Greetings from the Cardiovascular Research Institute! This irregularly irregular newsletter describes recent and upcoming CVRI activities.

CVRI Division Updates
The wide breadth of research supported by the CVRI is represented by 5 Divisions: Vascular Biology and Hemostasis, Public Health, Clinical and Translational Research, Neuroscience, and Physiology and Biophysics. Here is some news from each Division:

Vascular Biology and Hemostasis Division - The Division’s faculty, staff, and students have been particularly productive this year, publishing 14 peer-reviewed manuscripts just in the last 6 months. Four of these papers included medical students whose work was partially supported by the CVRI. The Division members participated in many virtual conferences, presenting dozens of abstracts, and organized several symposia and lectures including a Scientific Symposium in conjunction with Global Thrombosis Forum on Thrombo-inflammatory Mechanisms in Vascular Diseases. In addition, the Division recently celebrated the first global approval of ovine enoxaparin by the Indonesian drug regulatory agency BPOM. The CVRI is proud of the role of our investigators in the studies that lead to this revolutionary development, which will impact resourcing of heparin and related drugs.

The Division plans a virtual retreat for faculty interested in vascular diseases with reference to COVID-19 pathogenesis and treatment to identify other projects. The Division faculty will host 10 medical students for STAR and summer research programs.

Public Health Division - The CVRI is grateful to Lara Dugas Ph.D. for her years of outstanding service as the Director of the Public Health Division. Dr. Dugas is stepping down as Division Director to focus on her increasing research responsibilities. We are happy to announce the appointment of the new Public Health Division Director, Oguz Akbilgic Ph.D.
Dr. Akbilgic is a data scientist specializing in machine learning for analysis of clinical data. You can read more about his use of AI to analyze ECG data and predict heart failure here: http://www.akbilgic.com. Dr. Akbilgic said “Cardiovascular disease has consistently been the leading cause of death, posing a major public health concern. Our division will aim to better utilize Public Health and Public Health Informatics tools and methods to improve cardiovascular health. I feel privileged to lead the Public Health Division and to serve for overall mission of CVRI.”.

Welcome Dr. Akbilgic! Public Health Division faculty have been very active in developing low cost, ECG-based artificial intelligence tools for prediction of risk for cardiomyopathy among cancer survivors and heart failure in general population. These efforts resulted in multiple publications and will be presented at ACC 2021 Meeting at the “Top Innovations of Past Year” session.

Clinical and Translational Research Division - The Division is hosting a semiannual translational meeting: “Let’s translated”. This meeting aims to foster knowledge and collaboration among basic and clinical scientists at the Health Science Division of Loyola University Chicago. The meeting pairs a basic scientist research update with a clinical colleague detailing the unmet clinical need in the area and his ongoing clinical research project. The Division has also sponsored access to multiple clinical research databases for our members. The data represent new research opportunities for trainees, fellows, and faculty.

Neuroscience Division - Neuroscience faculty, students, and staff have been busy and highly productive this year. They published fourteen peer-reviewed papers, including projects that received funding support from CVRI. The CVRI efforts to support translational collaborative research are continuing to yield results in our Division this year as we welcomed two research rotation fellows from the Neurosurgery Program, Dr. Ronak H. Jani and Dr. Isaac B. Ng. We are also proud to announce and give our warmest congratulations to two of our student members (and their mentors, Dr. Mansuy-Aubert and Dr. Pak):

- Raiza Bonomo, awarded a Schmitt Fellowship for her PhD Dissertation “Understanding the Role of Lipids in a Mouse Model of Obesity-Induced Peripheral Pain”.
- Dr. Chun Kim, who received the 2021 Council of Graduate School Programs Biomedical Sciences Dissertation of the Year Award for his work entitled “Estrogen regulation of mir-9-5p and mir-9-3p in the aging female brain”.

Both Raiza and Chun are previous recipients of CVRI travel awards. Congratulations! In other news, congratulations to our MS students in Neuroscience who recently graduated: Harsh Hariani, Morgan Lenz, and Jen Schreiber. We also bid farewell to three esteemed faculty members of our Division: Dr. George Battaglia, Dr. Lydia DonCarlos, and Dr. Michael Collins. Congratulations! We wish you the longest and most joyous retirement possible!

Physiology and Biophysics Division - Division faculty are involved in numerous collaborative projects supported by several extramural research grants. Despite COVID-related
restrictions of 2020, division faculty published over 10 manuscripts in high profile journals. Examples of our recent publications can be seen on the CVRI website: https://ssom.luc.edu/cvri.

Congratulations to Ph.D. candidate Marisa Stachowski (Dr. Kirk’s lab) who was awarded an American Heart Association (AHA) pre-doctoral fellowship.

Congratulations to Research Associate Jaroslava Seflova Ph.D. (Dr. Robia’s lab) who was awarded an AHA post-doctoral fellowship.

Congratulation to Jordan Beach Ph.D. who received the NIH R35 grant award: “Mechanisms of Contractile Network Assembly”.

Peter Kekenes-Huskey Ph.D. received an American Heart Association Transformational Project Award.

Ruben Mestril Ph.D. received a new grant from U.S. Department of Defense (DOD).

Aleksey Zima Ph.D. was awarded with a new R01 NIH grant entitled: “New mechanisms of SERCA2a regulation: role of luminal calcium”. The grant was scored at 2%. This proposal is a result of successful collaboration between the Zima, Robia and Kuo labs.

CVRI Translational Research Fellowship
The Cardiovascular Research Institute Fellowship in Translational Research is an academic training program initiated in 2018 to provide advanced training for physician-scientists with an interest in research in cardiovascular medicine. Fellows are connected to a pair of mentors representing both Clinical and Basic Science Research. They gain experience in study design, analytical/statistical methods, and scientific writing/grantsmanship. Fellows also perform clinical service through assignment in the section of Cardiology, Department of Medicine.

CVRI Translational Research Fellows:
2018-2019: Yevgeniy (Eugene) Brailovsky, D.O., Mentors: Amir Darki, M.D. M.Sc., Medicine, Cardiology; Jawed Fareed Ph.D., Departments of Pathology, Molecular Pharmacology and Therapeutics. Current position: Assistant Professor, Advanced Heart Failure, Mechanical Circulatory Support, Heart Transplant, Sidney Kimmel School of Medicine, Thomas Jefferson University, Philadelphia PA.
2019-2020: Parth Desai M.D., Mentors: Smit Vasiwalia M.D., Medicine, Cardiology; Jonathan Kirk Ph.D. Department of Cell and Molecular Physiology. Current position: Cardiology Fellow, Department of Medicine, Stritch School of Medicine, Loyola University Chicago.
2020-present: Mohsin Haseeb M.D. Mentors: Max Liebo M.D., Medicine, Cardiology; Gregory Aubert M.D., Ph. D. Medicine, Cardiology, Cell and Molecular Physiology.

New NIH Shared Instrumentation Grant
A team of CVRI-affiliated faculty were successful in competing for an S10 Shared Instrumentation Grant from the National Institutes of Health to obtain a high-resolution small animal ultrasound imaging system. This instrument can perform 4D echocardiography, acquiring functional data of quality comparable to cardiac MRI. Additional applications include high resolution organ and tumor imaging and vascular functional imaging. The shared instrumentation application included projects from faculty from several Loyola departments including Cell and Molecular Physiology, Medicine, Public Health, Surgery, and Cancer Biology: Seth Robia Ph.D., David Barefield Ph.D., Greg Aubert M.D., Ph.D., Jonathan Kirk Ph.D., Ivana Kuo Ph.D., Virginie Mansuy-Aubert Ph.D., Lara Dugas Ph.D., Wei Qui Ph.D., Toni Pak Ph.D., Aleksey Zima Ph.D., Vivian Gahtan M.D., and Kristopher Maier Ph.D.

New Initiative: The CVRI Innovation and Exchange Scholarship Program
The newly established CVRI Translational Research Exchange Scholarship program sponsors a Loyola faculty member to visit a partner laboratory at another institution for several months of intensive research, and to have the partner faculty visit Chicago for a reciprocal period of collaborative research at Loyola. The scholarship supports research costs, apartment rental and travel costs, and other associated research expenses. The 2020 CVRI Translational Research Exchange Scholars are Prof. Jonathan Kirk Ph.D., Loyola University Chicago, and Prof. Stuart Campbell Ph.D., Yale University Chicago.

Dr. Kirk and Dr. Campbell are exploring mechanisms to enhance the ability of the failing heart to beneficially remodel. This process, called “myocardial recovery”, occurs spontaneously in a small fraction of patients. Gaining mechanistic insight into
myocardial recovery may lead to new therapeutic approaches to heart failure.

**CVRI Research Symposium**
The previous symposium is described on the CVRI website: [https://ssom.luc.edu/cvri/cvrievents/](https://ssom.luc.edu/cvri/cvrievents/)

Please keep an eye out for an announcement of the next research symposium, probably in the fall of 2021.

**CVRI Minigrants and Research Support**
In the 2019-2020 cycle, CVRI disbursed $173,000 across 15 research grants to 49 faculty, and 22 student travel awards. In the 2020-2021 cycle, minigrants were suspended due to budget cuts and disruptions of faculty research and student travel. The minigrants program will resume for the 2021-2022 cycle. Please watch for a request for applications email in the fall of 2021. In the absence of a minigrants program, the Division Directors took on a greater role in allocation of CVRI resources. Here are some ways that the Division Directors supported CVRI researchers over the last year:

**Support for a study of COVID-19 vaccine responses in transplant recipients.** Investigators: Nina Clark M.D., Gail Reid M.D., Susan Uprichard Ph.D.

**Purchase of research supplies and equipment:**
- Tissue scaffolds for engineered tissues
- Tissue culture incubators
- Tissue culture hood
- Micromanipulator and controller
- Ultracold freezer
- Network attached storage for ultrasound image data
- Surgical instruments
- Telemetry probes
- Antibodies and enzymes
- Water purifier cartridges
- Network storage for ultrasound data

**Other expenditures:**
- Abstract/Publication fees
- Partial support of a research technician salary
- Ultrasound analysis software licenses
- Support for statistical analysis services
- Visa application support for a Translational Research Fellow

Purchased access to the National Death Index (a database for outcomes research)

**Other Ongoing CVRI Activities**
The CVRI continues to support a bi-weekly journal club attended by scientists and clinicians, coordinated by Peter Kekenes-Huskey Ph.D. This journal club has been running continuously for several decades. Medical residents and fellows are particularly encouraged to attend or present articles of interest. If you are interested in presenting or receiving email reminders of the meetings, please contact Dr. Kekenes-Huskey: pkekeneshuskey@luc.edu.

The CVRI supports a small animal core facility with a full-time animal surgeon, Quan Cao Ph.D. This facility provides echocardiography, telemetry, and surgical services to HSD researchers and external customers.

In collaboration with the Clinical Research Office, the CVRI procures samples of patient myocardial tissue for the CVRI Biorepository. If you are interested in using these samples in your research, please contact Jonathan Kirk Ph.D.: jkirk2@luc.edu.

For more information about the Loyola Cardiovascular Research Institute, please visit our website [https://ssom.luc.edu/cvri](https://ssom.luc.edu/cvri) or contact us by email: mhelwich@luc.edu