**25TH Annual GSRPD**

**Abstract Submission Form**

PLEASE NOTE: Due to the limited number of presentations for GSRPD 2021 Online, abstract submissions that do not follow all guidelines will not be considered for presentation.

A sample of a properly completed form is available on the Abstract Submission page of the GSRPD 2021 website.

Instructions:

* Complete all sections of this form
* ***For MD students without a dissertation committee, please include only the name of the faculty you are working with (No other members are necessary)***
* Abstract title should be in sentence case – Only the first word and proper nouns should be capitalized
* Abstract body should not exceed 250 words
* Submit your abstract via email to gsrpd@wayne.edu
* Questions can be emailed to gsrpd@wayne.edu or directed to a member of the Abstracts subcommittee.

|  |  |
| --- | --- |
| **Presenter’s Name** | **Presenter’s Primary Department** |
| Andrew Kulek |  | Biochemistry, Microbiology, and Immunology |
|  |
| **Presenter’s WSU Email Address** |
| akulek@med.wayne.edu |  |
|  |
| **Complete List of Committee Members** |
| Name | Department |
| Karin Przyklenk (PI) | Physiology |
| David Evans | Biochemistry, Microbiology, and Immunology |
| William Brusilow | Biochemistry, Microbiology, and Immunology |
| Maik Huettemann | CMMG |
| Brian O’Neil | Emergency Medicine |
|  |  |
| **Complete Authors List with Affiliations** |
| Authors |  |
| Andrew Kulek1, Vishnu V.R. Undyala1, Sarita Raghunayakula2, Thomas H Sanderson2, and Karin Przyklenk1 |
| Affiliations |  |
| 1Dept. of Biochemistry, Microbiology, and Immunology, Wayne State University School of Medicine, Detroit, MI; 2Dept. of Molecular and Integrative Physiology, University of Michigan, Ann Arbor, MI |
|  |  |
| **Select your presentation:** |
| 10-minute oral presentation | 3-minute rapid fire poster presentation |
|  |  |
| **Abstract Title** |
| Disruption Of Mitochondrial Cristae Integrity In Lethal Myocardial Ischemia-Reperfusion Injury: Association Or Cause-and-Effect? |  |
|  |  |
| **Abstract Body (250 word max):****Background:** Considerable attention has focused on the concept that disruption of mitochondrial structure/function is a determinant of cell death in cardiomyocytes subjected to ischemia-reperfusion (IR). However, the details of this relationship, and the precise mitochondrial event(s) that precipitate lethal IR injury, remain unresolved. Aim: Emerging evidence has revealed that cardiomyocytes subjected to IR display: i) degradation of optic atrophy protein-1 (OPA1), the inner mitochondrial membrane protein responsible for maintaining cristae junction integrity, followed by ii) inappropriate release of OPA1 into the cytosol. Accordingly, our goal was to establish whether degradation of OPA1 plays a causal, mechanistic role in determining cardiomyocyte fate. **Methods and Results:** In Protocol 1, HL-1 cardiomyocytes underwent 2.5 hrs of simulated ischemia. This was preceded by either a classic intervention known to attenuate IR injury (ischemic preconditioning: IPC) or a matched control period. Cell viability was quantified at 24 hrs post-R, and release of OPA1 into the cytosol was measured at 30 min post-R. In Controls, IR resulted in ~50% cell death and a >15-fold increase in OPA1 in the cytosol - effects that were both attenuated by IPC (Figure: top). In Protocol 2: to discern whether these data reflect an association between OPA1 degradation and cell death or cause-and-effect, HL-1 cells were transfected witheither siRNA targeting OPA1 (resulting in near-total knockdown of OPA1 expression: data not shown) or scrambled siRNA. Cardiomyocytes then underwent IPC/no intervention and IR as in Protocol 1. If OPA1 disruption contributes to IR injury, we reasoned that OPA1 knockdown would exacerbate cell death in Controls and attenuate IPC-mediated protection. However, OPA1 knockdown had no effect on cell death in either cohort (Figure: bottom). **Conclusion:** Disruption of OPA1 and loss of cristae junction integrity does not play a causal role in lethal IR injury. |
|  |