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**Q1 Faculty Information:**

Last name:	<b>Kresh</b>
First name:	<b>J. Yasha</b>
Faculty Position:	<b>Professor and Research Director</b>
Department:	<b>Cardiothoracic Surgery / Cardiology</b>
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**Q2 Type of Research?**

**Translational Research,**

Other (please specify):

Learning and scholarly interaction are fostered in an atmosphere of discovery within the Cardiothoracic Research and Cardiovascular Biophysics Laboratory, which is an interdisciplinary core facility bridging the Department of Cardiothoracic Surgery and the Division of Cardiovascular Diseases. The research projects draw on a large multidisciplinary knowledge base, applying the principles, phenomena, techniques, and engineering technology, 3D printing, cellular and tissue engineering, biophysics, mathematical / computational biology and systems theory to the solution of basic and clinical cardiovascular problems.

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## Medical Student Research Opportunities

### Q3 Please describe your research interests:

The broad range of research projects that been pursued reflects this unique interdisciplinary approach. Importantly, this facility also serves as an educational cardiac research center to direct the scientific projects of medical and engineering students as well as graduate biomedical engineering students.

#### Ongoing Projects:

- Improving the hemodynamic performance and design of artificial hearts and mechanical heart valves
- Study implantable magnetically levitating axial blood-flow pumps for short and long-term mechanical circulatory support
- Model forces responsible for cardiac and vascular mechanotransduction in heart failure and recovery
- Image analysis / segmentation and assessment of vascular / cardiac anatomy (structure and biomechanics)

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### Q4 Please provide a brief description of research opportunity/project(s):

1) Title of project(s):

**Atheroprotective Spiral Flow: Mechanobiological Significance**

Brief Description:

**In-silico and in vitro-experiments using engineered biomimetic fluid mechanics models to investigate and better understand complex (spiral) 3-dimensional blood flow structures in health and disease**

Duration:

**2018-19**

Time commitment:

**10-20 hours / week**

Specific Requirements:

**Funded (unrestricted)**

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**Q5 Please indicate the specific level of experience required, if applicable:**

**Open to all medical students**

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