

A woman is lying on a table in a medical setting, receiving an ultrasound scan on her abdomen. A healthcare professional is using a blue probe on her skin. In the background, a large monitor displays a medical image. The scene is overlaid with decorative elements: a dark blue banner on the left containing text, and several light blue and white circular shapes. The background features a pattern of light blue molecular or network-like structures.

IMWEL Infrastructure

X. Edward Guo, Columbia University

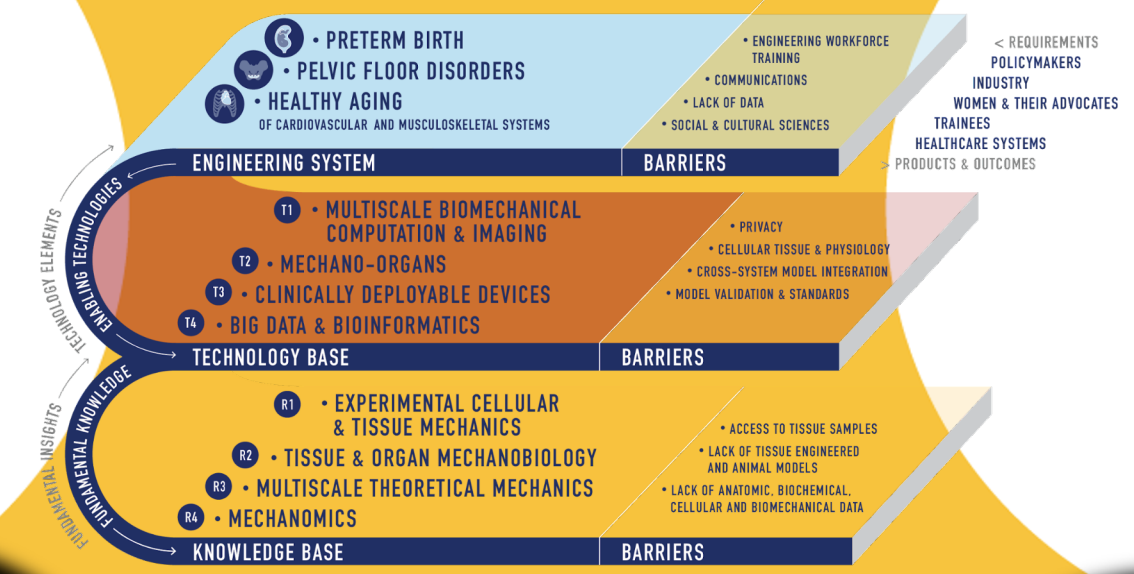
Diversity
and
Culture of
Inclusion



Innovation
Ecosystem



ERC STRATEGIC FRAMEWORK: PROPOSAL #0120263, X. EDWARD GUO,
CENTER FOR INTEGRATED MECHANOBIOLOGY FOR WOMEN'S HEALTH (IMWEL), COLUMBIA UNIVERSITY



Engineering
Workforce
Development



Team
Science



IMWEL Leadership and Management



Ed Guo
Lead PI
Center Director
Healthy Aging Co-Lead



Administrative
Director



5 Project Managers
& Coordinators



Lance Kam
Center Deputy Director
Mechanomics Lead



Wendy Liu
Director of Integration, Tissue
& Organ Mechanobiology Lead



Kristin Myers
Center Deputy Director
Preterm Birth Co-Lead



Michelle Oyen
Preterm Birth Co-Lead
Engineering Workforce Development
Co-Director, Experimental Cellular
& Tissue Mechanics Co-Lead



Steven Abramowitch
Pelvic Floor Disorders Lead,
Multiscale Biomechanical
Computation & Imaging Co-Lead



Valerie Purdie-Greenaway
Diversity and Culture
of Inclusion
Co-Director



Naomi Chesler
Diversity and Culture
of Inclusion Co-Director
Healthy Aging Co-Lead



Harry West
Innovation Ecosystem Director



Tim Downing
Engineering Workforce Development
Co-Director

IMWEL Executive Committee

- **X. Edward Guo (Chair), Kristin Myers, Lance Kam, Michelle Oyen, Steven Abramowitch, and Wendy Liu**



–**Dr. Guo** in consultation with the Executive Committee:

- Day-to-day management and setting overall Center direction, adaptation, financial and policy development, and communications
- Reviewing monthly progress from each basic Research Thrust, Technology Testbed, and System Testbed, help resolve conflicts, evaluate and select new projects funded by the Center, and select graduate students and other trainees to receive Center funding

–**Dr. Liu** as IMWEL's Director of Integration:

- Integration among Research Thrusts, Technology, and System Testbeds
- Approving and validating plans, results, and outcomes from Research Thrusts to converge into the various Enabling Technologies and apply to Testbeds.



IMWEL Leadership Team

Leadership Team of Executive Committee and Directors of Four pillars will direct the Center

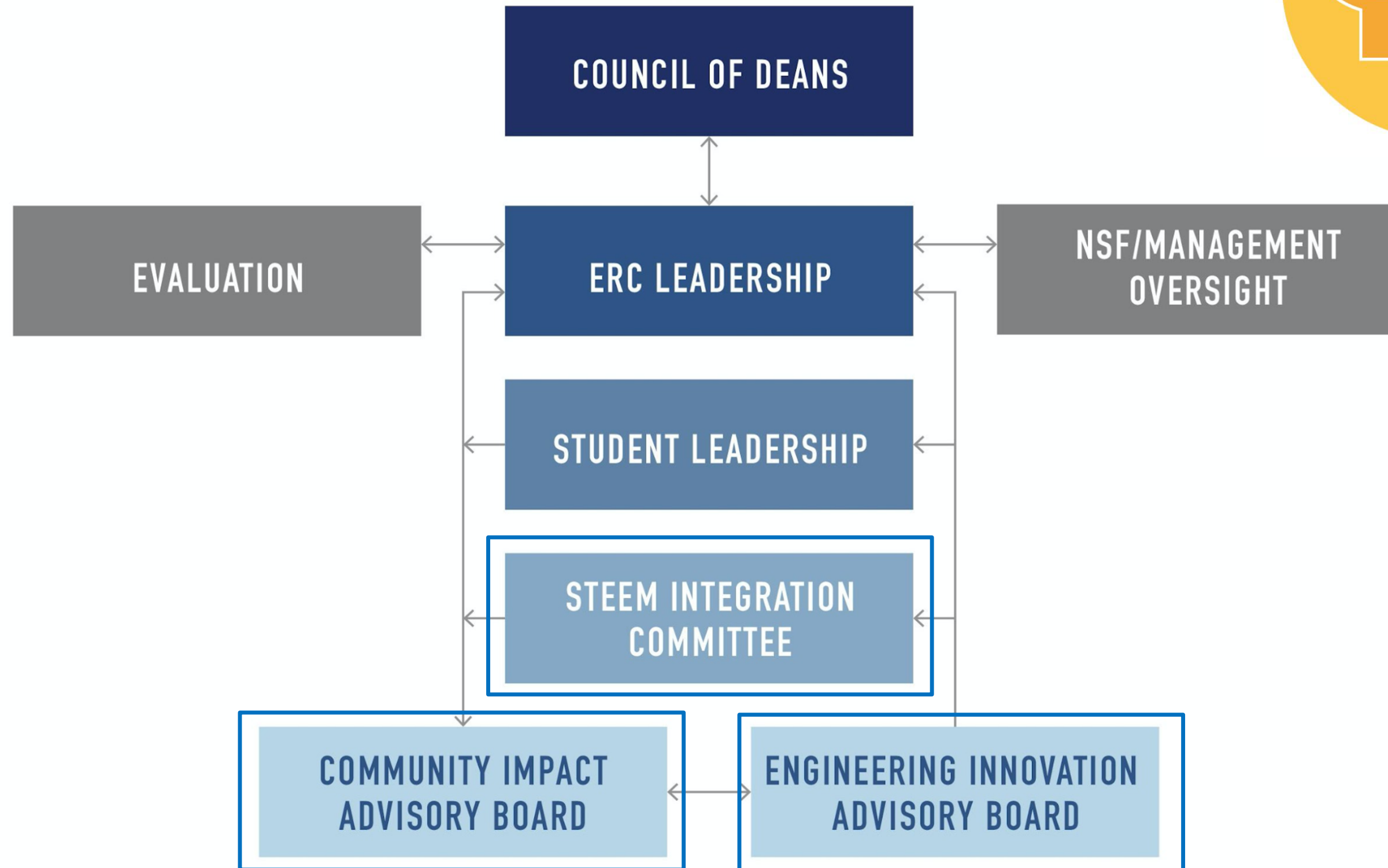
- **Executive Committee:** X. Edward Guo (Chair), Kristin Myers, Lance Kam, Michelle Oyen, Steven Abramowitch, and Wendy Liu
- Harry West, Director of IE, CU
- Valerie Purdie-Greenaway, Lead Co-Director of DCI, CU
- Naomi Chesler, Co-Director of DCI, UCI
- Tim Downing, Lead Co-Director of EDW, UCI
- Michelle Oyen, Co-Director of EDW, WUSTL



IMWEL Management Structure



Team
Science



IMWEL Convergent Team Science

- Team Scholarship Acceleration Lab (TSAL) at UCI led by team science scholars, Drs. Gary and Judith Olson, Campo, and Stokols
 - Leadership/Management
 - Convergent Research
 - Integration of DCI and EWD



Maritza Salazar Campo

Assistant Professor, Merage School of Business



Judith Olson

Professor Emeritus, Department of Informatics



Gary Olson

Professor Emeritus, Department of Informatics



Dan Stokols

Professor Emeritus, School of Social Ecology



IMWEL Team Science

- Manage the Large Size of the Team, East-West Geographic Distribution
- Provide Effective Leadership and Decision Making
- Resolve Conflicting Goals
- Set Up a Clear Process for Updating Goals
- Establish Clear Criteria to Assigning Credit for Work
- Manage Transparently Resources and Funds
- Foster Trust and Clear Communication



Enables Access to Broader
Expertise



Creates
Synergies



larges Access to More
Resources

IMWEL Team Science At Get-Go

- Convergence Science Training and Consultation to ERC members
 - TSAL Workshop @ Kick-off, Years 2 and 4
 - TSAL A Team Collaboration plan
 - Specifying agreements for developing and sharing credit on research reports;
 - Procedures for resolving collaborative conflicts;
 - Sharing leadership activities across institutions to effectively integrate IMWEL's research;
 - Developing strategies to leverage the team's diverse composition to enable maximum innovation.

IMWEL Administrative Support

- Center Director and the Leadership Team, Assisted by
 - **Administrative Director**
 - Financial Management, Operations, Personnel, Communications
 - NSF Site Visits
 - Administrative Director Supported by
 - **Program Manager** for Communications, Events, Outreach for EWD, DCI, and IE, aided by:
 - **Program Coordinator**
 - **DCI/EDW Coordinator**
 - **Research Coordinator**
 - **IE Manager**
 - **IE Coordinator**

IMWEL Council of Deans

- Deans Shih-Fu Chang (CU, Chair), James R. Martin (Pitt), Aaron Bobick (WUSTL), Magnus Egerstedt (UCI)
- Biannual Meetings with IMWEL Leadership Team
 - Develop 5-10 Questions: Immediate/Long-term Strategic Natures
 - Strengths, Weaknesses, Opportunities, and Threats (SWOT) analyses in “IMWEL Annual Report”



IMWEL Community Impact Advisory Board

- This advisory board (led by Dr. Myers and including members of the DCI/EDW/IE teams) envisions a safe, inclusive, and resilient social community, and includes translational research faculty, public policy practitioners, and community stakeholders (e.g., patient advocacy group partner, Iris Fund).
- The board will stress communication of all research and non-research activities to the general public. The board will orchestrate outreach events to medical, government, women's advocacy groups, and general public communities, to collaboratively create new science literacy and bioethics around mechanobiology and women's health.



IMWEL Engineering Innovation Advisory Board

- Chaired by Harry West (CU), including representatives from partner companies and domain-specific business mentors (including women's health tech entrepreneurs such as partners NextGen Jane, Materna, and Pregnolia AG), investors (e.g., partner Deerfield), policymakers in women's health, regulatory specialists, and other industry representatives.
- A representative from each partner institution's technology transfer offices will staff this advisory board, which meets biannually.
- The advisory board will provide feedback to translational research initiatives and help evaluate and select projects for translational pilot grants.



IMWEL STEEM Integration Committee

- **STEEM = Science, Technology, Engineering, Entrepreneurship & Math**
- Chaired by Wendy Liu (UCI), including all Leadership Team members, Research Thrusts, Technology Testbed Leads, and EWD, DCI, and IE Leads.
- Triannual Meetings
 - This meeting will have one rotating System Testbed present for 30 minutes on Overall development and pose operational questions to Technology, Research Thrust, EWD, DCI, and IE leads, with 30 minutes for the larger team to ask questions and identify emerging collaborative opportunities.



IMWEL Student Leadership Committee

- This committee (advised by Dr. Kam) will meet monthly and will include IMWEL-funded undergraduate and graduate students across the four partner institutions.
- Members will serve for two years and will self-elect a President and Co-President who will liaise with the other committees and advisory boards.
- The SLC will prepare an annual SWOT analysis to present at the annual NSF visit.



IMWEL Integrated Activities



- Self-Study of IMWEL Teams
 - Integration of DCI: Inclusion of Diversity will lead to Excellence in Women Bioengineering Research/Education/Innovation
- Graduate Research Assistants/Postdoctoral Fellows “Interview” PIs
- Monthly IMWEL Seminars/Afternoon “Tea” (Hybrid)
- Quarterly Half-Day Brainstorming Sessions (Hybrid)
 - Concurrent Brainstorming Sessions at Kickoff
- Biannual Team Assessment Meeting with Assessment Consultant and TSAL Team



IMWEL Annual Meetings

- An IMWEL annual meeting will convene all stakeholders every summer to review the Center's progress and SWOT analyses, make course corrections, and update goals.
- The Annual Meeting will run in tandem with IMWEL DCI/EWD/IE activities, such as REU/RET conferences, and IMWEL Innovation Summit
- CU will host the annual meeting in Years 1 and 5 and the site will rotate between Pitt, WUSTL, and UCI in Years 2–4.



YEAR

1

2

3

4

5

IMWEL Institutional Configuration



Columbia University (CU)

Mechanobiology
Bioengineers for Women's Health
Musculoskeletal Bioengineering
Caribbean Hispanic Women Population

University of Pittsburgh (Pitt)

Bioengineers for Women's Health
Magee-Women Research Institute
Black Women Population

Washington University in St. Louis (WUSTL)

Women's Health Technologies Research
Top Engineering and Medical Schools
Black Women Population

University of California, Irvine (UCI)

Mechanobiology
Cardiovascular Bioengineering
Team Science TSAL
Minority Serving Institution
Mexican Hispanic Women Population

The background of the slide features a photograph of a pregnant woman lying on a table, undergoing an ultrasound. A healthcare professional is using a probe on her abdomen. A large monitor in the background displays a medical scan. The image is overlaid with several decorative elements: a dark blue horizontal band on the left containing the title, a large white speech bubble on the right, and several light blue circular and cross-shaped icons scattered across the scene. The overall background has a light blue pattern of interconnected circles and lines.

IMWEL Infrastructure Q&A