**Daniel C. Brock**

2021-2022 MD/PhD Applicant

dddbrock4@gmail.com

720-425-0917

AAMC ID: 15075724

Interests: Genetics, bioinformatics, neurodegeneration, mitochondria, aging, nutrition, and precision medicine.

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| **University of Washington**, Seattle, WA  B.S. with Honors and Distinction  Biochemistry, Molecular Cellular & Developmental Biology  cGPA: 3.80, sGPA: 3.78  MCAT: 524 (132, 129, 132, 131) | **Aug/2015 – Jul/2019** |

**Education and Test Scores**

**Research Positions**

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| **Swaroop Lab**, *Retinal Development Genetics & Therapy Section, NEI-NIH*, Bethesda, MD  Postbac IRTA Fellow. Uncovering the role of diet in the epigenetic and transcriptomic aging process in the retina. | **Apr/2020 – Present** |
| **Kaplan Lab**, *Pediatric Oncology Branch, NCI-NIH*, Bethesda, MD  Postbac CRTA Fellow. Genetically engineering mesenchymal stem cells with extracellular matrix remodeling enzymes to target the tumor microenvironment of pancreatic cancer. | **Sep/2019 – Apr/2020** |
| **Brockerhoff Lab**, *Department of Biochemistry, University of Washington*, Seattle, WA  Undergraduate Research Assistant. Measuring calcium flux in the retinal photoreceptor mitochondria. Tracking circadian gene expression changes in zebrafish cone photoreceptors. | **Aug/2017 – Jul/2019** |

**Clinical Experience**

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| **Shadowing:** Clinical Center, NIH, Bethesda, MD  Henry Masur, MD – infectious diseases: 15 hours  Rosandra Kaplan, MD – pediatric oncology: 12 hours  Les Folio, MD – Radiology: 32 hours  Emily Chew, MD – Ophthalmology (virtual): 21 hours | **Oct 2019 – Present** |
| **Sorror Lab**, *Clinical Research Division, Fred Hutch*, Seattle, WA  Summer Volunteer Intern. Monitoring the mental and physical health of elderly acute myeloid leukemia patients. 700 hours | **May/2016 – Nov/2016** |
| **University of Washington Medical Center**, Seattle, WA  Helped transport patients between various units, delivered gifts, and stocked hospital supplies. 252 hours | **Dec/2015 – May/2017** |

**Publications**

1. Smith, A. J., Advani, J., **Brock, D. C.**, Nellissery, J., Gumerson, J. D., Dong, L., Aravind, L., Kennedy, B., & Swaroop, A. (Under revision). DJ-1 like protein GATD3A repairs glyoxal glycation damage preventing AGE accumulation in mitochondria. Currently under revision in *Cell Reports*.
2. Giarmarco, M. M., **Brock, D. C**., Robbings, B. M., Cleghorn, W. M., Tsantilas, K. A., Kuch, K. C., Ge, W., Rutter, K. M., Parker, E. D., Hurley, J. B., & Brockerhoff, S. E. (Nov 2020). Daily mitochondrial dynamics in cone photoreceptors. *Proceedings of the National Academy of Sciences of the United States of America*, 117(46), 28816–28827. <https://doi.org/10.1073/pnas.2007827117>
3. Hutto, R. A., Bisbach, C. M., Abbas, F., **Brock, D. C**., Cleghorn, W. M., Parker, E. D., Bauer, B. H., Ge, W., Vinberg, F., Hurley, J. B., & Brockerhoff, S. E. (Aug 2019). Increasing Ca2+ in photoreceptor mitochondria alters metabolites, accelerates photoresponse recovery, and reveals adaptations to mitochondrial stress. *Cell Death & Differentiation*, 27(3), 1067–1085. <https://doi.org/10.1038/s41418-019-0398-2>

**Presentations**

1. **Brock, D.C.**, Smith, A. J., Advani, J., Nellissery, J., Gumerson, J., Swaroop, A. *Function of the Novel Mitochondrial Deglycase Enzyme GATD3A in the Mouse Retina*. Virtual poster presented at the Association for Research in Vision and Ophthalmology (ARVO), (April 2021).
2. **Brock, D.C.**, Smith, A. J., Advani, J., Nellissery, J., Gumerson, J., Swaroop, A. *Function of the Novel Mitochondrial Deglycase Enzyme GATD3A in the Mouse Retina*. Virtual poster presented at Postbac Poster Day at the NIH, Bethesda, MD (April 2021).
3. **Brock, D. C.** *A Multi-Omics Study of how Dietary Choices Modulate the Epigenome of Aging Mouse Retinas*. Virtual talk given at the Postbac Seminar Series at the NIH, Bethesda, MD (Feb 2021).
4. **Brock, D. C.**, Sowder, M. E., Ju, W., Kaplan, R. N. *Understanding Common Signaling Axes in Osteosarcoma to Target Tumor Cells and the Microenvironment.* Virtual poster presented at Postbac Poster Day at the NIH, Bethesda, MD (April 2020).
5. Giarmarco, M. M., **Brock, D. C.**, Cleghorn, W. M., Tsantilas, K. A., Rutter, K. M., Robbings, B. M., Kuch, K. C., Ge, W., Evans, A., Parker, E., Hurley, H. B., Brockerhoff, S. E. *A day in the life of a photoreceptor: Mitochondrial dynamics support daily energy demands.* Poster presented at the University of Washington Biochemistry Retreat, Bainbridge Island, WA (Sep 2019).
6. **Brock, D. C.**, Giarmarco, M. M., Cleghorn, W. M., Tsantilas, K. A., Kuch, K. C., Ge, W., Brockerhoff, S. E. *Circadian Mitochondrial Dynamics in Zebrafish Cone Photoreceptors*. Poster presented at the University of Washington Undergraduate Research Symposium, Seattle, WA (May 2019).
7. **Brock, D. C.**, Giarmarco, M. M., Cleghorn, W. M., Tsantilas, K. A., Ge, W., Brockerhoff, S. E. *Mitochondrial Biogenesis in Zebrafish Cone Photoreceptors*. Poster presented at the Association for Research in Vision and Ophthalmology (ARVO), Vancouver, BC (April 2019).
8. **Brock, D. C.**, Hutto, R. A., Bisbach, C. M., Brockerhoff, S. E. *Ca2+ Regulation in the Retinal Mitochondria*. Poster presented at the University of Washington Undergraduate Research Symposium, Seattle, WA (May 2018).

**Volunteering and Community Service**

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| **Silver Spring Village**, Silver Spring, MD  Delivered food and prescriptions to elderly during the pandemic | **May/2020 – Present** |
| **Maskeraid and Johns Hopkins University**, Baltimore, MD  Emergency PPE manufacturing and delivery | **Apr/2020 – Present** |
| **Montgomery Parks**, Bethesda, MD  Maintained local trails and parks in Montgomery County | **Jan/2020 – Present** |
| **Washington Trails Association**, Seattle, WA  Maintained Blanca Lake Trail in the Cascade Mountains | **Jul/2016 – Sep/2018** |

**Leadership**

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| **Postbac Committee**, Bethesda, MD  Chair | **Mar/2021 - Present** |
| **University of Washington Pre-Physician Scientist Club**, Seattle, WA  Founder and Alumni Leader | **Jul/2020 – Present** |
| **NIH Bike Club, NIH Hiking Club, NIH Movie Club**, Bethesda, MD  Founder and President  **NIH Postbac Seminar Series**, Bethesda, MD  Co-chair | **May/2020 – Present** |
| **University of Washington Undergraduate Research Leader**, Seattle, WA | **Sep/2018 – Jun/2019** |

**Grants and Awards**

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| **Office of Dietary Supplements Grant** ($100k), coauthored a research grant with a postdoc in the Swaroop Lab. | **Oct/2020 – Present** |
| **Cum Laude**, University of Washington | **Jun/2019** |
| **Distinguished Research in Biochemistry Award**, University of Washington | **Jun/2019** |
| **Undergraduate Research Travel Award** ($500), University of Washington, recipient and first author | **Apr/2019** |
| **Levinson Scholarship** ($7000), University of Washington, recipient and first author | **Sep/2018 – Jun/2019** |