Disclaimer

No conflicts of interest to disclose, financial or otherwise.
Objectives

1. Reflect on Importance of Mentoring in Academics
2. Review Team Science
3. Evaluate Mentoring Needs to Prepare for Team Science
4. Discuss Institutional Changes Required to Support Team Science
“Most physician trainees never have a true mentor—there are not enough to go around. They have role models and faculty advisors. Having a real mentor will always be a privilege of only a few.”

Martin Tobin

Seven Roles and Some Specifics
A Story about the Importance of Mentoring

“I think for clinical researchers, finding the right mentor may be more important than the research topic”

K12 Scholar
What is a Mentor?
Origins of the Mentor

Homer’s Odyssey

- Odysseus asked Mentor to guide his son and watch out for his wife
- Athena took disguise of mentor

Someone of greater experience in the world serves as protégé’s teacher, sponsor, advisor, and model
Mentoring is Critical to Academic Success

• 2-fold increase in promotion
• 26% teaching (annual performance review)
• 6% patient care (annual performance review)
• Increases self-efficacy: 52% professional development, 33% educational, 76% administration
Mentoring is Critical to Research

- 56% improvement in research (annual performance review)
- 2-3 times more likely to be PI on research grant
- Greater number of publications and grants
- Almost 9 times more likely to become a mentor

What makes a good mentor?
What is a Mentor?

7 Roles of a Mentor

1. Teacher
2. Sponsor
3. Advisor
4. Agent
5. Role model
6. Coach
7. Confidante
7 Roles of a Mentor

Teacher
- Technical Skills
- Scientific Writing
- Education of Character

Sponsor
- Networking
- Context

Martin Tobin Mentoring
Seven Roles and Some Specifics
7 Roles of a Mentor

Advisor
- Counselor
- Paves the Road

Agent
- Has your back
- Removes obstacles

Role model
- Emulate values & style
- Role models more common than mentors (e.g. Michael Jordan)
7 Roles of a Mentor

Coach
• Encouraging
• Pushes for action
• Sets high standards

Confidante
• Trusted confidential discussions
• Parental yet independent
2013 BIRCWH Survey

- Availability
- Networking
- Mentor characteristics
- Mentor as role model
- Expectations
- Institutional support/advocacy
- Promotion/career
- Research - critique, independence, productivity related

Guise JM, Regensteiner J, Nagel J. BIRCWH Directors Best Practices & Pearls In Interdisciplinary Mentoring. JWH. 2013
Factors Associated with Success

• Protected time for mentoring (at least weekly or bi-weekly)
• Promotion of research independent of mentor
• Interdisciplinary team mentoring
  • Career mentor
  • Content/Research Mentors (>2)
• Clearly defined expectations
• Mutual accountability
Specific Challenges Identified

- **Scholar’s lack of:**
  - Receptiveness
  - Respect of mentor
  - Taking active role
  - Accountability

- **Mentor’s lack of:**
  - Awareness of impact
  - Good listening skills
  - Encouraging environment/generosity
  - Willingness to counsel
Results: Factors Associated with Challenges or Failure

- Lack of support/resources
- Mentor expectations that scholar is there to do Mentor’s research
- Unclear expectations
- Limited time available for mentoring; Infrequent mentor/scholar meetings
- Poor match between mentor and scholar
- Communication issues
Finding A Single Mentor

- Mature, has shed envies, petty vanities
- Benevolent
- Enthusiasm
- Time
- Commitment
- Common sense
- Competence
- Conscience
- Good judgment
- Leadership & Values
• “Time is the most scarce resource in academic life. Yet it’s treated as having no value

• Martin Tobin on Mentoring.”
Talk About Teams is All Around
Teams in Medicine

IPEC®
Interprofessional Education Collaborative
Connecting health professions for better care

TeamSTEPPS®
Team Strategies & Tools to Enhance Performance & Patient Safety

SciTS
Building the knowledge base for effective team science
Problems Facing Society Are Complex
ISSUE - *Dealing with Aristotle’s Legacy*

- Disciplines are distinguished partly for historical reasons and reasons of administrative convenience (such as the organization of teaching and of appointments)… But all this classification and distinction is a comparatively unimportant and superficial affair. **We are not students of some subject matter but students of problems. And problems may cut across the borders of any subject matter or discipline** (Popper, 1963).

**ISSUE - Dealing with University Structure**

- What is critical to realize is that “the way in which our universities have divided up the sciences does not reflect the way in which nature has divided up its problems” (Salzinger, 2003, p. 3)
Terminology of Team Science

What is team science, interdisciplinary teams, interprofessional teams
What is a Team

Teams are defined as “two or more individuals who must interact and adapt to achieve specified, shared, and valued objectives”

Salas, Dickinson, Converse, & Tannenbaum
“team science” combines specialized expertise, theoretical approaches, and research methods across disciplinary boundaries to solve complex problems and produce high-impact science.
Defining Research Approaches

**CROSS-disciplinary Research**

- Offer this as a general term to describe:
  - Research meant to utilize, in some way, varied concepts, methods, and theories from differing fields
  - Where science team members contribute their disciplinary expertise and collectively contribute to the production of new knowledge

- **Multi-, Inter-, and Trans-disciplinary Research**

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Multi-disciplinary Research

- **Collaborative effort** of several disciplines to achieve a common goal
  - *Purpose is to achieve broader analyses of common research problems*
- Work independently or sequentially
  - *Periodically come together to share perspectives*
- Contributions drawn from different disciplines are complementary
  - *In service of objective, adopts but not necessarily integrate methods, concepts, theories*

- **Scientists in multidisciplinary teams remain firmly anchored in the concepts and methods of their respective disciplines.**

Inter-disciplinary Research

Demands more than just complementarity
- Team members combine or juxtapose concepts and methods from different disciplines
- Overarching goal is systematic integration
  - Integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge

Goal is to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or field of research practice.

Trans-disciplinary Research

- Integrates and **builds from** discipline-specific theories, concepts, and methods
  - Pursues collaboration **across levels of analysis** (e.g., from cells to society)
  - Develops **comprehensive understanding** of problem
- **May** also include:
  - A focus on **societal problems** and development of **practical knowledge**
  - **Translational partners** from differing sectors (NGO, Community, Industry)

*Transcends disciplinary perspectives and enables development and application of new methodologic or conceptual frameworks*

Team Science Continuum

**Transdisciplinary**
Researchers from *different disciplines work jointly* to develop and use a shared conceptual framework that *synthesizes and extends* discipline-specific theories, concepts, and methods, to create *new approaches* to address a common problem.

**Interdisciplinary**
Researchers from *different disciplines work jointly* to address a common problem. Some integration of perspectives occurs, but contributions remain anchored in their own disciplines.

**Multidisciplinary**
Researchers from *different disciplines work sequentially,* each from their own discipline-specific perspective, with a goal of eventually combining results to address a common problem.

**Unidisciplinary**
Researchers from a *single discipline* work together to address a common problem.

Adapted from Rosenfield, 1992
Investigators in collaborative groups publish more & higher impact

Interdisciplinary Teams & Job Satisfaction

- University of Pennsylvania School of Medicine Work-Climate Survey
- positive correlation between the number of mentors faculty had and satisfaction with their work lives – the greater the number of mentors, the greater their level of satisfaction.

Shaping a career in academic medicine: Guidelines for mentor/mentee conversations
MENTORING FOR TEAM SCIENCE
SLIDES WITH UNPUBLISHED DATA REMOVED
“I don’t know what your destiny will be, but one thing I know: the only ones among you who will be really happy are those who will have sought and found how to serve.”

Albert Schweitzer
Thank you

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