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

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
- Simeng Miao, M2
  - President, Landacre Research Honor Society
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

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

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 JRR 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. VI No. 6

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)

Medical Student Publications

Commercially available gaming systems as clinical assessment tools to improve value in the orthopaedic setting: A systematic review. Injury. 2015:46(2):178-83
Ruff J, Wang TL, Quatman-Yates CC, Pifieffer LS, Quatman CE. Department of Orthopaedics The Ohio State University Wexner Medical Center

Relation of body mass index to frequency of recurrent preterm birth in women treated with 17-alpha hydroxyprogesterone caproate.
CoAl1, Walker HC1, Hade BM2,iams JD3.
1College of Medicine, The Ohio State University, Columbus, OH. 2Department of Obstetrics and Gynecology, The Ohio State University, Columbus, OH. 3Center for Biostatistics, The Ohio State University, Columbus, OH.

1College of Medicine, Ohio State University, Columbus, OH, USA.; 2Division of Pediatric Gastroenterology, Hepatology and Nutrition, Nationwide Children’s Hospital, Columbus, OH.

Elotuzumab directly enhances NK cell cytotoxicity against myeloma via CS1 ligation: evidence for augmented NK cell function complementing ADCC.
The Ohio State University, Columbus, OH, USA.
### Delayed cerebral radiation necrosis after neutron beam radiation of a parotid adenocarcinoma: a case report and review of the literature.


Hong CS1, Gokozan HN, Otero JF, Guieu M, Elder JB.

1Department of Neurological Surgery, The Ohio State University Wexner Medical Center, 2Department of Pathology, The Ohio State University Wexner Medical Center, 3Department of Radiation Oncology, The Ohio State University Wexner Medical Center.


Hsieh JK1,2, Hong CS3, Manjila S4, Cohen ML5, Lo SI6,7, Rogers L1,8, Sloan AE1,2,3.

1Case Western Reserve University School of Medicine, Cleveland; 2Cleveland Clinic Lerner College of Medicine, Cleveland; 3The Ohio State University School of Medicine, Columbus; 4Department of Neurological Surgery, University Hospitals Case Medical Center, Cleveland; 5Department of Pathology, and; 6Case Comprehensive Cancer Center, Case Western Reserve University School of Medicine, Cleveland; and; 7Departments of Radiation Oncology and, Neurology, University Hospitals Seidman Cancer Center, Cleveland, Ohio.

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### Application of Peptide Nucleic Acid-based Assays Toward Detection of Somatic Mosaicism.


Hong CS1, Yang C2, Zhuang Z1.

1Surgical Neurology Branch, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland, USA.

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### Endocrine therapy in breast cancer: the neoadjuvant, adjuvant, and metastatic approach.


The Ohio State University, Columbus, OH, USA.

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### Epidemiology of overuse injuries among high-school athletes in the United States.


Schroeder AN1, Best TM2.

1Ohio State University College of Medicine, Columbus, OH; and 2The Ohio State University Sports Medicine Center, The Ohio State University, Columbus, OH.

Is self myofascial release an effective preexercise and recovery strategy? A literature review.

Schroeder AN1, Best TM2.

1The Ohio State University College of Medicine, Columbus, OH; and 2The Ohio State University Sports Medicine Center, The Ohio State University, Columbus, OH.

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### The accuracy of a patient or parent-administered bleeding assessment tool administered in a paediatric haemophilia clinic.


Lang AT1, Sturm MS, Koch T, Walsh M, Grooms LP, O’Brien SH.

1College of Medicine, The Ohio State University, Columbus, OH, USA.


Lee AY1, Mahler NI1, Best CI1, Lee YU1, Breuer CK2.

1Tissue Engineering Program and Surgical Research, Nationwide Children's Hospital, Columbus, Ohio; 2Pediatric Surgery, Tissue Engineering Program and Surgical Research, Nationwide Children's Hospital, Columbus, Ohio.
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) 2016 Stats

- 109 Phase II applications were submitted
- 85 Summer projects (8-10 weeks) funded

MDSR Scholarship Applications & Awards
Potential Timing of Research Experiences

- Med VI (Advanced Competencies in Research)
- Med III (Leave of Absence for year-long research experience [LOA])
- Med II (Summer Research Project 8-10 weeks)
- Med I (Leave of Absence for year-long research experience or Year Long part time research project [LOA])

How to Find Research Opportunities & Funding?

- How to Find Research Opportunities & Funding?
- 2016-2017 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)

MDSR and Landacre Information and Help Sessions

- Become an active participant in your own future!
- 2016-2017 Medical Student Research Program Calendar of Events
- MDSR Program Meetings and Events
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- Workshops on Extramural Summer Funding Applications
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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
  - Simeng Miao, President, Simeng.Miao@osumc.edu
- Landacre Interest Group
Landacre Honor Society

Research Opportunities Fair!

Medical Student Research Opportunities Fair
- Monday October 10th, 4:00 – 5:30 PM
- 115 Biomedical Research Tower, 460 W. 12th Ave.
- Meet Faculty from OSU COM and NWCH

MDSR Annual Research Symposium

Research Symposium
- Friday October 28th, 2:30 – 4:00 PM
- Ross Heart Hospital Conference Center and Lobby.
- MDSR Scholar’s Research Poster Presentations
Questions