Medical Student Research Program
2015 Medical School Orientation
August 4, 2015

Ginny L. Bumgardner MD PhD FACS
Associate Dean for Research Education
Introductions

- Ginny L. Bumgardner, MD, PhD
  - Associate Dean of Research Education
  - Director of Medical Student Research
  - Director of COM Masters of Medical Science Program
  - Co-Director of OSU HHMI Med-into-Grad Scholars Program

- Bianca McArrell
  - Program Manager, Medical Student Research

- Vlad Manko, M3
  - President, Landacre Research Honor Society
Medical Student Research Program (MDSR)

The Office of Research Education's Medical Student Research Program aims to promote awareness of research opportunities and facilitate research success for OSU medical students.

- Serves as a resource for information
- Provides tips on how to find a faculty research advisor and current research opportunities.
- Facilitates application to internal and extramural funding opportunities for eligible Medical Student Research projects.
- Publicizes news, research accomplishments, presentations, and publications by OSU medical students.
Biomedical Research and Medicine
What is Research Education?

- Research Education is training that incorporates activities involved in the process of
- **Discovery** through Critical Thinking, Innovation & Experimentation
- **Communication** of New Knowledge
- **Application** of New Knowledge to enhance Patient Care
- **Evaluation** of Outcomes in Humans
Research Education in the COM

- Undergraduates
- Graduate Students
- Postdoctoral Fellows & Researchers
- Medical Scientist Program
- **Medical Students**
- Residents & Fellows
Relevance of Research Education to Physician Training

Problem Solving

Health-----Disease-----Intervention-----Outcome & Assessment

In LSI……

• Ask Important Health Related Questions
• Develop an Action Plan (Research Plan) to Answer the Question
• Action (Research)
• Evaluate the Results of the Action Plan (Critique)
• Communicate the Conclusions
What Kinds of People Do Research?
Medical Student Research Program

Goals

- Training in Biomedical Research
  - Formulating Research Questions
  - Team Operations
  - Research Experimental Skills
  - Research Presentation Skills
- Criteria & Competition for Funding
Medical Student Research Experience Value

- First Hand Experience in Biomedical Discovery
- Depth of Knowledge in a Particular Field
- Develop Research Skills
- Influence on Your Career Opportunities
- Advance the Future of Medicine
- Influence Institutional Reputation
Why Research?
In Medical Students’ Own Words

- “I believe that involvement in scientific research during medical school equips me with both the intense skeptical inquiry of a research scientist and the clinical experience necessary to focus my research efforts toward enhancing patient care.”

- “With the time that I devote to the research lab, I imagine that my time is devoted to a thousand unnamed patients. These are patients that I will never know and who will never know me, but their foothold rests in my efforts to take on an unanswered question, or a treatment that hasn’t been tried.”
A Major Discovery
A Major Discovery
A Major Discovery-Insulin

- 1869: Paul Langerhans, medical student in Germany studying the histology of the pancreas, noted 2 types of cells (acinar and islet cells)

- 1889: Josef von Mering, a researcher focusing on GI tract approached a colleague with training in surgery, Oskar Minkowski---pancreatectomy created disorder similar to human diabetes

- 1890-1920s: Many near discoveries…

- 1921: Toronto-trained surgeon Frederick Banting MB came up with an idea after reading an article about how to optimize isolation of islets the purported source of “internal secretion” (hormone). He approached JJR MacLeod PhD, Chair of Dept Physiology at the University of Toronto and expert in carbohydrate metabolism. MacLeod was skeptical due to Banting’s lack of research experience and failures by many others but he was convinced enough to rework his ideas and experiments. He also introduced Banting to James Collip PhD (a physiologist/biochemist, full professor from Univ of Alberta doing a sabbatical with Dr. MacLeod) and medical student Charles Best (Univ of Toronto, Maine). Together this quartet discovered the hormone insulin in pancreatic extract of dogs. They injected the hormone into a diabetic dog and found that blood glucose was normalized. Published in The next year they purified insulin successfully treated a boy with diabetes

- 1923: Banting & Macleod shared the 1923 Nobel Prize for Physiology & Medicine^
A Major Discovery-The Team

The Journal of Laboratory and Clinical Medicine

Vol. VII St. Louis, February, 1922 No. 5

ORIGINAL ARTICLES

THE INTERNAL SECRETION OF THE PANCREAS

BY F. G. BANTING, M.B., AND C. H. BEST, B.A.

The hypothesis underlying this series of experiments was first formulated by one of us in November, 1920, while reading an article dealing with the relation of the isles of Langerhans to diabetes. From the passage in this article, which gives a résumé of degenerative changes in the acini of the pancreas following ligation of the ducts, the idea presented itself that since the acinus, but not the islet tissue, degenerates after this operation, advantage might be taken of this fact to prepare an active extract of islet tissue. The subsidiary hypothesis was that trypsinogen or its derivatives was antagonistic to the internal secretion of the gland. The failures of other investigators in this much-worked field were thus accounted for.

The feasibility of the hypothesis having been recognized by Professor J.J.R. Macleod, work was begun, under his direction, in May, 1921, in the Physiological Laboratory of the University of Toronto.
A Major Discovery-Insulin and Beyond

- **1923**: Banting & Macleod receive the 1923 Nobel Prize for Physiology & Medicine
- **1966**: First Pancreas Transplant, Richard Lillehei MD, University Of Minnesota (3 years after the first kidney transplant)
- ....
Research affords you advanced opportunities and experiences!
Medical Student Research Program

- Research Opportunities
- Scholarship Opportunities
- Research Projects/Mentors
- Events
- Resources

http://medicine.osu.edu/go/mdsr
Medical Student Research Scholarship (MDSRS) 2015 Stats

- 109 Phase II applications were submitted
- 78 Awards were funded
  - 2 one-year LOA projects funded
  - 1 part-time year-long project funded
  - 75 Summer projects (8-10 weeks)
Potential Timing of Research Experiences

- **Med VI** (Advanced Competencies in Research)
  - Leave of Absence for year long research experience (LOA)

- **Med III**
  - Leave of Absence for year long research experience or Year Long part time research project (LOA)

- **Med II**
  - Summer Research Project 8-10 weeks

- **Med I**
MDSR and Landacre Information and Help Sessions

Become an active participant in your own future!

- 2015-2016 Medical Student Research Program Calendar of Events
- MDSR Program Meetings and Events
- **Know your deadlines, plan in advance**
- Workshops on Extramural Summer Funding Applications
- One-on-one assistance with prestigious national fellowship applications
  - (e.g., HHMI, Sarnoff, Doris Duke, AOA)
Resources Available

- Medical Student Research Program Office
  - Reach us by email: research.education@osumc.edu
  - Phone: 685-9106
  - In person: 1190A Graves Hall

- Medical Student Research Program Website
  - http://medicine.osu.edu/go/mdsr
  - MDSR Newsletter

- Landacre Research Honor Society Executive Board
  - Vlad Manko, President

- Landacre Interest Group
Landacre Honor Society
2015-2016 Landacre Honor Society
Upcoming Events!

- **Introduction to Medical Student Research Opportunities and How to Identify a Research Mentor Information Session**
  - Thursday September 10th, 12:00 – 1:30 PM
  - 160 Meiling Hall

- **Medical Student Research Opportunities Fair**
  - Thursday October 22nd, 5:00 – 6:30 PM
  - 115 Biomedical Research Tower, 460 W. 12th Ave.
  - Meet Faculty from OSU COM and NWCH
Questions