John Snell
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Research Interests

I am studying sequence - based origin of the picornaviral 2A-peptide ribosomal skipping mechanism for use in biotechnology applications.

Skills and Competencies

- Anesthetic use and monitoring in mice
- Mass Spectrometry sample preparation and analysis
- Flow Cytometry
- Statistical Analysis using R software
- Cell culture technique with astrocytes and immortalized cell lines
- Western Blot
- PCR technique

Research Experience

Case Western Reserve University
Dr. Kenneth Matreyek Laboratory
December 2022 – Present

Position: Ph.D. Candidate

Project: Determination of how protein and mRNA sequence impacts ribosomal skipping in the picornaviral 2A peptide.

Seattle Children's Research Institute
Dr. Philip Morgan and Dr. Margaret Sedensky Laboratory
February 2020 – June 2022

Position: Laboratory Technician II

Project: Determination of effects of anesthesia on mitochondrial mutant mouse model, mouse colony maintenance, and metabolic assay assistance

Seattle Children's Research Institute
Dr. Simon Johnson Laboratory
April 2019 – February 2020

Position: Undergraduate Research Volunteer

Project: Assistance with metabolic assays surrounding glutamine handling under mitochondrial mutant conditions

Education

University of Washington, Seattle, WA
Bachelor of Science in Biochemistry
Bachelor of Science in Molecular, Cellular, and Developmental Biology
Graduation Date: June 2020
Cumulative GPA: 3.59

Case Western Reserve University, Cleveland, OH
Systems Biology and Bioinformatics Ph.D.

Anticipated Graduation Date: June 2027
Current

Publications

Shukla N, Roelle SM, **Snell JC**, DelSignore O, Bruchez AM, et al. (2024) Pseudotyped virus infection of multiplexed ACE2 libraries reveals SARS-CoV-2 variant shifts in receptor usage. PLOS Pathogens 20(5): e1012044. https://doi.org/10.1371/journal.ppat.1012044

Spencer K.A., Howe M.N., Mulholland M.T., Truong V., Liao R.W., Chen Y., Setha M., **Snell J.C.**, Hanaford A., James K., Morgan P.G., Sedensky M.M., Johnson S.C. Impact of dietary ketosis on volatile anesthesia toxicity in a model of Leigh syndrome. *Pediatr Anesth*. 2024; 00: 1-10. doi:10.1111/pan.14855

Spencer, K. A., Mulholland, M., **Snell, J**., Howe, M., James, K., Hanaford, A. R., Morgan, P. G., Sedensky, M., & Johnson, S. C. (2023). Volatile anaesthetic toxicity in the genetic mitochondrial disease Leigh syndrome. British journal of anaesthesia, S0007 0912(23)00442-7. Advance online publication. https://doi.org/10.1016/j.bja.2023.08.009

Stokes J, Freed A, Bornstein R, Su KN, **Snell J**, Pan A, Sun GX, Park KY, Jung S, Worstman H, Johnson BM, Morgan PG, Sedensky MM, Johnson SC. Mechanisms underlying neonate-specific metabolic effects of volatile anesthetics. Elife. 2021 Jul 13;10:e65400. doi: 10.7554/eLife.65400. PMID: 34254587; PMCID: PMC8291971.

Stokes, J. C., Bornstein, R. L., James, K., Park, K. Y., Spencer, K. A., Vo, K., **Snell, J. C**., Johnson, B. M., Morgan, P. G., Sedensky, M. M., Baertsch, N. A., & Johnson, S. C. (2022). Leukocytes mediate disease pathogenesis in the Ndufs4(KO) mouse model of Leigh syndrome. JCI insight, 7(5), e156522. https://doi.org/10.1172/jci.insight.156522

Bornstein R, James K, Stokes J, Park KY, Kayser EB, **Snell J**, Bard A, Chen Y, Kalume F, Johnson SC. Differential effects of mTOR inhibition and dietary ketosis in a mouse model of subacute necrotizing encephalomyelopathy. Neurobiol Dis. 2022 Feb;163:105594. doi: 10.1016/j.nbd.2021.105594. Epub 2021 Dec 20. PMID: 34933094.

Poster Presentations

Development of an *in vitro* Assay to Assess the Impact of Mitochondrial Dysfunction on Cerebellar Metabolic Flux, Seattle Children's Research Institute, 3rd Annual SCRI Research Symposium for Postdocs and Students, Poster co-presented, November 7, 2019

The Impact of Volatile Anesthetics on Metabolic Sequelae in a Genetic Mitochondrial Disease Model, UW Anesthesiology and Pain Medicine, 13th Annual Academic Evening, Poster presented, October 5, 2021

The Impact of Volatile Anesthetics on Metabolic Sequelae in a Genetic Mitochondrial Disease Model, Seattle Children's Research Institute Center for Integrative Brain Research, 2021 SCRI CIBR Retreat, Poster presented, December 17, 2021