**Ashley Solmonson, Ph.D.**

Assistant Professor

Cecil H. and Ida Green Center for Reproductive Biology Sciences and

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EDUCATION

*2011 – 2016* **Ph.D.,** Cell and Molecular Biology

University of Texas**,** Austin, Texas

*Thesis:* ***Molecular mechanisms opposing obesity and skin cancer in response to UCP3 overexpression in epidermis***

Mentor: Edward Mills, Ph.D. (deceased)

*2003 – 2007* **B.Sc.** Biology with Chemistry minor

Sam Houston State University, Huntsville, Texas

RESEARCH TRAINING

*2023-present* **Assistant Professor**

Cecil H. and Ida Green Center for Reproductive Biology Science

UT Southwestern Medical Center, Dallas, Texas

*2021-2023* **Assistant Instructor**

Children’s Medical Center Research Institute

UT Southwestern Medical Center, Dallas, Texas

*2016 – 2021* **Postdoctoral Fellow**

Genetic and Metabolic Disease Program, Children’s Medical Center Research Institute

UT Southwestern Medical Center, Dallas, Texas

Mentor: Dr. Ralph DeBerardinis, M.D., Ph.D.

*2011 – 2016* **Ph.D. Candidate/Graduate Student**

Institute of Cell and Molecular Biology, University of Texas – Austin, Texas

Mentor: Dr. Edward Mills Ph.D. (deceased)

*2010 – 2011* **Research Engineer/Scientist Assistant**

Department of Biochemistry, University of Texas – Austin, Texas

Laboratory of Dr. Dean Appling Ph.D.

FEATURED PUBLICATIONS

1. Laura D. Brown, Paul J. Rozance, Dong Wang, Evren C. Eroglu, Randall B. Wilkening, **Ashley Solmonson**, Stephanie R. Wesolowski. Increased hepatic glucose production with lower oxidative metabolism in the growth-restricted fetus. ***Accepted at Journal of Clinical Investigation Insight January 2024.***
2. Niranjan Venkateswaran, Yi-Heng Hao**\***, **Ashley Solmonson\***, M.Carmen Lafita-Navarro**\***, Ilgen Mender**\***, Jessica Kilgore, Isabella N. Brown, Jiwoong Kim, Yuming Xia, Andrew Lemoff, Nick V Grishin, Lisa Kinch, Lin Xu, Jerry Shay, Ralph J DeBerardinis, Hao Zhu, Noelle Williams, Maralice Conacci-Sorrell. Tryptophan restriction blocks MYC-driven tumorigenesis by inhibiting growth pathways and reprograms tumor cells to rely on lipolysis ***Accepted at Nature Communications February 2024***  **\*equal contribution**
3. Ivan Menendez-Montes, Consuelo Marin-Vicente, Shibani Mukherjee, Mahmoud Salama Ahmed, Manuel Jose Gomez, Chukwuemeka George Anene-Nzelu, Mick Lee, **Ashley Solmonson**, Shah R Ali, Abdallah Elnwasany, Nicholas T Lam, Suwannee Thet, Enrique Calvo, Alisson C Cardoso, Ana Helena M Pereira, Feng Xiao, Ping Wang, Ngoc Uyen Nhi Nguyen, Ching-Cheng Hsu, Ralph DeBerardinis, Roger Sik-Yin Foo, Michael Kinter, Luke Szweda, Aroumougame Asaithamby, Jose Antonio Enriquez, Miguel Torres, Jesus Vazquez, and Hesham A. Sadek. Mitochondria Directly Interact with the Nuclear Pore Complex to Regulate Nuclear Energetics. ***Under revision at Nature February 2024.***
4. Nawas AF, **Solmonson A**, Gao B, DeBerardinis RJ, Minna JD, Conacci-Sorrell M, Mendelson CR. IL-1β mediates the induction of immune checkpoint regulators IDO1 and PD-L1 in lung adenocarcinoma cells. **Cell Commun Signal**. (2023) Nov 20;21(1):331. doi: 10.1186/s12964-023-01348-1. PMID: 37985999; PMCID: PMC10658741.
5. Tippetts TS, Sieber MH, **Solmonson A**. Beyond energy and growth: the role of metabolism in developmental signaling, cell behavior and diapause. Development. 2023 Oct 15;150(20):dev201610. doi: 10.1242/dev.201610. Epub (2023) Oct 26. PMID: 37883062; PMCID: PMC10652041.
6. Ahmed MS, Farag AB, Boys IN, Wang P, Menendez-Montes I, Nguyen NUN, Eitson JL, Ohlson MB, Fan W, McDougal MB, Mar K, Thet S, Ortiz F, Kim SY, **Solmonson A**, Williams NS, Lemoff A, DeBerardinis RJ, Schoggins JW, Sadek HA. FDA approved drugs with antiviral activity against SARS-CoV-2: From structure-based repurposing to host-specific mechanisms. **Biomed Pharmacother**. (2023) Jun;162:114614. doi: 10.1016/j.biopha.2023.114614. Epub 2023 Mar 28. PMID: 37068330; PMCID: PMC10043961.
7. Bryn D. Webb1, Sara M. Nowinski, **Ashley Solmonson#**, Jaya Ganesh, Richard J. Rodenburg, João Leandro, Anthony Evans, Hieu S. Vu, Thomas P. Naidich, Bruce D. Gelb, Ralph J DeBerardinis, Jared Rutter, Sander M. Houten. Recessive pathogenic variants in MCAT cause combined oxidative phosphorylation deficiency. **Elife. (**2023) Mar 7;12:e68047. doi: 10.7554/eLife.68047. PMID: 36881526 **#corresponding author**
8. Panayotis Pachnis, Zheng Wu, Brandon Faubert, Alpaslan Tasdogan, Wen Gu, Spencer Shelton, **Ashley Solmonson**, Aparna D. Rao, Akash K. Kaushik, Thomas J. Rogers, Jessalyn M. Ubellacker, Collette A. LaVigne, Chendong Yang, Bookyung Ko, Vijayashree Ramesh, Jessica Sudderth, Lauren G. Zacharias, Misty S. Martin-Sandoval, Duyen Do, Thomas P. Mathews, Zhiyu Zhao, Prashant Mishra, Sean J. Morrison, Ralph J. DeBerardinis. In vivo isotope tracing reveals a requirement for the electron transport chain in glucose and glutamine metabolism by tumors. (2022) ***Science Advances.*** *Sep 2;8(35):eabn9550. doi: 10.1126/sciadv.abn9550. PMID: 36044570*
9. **Solmonson A**, Faubert B, Gu W, Rao A, Cowdin MA, Menendez-Montes I, Kelekar S, Rogers TJ, Pan C, Guevara G, Tarangelo A, Zacharias LG, Martin-Sandoval MS, Do D, Pachnis P, Dumesnil D, Mathews TP, Tasdogan A, Pham A, Cai L, Zhao Z, Ni M, Cleaver O, Sadek HA, Morrison SJ, DeBerardinis RJ. Compartmentalized metabolic activities support midgestation mammalian development. (2022) ***Nature***. 604(7905):349-353. PMID: 35388219
10. Ni M, Black LF, Pan C, Vu H, Pei J, Ko B, Cai L, **Solmonson A**, Yang C, Nugent KM, Grishin NV, Xing C, Roeder E, DeBerardinis RJ. Metabolic impact of pathogenic variants in the mitochondrial glutamyl-tRNA synthetase EARS2. (2021) ***Journal of Inherited Metabolic Diseases***. 44(4):949-960. PMID: 33855712.
11. Tran DH, Kesavan R, Rion H, Soflaee MH, **Solmonson A**, Bezwada D, Vu HS, Cai F, Phillips JA 3rd, DeBerardinis RJ, Hoxhaj G. Mitochondrial NADP+ is essential for proline biosynthesis during cell growth. (2021) ***Nature Metabolism***. 3(4):571-585. PMID: 33833463.
12. Nowinski SM, **Solmonson A**, Rusin SF, Maschek JA, Bensard CL, Fogarty S, Jeong MY, Lettlova S, Berg JA, Morgan JT, Ouyang Y, Naylor BC, Paulo JA, Funai K, Cox JE, Gygi SP, Winge DR, DeBerardinis RJ, Rutter J. Mitochondrial fatty acid synthesis coordinates oxidative metabolism in mammalian mitochondria. (2020) ***Elife***. 17;9. PMID: 32804083
13. Faubert B\*, **Solmonson A\***, DeBerardinis RJ. Metabolic reprogramming and cancer progression. (2020) ***Science***. 368(6487). PMID: 32273439. **\*equal contribution**
14. Tasdogan A, Faubert B, Ramesh V, Ubellacker JM, Shen B, **Solmonson A**, Murphy MM, Gu Z, Gu W, Martin M, Kasitinon SY, Vandergriff T, Mathews TP, Zhao Z, Schadendorf D, DeBerardinis RJ, Morrison SJ. Metabolic heterogeneity confers differences in melanoma metastatic potential. (2020) ***Nature***. 577(7788):115-120. PMID: 31853067.
15. Ni M, **Solmonson A**, Pan C, Yang C, Li D, Notzon A, Cai L, Guevara G, Zacharias LG, Faubert B, Vu HS, Jiang L, Ko B, Morales NM, Pei J, Vale G, Rakheja D, Grishin NV, McDonald JG, Gotway GK, McNutt MC, Pascual JM, DeBerardinis RJ. Functional Assessment of Lipoyltransferase-1 Deficiency in Cells, Mice, and Humans. (2019) ***Cell Reports***. 27(5):1376-1386.e6.  PMID: 31042466.
16. **Solmonson A**, DeBerardinis RJ. Lipoic acid metabolism and mitochondrial redox regulation. (2018) ***Journal of Biological Chemistry*** 293(20):7522-7530.  PMID: 29191830. *Invited Review.*
17. Lu X\*, **Solmonson A\***, Lodi A, Nowinski SM, Sentandreu E, Riley CL, Mills EM, Tiziani S. The early metabolomic response of adipose tissue during acute cold exposure in mice. (2017) ***Scientific Reports*** 7(1):3455. PMID: 28615704. **\*equal contribution**
18. Riley CL, Dao C, Kenaston MA, Muto L, Kohno S, Nowinski SM, **Solmonson AD**, Pfeiffer M, Sack MN, Lu Z, Fiermonte G, Sprague JE, Mills EM. The complementary and divergent roles of uncoupling proteins 1 and 3 in thermoregulation. (2016) ***The Journal of Physiology***. 594(24):7455-7464. PMID: 27647490.
19. **Solmonson A**, Mills EM. Uncoupling Proteins and the Molecular Mechanisms of Thyroid Thermogenesis. (2016) ***Endocrinology***. 157(2):455-62.  PMID: 26636187. *Invited Review.*
20. Nowinski SM**\***, **Solmonson A\***, Rundhaug JE, Rho O, Cho J, Lago CU, Riley CL, Lee S, Kohno S, Dao CK, Nikawa T, Bratton SB, Wright CW, Fischer SM, DiGiovanni J, Mills EM. Mitochondrial uncoupling links lipid catabolism to Akt inhibition and resistance to tumorigenesis. (2015) ***Nature Communications***. 27;6:8137. PMID: 26310111. **\*equal contribution**

**Highlight:** Nowinski SM, **Solmonson A**, Mills EM. Chewing the fat for Akt1 inhibition and oncosuppression. (2016) ***Molecular & Cellular Oncology***. 3(2):e1102795. PMID: 27308618.

1. Hanse EA, Mashek DG, Becker JR, **Solmonson AD**, Mullany LK, Mashek MT, Towle HC, Chau AT, Albrecht JH. Cyclin D1 inhibits hepatic lipogenesis via repression of carbohydrate response element binding protein and hepatocyte nuclear factor 4α. **Cell Cycle**. (2012) Jul 15;11(14):2681-90. PMID: 22751438.
2. Bolusani S, Young BA, Cole NA, Tibbetts AS, Momb J, Bryant JD, **Solmonson A**, Appling DR. Mammalian MTHFD2L encodes a mitochondrial methylenetetrahydrofolate dehydrogenase isozyme expressed in adult tissues. **J Biol Chem**. (2011) Feb 18;286(7):5166-74. PMID: 21163947.

FUNDING

*2023* Faculty Recruitment Startup funds (UTSW): Green Center for Reproductive Biology Sciences, Department of OB/GYN

*2022* CTSA Pilot (UTSW), Placental Metabolic Response to Chronic Hypertension, PI: Christina Herrera

*2018 - 2021* NIH/NICHD Ruth L. Kirschstein Postdoctoral Fellow, F32 HD096786-01, PI: AD Solmonson

HONORS AND RECOGNITION

*2023* **Dean’s Discretionary Award,** UT Southwestern Graduate Awards Committee, UT Southwestern Graduate School of Biomedical Sciences, Dallas, Texas

*2021* **The EMBO Journal First Place Poster Award,** 2nd FUSION Metabolism in Health and Disease Conference, Cancun, Mexico

*2019* **NIH/NICHD Loan Repayment Program Award**

*2017* **Travel Award**, UT Southwestern Postdoctoral Association, Women in Science, and Medicine Advisory Committee

TEACHING

*Spring 2024* **Developmental Principles in Science and Regenerative Medicine,** Placental Development and Disease Lecture, Genetics, Development and Disease Graduate Program, UT Southwestern Medical Center. Course Coordinator: Ondine Cleaver, Ph.D.

*Spring 2023* **Invited Lecturer, PGS384L** Biochemistry and Molecular Toxicology

*Spring 2022* Cancer and Metabolism Lecture, Graduate level

*Spring 2016* University of Texas at Austin,

*Spring 2015* Supervising Faculty: Dr. Karen Vasquez Ph.D.

MENTORSHIP

*2022-present* Trevor Tippetts – Postdoctoral Fellow

*2021-2023*  Amy Tarangelo – Postdoctoral Fellow

*2018* Sherwin Kelekar – M.D./Ph.D. (MSTP) graduate student

*2017* Rebecca McDonald – SURF student

*2016* Robert Harris – M.D./Ph.D. (MSTP) graduate student

SELECTED PRESENTATIONS

*2022* Postdoctoral Rising Stars Symposium – The University of Utah *–* ***Invited Speaker***

*2022* 2nd FUSION Metabolism in Health and Disease Conference –**EMBO Journal First Prize Poster**

*2021* Leducq REDOX webinar – **Invited Speaker**

*2021* HHMI Conference: Metabolism and Disease – Poster presentation

*2021* Janelia Workshop: Integrating Nutrition across Scales – **Invited speaker**

*2021* Keystone Symposia: Metabolic Decisions in Development and Disease – Poster presentation

*2019*Keystone Symposia: Tumor Metabolism – **Invited platform presentation**

*2017* Keystone Symposia: Maternal Fetal Crosstalk – Poster Presentation

AD HOC SCIENTIFIC REVIEWER

*2022-present Nature Chemical Biology*

*2022-present Nature Communications*

*2023-present Nature*