Research and Scholarship Strategic Planning:
Update on priority themes and what’s ahead

February 14, 2018
Simin Nikbin Meydani
Vice Provost for Research
Why is it Important to Set Research and Scholarship Priorities?

Fulfill our educational mission by achieving Tufts’ ambitions for civic engagement and global impact

Reinforce Tufts’ identity as a student-centered research university

Safeguard Tufts’ status as a top tier research institution

Maximize yield on an ever-dwindling pool of limited funding and resources

Propel Tufts to where it should be in 10 years through strategic investments
Identify Tufts University research and scholarship (RS) priorities based on:
- Existing excellence
- Potential for future innovations and societal/global impact
- Greatest opportunities for cross-disciplinary collaboration

Determine effective strategies and appropriate resources to advance the RS enterprise at Tufts University
- Focus scarce resources on priority areas
- Address structural impediments to success across research areas

Purpose of the Strategic Plan
Utilize a stake holder-centered approach to setting Research and scholarship priorities across Tufts

Convene discussions to identify strengths and priorities

Engage Tufts Leadership in the review of recommendations
- Leadership is committed to support implementation of recommendations

Facilitate implementation of recommendations

Assess and Communicate progress
- Actively monitor changes in internal and external environment, make course corrections where needed
Steering Committee

- Sawkat Anwer (Cummings)
- Joe Auner (A&S)
- Sarah Booth (HNRCA)
- Ippolita Cantuti-Castelvreti (University Advancement)
- Diana Chigas (Central)
- Bob Cook (A&S)
- Sarah Dykstra (PDA)
- Zhang Fang (TIE)
- Caroline Genco (TUSM)
- Dan Jay (Sackler)
- David Kahle (TTS)
- Peter Levine (Tisch)
- Tom McGurty (Finance)
- Gilbert Metcalf (A&S)
- Simin Meydani (Chair)
- Elena Naumova (Friedman)
- Fio Omenetto (SOE)
- Jim Rollins (Fletcher)
- Ed Saltzman* (Friedman)
- Christine Sanni (University Relations)
- Lois Stanley (Operations)
- Allen Taylor* (HNRCA)
- Dawn Terkla (Central)
- Samantha Toohey (iGEM)
- Carroll Ann Trotman (TUSDM)

*=alternate
Project Team

Project Manager: Augusta Rohrbach (OVPR, Director of Strategic Initiatives)

Project Members:
- Kara Charmanski (OVPR, Business Operations)
- Jimmy Crott (OVPR, Strategic Initiatives)
- Chris Drew (Planning Consultant)
- Amy Gantt (OVPR, Research Admin and Devel.)
- Helena Han (OVPR, Business Operations)
- Kirby Johnson (OVPR, Research Compliance)
- Thuy Nguyen (OVPR, Strategic Initiatives)

Ad-hoc:
- Dan Jay (Post-doc Officer)
- Larry Steranka (OVPR, OTTIC)
- Zoya Davis-Hamilton (OVPR, Research Admin and Devel.)
- Sarah Marina (OVPR, Research Admin and Devel.)
- Scott Perkins (OVPR, DLAM)
Executive Committee

- Tony Monaco (President)
- David Harris (Provost & SVP)
- Patricia Campbell (Exec VP)
- Kevin Dunn (Vice Provost)
- Simin Meydani (Vice Provost for Research)
Research and Scholarship Strategic Planning Timeline

Data collection
5 Prongs

SC identifies preliminary R&S priority themes
Working groups to assess options, develop proposal

SC finalize recommendations

Present recommendations to trustees

May- Oct. ‘17

Jan. ‘18

February

March

April

May

Data Analysis

Presentation of preliminary R&S priority themes to PSS and PC

Presentation of preliminary R&S priority themes to research community

Final recommendations and report to EC, followed by presentation to PC

SC: Steering Committee
EC: Executive Committee
PC: Provost Council
The Information Gathering Phase

✓ 1:1 Internal and External Interviews: 95
✓ Focus Groups: 16 Groups, 91 participants
✓ Survey sent to 1700 Faculty: 30% responded

Survey questions:
Resources and Services
Collaboration
Determining Priority Areas
Priority Selection Criteria for RSSP

- Aligns with Tufts’ T10 strategic priorities and complements School and Center strategic priorities
- Maintains or enhances Tufts’ reputation and standing as a tier one research and scholarship institution
- Builds on Tufts existing strengths
- Has potential for field-advancing innovation and societal impact
- Provides opportunities for cross- or multi-disciplinary, collaborative, and/or translational research and scholarship, inside and/or outside Tufts
- Positions Tufts to secure funding and other vital support
- Provides opportunities for student engagement
Goal:
Identify needs and opportunities beyond Tufts’ walls

Outside experts
Collaborators
Thought leaders
Institutions
The Grand Challenges and Opportunities provide an externally validated set of possibilities for Tufts to consider, that are:

- meaningful to people and societies,
- broad in scope,
- have wide visibility,
- generate interest and activity,
- can assist raising financial and other support

### Determined priority areas

- World Economic Forum
- World Health Organization
- United Nations
- National Endowment for Humanities
- U.S. National Academies of Science, Engineering, and Medicine
- Global Challenges Foundation
- Millennium Project
- Dow Corporation
- European Commission (EC)
- Faculty input
Selected Grand Challenges and Opportunities

Goal:
Identify Priorities

Faculty surveys
Focus groups
Open campus forums

The Process
Selected Grand Challenges and Opportunities

- Exploring and Expressing Human Culture and Creativity
- Human Rights and Geopolitical Challenges
- Security
- Population
- Food and Water
- Health
- Climate Change and Environment
- Energy
- New Technologies
- Infrastructure and Economy

Grand Challenges and Opportunities
<table>
<thead>
<tr>
<th>Exploring and Expressing Human Culture and Creativity</th>
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<tbody>
<tr>
<td>• Global Humanities</td>
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<tr>
<td>• Understanding art culture and heritage</td>
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<td>• Creating Art, Literature, and Expressive Culture</td>
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<td>• New Media</td>
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<td>• Preserving and understanding cultural expressions</td>
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<td>• Understanding human behavior as it relates to global challenges</td>
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<td>• Understanding consciousness</td>
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<td>• Educational and Learning Disparities</td>
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<thead>
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<th>Human Rights and Geopolitical Challenges</th>
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<td>• Democracy &amp; civic engagement</td>
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<td>• Equality (e.g., racial, gender)</td>
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<td>• Gender Identity</td>
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<td>• Religious Freedom</td>
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<td>• Africa in the 21st century</td>
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<td>• Rise of New Powers</td>
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<td>• Unequal Economic Growth</td>
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<td>• Globalization</td>
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<td>• Decolonization</td>
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<td>• Diplomacy and Conflict Resolution</td>
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<td>• Stronger communities</td>
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<th>Security</th>
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<td>• Violent Conflict</td>
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<td>• Terrorism</td>
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<td>• Refugees</td>
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<td>• Cybersecurity</td>
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<td>• Arms Proliferation</td>
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<td>• Genocide</td>
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<th>Health</th>
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<td>• Infectious disease</td>
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<td>• Chronic Disease</td>
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<td>• Obesity</td>
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<td>• Availability of Care</td>
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<td>• Health Disparity</td>
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<td>• Malnutrition</td>
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<td>• Occupational Health</td>
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<td>• Pain and Opioid Addiction</td>
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<th>Food and Water</th>
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<td>• Security</td>
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<td>• Availability</td>
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<td>• Agriculture &amp; Sustainable Production</td>
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<td>• Waste Management</td>
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<td>• Water Pollution</td>
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<td>• Aging</td>
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<td>• Birth Rate, Population Size &amp; Growth</td>
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<td>• Fertility and Contraception</td>
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<td>• Wealth Inequality</td>
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<td>• Urbanization</td>
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<td>• Gentrification</td>
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<td>• Migration</td>
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<td>• Unemployment</td>
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<th>Infrastructure and Economy</th>
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<td>• Transportation</td>
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<td>• Communication</td>
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<td>• Governance</td>
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<td>• Utility Access (e.g., water, energy, internet)</td>
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<td>• Shelter</td>
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<td>• Global Financial Systems</td>
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<td>• Smart Cities and Grids</td>
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<td>• Sustainable Development</td>
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<th>New Technologies</th>
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<td>• Big Data</td>
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<td>• Artificial Intelligence</td>
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<td>• Materials/Biomaterials</td>
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<td>• Genetic Engineering</td>
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<td>• Imaging</td>
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<td>• Access</td>
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<td>• Technology and society</td>
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<th>Climate Change and Environment</th>
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<td>• Global Warming</td>
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<td>• Sea Levels</td>
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<td>• Ecosystem Loss</td>
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<td>• Severe Weather</td>
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<td>• Human Impact</td>
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<th>Energy</th>
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<td>• Increasing Demand</td>
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<td>• Efficiency</td>
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<td>• Storage</td>
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Sample Questions

Q5 Which are the most important grand challenges that researchers and scholars at Tufts can and should address in the next decade?

Q6 Would any of the following encourage/motivate you to participate in research or scholarship that addresses the grand challenges you have identified? Check all that would encourage or motivate you.

Q7 In which of all the grand challenges can you imagine scholars in the arts, engineering, humanities, and biological and social sciences working collaboratively, both within Tufts and with external entities? Select all that apply.
The Process

1. Information Gathering Phase
   Goal:
   Identify needs and opportunities beyond Tufts walls

   Outside experts
   Collaborators
   Thought leaders
   Institutions

2. Created Grand Challenges and Opportunities
   Goal:
   Identify Priorities

   Faculty surveys
   Focus groups
   Open campus forums

3. Derived Can and Should Rankings
   Goal:
   Categorized Grand Challenges into subcategories

   Faculty survey validated by other sources
Data Analysis, Summary (Project Team, Huron)

- 1-on-1 Interviews
- Focus Groups
- Open Forum
- Survey
- Strategic Plans

Steering Committee

Decide 5-6 R&S Priority broad themes to form WG, identify participants, provide charges and data (consult PC)

Working Groups (faculty-led)

- TBD Priority Theme Working Group
  - Connectivity
- TBD Priority Theme Working Group
  - Core Facilities
- TBD Priority Theme Working Group
  - Global Engagement and Impact
- TBD Priority Theme Working Group
  - Industry Collaboration
- TBD Priority Theme Working Group
  - Resources and Infrastructure

Develop Recommendations & Report

The Process

Final Recommendations and Report to Executive Committee & Trustee

Provost Council
Existing strengths of Tufts will be incorporated into these rankings.
R&S Priority Candidates for Working Groups

- One Health
- Reclaiming the Human*
- Climate, Food & Water
- Secure & Equitable Society
- Living Technology

*Or Understanding the Human Experience Across Time and Space
Health was identified as the number one grand challenge Tufts should and could address. Addressing challenges under this theme requires interdisciplinary approaches beyond those currently used. One Health recognizes the importance of the evolutionary and ecological links and interdependencies between humans, animals, and the environment, and creates a research and learning enterprise that integrates human and veterinary medicine in an interactive dynamic of discovery and application.

Possible sub-categories include:
Aging
Antibiotic Resistance
Chronic Disease (neurological diseases, diabetes, cancer)
Food, Nutrition (health)
Genetic Engineering
Health Disparity
Human Impact
Infectious Disease
Materials/Biomaterials
Obesity
Like One Health, this topic area uses an interdisciplinary approach to one of the most fundamental problems of the 21st century—understanding human experience across time and space, in its various iterations, from the metaphor to the meme. The challenges of this theme benefit from an intersectional approach to the histories of culture drawing on relation, convergence, translation, exchange, memory, material culture. Such multiple strands of inquiry approach problems as braided together with beliefs, common practices, and modes of inquiry as constructing both the problem and the solution. Reclaiming the Human recognizes the promises and pitfalls of universalizing notions of the global, and the human to reveal important links connecting problems that are as elemental as air itself to human culture and experience.

Possible sub-categories Include:
Creating Art, Literature and Expressive Culture
Decolonization
Equality (racial, gender)
Gender Identity
Global Humanities
Globalization
New Media
Preserving and Understanding Cultural Expressions
Religious Freedom
Understanding Art Culture and Heritage
Understanding Human Behavior as It Relates to Global Challenges
As the world population grows and geopolitical powers shift, global challenges emerge for our planet to maintain it as an inhabitable place for all. These challenges encompass both societal (through migration, economic disparity, and availability of water, natural resources, health care, data security) and natural order (through depletion of non-renewable resources, food waste, climate change). This theme lies at the junction of society, natural resources, and our changing ecosystem. Tufts has expertise in several sub-categories related to this theme.

**Possible sub-categories include:**
- Agriculture and Sustainable Production
- Availability
- Ecosystem Loss
- Efficiency
- Global Warming
- Human Impact
- Hunger/Malnutrition
- Severe Weather
- Smart Cities and Grids
- Sustainable Development
- Understanding Human Behavior as It Relates to Global Challenges
- Utility Access (water, energy, internet)
- Wastage & Waste Management
- Water Pollution
All universities study social issues: their causes and consequences. A focus at Tufts, deeply rooted in our intellectual traditions, evident in all of our schools and colleges, and linked to our teaching mission, is advanced research on why and how humans address social issues with attention to stability, equality, engagement and peace. Specific social issues that have been proposed by Tufts’ stakeholders (e.g., wealth inequality, the rise of new global powers, and urbanization and gentrification) are examples of topics that can be studied with a focus on how human affect such problems.

Possible sub-categories include:
- Cybersecurity
- Democracy and Civic Engagement
- Diplomacy and Conflict Resolution
- Equality (racial, gender)
- Gentrification
- Health Disparity
- Refugees
- Rise of New Powers
- Terrorism/Security
- Urbanization
- Wealth Inequality
Technology that brings together life/technology, and the planet

Technology is an integral part of our contemporary, connected world: the separation between human and machine is reducing more and more, social media dominates human interaction, and devices are becoming more compact, integrated (with living tissues and the environment) and capable of complex computation. New materials are bringing computing, sensing and imaging on the skin of and inside humans. Data is pervasive and rich of emergent information of diagnostic, social, and logistical importance allowing to see the invisible, access and transfer information globally, and connect us like never before (the internet of things and the internet “of people” are becoming one).

Possible sub-categories include:
Access
Artificial Intelligence
Big Data
Cybersecurity
Data Handling
Digital Humanities
Genetic Engineering
Imaging
Materials/Biomaterials (tissue engineering, synthetic biology, microbiome)
New Media
Storage
Technology and Society
Identify Tufts’-specific research priorities under each challenge theme

Rely on the combined expertise of working group members to define the specific questions/grand challenges under each theme taking into account:

- Ranking of sub-categories
- Existing strengths
- Potential for collaboration
- Funding opportunity

We will set parameters within which Working Groups will operate to produce their “proposals”.
Working Group Members

One Health
Chair: John Leong
Facil.: Jimmy Crott
- Gillian Beamer
- Olaf Dammann
- Chris Economos
- Roger Fielding
- Lisa Freeman
- Jonathan Garlick
- Phil Haydon
- Justin Hollander
- Linden Hu
- Mike Levin
- Cheryl London
- Amy Pickering
- Susan Roberts

Reclaiming the Human
Chair: Lisa Lowe
Facil.: Augusta Rohrbach
- Joe Auner
- Alessandra Campana
- Kendra Field
- Brian Hatcher
- Kareem Khubchandani
- Megan McMillan
- Sarah Pinto
- Kamran Rastegar

Climate, Food & Water
Chair: Tim Griffin
Facil.: Amy Gantt
- Linda Abriola
- Sean Cash
- UC Chakravorty
- Kyle Emerick
- Kelly Sims Gallagher
- Eric Hines
- Shafiqul Islam
- Joel Mason
- Dan Maxwell

Secure & Equitable Society
Chair: Peter Levine
Facil.: Chris Drew
- Jennifer Allen
- Bruce Boghosian
- David Ekbladh
- Silke Forbes
- Kelly Greenhill
- Eitan Hersh
- Ian Johnstone
- Melissa McInernery
- Tom Stopka
- Monica Toft

Living Technology
Chair: Fio Omenetto
Facil.: Kirby Johnson
- Bree Aldridge
- Marina Bers
- Ken Fan
- Joshua Finkelstein
- Kathleen Fisher
- David Kaplan
- Charlie Mace
- Jose Ordovas
- Matthias Scheutz
- Ben Wolfe
- Iryna Zenyuk
Research and Scholarship Strategic Planning Timeline

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5 Prongs

SC identifies preliminary R&S priority themes

Presentation of preliminary R&S priority themes to research community

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EC: Executive Committee
PC: Provost Council
Questions?

Please contact Dr. Augusta Rohrbach, Director of Strategic Initiatives

Augusta.Rohrbach@tufts.edu