**Taylor S. Harman,** Ph.D.

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**Areas of Specialization**

Human Biology ● High Altitude Adaptation ● Human Evolution ● Exercise Physiology ● Genetics & Epigenetics ● Data Science

**Academic Appointments & Education**

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| 2024 – present | Postdoctoral Research Scholar  Department of Anthropology, Vanderbilt University, Nashville TN  Faculty mentor: Monica Keith, Ph.D. |
| 2019 – 2024 | Ph.D. in Anthropology  Syracuse University, Syracuse NY  Dissertation: “Evolution on High: A comparison of the physiology and narrative representation of two native high altitude populations”  Co-Advisors: Dr. Tom Brutsaert & Dr. Shannon Novak |
| 2017 – 2019 | M.S. in Exercise Science  Syracuse University, Syracuse NY  Thesis: “Epigenetic Changes with Incremental Ascent to High Altitude”  Advisor: Dr. Tom Brutsaert |
| 2014 – 2017 | B.S. in Molecular Biology  University of California, San Diego, La Jolla CA |

**Publications**

***Peer-reviewed Articles***

Brutsaert, T. D., **Harman, T. S.,** Bigham, A. W., Kalker, A., Jorgensen, K. C., Zhu, K. T., Steiner, B. C., Hawkins, E., Day, T. A., Kunwar, A. J., Thakur, N., Dhungel, S., Sherpa, N., & Holmström, P. K. (2024). Larger spleens and greater splenic contraction during exercise may be an adaptive characteristic of Nepali Sherpa at high-altitude. American Journal of Human Biology: The Official Journal of the Human Biology Council, e24090. https://doi.org/10.1002/ajhb.24090

Holmström, P. K., **Harman, T. S.,** Kalker, A., Steiner, B., Hawkins, E., Jorgensen, K. C., Zhu, K. T., Kunwar, A. J., Thakur, N., Dhungel, S., Sherpa, N., Day, T. A., Schagatay, E. K., Bigham, A. W., & Brutsaert, T. D. (2024). Differential splenic responses to hyperoxic breathing at high altitude in Sherpa and lowlanders. Experimental Physiology, EP091579. https://doi.org/10.1113/EP091579

Childebayeva, A., **Harman, T.S.,** Weinstein, J., Day, T.A., Brutsaert, T.D., Bigham, A.W. (2021). Genome-Wide DNA Methylation Changes Associated with High-Altitude Acclimatization During an Everest Base Camp Trek. Frontiers in Physiology.

Lefferts, W.K., DeBlois, J.P., Soriano, J.E., Mann, L., Rampuri, Z., Herrington, B., Thrall, S., Bird, J., **Harman, T.S.**, Day, T.A. and Heffernan, K.S., (2020). Preservation of Neurovascular Coupling to Cognitive Activity in Anterior Cerebrovasculature During Incremental Ascent to High Altitude. High Altitude Medicine & Biology, 21(1), 20-27.

Childebayeva, A., **Harman, T.S.,** Weinstein, J., Goodrich, J., Dolinoy, D., Day, T. A., ... & Brutsaert, T. (2019). DNA methylation changes are associated with an incremental ascent to high altitude. Frontiers in Genetics, 10, 1062

***Conference Papers***

**Harman, Taylor S.**, Pontus K. Holmström, Kelsey J. Jorgensen, Anne Kalker, Melisa Kiyamu, Kimberly T. Zhu, Trevor A. Day, Abigail W. Bigham, and Tom D. Brutsaert. 2022. “Oxygen Transport Phenotypes and the Adaptive Modes of Andean versus Tibetan Highland Native Populations.” American Association of Biological Anthropologists. Submitted October 17, 2022. Accepted December 5, 2022.

Day, Trevor A., Pontus K. Holmström, **Taylor S. Harman**, Bethany Steiner, Ella Hawkins, Anne Kalker, Kelsey J. Jorgensen, et al. 2022. “TONIC SPLENIC CONTRACTION WITH ACCLIMATIZATION TO HIGH-ALTITUDE IN LOWLANDERS COMPARED TO SHERPA: EFFECT OF HYPEROXIA.” In Chateau Lake Louise, Alberta, Canada.

Brutsaert, Tom D., Abigail W. Bigham, Trevor A. Day, **Taylor S. Harman**, and Pontus K. Holmström. 2022. “Factors Affecting the Exercise Performance of Highland Natives in the Andes and Himalayas.” In 8th Chronic Hypoxia Symposium Proceedings. La Paz, Bolivia.

**Harman, T. S.**, Bigham, A. W., Kiyamu, M., Revolledo, G. E., & Brutsaert, T. D. (2020, March). Developmental exposure to high altitude enhances aerobic capacity in hypoxia. In American Journal of Physical Anthropology (Vol. 171, pp. 114-114). 111 River St, Hoboken 07030-5774, NJ USA: Wiley.

DeBlois, J. P., Lefferts, W. K., **Harman, T. S.**, Heffernan, K. S., Day, T. A., & Brutsaert, T. D. (2019). Hypoxic Cerebrovascular Reactivity Does Not Predict Cognitive Function in Mt. Everest Basecamp Trekkers. In Medicine & Science in Sports & Exercise, 51(6), 160.

***In press***

Nicole A. Johnson, Jessica A. Dickenson, Benjamin W.L. Mackenzie, Rodion Isakovich, Anne Kalker, Janne Bouten, Nicholas Strzalkowski, **Taylor S. Harman**, Pontus Holmström, Ajaya J. Kunwar, Nilam Thakur, Sunil Dhungel, Nima Sherpa, Abigail W. Bigham, Tom D. Brutsaert, Trevor A. Day. 2024. “Comparing integrative ventilatory and renal acid-base acclimatization in lowlanders and Tibetan highlanders during ascent to 4300m.” Submitted to: Proceedings of the National Academy of Sciences (PNAS).

***In preparation***

**Taylor S. Harman**, Pontus K. Holmström, Kelsey C. Jorgensen, Anne Kalker,Melisa Kiyamu, Kimberly T. Zhu, Trevor A. Day, Abigail W. Bigham, Tom D. Brutsaert. 2024. “Andean vs Tibetan oxygen transport phenotypes during submaximal and maximal exercise.” Planned submission to: High Altitude Medicine & Biology

**Taylor S. Harman**, Pontus K. Holmström, Kelsey C. Jorgensen, Anne Kalker,Melisa Kiyamu, Kimberly T. Zhu, Trevor A. Day, Abigail W. Bigham, Tom D. Brutsaert. 2024. “Similar flow-mediated dilation responses between Andean and Tibetan highlanders in hypoxia.” Planned submission to: The American Journal of Human Biology.

**Taylor S. Harman** & Shannon A. Novak. 2024. “Science as Storytelling: a case study from the subdiscipline of high altitude adaptation.” Planned submission to: The American Journal of Biological Anthropology.

**Grants and Awards**

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| 2024 | Hypobaric Hypoxia Society Young Investigator Award ($250) |
| 2024 | Finalist – Life Sciences Research Foundation Postdoctoral Fellowship |
| 2024 | Outstanding Teaching Assistant Award |
| 2022 | Maxwell School Dean’s Summer Research Award ($5,500) |
| 2022 | NSF Doctoral Dissertation Research Improvement Grant: Evolution on High – A comparison of the physiology and narrative representation of two native high altitude populations ($25,200) |
| 2021 | Collaboration for Unprecedented Success and Excellence Grant: The association of the *EGLN1* gene with the high aerobic capacity of Nepali Sherpa at high altitude ($24,000) |
| 2021 | Maxwell School Dean’s Summer Research Award ($4,500) |
| 2020 | Graduate Student Organization Travel Grant ($300) |
| 2020 | School of Education Council Travel Grant ($150) |
| 2018 | Sidney W. Young Student Research Award ($1,000) |
| 2017 | Himan Brown Fellowship ($4,300) |
| 2016 | Frontiers for Innovation Scholars Grant ($2,150) |

**Research Projects**

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| 2024 – | Social determinants of allostatic load, maternal health, and birth outcomes in the United States, *Collaborator*  PI: Monica Keith; Co-PIs: Melanie A. Martin, Mulubrhan Mogos  Funding: NSF, University of Washington Center for Studies in Demography and Ecology |
| 2023 – 24 | The adaptive significance of large spleen volume and splenic contraction in Sherpa at high altitude, *Collaborator*  PI: Tom D. Brutsaert; Co-PIs: Abigail Bigham, Trevor A. Day  Funding: NSF |
| 2022 – 24 | Oxygen transport and the evolution of high-altitude adaptation in humans, *Co-PI*  PI: Tom D. Brutsaert  Funding: NSF, Collaboration for Unprecedented Success and Excellence Grant |
| 2018 – 19 | DNA Methylation on Incremental Ascent to High Altitude, *Collaborator*  PI: Abigail Bigham; Co-PI: Ainash Childebayeva  Funding: National Geographic Early Career Award; Marshall Weinberg Award |
| 2016 – 17 | Biological Embedding of Stress in Children of Mexican Immigrants,*Research Assistant*  PI: Amy Non  Funding: Foundation for Child Development Young Scholar Program |
| 2016 | Kastrouli Land & Sea Late Mycenaean Settlement Project, *Research Assistant*  PI: Tom Levy  Funding: University of California Office of the President Catalyst Grant |
| 2014 – 15 | Phage Genomics Research Initiative, *Research Assistant*  PI: Joe Pogliano  Funding: Howard Hughes Medical Institute Science Education Alliance |

**Conference Presentations**

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| 2024 | “Andean versus Tibetan adaptive mechanisms: evidence at rest and during exercise,” Hypobaric Hypoxia Society (HHS) 7th International Leh Symposium. August 7, 2024. (contributed podium) |
| 2023 | “Oxygen transport phenotypes and the adaptive modes of Andean versus Tibetan highland native populations,” American Association of Biological Anthropologists (AABA) Conference, April 19-22, 2023. (contributed podium) |
| 2020 | “Developmental exposure to high altitude enhances aerobic capacity in hypoxia,” American Association of Physical Anthropologists (AAPA) Conference, April 15-18, 2020. (contributed podium) |
| 2017 | **“**CHICOS Project: Epigenetic Signatures on SLC6A4 Suggests Intergenerational Inheritance of Stress Markers,” 30th Annual  UC San Diego Undergraduate Research Conference April 22, 2017. (contributed podium) |
| 2016 | “ArchaeoSTOR: A User-friendly Archaeological Database,” 29th Annual UC San Diego Undergraduate Research Conference, April 23, 2016. (contributed podium) |
| 2015 | “Phage Genomics Research Initiative: Idenfication and Sequencing of the Novel Bacteriophage Kersh,” UC San Diego 7th Annual Biology Research Showcase**,** 2015. (contributed poster) |

**Invited Lectures**

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| 2024 | “Biocultural adaptations to high altitude environments,” in Introduction to Biological Anthropology, Syracuse University. April 10, 2024. |
| 2024 | “Human Adaptation to High Altitude: A Curious Subdiscipline of Biological Anthropology,” in Method and Theory in Biological Anthropology, Syracuse University. March 4, 2024. |
| 2023 | “Biocultural adaptations to high altitude environments,” in Introduction to Biological Anthropology, Syracuse University. April 17, 2023. |
| 2023 | “Life in Diverse Environments: Human Adaptation to High Altitude,” in Human Health & Climate Change, Syracuse University. February 21, 2023. |
| 2022 | “Ventilation and Equilibration,” in the Physiology of Exercise, Syracuse University. October 10, 2022. |
| 2022 | “Human Adaptation to High Altitude,” in Introduction to Biological Anthropology, Syracuse University. April 20, 2022. |
| 2021 | “Epigenetic Changes with Incremental Ascent to High Altitude,” in Method and Theory in Biological Anthropology, Syracuse University. April 6, 2021. |

**Teaching Experience**

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| 2020 – 24 | Syracuse University, Department of Anthropology  Peoples and Cultures of the World (ANT 121), *Teaching Assistant*  Introduction to Biological Anthropology (ANT 131), *Teaching Assistant*  Introduction to Archaeology and Prehistory (ANT 141), *Teaching Assistant* |
| 2017 – 20 | Syracuse University, Department of Exercise Science  Introduction to Exercise Science (EXE 295), *Teaching Assistant*  Physiology of Exercise (EXE 497), *Teaching Assistant*  Environmental Physiology (EXE 500), *Teaching Assistant* |

**Laboratory and Technical Skills**

**Molecular Biology Techniques**

DNA extraction from saliva, buccal swabs, and blood

Gel electrophoresis

Bisulfite treatment of extracted DNA

Polymerase Chain Reaction (PCR) for DNA amplification

Pyrosequencing for the quantification of DNA methylation

Aseptic technique

Bacterial/bacteriophage culture

Spot titers

Microscopy

**Physiological Measurements**

Palpation of heart rate and auscultation of blood pressure

Hypoxic Ventilatory Response (HVR) measurement

Forced vital capacity (FVC) and forced expiratory volume in one second (FEV1)

Oxygen consumption (VO2) and maximal aerobic capacity (VO2max)

Anaerobic capacity via Wingate testing

Body composition via bioelectrical impedance, skinfolds, and air displacement plethysmography

Flow-mediated dilation (FMD) via ultrasound

**Computational**

Proficient inR, RStudio, SPSS, Excel, and ArcGIS

Proficient in univariate and multivariate statistics, linear mixed effects modelling, and proximity analysis

Advanced in data visualization

**Professional Affiliations**

American Anthropological Association

American Association of Biological Anthropologists

National Forensic League

Sigma Xi Scientific Research Honor Society