

# MitCare

# 2022

We are grateful for all the help we got to expand our faculty team, to establish our data science operation, and to initiate exciting new adventures in mitochondrial biology and medicine in 2022.

# Mito Circle Journal Club 2022 Summary

Date	Name	1 <sup>st</sup> au. last au: title_yr_journal
Jan 10	Steve Hurst	MICU1 occludes MCU in the mitochondrial calcium uniporter complex Tsai C-W et al. 2021 bioRxiv
Jan 24	Erin	1. Combinatorial G x G x E CRISPR screening and functional analysis highlights SLC25A39 in mitochondrial GSH transport. Shi X et al. 2021 BioRxiv; 2. SLC25A39 is necessary for mitochondrial glutathione import in mammalian cells. Wang Y et al. 2021 Nature
Feb 7	Gyuri C	Metabolic design in a mammalian model of extreme metabolism, the North American least shrew ( <i>Cryptotis parva</i> ). Chung DJ et al 2022 J Physiol
March 14	Dave Booth	1. Ultrasensitive Genetically Encoded Indicator for Hydrogen Peroxide Identifies Roles for the Oxidant in Cell Migration and Mitochondrial Function. Pak et al. 2020 Cell Metab. 2. Spatial and temporal control of mitochondrial H <sub>2</sub> O <sub>2</sub> release in intact human cells. Hoehne et al. 2022 EMBO J.
Mar 28	Tom Neil	Mosaic dysfunction of mitophagy in mitochondrial muscle disease. Mito et al 2022 Cell Metab
Apr 11	Ben	A comprehensive approach to artifact-free sample preparation and the assessment of mitochondrial morphology in tissue and cultured cells. Hinton et al. 2021. BioRxiv
Apr 25	Marco	The interplay between BAX and BAK tunes apoptotic pore growth to control mitochondrial-DNA-mediated inflammation. Cosentino et al. 2022. Mol. Cell.
June 6	Elena	A Ca <sup>2+</sup> -Dependent Mechanism Boosting Glycolysis and OXPHOS by Activating Aralar-Malate-Aspartate Shuttle, upon Neuronal Stimulation. Pérez-Liébana et al. 2022 J Neurosci.
Aug 29	Gyuri H	Regulation of mitochondrial proteostasis by the proton gradient. Patron et al. 2022. EMBO J
Sep 12	Steve Hurst	The mitochondrial calcium uniporter engages UCP1 to form a thermopore that promotes thermogenesis. Xue K et al. 2022. Cell Metab.
Sep 26	Marilen	Enhanced NCLX-dependent mitochondrial Ca <sup>2+</sup> efflux attenuates pathological remodeling in heart failure. Garbincius et al. 2022 JMCC
Oct 10	Piyush	Mitochondrial dynamics regulate genome stability via control of caspase-dependent DNA damage. Cao K et al. 2022 Dev Cell
Oct 24	Arijita	A three-organelle complex made by wrapper contacts with peroxisomes and mitochondria responds to liver lipid flux changes. Ilacqua et al. 2022 J Cell Sci.
Nov 7	RVS	Synaptic vesicle pools are a major hidden resting metabolic burden of nerve terminals. Pulido and Ryan 2021 Sci Adv
Nov 21	Elena (2 <sup>nd</sup> )	Ca <sup>2+</sup> channels couple spiking to mitochondrial metabolism in substantia nigra dopaminergic neurons. Zampese et al. 2022. Sci. Adv.
Dec 5	Shey	Magnetic sensitivity of cryptochrome 4 from a migratory songbird. Xu J et al. 2021. Nature
Dec 19	Caitlyn	Mitochondrial functional resilience after TFAM ablation in the adult heart. Ghazal et al. 2021 AJP Cell

## MitoCircle 2022

An-Chi Wei, Ph.D. Jan 31 **MitoTox: a mitochondrial toxicity database and screening platform**

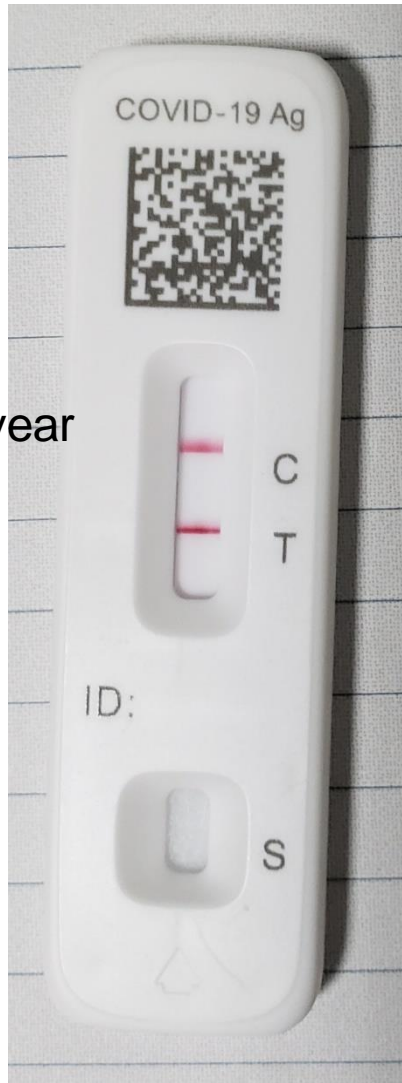
Geert Bultynck, Ph.D. Feb 14 **The Bcl-2 family and  $\text{Ca}^{2+}$  signaling in health & disease**

Evgeny Pavlov, Ph.D. Mar 1 **Novel holographic imaging assay of the permeability transition pore in living cells: dissecting specific contributions of the ANT and ATP synthase**

Suliana Manley & Tatjana Kleele, Ph.D. May 3 **Distinct fission signatures predict mitochondrial degradation or biogenesis**

Julia Liu, Ph.D. Sept 12 **Mitochondrial calcium regulation in cardiac function**

Still, a common theme for the year





In January Zuzana departed from Csordas lab for an indefinite period





# Metabolic adaptation to the chronic loss of $\text{Ca}^{2+}$ signaling induced by KO of $\text{IP}_3$ receptors or the mitochondrial $\text{Ca}^{2+}$ uniporter

Received for publication, April 18, 2021, and in revised form, October 4, 2021 Published, Papers in Press, November 19, 2021,  
<https://doi.org/10.1016/j.jbc.2021.101436>

Michael P. Young<sup>1</sup>, Zachary T. Schug<sup>2</sup>, David M. Booth<sup>1</sup>, David I. Yule<sup>3</sup>, Katsuhiko Mikoshiba<sup>4,5</sup>,  
György Hajnóczky<sup>1</sup>, and Suresh K. Joseph<sup>1,\*</sup>

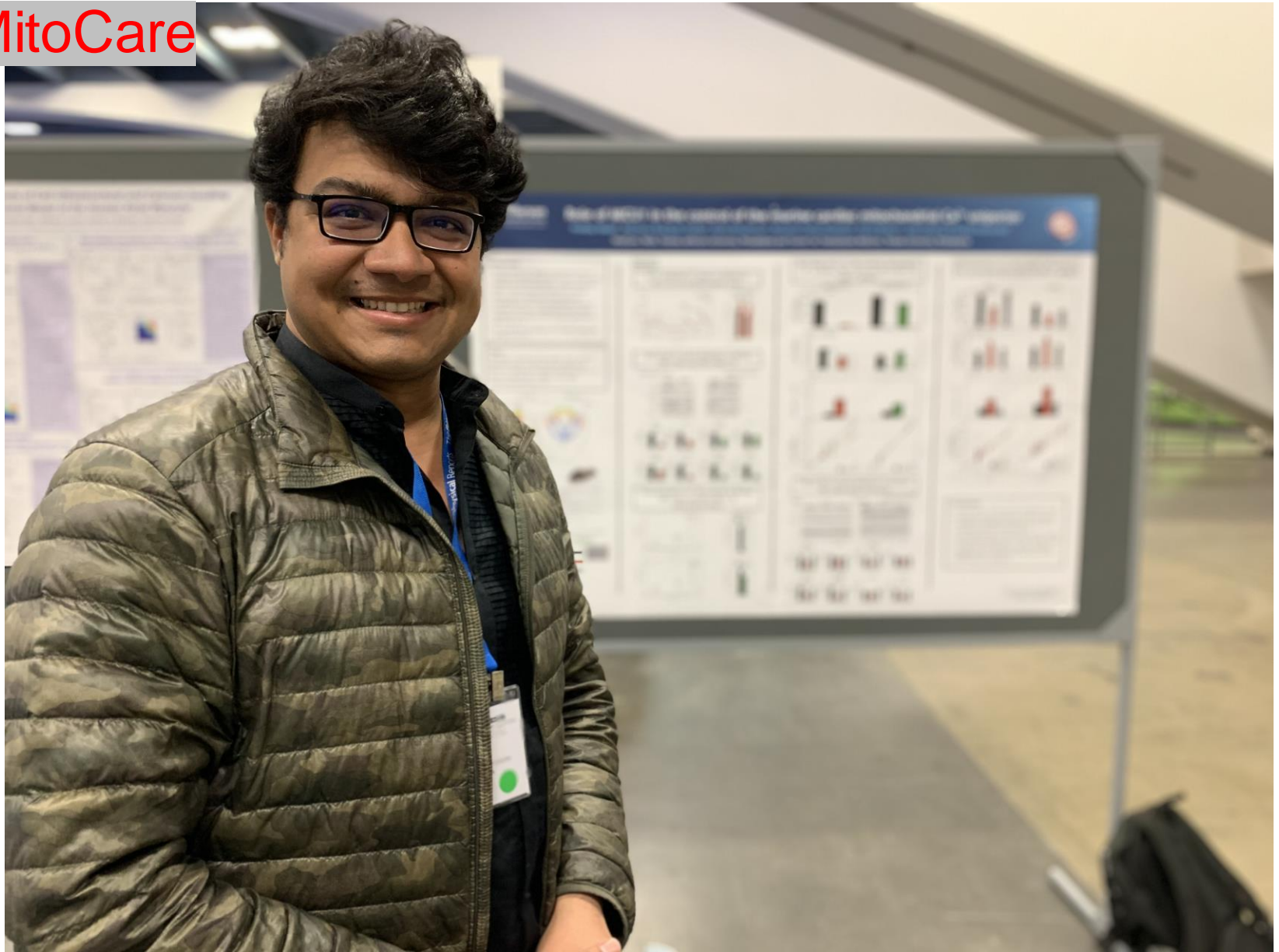
*From the <sup>1</sup>Department of Pathology, MitoCare Center, Anatomy, and Cell Biology, Thomas Jefferson University, Philadelphia, Pennsylvania, USA; <sup>2</sup>Molecular and Cellular Oncogenesis, The Wistar Institute, Philadelphia, Pennsylvania, USA; <sup>3</sup>Department of Pharmacology & Physiology, University of Rochester, Rochester, New York, USA; <sup>4</sup>Shanghai Institute of Advanced Immunochemical Studies (SIAIS), Shanghai Tech University, Shanghai, China; <sup>5</sup>Department of Biomolecular Science, Faculty of Science, Toho University, Funabashi, Japan*



A photograph of a birthday celebration set on a wooden table. In the foreground, four cupcakes are arranged in a row, each in a clear plastic cupcake holder with its lid open. The first cupcake has white frosting and a blue candle. The second has white frosting, a red cherry, and a red candle. The third has purple frosting and a yellow candle. The fourth is a chocolate cake with a green candle. To the right of the cupcakes is a large, multi-layered cake with white frosting and yellow fruit on top, sitting on a black plate. Behind the cupcakes are four clear plastic cups and a stack of colorful paper plates. To the right of the plates is a package of white napkins and a brown paper napkin. A silver knife is also visible on the right. In the background, there are three office chairs and a large window looking out onto a brick building.

1<sup>st</sup> full year of the Birthday Cupcakes

Biophysics at SF; Prottoy was the ONLY poster presenter of MitoCare







But Adam and Veronica, two  
MC Alumni gave talks

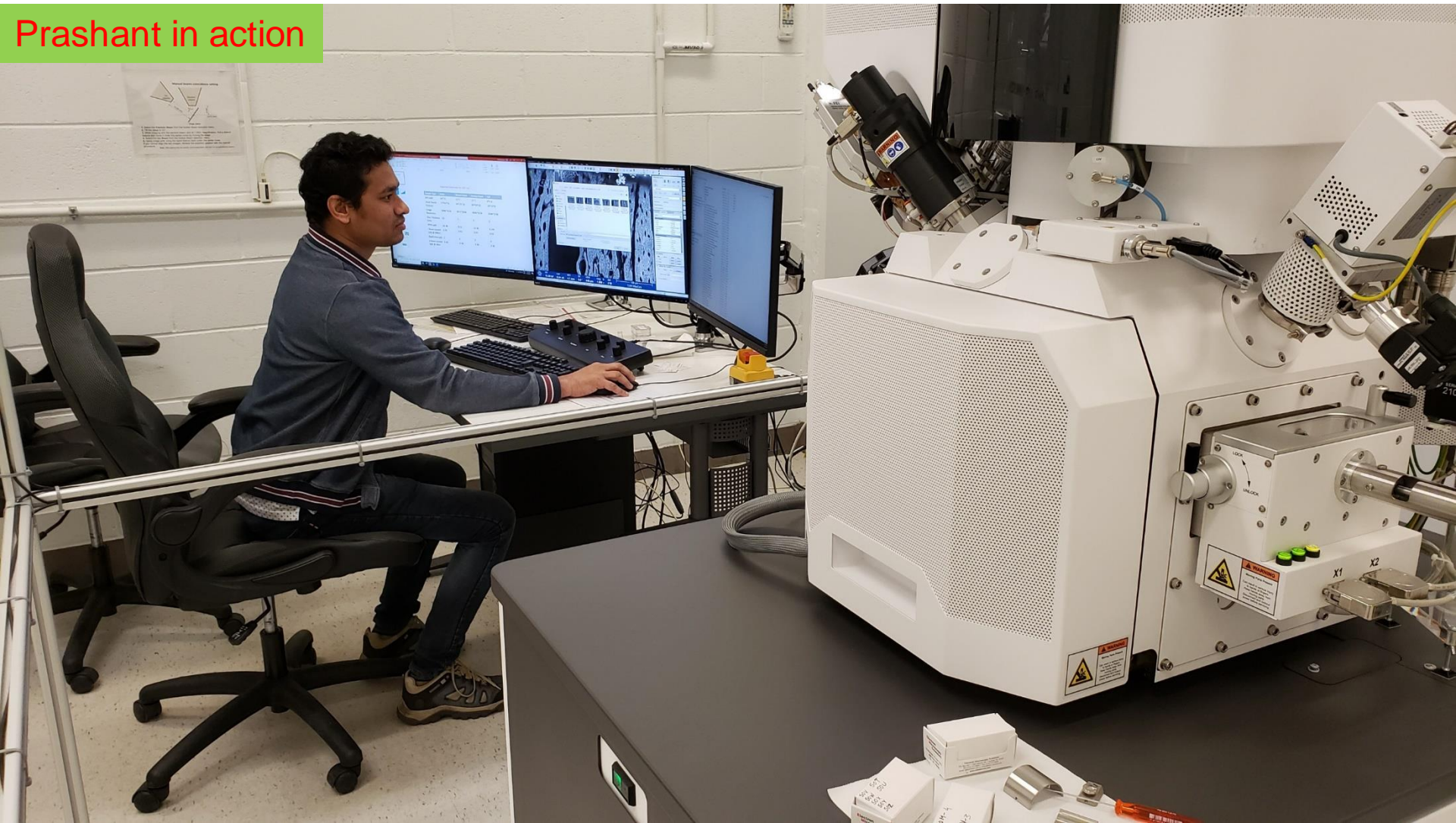


March - FIB-SEM Training II with the new operator recruit, Prashant Badgujar (right)



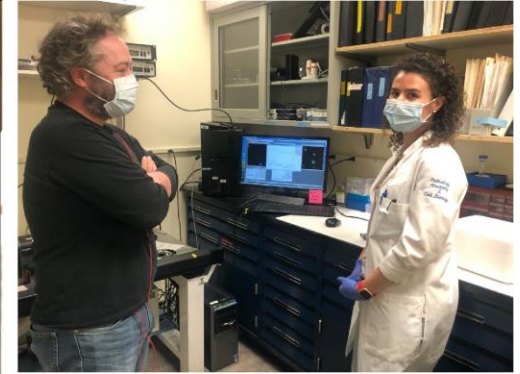
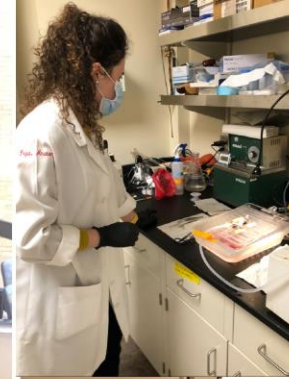


Prashant in action

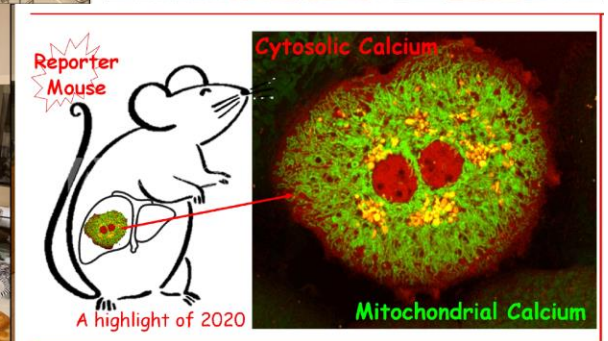
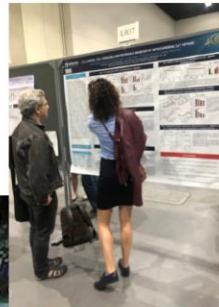




# Kata says goodbye



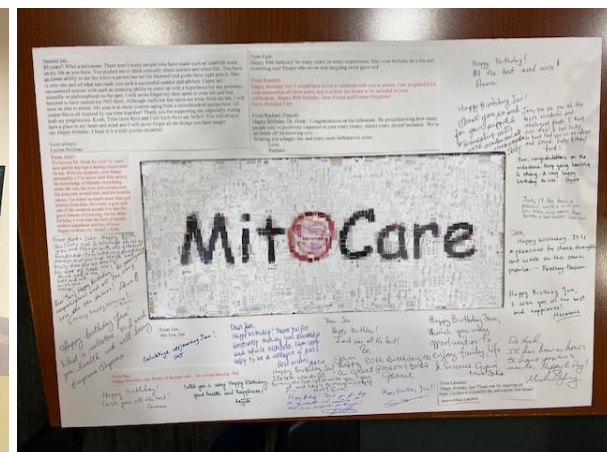
**MitoCare**  
**2019-2022**





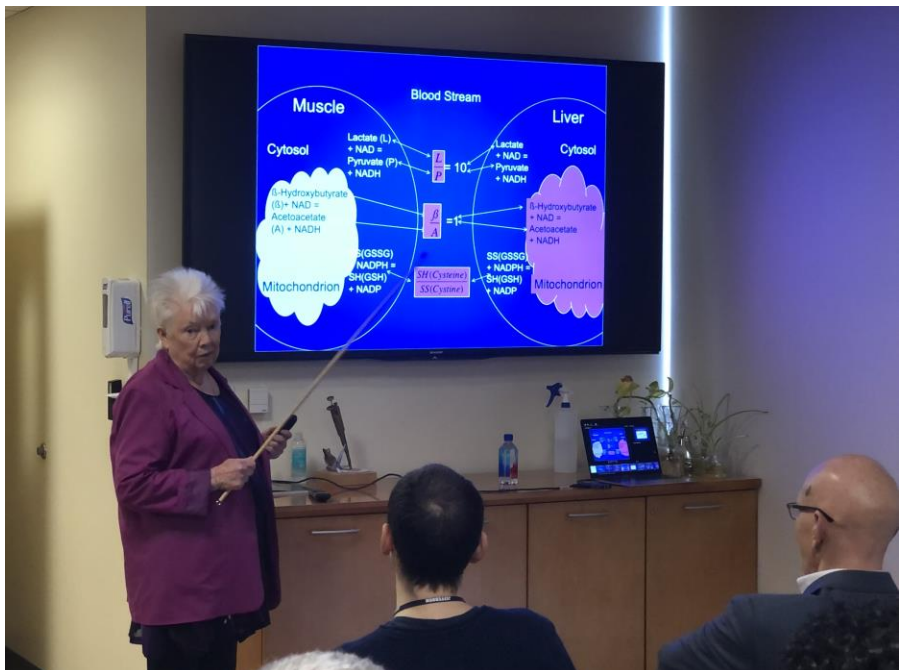
Mid-March  
Catching up with  
Zuzana in  
Bratislava





**Celebrating  
Jan's 80<sup>th</sup>  
at Mit@Care**

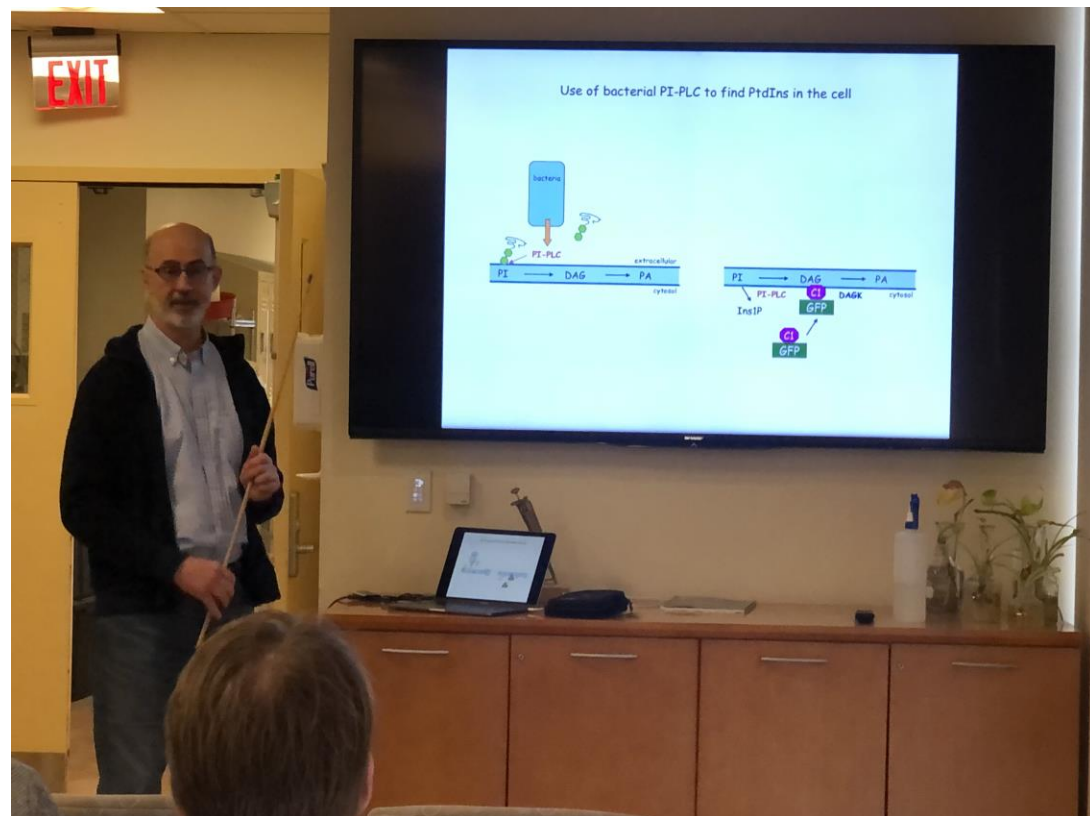
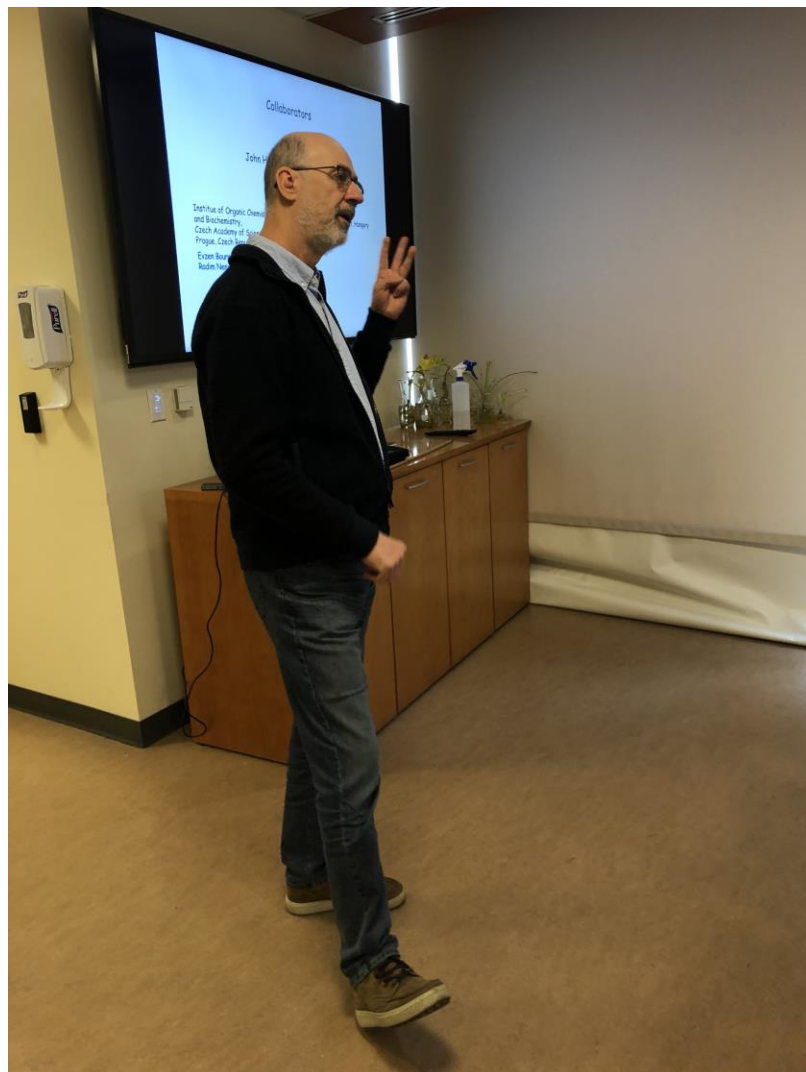




Happy 80th Jan!



# Tamas Balla (NIH) on Mitochondria & Lipid

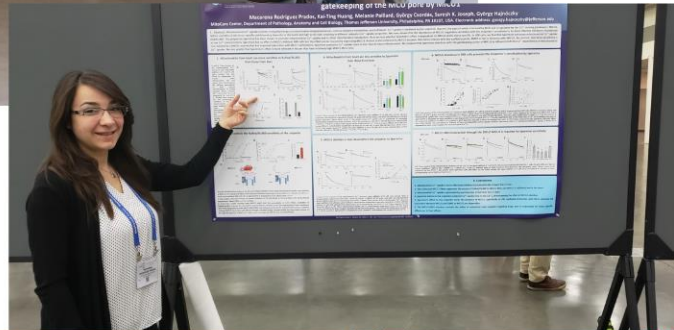




# Macarena's Farewell



**MitoCare**  
2018  
-  
2022

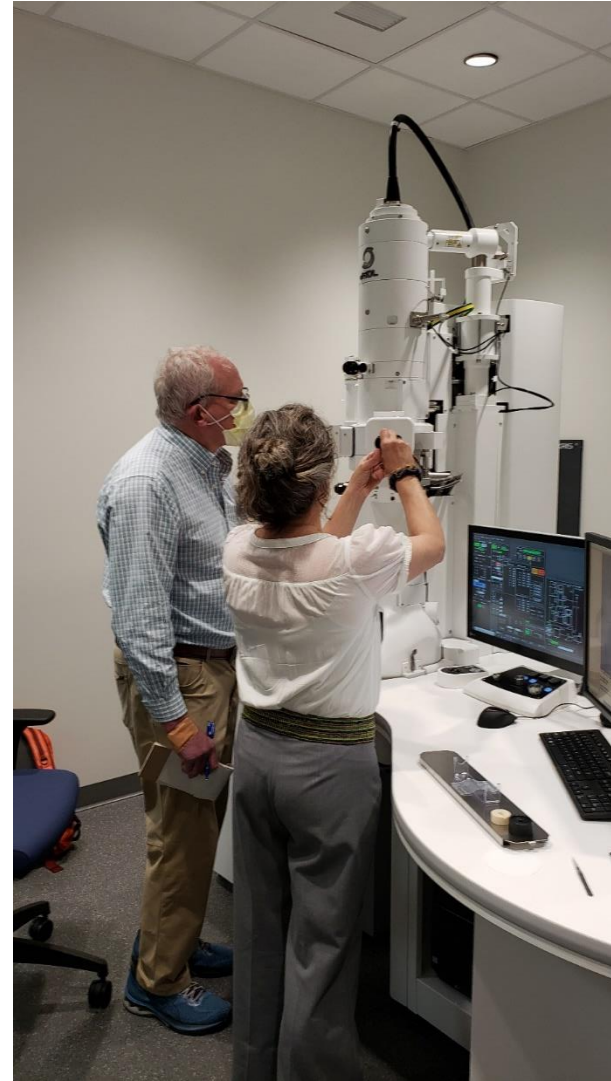


End of April – Hitachi HT7800 120kV TEM Demo in Clarksburg, MD





## Early May – JEOL JEM1400 Flash 120kV TEM Demo at Eurofins, in Lancaster PA



Mid May – ThermoScientific Talos L120C 120kV TEM Demo at the 'Nanoport',  
in Hillboro OR





## Frataxin deficiency lowers lean mass and triggers the integrated stress response in skeletal muscle

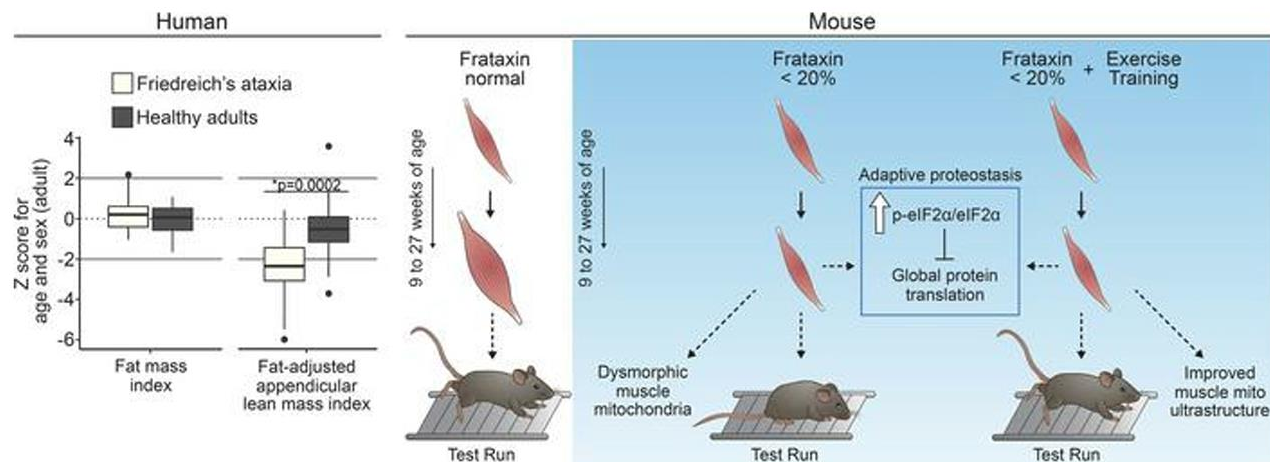
César Vásquez-Trincado, ... , Shana E. McCormack, Erin L. Seifert

*JCI Insight.* 2022;7(9):e155201. <https://doi.org/10.1172/jci.insight.155201>.

Research Article

Muscle biology

### Graphical abstract



Andreas Bayer (MCW),  
our Newest Collaborator  
In the Human Heart  
Studies with TJ & JHS



## The 'Human heart connection'

Donor heart samples from MCW for FIB-SEM and TEM analysis





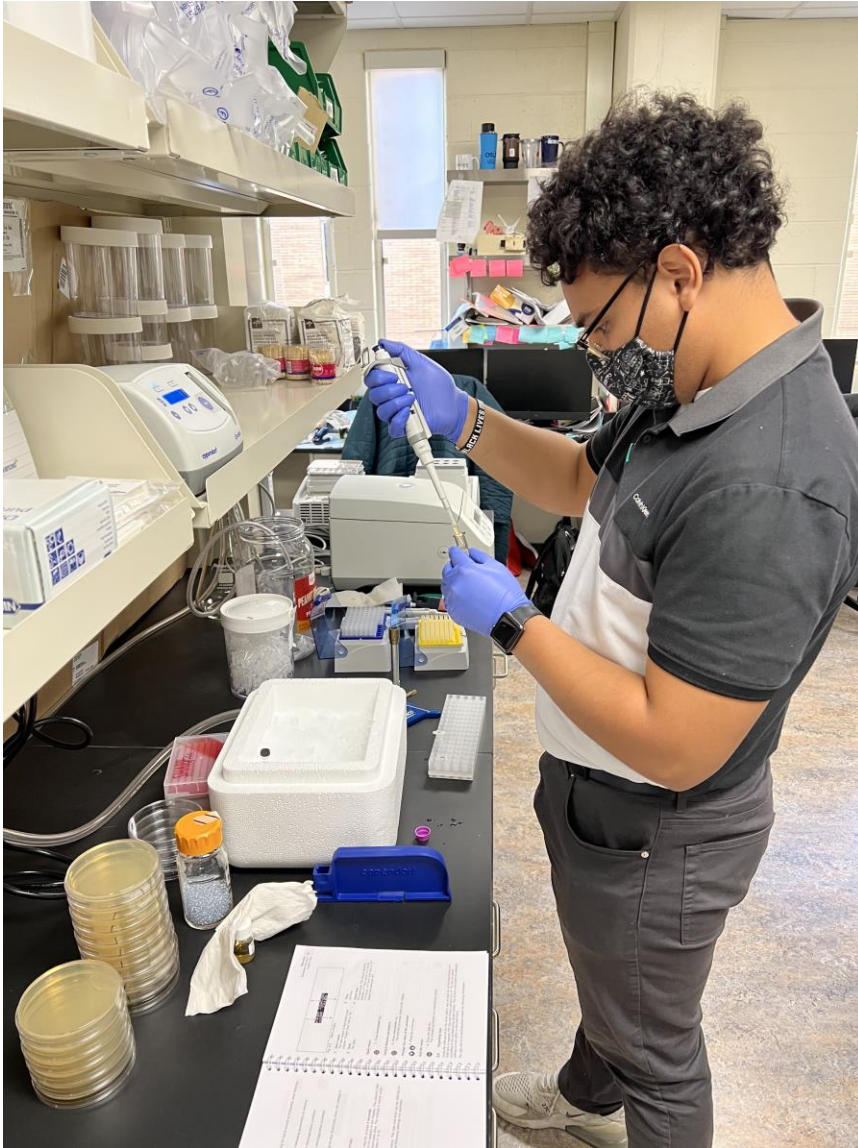


## Broad Street 10M: Our troopers + George + Masha





# Combination of Human and Robot Forces in the Tigano Lab





MitoCare kids do not stop  
growing and being  
adorable



# Marco's FIRST NIH Grant!



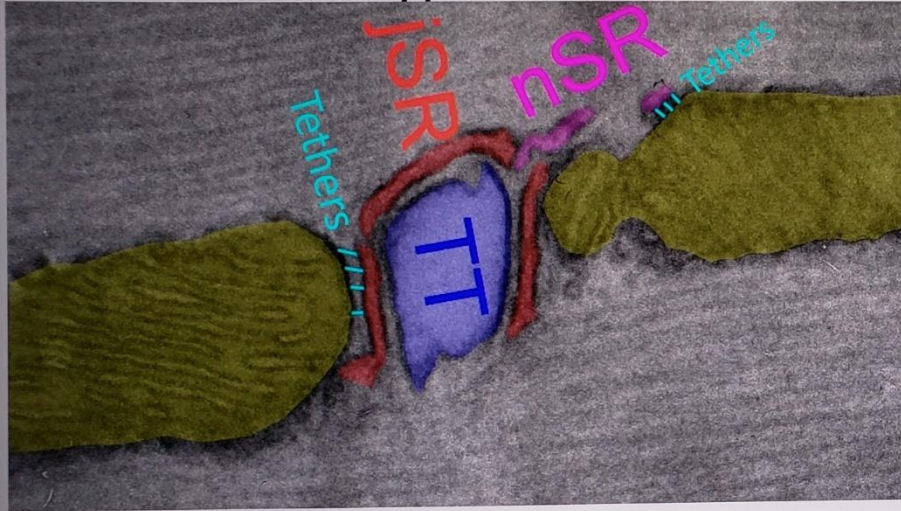
Department of Health and Human Services  
National Institutes of Health  
NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES

**Notice of Award**  
FAIN# R35GM147191  
Federal Award Date  
06/21/2022

Recipient Information	Federal Award Information																								
<b>1. Recipient Name</b> THOMAS JEFFERSON UNIVERSITY 1020 WALNUT ST STE 1  PHILADELPHIA, 19107	<b>11. Award Number</b> 1R35GM147191-01																								
<b>2. Congressional District of Recipient</b> 03	<b>12. Unique Federal Award Identification Number (FAIN)</b> R35GM147191																								
<b>3. Payment System Identifier (ID)</b> 1231352651A1	<b>13. Statutory Authority</b> 42 USC 241 42 CFR 52																								
<b>4. Employer Identification Number (EIN)</b> 231352651	<b>14. Federal Award Project Title</b> From mtDNA stress to cellular immunity: Triggers, Mechanisms and Effectors																								
<b>5. Data Universal Numbering System (DUNS)</b> 053284659	<b>15. Assistance Listing Number</b> 93.859																								
<b>6. Recipient's Unique Entity Identifier</b> R8JEVL4ULGB7	<b>16. Assistance Listing Program Title</b> Biomedical Research and Research Training																								
<b>7. Project Director or Principal Investigator</b> Marco Tigano, PHD  mxt422@jefferson.edu 215-503-8558	<b>17. Award Action Type</b> New Competing																								
<b>8. Authorized Official</b> Burwell, Margaret resadmin@jefferson.edu 215-503-6976	<b>18. Is the Award R&amp;D?</b> Yes																								
<b>Federal Agency Information</b>	<b>Summary Federal Award Financial Information</b>																								
<b>9. Awarding Agency Contact Information</b> Kauai MacDonald Porche Grants Management Specialist NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES kauai.macdonaldporche@nih.gov (301) 594-1858	<table border="1"><tr><td colspan="2"><b>19. Budget Period Start Date 07/01/2022 – End Date 04/30/2023</b></td></tr><tr><td><b>20. Total Amount of Federal Funds Obligated by this Action</b></td><td>\$390,000</td></tr><tr><td>20 a. Direct Cost Amount</td><td>\$250,000</td></tr><tr><td>20 b. Indirect Cost Amount</td><td>\$140,000</td></tr><tr><td><b>21. Authorized Carryover</b></td><td></td></tr><tr><td><b>22. Offset</b></td><td></td></tr><tr><td><b>23. Total Amount of Federal Funds Obligated this budget period</b></td><td>\$390,000</td></tr><tr><td><b>24. Total Approved Cost Sharing or Matching, where applicable</b></td><td>\$0</td></tr><tr><td><b>25. Total Federal and Non-Federal Approved this Budget Period</b></td><td>\$390,000</td></tr><tr><td colspan="2"><hr/></td></tr><tr><td colspan="2"><b>26. Project Period Start Date 07/01/2022 – End Date 04/30/2027</b></td></tr><tr><td><b>27. Total Amount of the Federal Award including Approved Cost Sharing or Matching this Project Period</b></td><td>\$390,000</td></tr></table>	<b>19. Budget Period Start Date 07/01/2022 – End Date 04/30/2023</b>		<b>20. Total Amount of Federal Funds Obligated by this Action</b>	\$390,000	20 a. Direct Cost Amount	\$250,000	20 b. Indirect Cost Amount	\$140,000	<b>21. Authorized Carryover</b>		<b>22. Offset</b>		<b>23. Total Amount of Federal Funds Obligated this budget period</b>	\$390,000	<b>24. Total Approved Cost Sharing or Matching, where applicable</b>	\$0	<b>25. Total Federal and Non-Federal Approved this Budget Period</b>	\$390,000	<hr/>		<b>26. Project Period Start Date 07/01/2022 – End Date 04/30/2027</b>		<b>27. Total Amount of the Federal Award including Approved Cost Sharing or Matching this Project Period</b>	\$390,000
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Mitochondria and SR form close contacts, which are secured by protein tethers.



## GENETICALLY ENGINEERED SR-MITOCHONDRIA LINKER IN THE MOUSE HEART

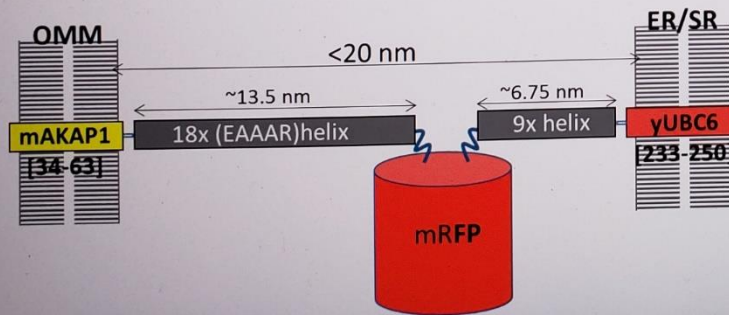
Zuzana Nichtova, (+10 others), Gyorgy Csordas  
Thomas Jefferson University

P #22



- **Benefit:** Excitation-Energetics coupling  
 $\text{RyR2} \rightarrow \text{Ca}^{2+} \rightarrow (\text{MCUc}) \rightarrow \text{matrix dehydrogenases} \uparrow \rightarrow \text{ATP} \uparrow$
- **Risk:** mitochondrial  $\text{Ca}^{2+}$  overload,  $\text{Ca}^{2+}$ /ROS vicious cycles, mPTP activation  $\rightarrow \rightarrow$  myocyte loss
- **Dilemma:** most endogenous tethers are multifunctional.  
How can one test selectively tethering function?

We developed a dedicated tether transgene expressed under the Myh6 promoter in mouse



[Tg(Myh6/-tetO linker) x  
Tg(Myh6/tTA)] x Mfn2<sup>fl/fl</sup>



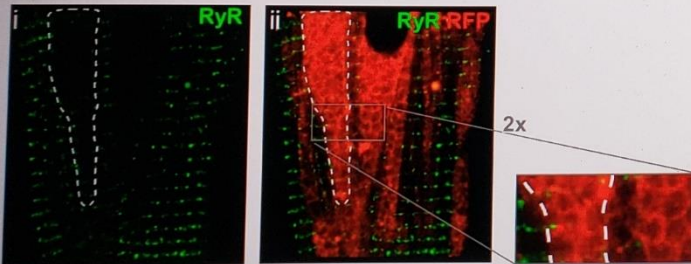
P #22

## Outcomes

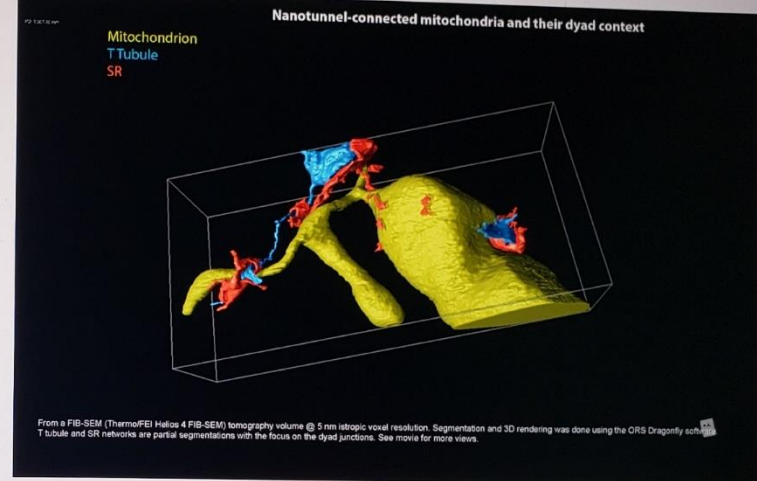
- Overt cardiomyocyte remodeling with dense mitochondrial clusters



- Dense clusters excluded dyads. There are fewer but individually enhanced mitochondria-dyad contacts.



- Increased nanotunnel communication by the mitochondria with dyad contact



- Mice are healthy, active/hyperactive
- Improved excitation-energetics coupling
- Increased tolerance to acute adrenergic stress
- Milder *ex vivo* I/R injury
- Thus, the remodeling is adaptive, not maladaptive. Increased nanotunnel communication likely helps to redistribute the individually increased  $\text{Ca}^{2+}$  load.

End of June GC and Marilen at the Cardiac Regulatory Mechanisms Gordon Conference  
Lobster Dinner (She didn't like the arthropod)





## End of June Cardiac Regulatory Mechanisms Gordon Conference (Colby College, NH)

A take-home wisdom from Colby College (NH)



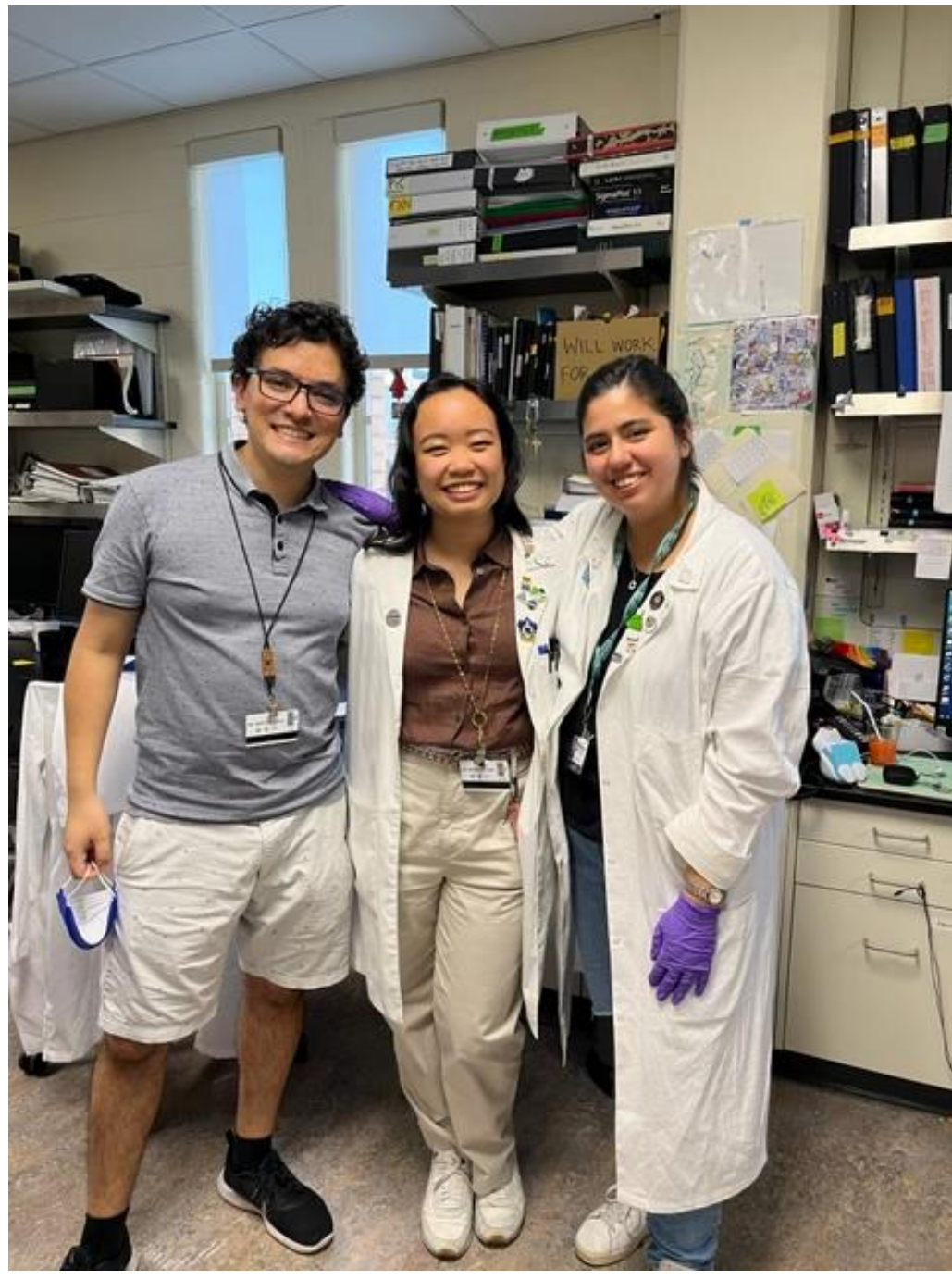
# First MitoCare Faculty Meeting with Rajarshi Chakrabarti, Raj, our new faculty





One of Briyanna's last decorations







# Leducq meeting in Berlin

Left to right: Mike, Jon, Fabio, Melanie, Gabriel, Charlie, Tish, Nina, Janine, Gyuri

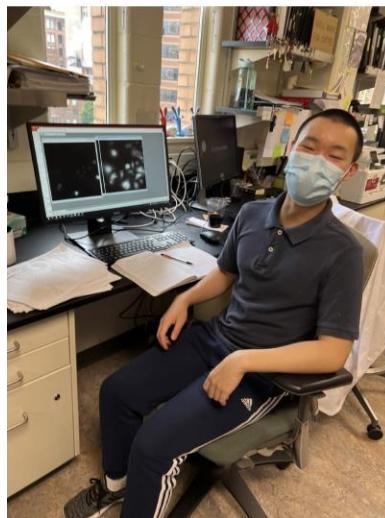




# Summer of Scott



## MitoCare 2022



Scott Gu, a rising Senior at Abington Sr. High School, showed remarkable work ethic and development in 8 wks





Life before and after  
the arrival of Raj  
..how many differences  
you can count in the  
2 photos





# Farewell Sadness for Briyanna

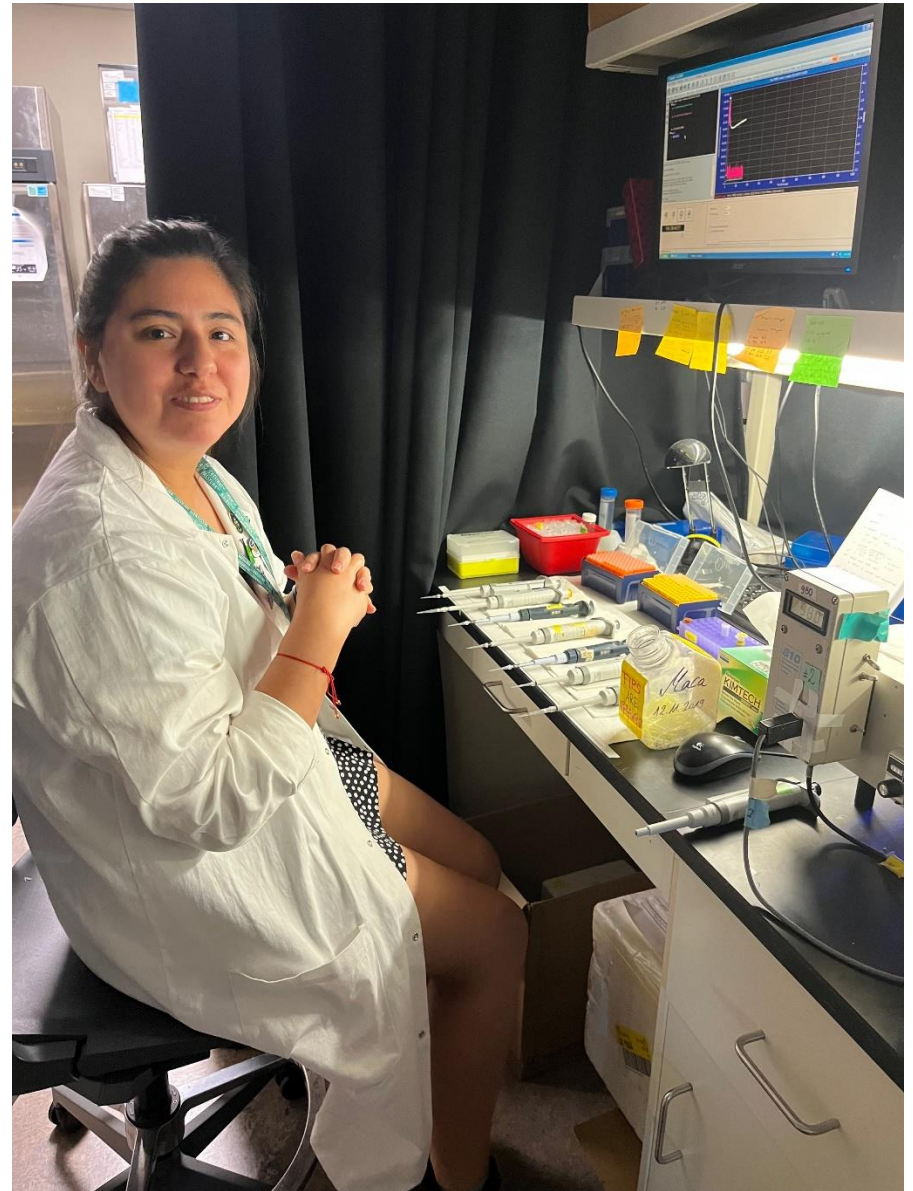








# Marite's preparation for a perfect calcium imaging/PTI day





Arijita at the 16th International Meeting of the European Calcium Society:  
-selected for oral presentation  
-supported by 2 travel awards



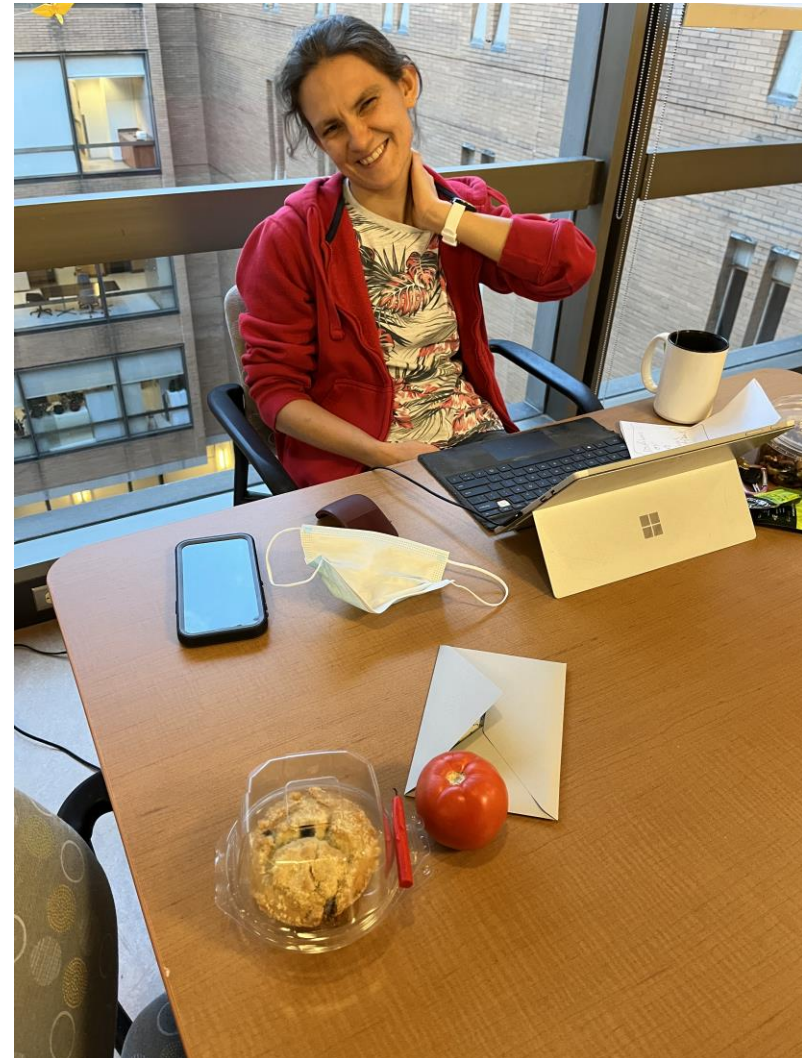
# Jefferson Postdoctoral Symposium 2022: Piyush wins the best oral presentation award







Elena's manuscript  
writing station





# Marco's Jefferson-wide impact

**Invigorate your connection to literature  
with these AI-driven tools**

*Academic Commons Training Session*

Instructors: Marco Tigano, PhD and Gary Kaplan, MSLIS

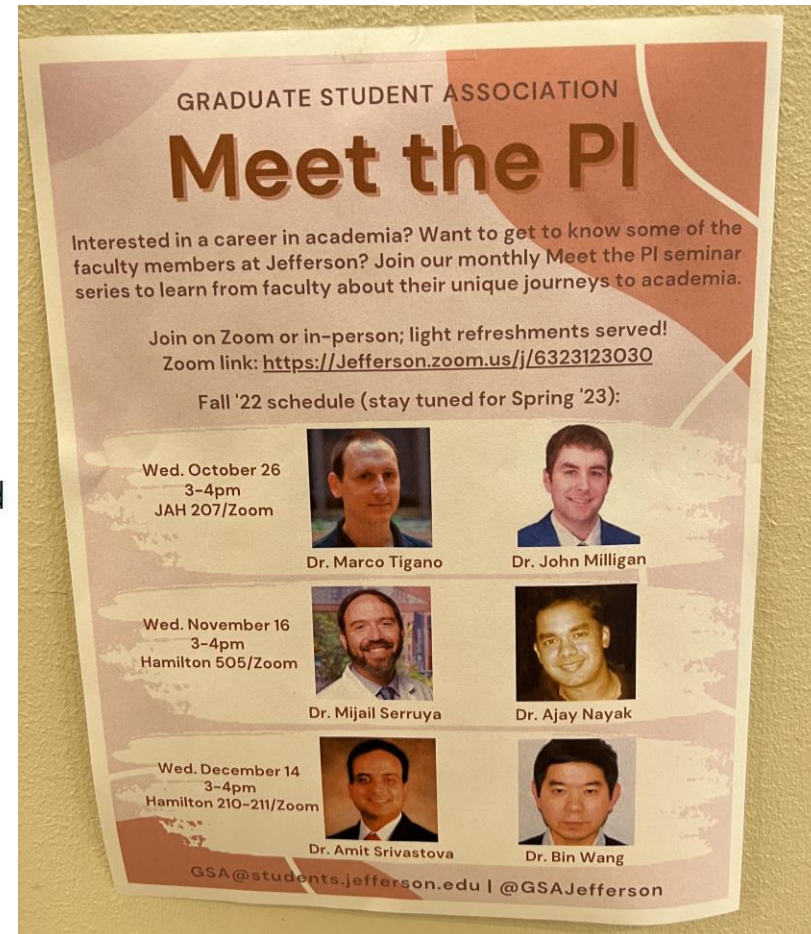
Date: Thursday, September 22, 2022

Time: 12 p.m.–1 p.m.

Location: Hybrid – 200A Scott Memorial Library, Center City  
Campus or Virtual (a link to the Zoom session will be provided  
approximately 24-48 hours before the workshop begins).

Educator Domains: Learning Environment Management,  
Innovation and Professional Vitality

Link to register: [http://library.jefferson.edu/tech/  
workshops/register.cfm?WorkshopID=3963](http://library.jefferson.edu/tech/workshops/register.cfm?WorkshopID=3963)





## Erin continues her success streak with DoD grants

RE: PR220761 - "Inhibiting Mitochondrial Permeability Transition Pore Opening to Treat Mitochondrial Myopathy"

STATUS: RECOMMENDED FOR FUNDING

# New Team Science Award in the area of Cancer Featuring Piyush, Mizue Terai and Phil Wedegartner

Dr. Gyorgy Hajnoczky,

Thank you for your submission of **“Development of Novel Therapeutics for Uveal Melanoma”** to the Team Award Program of the **Melanoma Research Institute of Excellence (MRIE)**. We are pleased to inform you that your application for an award has been reviewed and will be receiving funding.

Funding will be for up to **\$100,000 per year** for up to a total of **two years**. **Please be advised that second year funding is contingent on your team showing progress during the first 12 months of the project.** Accounts will be created and funds will be dispersed in the near future.

At the end of the two years, the project should have shown significant achievements that would support the application for extramural programmatic funding such as P01 and multi-PI RO1-type grants.

Please be aware of the following tentative submission dates for progress reports:

- 6-Month report; April 1, 2023
- Year 1 Progress Report: October 1, 2023
- Year 2 Progress Report: October 1, 2024

Reminders will be sent out approximately 1 month prior to the due date. **Failure to submit progress reports could result in loss of funding.**

Finally, please ensure to cite the **Melanoma Research Institute of Excellence** as a source of funding in all future presentations or publications relating to your project.

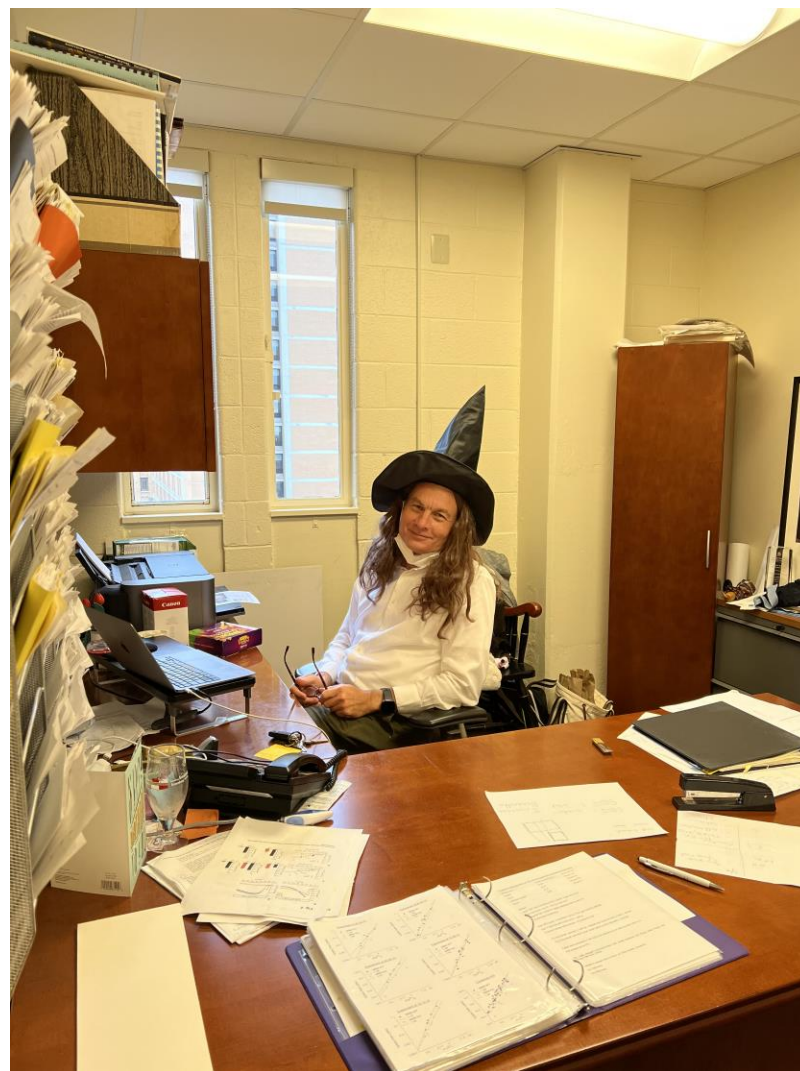
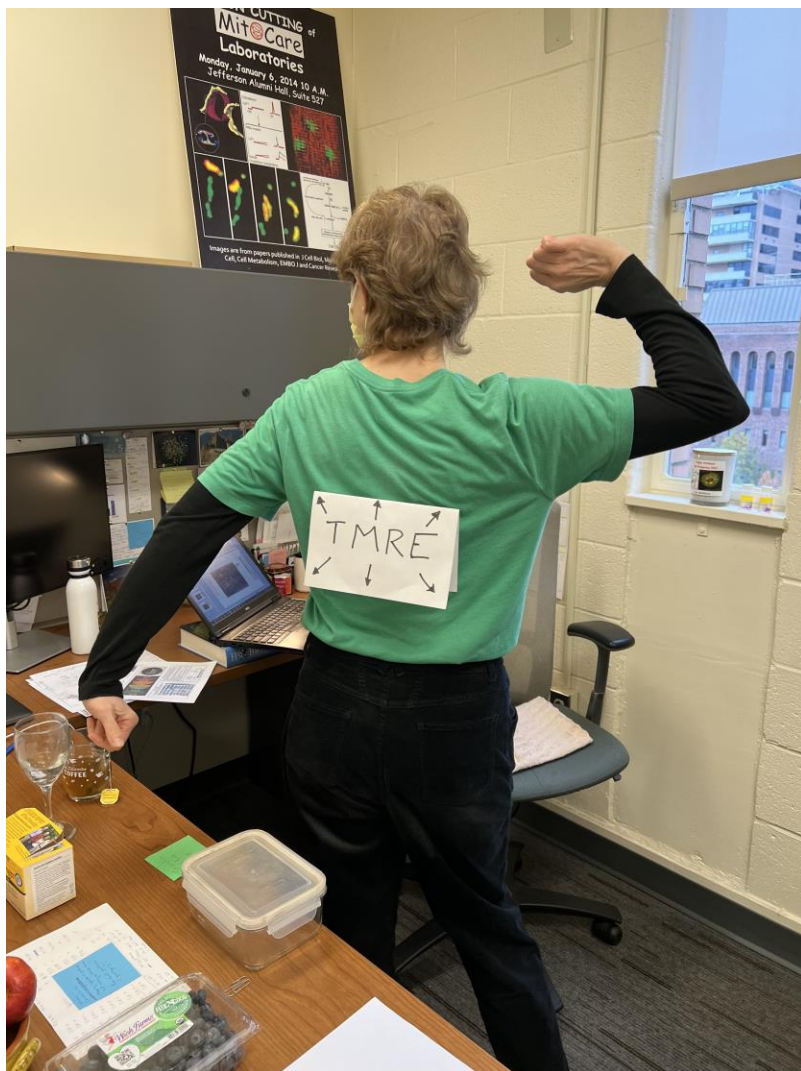
**Please direct questions to:** Mitch Berkowitz (Program Manager)



# Halloween 2022









# First attempt with a Neuroscience NIH Grant with unexpected success

## SUMMARY STATEMENT

**PROGRAM CONTACT:**

Jill Morris  
301-496-5745  
morrisja2@mail.nih.gov

( Privileged Communication )

*Release Date:* 11/29/2022

*Revised Date:*

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*Application Number:* 1 R01 NS132056-01

Principal Investigator

HAJNOCZKY, GYORGY

Applicant Organization: THOMAS JEFFERSON UNIVERSITY

*Review Group:* NOMD

Neural Oxidative Metabolism and Death Study Section

*Meeting Date:* 11/03/2022

*Council:* JAN 2023

*Requested Start:* 04/01/2023

*RFA/PA:* PA20-185

*PCC:* MORRIJNG

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*Project Title:* Mitochondrial Calcium and Neuronal Health

*SRG Action:* Impact Score:20 Percentile:1



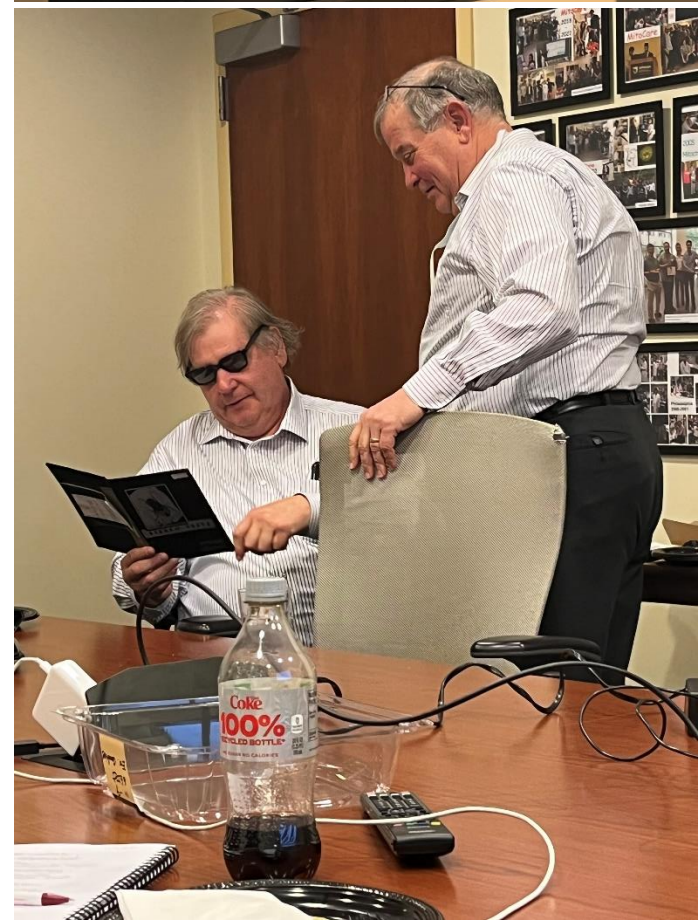
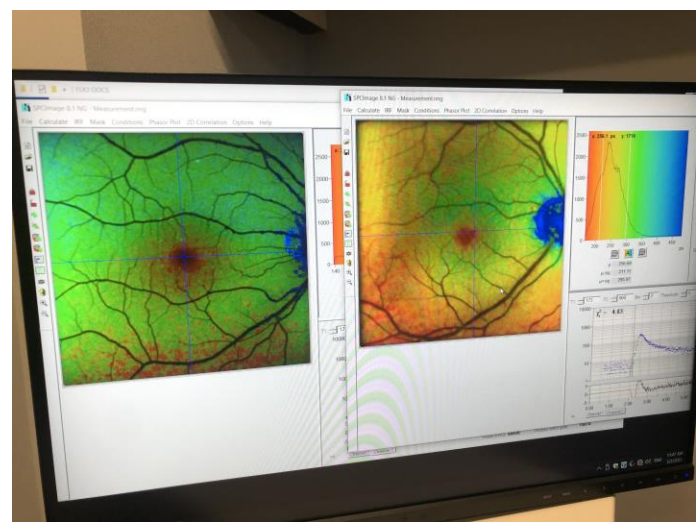
*Next Steps:* Visit [https://grants.nih.gov/grants/next\\_steps.htm](https://grants.nih.gov/grants/next_steps.htm)

Human Subjects: 10-No human subjects involved

Animal Subjects: 30-Vertebrate animals involved - no SRG concerns noted

Project Year	Direct Costs Requested	Estimated Total Cost
1	479,035	747,295
2	479,035	747,295
3	493,613	770,036
4	493,613	770,036
5	493,613	770,036
<b>TOTAL</b>	<b>2,438,909</b>	<b>3,804,698</b>

# NeuroMito presentation to the Gates Foundation with Bob Sergott, President Tykocinski, Thomas Leist, Libba Affel & Molly Gerber





# Orian's Symposium in Ein Gedi



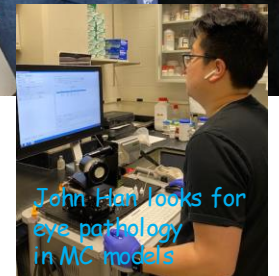
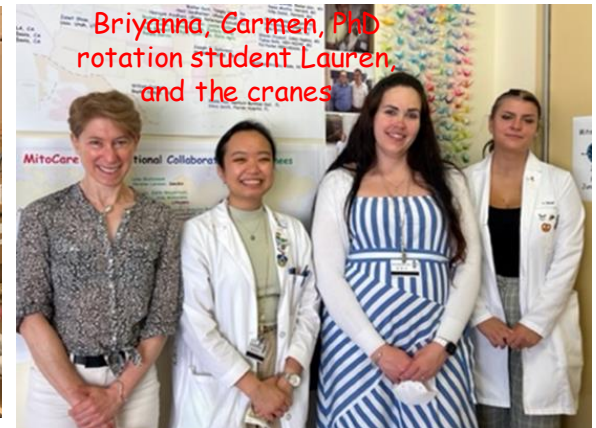
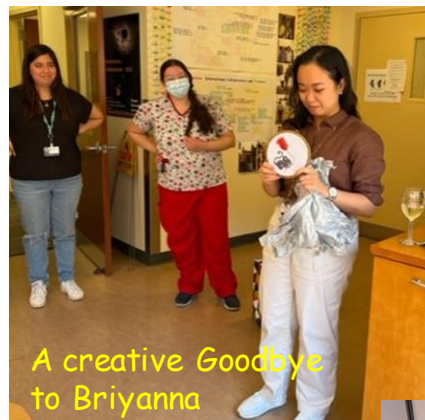




Erin & Gyuri with Janine and Roland Lill  
feel energized in the Dead Sea



## Seifert Lab 2022



## Seifert Lab News 2022

**Goodbye to Cesar, Briyanna and Carmen:** we wish everyone all the best in the next steps!!

**Welcome to** Brittney Blackburne, Shannon Lynch and Matt Dina, and Lauren Israel (PhD rotation student)!

### **Publications**

More news on Frataxin: a collaboration with the Csordás lab, and with UPenn clinicians that allowed data sets from FRDA patients to be included:

#### **Frataxin deficiency lowers lean mass and triggers the integrated stress response in skeletal muscle**

Cesar Vasquez-Trincado<sup>1</sup>, Julia Dunn<sup>2</sup>, Ji In Han<sup>1</sup>, Briyanna Hymms<sup>1</sup>, Jaclyn Tamaroff<sup>2</sup>, Monika Patel<sup>1</sup>, Sara Nguyen<sup>2</sup>, Anna Dedio<sup>2</sup>, Kristin Wade<sup>2</sup>, Chinazo Enigwe<sup>2</sup>, Zuzana Nichtova<sup>1</sup>, David R. Lynch<sup>3,4</sup>, Gyorgy Csordas<sup>1</sup>, Shana E. McCormack<sup>2,5</sup>, Erin L. Seifert<sup>1\*</sup>. JCI Insight PMID 35531957

#### **Co-author publications:**

Dylgieri et al Clin Cancer Res PMID 35078861 (Knudsen group)

Han et al Oncogene PMID 35046531 (Aplin group)

Zhi et al J Vis Exp PMID 35758711 (Zhang group)

Monteith et al Infect Immun PMID 34871043 (Skaar group, Vanderbilt)

### **Grants**

Awarded a Department of Defense Discovery Award!

Submitted: 2 R01s, to NIGMS (with Gyuri C as Co-I) and MPI NIGMS (with Nate Snyder at Temple), an MPI R21 (with Janice Walker), and a CURE grant MitoCare effort (with Gyuri H, Gyuri C, Marco and Raj)

### **Meetings: Acot2 and Frataxin projects on the road (and the zoom)**

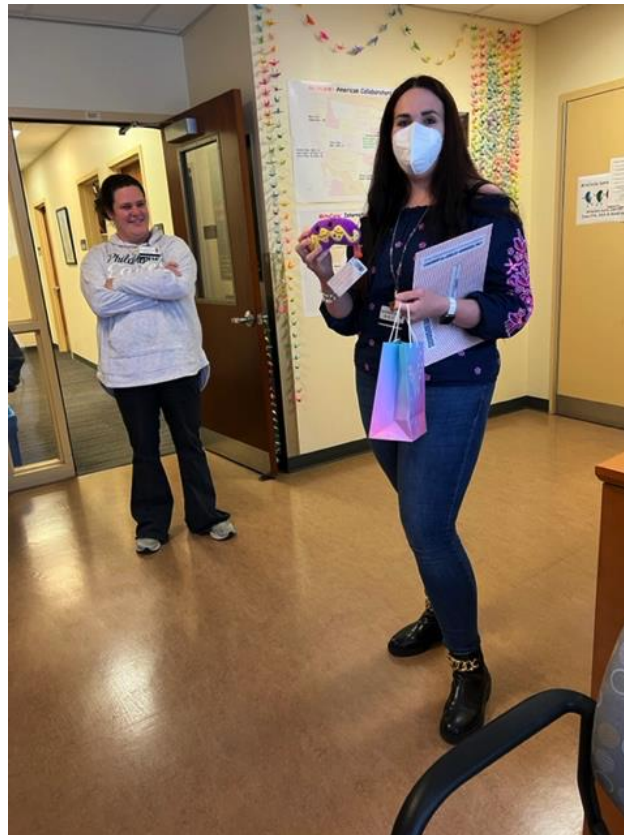
FASEB Molecular Metabolism, Oak Island, Nova Scotia, Canada Aug 7-11

Mitochondria 2022, Ein Gedi, Israel, Nov 13-16

Invited talks at West Virginia University (host Roberta Leonardi), ECU (host Darrell Neuffer), FARA (host Liz Soragni)



# Carmen's farewell







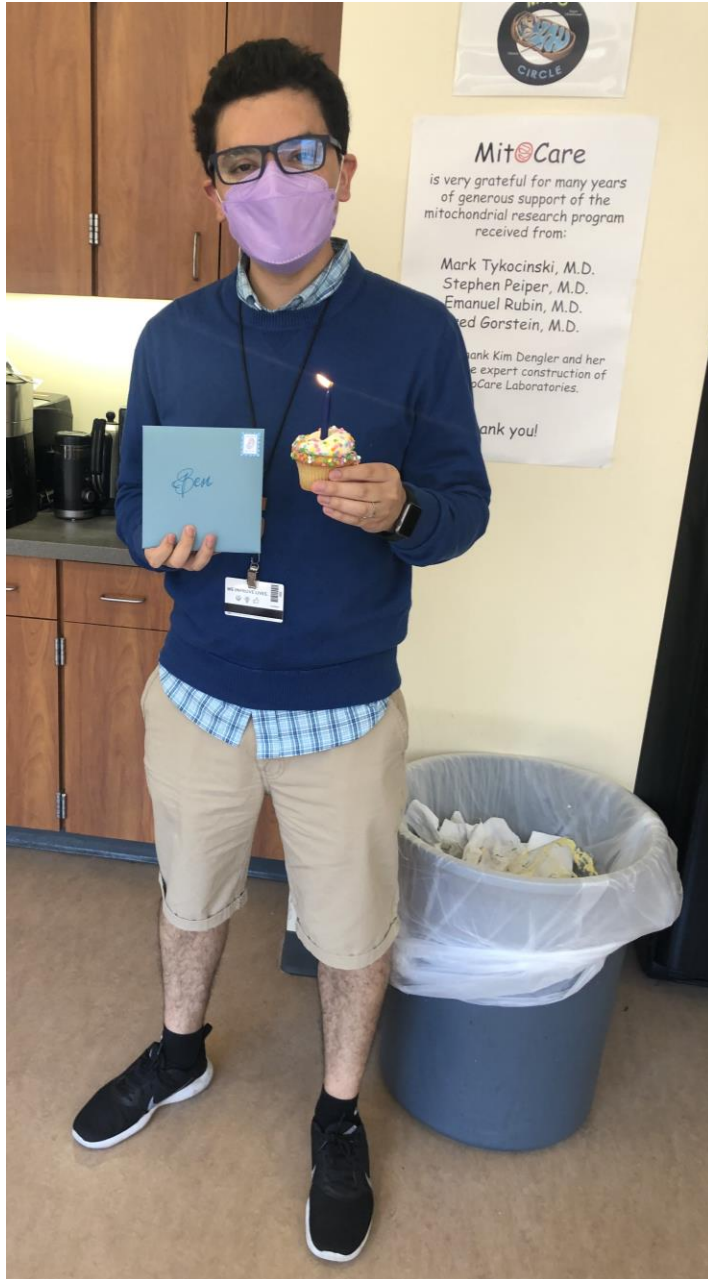
The Holiday Decoration Crew







# Cupcake Collection 2022





# Cupcake Collection 2022

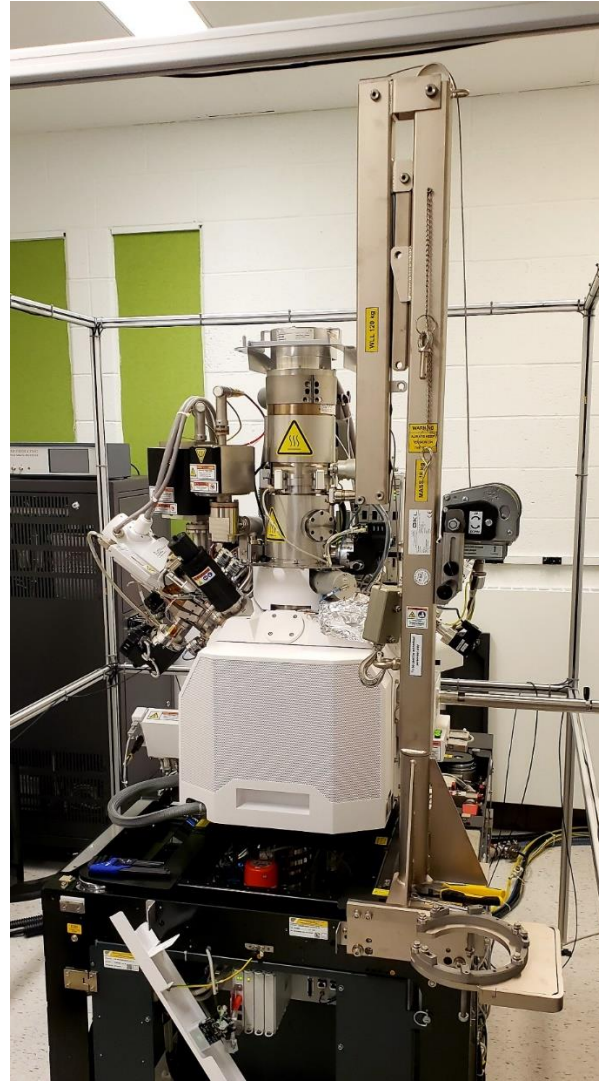


# Cupcake Collection 2022

Someone gets a Poppyseed Muffin Cupcake with melted candle in the middle

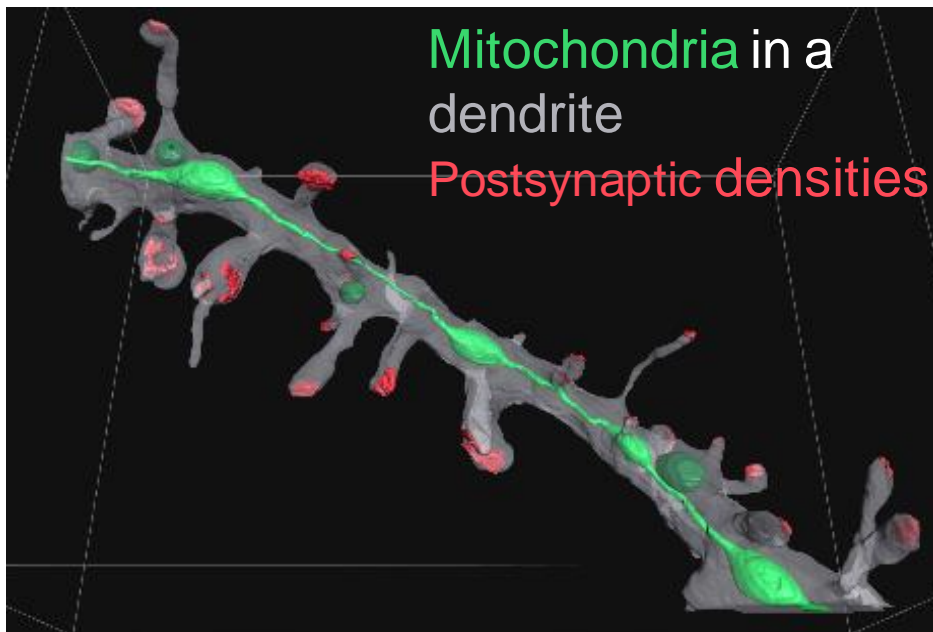
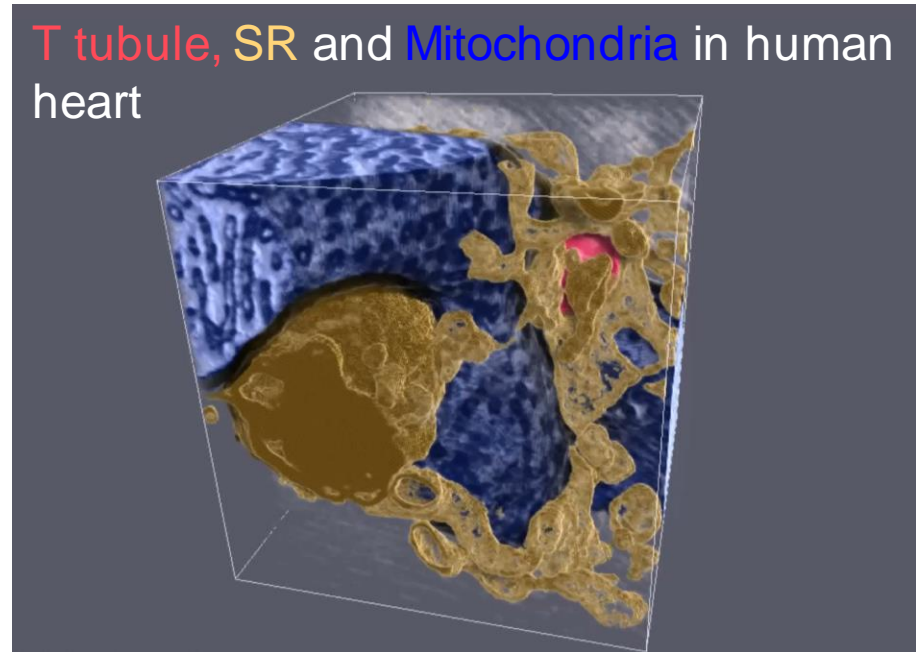
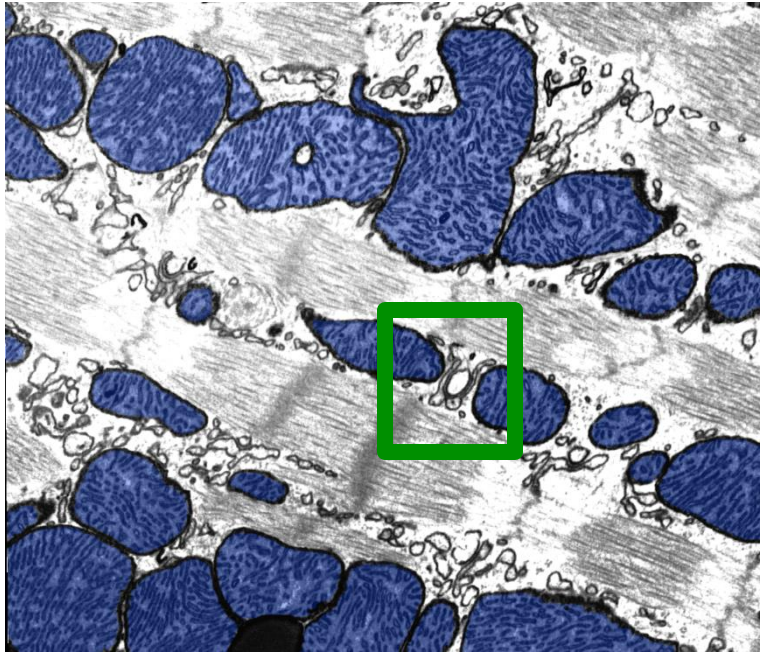




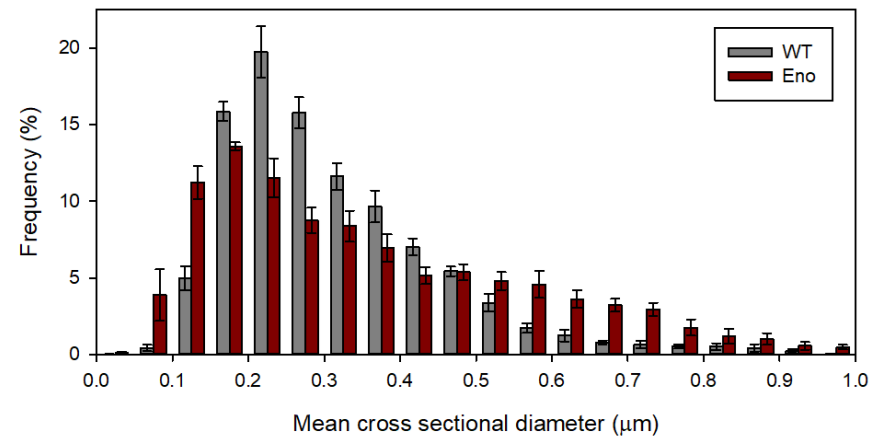


FIB-SEM had a bad year in terms of downtimes. At least, we could get some literal insights, what's under the hood....

Still the flow of astonishing structures and quantification has started



Dendrite mito transverse sections





And the Data Science Infrastructure for FIB-SEM analysis has been established under Dave's lead

**Our Team: Diverse Backgrounds and Expertise**

**MitoCare Director**  
Gyorgy Hajnoczky

**Analysis Team**

David Weaver – MitoCare Bioinformatician  
(Director of Technology Development 2014-2022)

**Operational Arm**

Prahlad Menon – Jefferson Data Science Engineer  
Aron Andresi – MitoCare Data Scientist (starting 2023)

**Experimental Arm**

Vijay Rajagopal – Univ. of Melbourne, Biomedical Engineering  
U. Melbourne Ph.D. student, starting sometime in 2023?

**FIB-SEM Operations Team**

Gyorgy Csordas, PI and Director of Electron Microscopy  
Prashant Badjugar, FIB-SEM operator

**Biologists:** PIs, Post-Docs, Grad Students

Linker mouse agility  
and tail-strength demo





## **Enhanced mitochondria-SR tethering triggers adaptive cardiac muscle remodeling.**

Zuzana Nichtová PhD<sup>1</sup>, Celia Fernandez-Sanz PhD<sup>2,6</sup>, Sergio De La Fuente PhD<sup>2,6</sup>,  
Yuexing Yuan PhD<sup>2</sup>, Stephen Hurst PhD<sup>1</sup>, Sebastian Lanvermann PhD<sup>2</sup>, Hui-Ying Tsai  
MS<sup>2</sup>, David Weaver MS<sup>1</sup>, Ariele Baggett MS<sup>1</sup>, Christopher Thompson<sup>3</sup>, Cedric Bouchet-  
Marquis PhD<sup>3</sup>, Péter Várnai MD, PhD<sup>4</sup>, Erin L Seifert PhD<sup>1</sup>, Gerald W Dorn II MD<sup>5</sup>, Shey-  
Shing Sheu PhD<sup>2</sup>, György Csordás MD<sup>1</sup>



Revision submitted to *Circulation Research*



## Publications of the year from the Hajnoczky lab

Katona M, Bartók Á, Nichtova Z, Csordás G, Berezhnaya E, Weaver D, Ghosh A, Várnai P, Yule DI, Hajnóczy G. Capture at the ER-mitochondrial contacts licenses IP3 receptors to stimulate local Ca<sup>2+</sup> transfer and oxidative metabolism. **Nat Commun**. 2022 Nov 9;13(1):6779. PMID: 36351901; PMCID: PMC9646835.

Paillard M, Huang KT, Weaver D, Lambert JP, Elrod JW, Hajnóczy G. Altered composition of the mitochondrial Ca<sup>2+</sup> uniporter in the failing human heart. **Cell Calcium**. 2022 Jul;105:102618. doi:10.1016/j.ceca.2022.102618. PMID: 35779476.

Singh R, Bartok A, Paillard M, Tyburski A, Elliott M, Hajnóczy G. Uncontrolled mitochondrial calcium uptake underlies the pathogenesis of neurodegeneration in MICU1 -deficient mice and patients. **Sci Adv**. 2022 Mar 18;8(11):eabj4716. PMID: 35302860; PMCID: PMC8932652.

Çoku J, Booth DM, Skoda J, Pedrotty MC, Vogel J, Liu K, Vu A, Carpenter EL, Ye JC, Chen MA, Dunbar P, Scadden E, Yun TD, Nakamaru-Ogiso E, Area-Gomez E, Li Y, Goldsmith KC, Reynolds CP, Hajnoczky G, Hogarty MD. Reduced ER-mitochondria connectivity promotes neuroblastoma multidrug resistance. **EMBO J**. 2022 Apr 19;41(8):e108272. PMID: 35211994; PMCID: PMC9016347.

Márta K, Booth D, Csordás G, Hajnóczy G. Fluorescent protein transgenic mice for the study of Ca<sup>2+</sup> and redox signaling. **Free Radic Biol Med**. 2022 Mar;181:241-250. PMID: 35158029; PMCID: PMC8988923.

Booth DM, Várnai P, Joseph SK, Hajnóczy G. Fluorescence imaging detection of nanodomain redox signaling events at organellar contacts. **STAR Protoc**. 2022 Jan 20;3(1):101119. PMID: 35098166; PMCID: PMC8783204.

Cartes-Saavedra B, Macuada J, Lagos D, Arancibia D, Andrés ME, Yu-Wai-Man P, Hajnóczy G, Eisner V. OPA1 Modulates Mitochondrial Ca<sup>2+</sup> Uptake Through ER-Mitochondria Coupling. **Front Cell Dev Biol**. 2022 Jan 3;9:774108. PMID: 35047497; PMCID: PMC8762365.

Monteith AJ, Miller JM, Beavers WN, Maloney KN, Seifert EL, Hajnoczky G, Skaar EP. Mitochondrial Calcium Uniporter Affects Neutrophil Bactericidal Activity during Staphylococcus aureus Infection. **Infect Immun**. 2022 Feb 17;90(2):e0055121. PMID: 34871043; PMCID: PMC8853686.



# Holiday Party 2022 with Trivia and Ugly Sweater competition





# The Ugly Sweater Competitors





# The 2022 Trivia Champions with the Golden Pipette and Dave and Bradley, the Masters of the Ceremony



Mit⑈Care

wishes you

Happy and  
Productive 2023!

