Waylon J. Hastings

145 Borlaug Building; 498 Olsen Blvd; College Station, TX 77843; whastings2012@gmail.com

Education

Postdoctoral Scholar September 2022-July 2024

Tulane University School of Medicine (Mentor: Stacy Drury)

Postdoctoral Scholar December 2020-August 2022

The Pennsylvania State University

Dual-Title Ph.D. Biobehavioral Health and Bioethics

December 2020

The Pennsylvania State University (Advisor: *Idan Shalev*)

Dissertation: "Measurement of biological age in humans: Approach, comparability, and critical perspective"

M.S. Educational Administration May 2015

Texas A&M University

B.S. Biochemistry & Genetics May 2013

Texas A&M University

Minors: Classical Studies & Chemistry

B.A. Mathematics May 2013

Texas A&M University

Employment

Assistant Professor of Nutrition Aug. 2024-Present

Texas A&M University

Scientific Consultant/Council Advisor

May 2022-Present

Bayer Healthcare, LLC

Ecosystem Contract Writer Nov. 2024-Present

Geocyte, LLC

Publications

<u>Peer-Reviewed Publications</u> (underline = mentored student/staff)

- Wang R, **Hastings WJ**, Saliba JG, Bao D, Huang Y, Maity S, Ahmad OMK, Hu L, Wang S, Fan J, & Ning B (Accepted) Applications of nanotechnology for spatial omics: Biological structures and functions at nanoscale resolution. *ACS Nano*.
- Apsley AT, Ye Q, Caspi A, Chiaro C, Etzel L, **Hastings WJ**, Heim CC, Kozlosky J, Schreier HMC, Shenk CE, Sugden K, & Shalev I (Accepted). Cross-tissue comparison of epigenetic aging clocks in humans. *Aging Cell*.
- Schmunk LJ, Call TP, McCartney DL, Javaid H, **Hastings WJ**, Jovicevic W, Kojadinovic D, Tomkinson N, Zlamalova E, McGee K, Sullivan J, Ovari V, Wishart K, Behrens C, Stone E, Gavrilov M, Thompson R, Jackson T, Lord JM, Stubbs TM, Marioni RE, Martin-Herranz DE (Accepted) A novel framework

- to build biologically interpretable saliva-based DNA methylation biomarkers: quantifying systemic chronic inflammation as a case study. *Aging Cell.* doi: 10.1101/2023/12/21/572866 (*bioRxiv*).
- Ye Q, Apsley AT, **Hastings WJ**, Etzel L, Newschaffer C, Shalev I (2024) Parental age at birth, telomere length, and autism spectrum disorders in the UK Biobank cohort *Autism Research*. doi: 10.1002/aur.3258.
- Kinsey M, Shankar A, **Hastings WJ**, Lichtveld M, <u>Martin NA</u>, <u>Maglia Batista B</u>, Gokoel A, Sairras S, McLester-Davis LWY, Drury SS, & Zijlmans W (2024) The utility of the Child Development Review in Suriname: validating a neurodevelopmental screener for use in a Low- to Middle- Income Country. *Global Pediatrics*. doi: 10.1016/j.gpeds.2024.100225.
- Etzel L, Apsley AT, **Hastings WJ**, Ye Q, & Shalev I (2024) Early life adversity is associated with differential gene expression in immune cells: A cluster-based analysis across an acute psychosocial stressor. *Brain, Behavior, and Immunity*. doi: 10.1016/j.bbi.2024.04.035.
- Hastings WJ, Ye Q, Wolf S, Ryan C, Das SK, Huffman KM, Kobor MS, Kraus WE, MacIsaac JL, Martin CK, Racette SB, Redman LM, Belsky DW, & Shalev I (2024). Effect of long-term caloric restriction on telomere length in healthy adults: CALERIETM trial analysis. *Aging Cell*. doi: 10.1111/acel.14149.
- Martin NA, McLester-Davis LWY, Roy TR, Magruder MG, **Hastings WJ**, Drury SS (2024) Monochrome multiplex quantitative PCR telomere length measurement. *Journal of Visualized Experiments*. doi: 10.3791/66545.
- Wolf SE, **Hastings WJ**, Ye Q, Etzel L, Apsley AT, Chiaro C, Heim CM, <u>Heller T</u>, Noll JG, O'Donnell KJ, Schreier HMC, Shenk CE, Shalev I, (2024) Cross-tissue comparison of telomere length and DNA quality metrics among individuals aged 8 to 70 years. *PLOS One*. doi:10.1371/journal.pone.0290918.
- Ye Q, Apsley AT, Etzel L, **Hastings WJ**, <u>Kozlosky J</u>, Walker C, Wolf S, & Shalev I, (2023) Telomere length and chronological age across the human lifespan: a systematic review and meta-analysis of 414 study samples including 743,019 individuals. *Aging Research Reviews*. doi: 10.1016/j.arr.2023.102031.
- Apsley AT, Ye Q, Etzel L, Wolf S, **Hastings WJ**, Mattern BC, Siegel SR, & Shalev I (2023) Biological stability of DNA methylation measurements over varying intervals of time and in the presence of acute stress. *Epigenetics*. doi: 10.1080/15592294.2023.2230686.
- McLester-Davis LWY, Estrada P, **Hastings WJ**, Kataria LA, Martin NA, Siebeneicher JT, Tristana RI, Mayne CV, Horlick RP, O'Connell SS, & Drury SS (2023) A review and meta-analysis: Cross-tissue telomere length correlations in health humans. *Aging Research Reviews*. doi: 10.1016/j.arr.2023.101942.
- Apsley AT, Etzel L, **Hastings WJ**, Heim CM, Noll JG, O'Donnell KJ, Schreier HMC, Shenk CE, Ye Q, & Shalev I (2023). Investigating the effects of maltreatment and acute stress on the concordance of blood and DNA methylation methods of estimating immune cell proportions. *Clinical Epigenetics*. doi: 10.1186/s13148-023-01437-5.
- Waziry R, Ryan CP, Corcoran DL, Huffman KM, Kobor MS, Kothari M, Graf GH, Kraus VB, Kraus WE, Lin DTS, Pieper CF, Ramaker ME, Bhapkar M, Das SK, Ferrucci L, **Hastings WJ**, Kebbe M, Parker DC, Racette SB, Shalev I, Schilling B, & Belsky DW (2023) Effect of long-term caloric restriction on DNA methylation measures of biological aging in healthy adults: CALERIE Trail Analysis. *Nature Aging*. doi: 10.1038/s43587-022-00357-y.

- **Hastings WJ**, Etzel L, Heim C, Noll JG, Rose EJ, Schreier HMC, Shenk CE, <u>Tang X</u>, & Shalev I (2022) Comparing qPCR and DNA methylation-based measurements of telomere length in a high-risk pediatric cohort. *Aging*. doi: <u>10.18632/aging.203849</u>.
- Etzel L, Apsley AT, Mattern BC, **Hastings WJ**, <u>Heller T</u>, Ram N, Siegel SR, & Shalev I (2022). Immune cell dynamics in response to an acute laboratory stressor: A within-person between-group analysis of the biological impact of early life adversity. *Stress*. doi: <u>10.1080/10253890.2022.2148100</u>.
- Bolhuis E, Belsky J, Frankenhuis WE, Shalev I, **Hastings WJ**, Tollennar MS, O'Donnell KJ, McGill MG, Pokhvisneva I, Lin DTS, Kobor MS, de Weerth C, & Beijers R (2022). Attachment insecurity and the biological embedding of reproductive strategies: Investigating the role of cellular aging. *Biological Psychology*. doi: 10.1016/j.biopsycho.2022.108446.
- Bolhuis, E, Belsky J, Frankenhuis WE, Shalev I, **Hastings WJ**, Tollenaar MS, O'Donnell KJ, McGill MG, Pokhvisneva I, Meaney MJ, Lin DTS, MacIsaac JL, Kobor MS, de Weerth C,& Beijers R (2022) Cumulative risk exposure and child cellular aging in a Dutch low-risk community sample. *Psychophysiology*. doi: 10.1111/psyp.14205.
- Etzel, L, **Hastings WJ**, Hall MA, Heim CM, Meaney MJ, Noll JG, O'Donnell KJ, Rose EJ, Schreier HMC, Shenk CE, & Shalev I (2022) Obesity and accelerated epigenetic aging in a high-risk cohort of children. *Scientific Reports*. doi: 10.1038/s41598-022-11562-5.
- **Hastings WJ**, Eisenberg DTA, & Shalev I (2021) Impact of amplification efficiency approaches on telomere length measurement via qPCR. *Frontiers in Genetics*. doi: 10.3389/fgene.2021.728603.
- **Hastings WJ**, Almeida DM, & Shalev I (2021) Conceptual and analytical overlap between allostatic load and systemic biological aging measures: Analyses from the National Survey of Midlife Development in the United States. *Journals of Gerontology Series A.* doi: 10.1093/Gerona/glab187.
- Shirazi TN*, **Hastings WJ***, Rosinger AY, & Ryan CP (2020) Parity predicts biological age acceleration in post-menopausal women: Evidence from NHANES 1999-2010. *Scientific Reports*, *10*(1), 1-13. doi: 10.1038/s41598-020-77082-2.
- **Hastings WJ**, Eisenberg DTA, & Shalev I (2020) Uninterruptible power supply improves precision and external validity of telomere length measurement via qPCR. *Experimental Results*. doi: 10.1017/exp.2020.58.
- Etzel L, **Hastings WJ**, Mattern BC, Oxford ML, Heim C, Putnam FW, Noll JG, & Shalev I (2020) Intergenerational transmission of childhood trauma? Testing cellular aging in mothers exposed to sexual abuse and their children. *Psychoneuroendocrinology*, *120*. doi: 10.1016/j.psyneuen.2020.104781.
- Shalev I, **Hastings WJ**, Etzel L, Hendrick KA, Israel S, Russell M, Siegel SR, & Zinoble M (2020) Investigating the impact of early-life adversity on physiological, immune, and gene expression responses to acute stress: A pilot feasibility study. *PLoS One 15*(4), doi: 10.1371/journal.pone.0221310.
- Beijers R, Hartman S, Shalev I, **Hastings WJ**, Mattern BC, de Weerth C, & Belsky J (2020) Testing three hypotheses about effects of sensitive-insensitive parenting on telomeres. *Developmental Psychology*, 56(2), 237-250, doi: 10.1037/dev0000879.
- **Hastings WJ**, Shalev I, & Belsky DW (2019). Comparability of biological aging measures in the National Health and Nutrition Examination Study, 1999-2001. *Psychoneuroendocrinology*, *106*, 171-178, doi: 10.1016/j.psyneuen.2019.03.012.

- **Hastings WJ**, Chang AM, Ebstein RP, & Shalev I (2018). Neuroendocrine stress response is moderated by sex and sex hormone receptor polymorphisms. *Hormones and Behavior*, *106*, 74-80, doi: 10.1016/j.yhbeh.2018.10.002.
- **Hastings WJ**, Shalev I, & Belsky DW (2017). Translating measures of biological aging to test effectiveness of geroprotective interventions: What can we learn from research on telomeres?. *Frontiers in Genetics*, 8, 164, doi: 10.3389/fgene.2017.00164.
- **Hastings WJ**, Ritter MA, Chamakura KR, & Everett GFK (2013). Complete genome of Bacillus megaterium Siphophage Staley. *Genome announcements*, *1*(6), doi: 10.1128/genomeA.00864-13.

Book Chapters

- Shalev I & **Hastings WJ** (2019). Psychosocial Stress and Telomere Regulation. In AC Miu, JR Homberg, & KP Lesch (Ed.), *Genes, Brain, and Emotions: From Resilience to Psychopathology* (pp. 247-261). Oxford, UK: Oxford University Press. doi: 10.1093/oso/9780198793014.003.0017.
- Shalev I & **Hastings WJ** (2018). Telomere. In M. Bornstein (Ed.), *The SAGE encyclopedia of lifespan human development* (pp. 2220-2222). Thousand Oaks, CA: SAGE Publications Ltd. doi: 10.4135/9781506307633.n822.
- Shalev I & **Hastings WJ** (2017) Psychological Stress and Cellular Aging. In O Braddick (Ed.), *Oxford Research Encyclopedia of Psychology*. Oxford, UK: Oxford University Press. doi: 10.1093/acrefore/9780190236557.013.131.

Submitted Publications

- Lin J, Verhulst S, Fernandez Alonso C, Dagnall C, Shahinaz G, **Hastings WJ**, Lai TP, Shalev I, Wang Y, Zheng, YL, Epel E, & Drury SS (Under Review). Effects of DNA extraction, DNA integrity, and laboratory on the precision of qPCR-based telomere length measurement a multi-lab impartial study. *GeroScience*. doi: 10.1101/2022.12.14.520438 (*bioRxiv*).
- Ye Q, Apsley AT, Etzel L, **Hastings WJ**, Chiaro C, Claus E, Fisher Z, Heim C, Noll JG, Schreier HMC, & Shalev I (Submitted) Physiological composites of biological aging in a high-risk pediatric cohort: Examining the impact of maltreatment exposure and pubertal development. *PNAS*.
- Covey S, Roy TR, Kandalaft J, Albus K, Siebeneicher J, Lindrose A, Schieffelin JS, **Hastings WJ**, & Drury SS (Submitted) Retinal microvasculature associations with pediatric health: A scoping review.

 BMC Pediatrics.
- Kim Y, **Hastings WJ**, Ning B. (In Preparation) Exosomes in cancer diagnosis and treatment. *Biological Procedures Online*.

Invited Talks

- **Hastings WJ** (December 2024) *Biological aging: A tool to empower epidemiological and clinical research.*Rutgers School of Public Health Epidemiology and Biostatistics Department Lecture Series. Online.
- Roy T & **Hastings WJ** (December 2024) *Telomere length assessment and quality control in the Bucharest early intervention project*. BEIP Data Meeting. Boston, MA.
- **Hastings WJ** & Behrens C (November 2024) *Translational biomarkers of inflammaging for precision health.* Biomarkers of Aging Consortium. Boston, MA.
- **Hastings WJ** & Ho E (June 2024) *Age is more than a number the impact of lifestyle on cellular aging.* Bayer Consumer Health LinkedIn Live. Online.
- **Hastings WJ** (May 2024) Leveraging COMETS to explore impacts of caloric restriction on metabolomic aging. Consortium of Metabolomic Studies NCI/NCATS Virtual Workshop. Online.
- **Hastings WJ,** Fox N, Heim CM, Nelson C, Noll JG, Schreier HMC, Shenk CE, Zeanah C, Drury SS, & Shalev I (March 2023) *Investigating biological aging and pubertal development in two high-risk pediatric cohorts*. Society for Research in Child Development. Salt Lake City, UT.

Presentations

<u>Oral</u>

- **Hastings WJ** (September 2024) *Early career foresights in metabolomic epidemiology*. From Insights to Foresight in Metabolomic Epidemiology: 10 Years of COMETS and Beyond All Hands Meeting. Online
- **Hastings WJ** (March 2023) *Absolute telomere length quantification with CRISPR-Cas12a*. Telomere Research Network Annual Meeting. Durham, NC.
- **Hastings WJ**, Shalev I, & Almeida DM (November 2020) *Allostatic load and biological aging in the MIDUS National Survey*. Gerontological Society of America. Online.
- **Hastings WJ**, Eisenberg DTA, & Shalev I (November 2020) *Uninterruptible power supply improves telomere length measurement via qPCR*. Gerontological Society of America. Online.
- **Hastings WJ**, Shalev I, & Belsky DW (August 2019). *Comparability of biological aging measures in the National Health and Nutrition Examination Study, 1999-2001*. Psychoneuroendocrinology. Milan, Italy.
- **Hastings WJ**, Shalev I, & Belsky DW (July 2019). *Measurement of Biological Age in a Representative Sample of US Adults*. Gordon Research Seminar on the Biology of Aging. Newry, ME.
- **Hastings WJ** (May 2017) *Investigating Stress, Health, and Aging*. Penn State Life Science Symposium. University Park, PA.
- Shalev I, **Hastings WJ**, & Siegel SR (September 2016). *Early-life Adversity is Associated with Differential Gene Expression Response to Acute Psychological Stress*. Psychoneuroendocrinology. Miami, FL.
- Shehane MR, Bailey K, Woodruff TR, & **Hastings WJ** (March 2015). *Synthesizing the Undergraduate Cocurricular Experience in a Leadership Certificate Program*. Student Affairs Administration in Higher Education (NASPA). New Orleans, LA.

Poster

Hastings WJ (October 2024) *Emerging opportunities and obstacles in metabolomic epidemiology: A ChatGPT Study*. Metabolomics Society of North America Annual Conference. Tampa, FL.

- Temprosa M, Kelly R, **Hastings WJ**, Albanes D, Gadgil M, Allred N, Wheeler B, Park B, Chen KL, Crotty K, Crotti LB, Moore S, Mathe EA (June 2024) *Empowering metabolomic epidemiological insights:*COMETS Analytics v3.0 unveils meta-analyses and practical case studies for diabetes, lung disease, and cancer research in single- and multi-cohort projects from the Consortium of Metabolomics Studies (COMETS). Metabolomics Society International Conference. Osaka, Japan.
- Schmunk LJ, Call PT, **Hastings WJ**, McGee K, Sullivan J, Jackson T, Lord JM, & Martin-Herranz DE (September 2023). *A novel epigenetic biomarker of chronic inflammation*. Aging Research and Drug Discovery Meeting. Copenhagen, Denmark.
- **Hastings WJ**, Asghar M, Belsky DW, Carroll J, Hagg S, Justice J, Kiecolt-Glaser J, Lustig AJ, McLester-Davis LWY, Pierce B, Rehkopf D, Ryan C, & Shalev I for the Telomere Research Network Aging Subcommittee (December 2021). *A Critical Appraisal of Telomeres for Studies of Human Aging*. Cold Spring Harbor Meeting on Telomeres and Telomerase. Online.
- **Hastings WJ**, Shalev I, & Belsky DW (September 2018). *Comparing Measures of Biological Age on Morbidity and Functional Outcomes in a Nationally Representative Sample of US Adults*. Psychoneuroendocrinology, 100, S14.
- **Hastings WJ**, Siegel SR, & Shalev I (March 2018). *Early-Life Adversity is Associated with Diverse Dimensions of Cellular and Neuroendocrine Stress Response*. Penn State Graduate Exhibition. University Park, PA.
- **Hastings WJ**, Siegel SR, & Shalev I (September 2016). *Differential CD8+ Response to Stress is Moderated by Exposure to Early-Life Adversity*. Psychoneuroendocrinology. 71, 38.
- **Hastings WJ**, Gray J, & Devarenne T (July 2012). *Site and Effect of Phosphorylation on Squalene Synthase Activity from Solanum lycopersicum*. American Society of Plant Biologists Conference. Austin, TX.

Research Support (Under Review)

DataWorks! Prize 2024 (Submitted 10/24)

Hastings (Team Leader)

12/2024 - 06/2025

HeroX

Metabolomic fitness & aging: From cell to society

We explore how metabolomic markers of cellular senescence and cell cycle phase overlap with markers of human aging and reproductive fitness

Role: Team Leader (\$25,000; \$6,250 to primary)

R61 GRANT13964909 (Resubmitted 10/24)

Hastings (PI)

10/2025 - 09/2028

NCI

Using CRISPR for chromosome-specific telomere measurement in studies of cancer
This project develops and validates an innovative new technology to measure telomere length of specific chromosome arms using CRISPR technologies. (*Initial Impact Score = 37; 31st %ile*) **Role**: PI (\$450,000; \$401,423 to primary)

R21 GRANT14186608 (Submitted 06/24)

Hastings (PI)

04/2025 - 05/2027

NIA

Metabolomic aging in the general population and during caloric restriction: a pooled analysis This data-driven project involved collaboration with established intramural-extramural partnerships (COMETS; CALERIETM) and collaboration with epidemiological population studies domestic and abroad to develop novel metrics of metabolomic aging. (*Initial Impact Score* = 40; 34th %ile)

Role: PI (\$200,000; \$176,558 to primary)

Research Support (In Progress)

IHA Research Capacity Funding

Hastings (PI)

01/2025 - 03/2026

Texas A&M Institute for Advancing Health Through Agriculture

Using metabolomics to explore mechanisms mediating caloric restriction impacts on healthy aging

Role: PI (\$50,000.00)

Research Support (Completed)

Pilot Research Network Analysis Award

Hastings (PI)

08/2020 - 07/2021

Telomere Research Network

 $Comparing \ qPCR \ and \ DNA-methylation-based \ estimates \ of \ telomere \ length \ in \ a \ cohort \ of \ maltreated \ children$

Role: PI (\$4,000)

T32AG049679 Almeida (PI)

08/2018 - 05/2020

College of Health and Human Development, Pennsylvania State University

Biological Aging and Allostatic Load in The National Survey of Midlife Development in the United States

Role: Fellow/Awardee (\$64,188)

Hintz Graduate Education Enhancement Award

05/2018 - 06/2020

Department of Biobehavioral Health, Pennsylvania State University

Measurement of Biological Age in Humans: Approach, Comparability, and Critical Perspective

Role: Fellow/Awardee (\$5,785)

Graduate Student Travel Award

08/2015 - 12/2020

Department of Biobehavioral Health, Pennsylvania State University

Role: Awardee (\$3,000)

Professional Affiliations

Telomere Research Network

CALERIETM Molecular Data Working Group

Consortium of Metabolomics Studies (COMETS)

Metabolomics Society of North America (MANA)

Honors & Awards

Metabolomics Society of North America (MANA) Lightning Talk Award	2024
Neahous-Shepardson Scholarship	2024
Butler-Williams Scholar (NIA)	2021
Gordon Research Seminar Graduate Student Travel Award	2019
University Distinguished Graduate Fellowship	2015-2017
Psychoneuroendocrinology Graduate Student Travel Award	2016
Texas A&M Student Affairs Graduate Assistant of the Year	2015

Teaching

		
<u>Instructor</u> Senior Seminar in Nutrition (<i>NUTR 481</i>)	Spring 2025	
Principles of Epidemiology (BBH 440)	Summer 2020	
Introduction to Biobehavioral Health (BBH 101)	Summer 2016	
<u>Teaching Assistant</u> Developmental and Health Genetics (BBH 410)	Spring 2018	
Biobehavioral Aspects of Stress (BBH 432)	Fall 2016, Fall 2017	
Principles of Epidemiology (BBH 440)	Spring 2017	
Guest Lectures Biobehavioral Aspects of Aging (BBH 497)	Spring 2017, Fall 2018	
<u>Service</u>		
Graduate Student Admission Committee Department of Nutrition, Texas A&M University	Oct. 2024-Present	
Chair COMETS Early Career Working Group	Mar. 2024-Present	
Lightning Talk Judge Texas A&M Genome Editing Symposium	November 2024	
Moderator: Metabolomics of Food and Nutrition Session Metabolomics Society for North America Annual Conference	October 2024	
Facilities Manager Search Committee Department of Nutrition, Texas A&M University	Sep. 2024 – Oct. 2024	
Co-Chair Telomere Research Network Aging Subcommittee, NIH	2020-2022	
Q&A Facilitator Cold Spring Harbor Meeting on Telomeres and Telomerase	Dec. 2021	
Session Leader Osher Lifelong Learning Institute, Penn State University	July 2019	
Research Counselor Department of Biobehavioral Health DNA Camp, Penn State University	June 2019	
Health Methodologist Faculty Search Committee Department of Biobehavioral Health, Penn State University	2016-2017	
Colloquium Series Graduate Assistant Department of Biobehavioral Health: Penn State University	2016-2017	
Judge Pennsylvania Junior Academy of Science	2016, 2021	

Iournal Reviews

BMJ Open (5x) Mechanisms of Aging and Development

Scientific Reports (5x) Molecular Biology Reports

Journal of Gerontology: Biological Sciences (3x) ACS Nano

Clinical Epigenetics (3x) Journal of Gerontology: Psychological Sciences

Psychoneuroendocrinology (3x) Biological Psychiatry

PLOS One (3x) BioEssays

Developmental Psychobiology (3x)

Behavior Genetics

Aging-US (2x) Journal of Visualized Experiments

npj Aging (2x) Biology

BMC Genomics (2x) Frontiers in Medicine

Royal Society Open Science (2x) European Journal of Investigation in Health,

Lipids in Health and Disease (2x)

Psychology, and Education

BMC Neurology (2x) Development and Psychopathology

Pediatric Obesity (2x) GENE

Average: ~8 reviews/year (2018 – 2024)