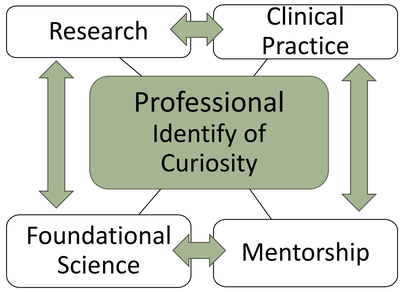
Skills for Mentoring Health Professions: How Can We Make Foundational Science Sing Through Research

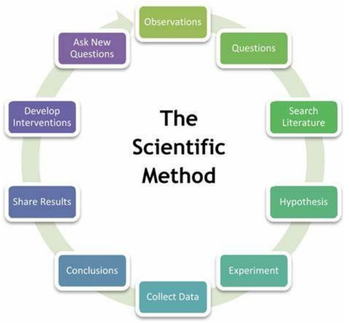
Stephanie N. Moore-Lotridge, PhD & Luke Finck, EdD, MA
Vanderbilt University Medical Center & Vanderbilt University School of Medicine

GOALS

- ❑ **Research is an important element of health professionals' training.**
- ❑ **Research mentors are in a unique position to support the connection between foundational science and health practices.**
- ❑ **Goal: Develop medical providers with a professional identify of curiosity**
  - ❑ Drive medical advancements



SCIENTIFIC METHOD



- ❑ Guide students to apply the scientific method when establishing their research projects
- ❑ Mentor involvement and direction (observations)-but student driven (search literature)
- ❑ Encourage projects from a <u>testable hypothesis</u>
- ❑ <u>Robust literature search</u> prior to beginning project
- ❑ Identify early where foundation science is involved in the project. What information does the student need to succeed?

COMMON TYPES OF RESEARCH HEALTH PROFESSION STUDENTS ENGAGE IN

Basic Science
- Animal Studies
- Molecular Ex vivo Studies
- Biochemical Studies
- Engineering-focused project
- Imaging Sciences

Public Health and Epidemiologic Studies
- Social determinants of health
- Health services research
- Epidemiologic studies
- Global Health
- Bioinformatics

Translational Science
- Systematic Reviews
- Biomarker Studies
- Bench-to Bedside Research
- Implementation Studies

Clinical Studies
- Retrospective Chart Review
- Technical procedures
- Case Reports
- Systematic Reviews
- Observational Studies
- Clinical Trials

5 STEPS TO MENTORSHIP BEST PRACTICES

Define Student Goals

- ❑ Students define their goals for conducting research
  - ❑ To fulfill a requirement?
  - ❑ To support their next career stage?
  - ❑ A passion/special interest?
  - ❑ Combination of these?
- ❑ Design projects, establish teams, & set expectations based on these goals

Establish Clear Expectations

- ❑ Define "Success" – What metric does this include?
- ❑ What are your expectations for the student?
- ❑ What are the students' expectations of you as a mentor?
- ❑ What support do they need to succeed?
- ❑ Set a timeline for the project
- ❑ Remember to be realistic and account for delays
- ❑ <u>Both</u> student and mentor should be accountable to this timeline
- ❑ Establish a transition plan (if necessary) for the student

Highlight Clinical Relevance

DEFINE WHY DOES THIS RESEARCH MATTERS
- ❑ <u>Mentor Goal</u>: Translate foundational science of the project to clinical applications.
- ❑ Consider clinical exposure to deepen connections
- ❑ <u>Student Goal</u>: Clearly communicate the aim(s) of the projects and the translational relevance.
- ❑ Identify situations where foundational science knowledge intercalates clinical scenarios.

Provide Technical Skills & Support

- ❑ Provide appropriate skills development and technical support to complete the project within timeline
  - ❑ Scientific Literature Skills
  - ❑ Technical Research Skills
  - ❑ Analysis Skills
  - ❑ Scientific Writing Skills
  - ❑ Professional Development
  - ❑ Communication Skills
  - ❑ Teamwork
  - ❑ Project Management Skills

Support Career Transition

MENTORSHIP REQUIRES A TEAM
- ❑ Identify experts at the institution
- ❑ Connect with experts outside the institution
- ❑ Identify opportunities for disseminating scholarship
- ❑ Reflect on short and long-term goals
- ❑ Celebrate successes
- ❑ Plan for continued discovery and collaborations

CHALLENGE 1: TIME – DIFFERENT RESEARCH MODELS

Dedicated Time in Curriculum

- ❑ Students have dedicated time to devote to research WITHOUT other responsibilities
- ❑ Can be conducted at home institution or away
- ❑ Can occur at different points in training (students will have varied clinical exposure depending on program)
- ❑ Flexibility of dedicated blocks

Between Academic Years

- ❑ Students have ~4-8 weeks dedicated time to for research between academic years WITHOUT other responsibilities
- ❑ Can be conducted at home institution or away
- ❑ Dedicated programs exist for summer opportunities
- ❑ Typically occurs between 1st and 2nd years of training (i.e., limited clinical exposure)

Outside of Curriculum

- ❑ Students have NO dedicated time to devote to research
- ❑ Conducting research concurrent with other responsibilities
- ❑ Primarily conducted at home institution
- ❑ Can occur at different points in training (students will have varied clinical exposure depending on program)

CHALLENGE 2: RESOURCES & ACCESS

- ❑ Must be considered by the mentor and the institution
- ❑ <u>Key points of Consideration for the Mentor:</u>
  - ❑ Financial support for research resources (consumable supplies)?
  - ❑ Core Facilities: Does the student have access and training on the equipment? Access to skilled personnel?
  - ❑ Clinical Data Availability: Can the student access the data? Does the study have IRB/IACUC approval? Is the student an approved key study personnel?
  - ❑ Feasibility: Does the patient data/population of interest exist? Is the population robust with the appropriate control groups?

CHALLENGE 3: FACULTY SUPPORT

- ❑ <u>Key points of Consideration for the Institution:</u>
  - ❑ Are your faculty supported to onboard a student researcher?
  - ❑ Are the faculty incentivized to mentor a student?
  - ❑ Is the time to mentor a student considered by faculty leadership relative to productivity?
  - ❑ Is the research team available to support the student?