Medical Research Scholars Program

at the National Institutes of Health

Tom Burklow, MD
Director, Medical Research Scholars Program

Office of Clinical Research Training and Medical Education
NIH Clinical Center
“NIH’s mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.”
Three Core Clinical Center Missions

Performing top-tier science

Providing patient care

Training the next generation of clinician-scientists
Clinical Research Training Opportunities Portfolio
NIH Medical Research Scholars Program

“To be the premier training program for future clinician-scientists that advances health by inspiring careers in biomedical research”

• A comprehensive, year-long residential research enrichment program for medical, dental, and veterinary students
• Scholars engage in a mentored basic, translational, or clinical research project in an area that matches their personal interests and career/research goals
• Located at the NIH Intramural Research Program in Bethesda, MD
• Co-sponsored by the NIH and private partners via contributions to the Foundation for the NIH
NIH Medical Research Scholars Program

“Not a research program for medical students ... but a career development program for students heading toward careers in biomedical research that is centered around a robust investigation experience”
Mentoring, advising and a curriculum...centered around a robust investigation experience.....
The Curriculum

• **Process of Discovery**
  Lectures on seminal basic and clinical research topics that highlight the continuum of discovery, including issues in bioethics, science policy and emerging technologies

• **Clinical Teaching Rounds**
  Select master teacher/investigators present their research in a case-centered forum with participating patients, discussing not just the science of medicine, but the art of clinical care

• **Proctored Journal Club**

• **Training in clinical protocol development and the conduct of human subjects research**

• **Monthly networking sessions** with selected great teachers from NIH and other academic institutions

• **Workshops** (CV writing, interview skills, protocol writing, Work-Life balance)

• **On-going Seminars** by world renowned researchers (Clinical Center Grand Rounds, Demystifying Medicine, Wednesday Afternoon Lecture Series)
Why choose MRSP...

- Mentorship within and across disciplines
- Advising program
- Independent research time
- Unique curriculum
- Team science and collaboration with peers
- Professional and personal long-term networking with participants
- Access to a wealth of resources for conducting research

- Immersive residential experience, sharing the excitement of new discovery with like-minded fellow scholars from multiple academic institutions
Opportunities...

- Statistical programming software
- Flow cytometry
- CRISPR
- MRI techniques/Image processing and analysis
- On-campus courses
- Publications
- Travel
- Public Speaking
Networking...meeting renowned scientists and academicians...

- Dr. Catherine DeAngelis, first woman editor of JAMA
- Dr. John Schiller, developer of HPV vaccine
- Dr. Steve Rosenberg, pioneer developer of adoptive immunotherapy
- Dr. James Bagian, physician, astronaut and patient safety expert
Living, working, and socializing with like-minded Scholars....
<table>
<thead>
<tr>
<th>Field</th>
<th>Investigated topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesiology</td>
<td>Transcriptional and Molecular Analyses of Spinal Pain Circuits</td>
</tr>
<tr>
<td>Cardiology</td>
<td>Effect of Anti-Interleukin-17 Monoclonal Antibody Therapy on Coronary Plaque Characteristics in Psoriasis</td>
</tr>
<tr>
<td>Dental Medicine</td>
<td>Localized Fibrin Accumulation in the Oral Gingiva Leads to Severe Periodontal Bone Loss</td>
</tr>
<tr>
<td>Dermatology</td>
<td>Assessing the Therapeutic Utility of CEACAM1 Blockade in a CRISPR-Cas9-Based Mouse Melanoma Model</td>
</tr>
<tr>
<td>Genetics (REI)</td>
<td>Investigating PRDM9, a Rapidly Evolving Regulator of Genetic Recombination</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>Phylogenetic Analyses of Early HIV Epidemic in Washington, DC</td>
</tr>
<tr>
<td>Interventional Radiology</td>
<td>An Image-Based Evaluation of IVC Filter Implant Healing in a Swine Model: Implications for Performance and Retrievability</td>
</tr>
<tr>
<td>Neuro-psychiatry</td>
<td>7q11.23 Copy Number Variation Impacts White Matter Microstructure as Measured by Multicomponent Driven Equilibrium Single Pulse Observation of T1 and T2 (mcDESPOT)</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>Combination of PP2A Inhibition &amp; PD-1 Blockade Synergistically Induces Regression of Murine Intracranial Glioblastoma</td>
</tr>
<tr>
<td>Oncology</td>
<td>Targeting CD200 as an Immune Checkpoint in Merkel Cell Carcinoma</td>
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<tr>
<td>Oncology</td>
<td>Immunotherapy Utilizing the Combination of NK and ADCC Mediating Agents with PARP Inhibition</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>Deep Learning and its Applications to the Age-Related Eye Disease Studies: An Imaging and Text-Mining Approach</td>
</tr>
<tr>
<td>Pediatric Neurology</td>
<td>PIEZO2 Deficiency Syndrome: Clinical Manifestations and In Vitro Cellular Modelling</td>
</tr>
<tr>
<td>Pediatric Oncology</td>
<td>A Therapeutic Strategy for Targeting N-Myc Driven Neuroblastoma using Epigenetic Small Molecule Inhibitors in Combination with Topoisomerase Inhibitors</td>
</tr>
<tr>
<td>Population Health/Disparities</td>
<td>Secondhand Smoke vs. Secondhand Vapor: Prevalence and Associated Characteristics Among Youth in Florida</td>
</tr>
<tr>
<td>Urology</td>
<td>Multiparametric Magnetic Resonance Image-Guided Robotic Radical Prostatectomy After Neoadjuvant Enzalutamide and Androgen Deprivation Therapy</td>
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</tbody>
</table>
Finding a research mentor

- After scholars are selected, they are given access to lists of approved mentors. With hundreds to select from, they are also given advice and guidance from the MRSP Academic Director and their MRSP Advisor.

- Scholars can research mentors in advance using the NIH intramural database
  - In top line, leave the reporting year as 2015, and then
  - Select either “all” NIH Intramural Institutes and Centers or any individual Institute or Center
  - In the next line, put an investigator’s name and/or one or more key words
  - Check “include relevancy score in search result”
  - Click “Search” to get relevant “NIDB Annual Report(s)”
  - Click on weblinks to get pop-up reports of interest
  - To start a new search, close pop-up, scroll up, change the investigator or key words, and click Search again
Outcomes: most graduates participate in research during residency....

<table>
<thead>
<tr>
<th>Residency</th>
<th>No. of residents</th>
<th>Research in residency</th>
<th>% doing research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesiology</td>
<td>2</td>
<td>1</td>
<td>50%</td>
</tr>
<tr>
<td>Dermatology</td>
<td>14</td>
<td>4</td>
<td>29%</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>6</td>
<td>3</td>
<td>50%</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>34</td>
<td>25</td>
<td>74%</td>
</tr>
<tr>
<td>IM/Pediatrics</td>
<td>2</td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td>Neurology</td>
<td>5</td>
<td>5</td>
<td>100%</td>
</tr>
<tr>
<td>Obstetrics/Gynecology</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>7</td>
<td>5</td>
<td>71%</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>17</td>
<td>15</td>
<td>88%</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>3</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>3</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>Radiology</td>
<td>12</td>
<td>5</td>
<td>42%</td>
</tr>
<tr>
<td>Surgery (including Dentistry)</td>
<td>20</td>
<td>11</td>
<td>55%</td>
</tr>
</tbody>
</table>

...and go on to research after residency and fellowship

Research Time Allotted

Faculty (n=84) Practice (n=7) Industry (n=3)

- <25%
- 25-50%
- >50%

MRSP Class profile, ‘18-’19

• N=37
• 24 female (65%)
• 3 underrepresented minorities (8%)
• 34 medical, 2 dental, 1 veterinary
• 28 different schools
NIH MRSP Scholar Benefit Package

• 12-month stipend (~$36,000)
• Relocation expenses to and from Bethesda
• Residential furnished housing on NIH campus
• Domestic conference travel expenses
• Health insurance
• Tuition support for scientific courses and textbooks
<table>
<thead>
<tr>
<th>Date Range</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 1</td>
<td>Application website opens</td>
</tr>
<tr>
<td>November 15</td>
<td>MRSP informational webinar (12:30 pm, EST)</td>
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<tr>
<td>January 11</td>
<td>Application deadline (5 pm, EST)</td>
</tr>
<tr>
<td>Mid February</td>
<td>Notification of Interview</td>
</tr>
<tr>
<td>Early March</td>
<td>MRSP Interviews (on the NIH campus)</td>
</tr>
<tr>
<td>Mid March</td>
<td>Notification of Selection</td>
</tr>
<tr>
<td>Mid March</td>
<td>Uniform Deadline to Accept (MRSP, Sarnoff, and Doris Duke)</td>
</tr>
<tr>
<td>July thru August</td>
<td>Students Arrive at NIH to begin year (rolling arrival dates based on home school calendar)</td>
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</table>
Recommendations for a competitive application

• Clear interest in research
  • Your interest and potential are the most important criteria

• Strong and detailed letters of recommendation
  • From faculty who know you well
  • If your research accomplishments are modest, then have your recommenders address this positively and strongly

• Focused cover letter/personal statement
  • Excellent writing is essential. Grammar matters!
  • Use this as your opportunity to describe your motivations to pursue biomedical research as your career path.

• Start application early
Clinical Center’s Training Website

Office of Clinical Research Training and Medical Education (OCRTME)

- For Students
  - Summer Internships
  - Clinical and Translational Research Course for Ph.D. Students
  - Medical Research Scholars Program
  - Clinical Electives
- For Residents/Fellows
  - Graduate Medical Education
  - Elective Rotations
  - NIH-Duke Master’s Clinical Fellows Program
  - Loan Repayment Program
- For Mid-Career Professionals
  - Statistical in Clinical Research Management
- Other Training Opportunities
  - Continuing Medical Education
  - Courses in Clinical Research
  - Other NIH Training/Educational Resources
  - News and Events
  - Contact Us

Department Fellowships and Other Opportunities (Specific Areas of Clinical Research)

- Bioethics Fellowship Opportunities
- Critical Care Medicine - Fellowship Opportunities for

http://clinicalcenter.nih.gov/training/index.html
For More Information

• Clinical Center Office of Clinical Research Training and Medical Education
  http://www.cc.nih.gov/training/index.html

• NIH Clinical Center
  http://www.cc.nih.gov

• National Institutes of Health
  http://www.nih.gov

• Contact:
  • Administrative email box, MRSP@mail.nih.gov