciences, humanities, and creative arts as multidisciplinary collaborations form to solve the contemporary problems of a global society. Entrepreneurship emphasizes initiative and resilience, over reactivity and aversion to risk. At its core, entrepreneurship is the spirit that drives faculty across Tufts to pursue paradigm-shifting research and scholarship, often in the face of numerous obstacles, and to persist until publishers, funders, and colleagues appreciate how their work fundamentally changes our understanding of the world.

To continue the success of our research and teaching enterprise and to foster an entrepreneurial spirit, Tufts will eliminate the existing administrative and cultural impediments to collaboration across the university. Innovation relies on the juxtaposition of unexpected perspectives that arise from new educational and scholarly initiatives. Connecting individuals and units in new and meaningful ways will require focused and sustained actions. It will be guided by rigorous assessment to ensure that scholarship, innovation, and creativity achieve their maximum impact. A demonstration of how this strategy has been successful in nurturing a spirit of innovation, entrepreneurship, and maximum impact at Tufts is the founding
with the ability to effectively employ a range of theoretical and methodological approaches.

Through the recruitment of innovative faculty who work in and across new thematic areas, transformational teaching and research continue to emerge. The university is infused with an entrepreneurial spirit that fosters the relentless pursuit of opportunities to solve problems with the vision to conceive of processes and applications, and the execution skills to bring them to life. All students are provided with opportunities to acquire and apply an entrepreneurial perspective across a broad range of intellectual areas and real-world applications.

T10 INITIATIVES
To best facilitate the achievement of our stated T10 strategic goals, the following initiatives have emerged through the strategic-planning process. Research funding is under siege in today’s higher education environment, and, as such, these initiatives are designed to assist our faculty with these pressures while at the same time increasing our value proposition and fortifying Tufts’ innovative and entrepreneurial spirit.
In the months following the approval of the strategic plan, in consultation with and support of the Tufts community, these initiatives will be advanced through the development of detailed implementation plans.

1. **Bridge Professorships.** As is the case at most universities, Tufts’ faculty hiring is largely driven by department and school priorities. This approach works well in general, but it can be inconsistent with hiring faculty whose teaching and research are of interest to multiple academic units, and therefore form the foundation upon which interdisciplinary bridges are built. To encourage the recruitment of greater numbers of interdisciplinary faculty, Tufts will create Bridge Professorships, an extension of the very successful recent cluster hiring initiative in the School of Arts and Sciences. Proposals for such professorships will emerge from existing and new faculty working groups, interdisciplinary programs, and other collaborative processes. After securing funding commitments from at least two schools and the Provost’s Office, searches will be launched. Bridge Professors will hold tenure (or the equivalent thereof) in at least two units. During the initial five years of their appointments, Bridge Professors will be partially supported by funds from the Provost’s Office. The goal is to have at least 5 to 10 Bridge Professors on campus once the program reaches maturity.
2. **Enhance the resources required to nurture innovation and an entrepreneurial spirit.** Tufts already has many resources focused on inspiring and cultivating an innovative and entrepreneurial spirit among students and faculty. Examples include the Entrepreneurial Leadership Studies (ELS) program, which awards a minor and engages hundreds of undergraduates each year; the Tisch College of Citizenship and Public Service, which facilitates social entrepreneurship among dozens of undergraduates, graduate students, and faculty each year; and the Office for Technology Licensing and Industry Collaboration, which works with faculty to identify and market their discoveries.

In the years ahead, Tufts will expand opportunities for faculty and students to learn about and engage with innovative and entrepreneurial activities and apply these methodologies across a range of areas. Working with our graduate and professional schools, we will provide aspiring scholars, veterinarians, dentists, physicians, nutritionists, scientists, and other practitioners with the requisite knowledge and skills to be innovative and entrepreneurial as they set out on their chosen path. To help facilitate these concepts, Tufts will explore creating venture funds that can be invested in faculty and student projects, with returns being used to seed additional projects in the future. We will also reexamine how our Office of Technology Licensing and Industry Collaboration identifies, pursues, and promotes opportunities.

Inspiring and cultivating innovation and an entrepreneurial spirit across Tufts will require approaches to teaching and learning, research and scholarship, and impact that reward, acknowledge, and inspire creativity and initiative. The provost and deans will work with the faculty to articulate this goal in ways that acknowledge the unique mission of each school.

3. **Tufts Innovation Institute (TII).** Through its initial thematic focus on, “Microbes, the Environment, and the Human Condition,” TII will translate basic science discoveries on microbes into sustainable global impacts on human well-being. TII will engage in four diverse areas of innovation: innovations in science and technology, innovations in the human condition, innovations in models to serve global populations, and innovations in education. In doing so, TII will leverage the collaborative strengths of Tufts faculty, staff, and students in the sciences, engineering, social sciences, economics, policy, the humanities, and expertise on evolving international contexts. TII will train undergraduate and graduate students in collaborative research and in the consequences of their discoveries to spark active citizenship and service learning. As the science driving TII delivers its promise on a global stage, it will serve as a shining example of how the university prioritizes our core mission of research in service of society, teaching, and impact over administrative barriers, and, as such, TII will blaze a path for the development of other practical models that can make a difference in the world.
4. **Identify and pursue emerging research areas, including computational approaches.** Tufts must be prepared to address emerging research areas, especially those that cross traditional disciplinary boundaries, and are less likely to arise in the usual academic conversations. For this reason, President Monaco established a number of thematic area working groups in 2012 in such areas as infectious disease, healthy aging, and language and cognition. Our task now is to develop these areas and to expand the list of critical areas of inquiry.

One clear area for focused attention is computational approaches. Exponential growth in computing power and available data have combined to produce what has been called an age of “big data.” Across the physical and life sciences, the humanities, and the social sciences, research increasingly requires access to equipment and individuals who can acquire, analyze, and disseminate large data sets. Alumni, parents, and employers are also reporting that to be successful in a growing number of careers, and to be a full participant in civic life, one must have comfort and acuity with data. We will appoint a thematic area working group to address computational approaches and charge it with identifying the resources that are necessary to enhance our research and educational capacity in this critical area. The group will be given no more than one year to present its findings and recommendations, after which we will pursue implementation. Over the next 10 years, data will likely become even more critical to all aspects of our core mission. We must ensure that Tufts prepares and supports its faculty and students for this reality.

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