

Project Title: National Research Sustainability Action Plan for Surgeon-Scientists
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Name of Collaborators and mentors:

Sponsors: **Hasan Alam**, Chair of Surgery (FSM/NU); **Sorond Farzanah**, Vice-Dean of Faculty Affairs (FSM/NU); **Robert Lowe**, Outgoing Vice-Dean of Faculty Affairs (FSM/NU); **Diana Farmer**, President American Surgical Association (ASA) [ELUM];

Collaborators: **Shelley Hwang** (Co-Chair), Vice-Chair of Research Duke University [ELUM]; **Allan Goldstein** (Co-Chair), Chief Pediatric Surgery, MGH and ASA Research Sustainability Task Force.

Background/Significance of project:

Historic contributions from surgeon scientists have transformed our understanding of human disease with no fewer than 9 Nobel Prizes awarded to surgeons (e.g., Murray). Surgeon scientists have faced unique barriers (e.g., time-intensive practice, RVU-based compensation), which has led to surgeons being disproportionately underrepresented among clinician-scientists and receiving less NIH funding. Despite this, some institutions, and departments of surgery (DOS) continue to provide a fertile environment, with highly competitive surgeon-scientists. A task force with highly funded DOSs offers the opportunity to leverage that knowledge.

Methods/Approach/Evaluation Strategy:

A national Research Sustainability Task Force (Co-Chairs: Ladner, Hwang, Goldstein) was created with the endorsement of the American Surgical Association (ASA). Chairs and VCRs of top NIH sponsored DOSs were invited (N=22, 100% participation). 5 meetings were held between 1/2023-5/2023. A literature review and SWOT analysis was performed, and work groups were formed focusing on actionable items in 7 categories (surgeons, mentorship, financial design and funds flow, structural/strategic support, community and culture, institutions, societies/funding agencies). Results will be published as a white paper by 5/2023.

Results

Important elements for research success and sustainability are listed by category. Surgeons: *Mindset* (develop research focus, planning for the long game, development of patience and tenacity and embrace of team science) and *skillset* (align skillset with research, filling of critical scientific gaps, team science leadership skills). DOS/Mentorship: *Chairs:* Mentors/mentee matching and accountability, providing sponsorship for mentees. *Mentors* must have relevant scientific expertise, active extramural funding, mentoring training and/or experience. *Mentees* must be organized, proactive, open to feedback with a clear goal. Topics should include research, professional development, academic guidance, skill development and work-life integration. DOS/Financial support is essential for talent acquisition/development and infrastructure development. Diversification of research portfolio (federal (e.g., DOD, PCORI), foundations, societies, industry), understanding the institutions funds flow, and generating philanthropic support are key. DOS/Strategic/Structural Support: *Structural* (Grants administrative support, biostats/bioinformatics, clinical research support, regulatory support, shared lab space, equipment). *Strategic* (strategic hiring, faculty recruitment and retention, philanthropy, tracking of progress, mentorship for grant writing, DOS-wide scientific meetings, strategic planning). DOS/Building community/culture: right mix of faculty, connecting surgeon-scientists with institutional scientific community, value placed on science (scientific grand rounds, competitive salaries, division chief IC tied to divisional research success, DOS awards, research requirement for residents). Institutions: *foundation* (real estate loans, cross-dep appointments, co-location of research space, multi-year flexible start-up packages, grant writing courses, mock

study sections), *nurture* (grants management, tissue acquisition, allowance for bonuses, bridge funding, promotion w/ consideration of clinical work, appointment of surgeon-scientists as division chiefs), *expectations*: RVU target relief, competitive salaries, longitudinal salary strategy for surgeon-scientist. Societies/funding agencies: changing training paradigms for surgeon-scientists, offer alternate awards to K-awards, representation at study section.

Summary/Conclusion:

It is imperative that leaders in academic surgery modernize surgical training. We have outlined action items for surgeon-scientists, department chairs and vice-chairs of research, institutions and funding agencies. The committee will pursue these action items to advocate for surgeon-scientists with funding agencies and will engage with key organizations (e.g., ACGME, ABS) to create a sustainable surgeon-scientist training model.