Jessilyn Dunn, PhD

Biomedical Engineering, Duke University
Durham, NC 27705

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ACADEMIC APPOINTMENTS

2019- Assistant Professor, Biomedical Engineering, Duke University
2019- Assistant Professor, Biostatistics & Bioinformatics, Duke University
2020- Assistant Professor, Electrical and Computer Engineering, Secondary Appointment, Duke University

Ph.D.-Granting Committee, Program, Institute, and Center Appointments

2019- Duke Clinical Research Institute
2020- Fitzpatrick Institute for Photonics
2020- Duke MEDx
2024 Duke PreMiEr (Precision Microbiome Engineering) Center
2025 Duke Computational Biology & Bioinformatics Program
2025 Duke Center for Computational and Digital Health Innovation (Assoc. Director)

ACADEMIC TRAINING

2015 - 2018 Postdoctoral Fellow in Genetics and Bioengineering
Stanford University, Palo Alto, CA, USA
Mentors: Dr. Michael Snyder and Dr. Scott Delp

2010 - 2015 Ph.D. in Biomedical Engineering
Georgia Institute of Technology & Emory University, Atlanta, GA, USA
Mentor: Dr. Hanjoong Jo
Dissertation: DNA Methylome and Transcriptome Responses to Disturbed Blood Flow in Endothelial Cells and their Role in Atherosclerosis

2006 - 2010 B.S. in Biomedical Engineering
Johns Hopkins University, Baltimore, MD, USA
Minor in Spanish Language for the Professions

RESEARCH

HONORS AND AWARDS

19 IEEE EMBS Early Career Achievement Award (2025)
18 NSF CAREER Award (#2339669) (2024)
17 CHIL Best Paper Award, Track 2: Applications & Practice (2024)
16 Duke DST Launch Seed Grant. Co-PIs: Dunn & Hwang (2022-2023)
15 mHealth Scholar, 2021 mHealth Training Institute (mHTI) (17.5% acceptance rate)
14 Nominated for 2021 Early Career Mentoring Award in Basic/Translational Science at Duke
13 US National Academy of Engineering Frontiers of Engineering Symposium (2020 & 2021)
12 Finalist, Duke Institute for Health Innovation (DIHI) RFA (2021)
11 Third most cited author, Nature Partner Journals (npj) Digital Medicine (2020)
10 Duke MEDx Colloquium Award for Duke Women in Data Science Conference (2020)
9 Whitehead Scholar (2020)

8 Duke MEDx Investigator (2019)
7 NIH BD2K Mobilize Distinguished Postdoctoral Fellowship (2015-2018)
6 Finalist for Stanford Biodesign Spectrum MedTech Pilot Grant Award (2017)
5 National Science Foundation Graduate Research Fellowship (2012-2015)
4 Nominated for Georgia Tech Outstanding Teaching Assistant Award (2010)
3 Vredenburg Scholarship for International Research (2009)
2 Semifinalist in Mid-Atlantic and Johns Hopkins Business Plan Competitions (2009)
1 Bloomberg Scholar, Johns Hopkins University (2007-2008)

SCHOLARSHIP

Peer-reviewed publications in the primary literature:
(10 most significant in bold). *(h-index = 29; total citations = 5,615; 2023 citations = 1008), Statistics from Google Scholar on 11/19/24,* * *= authors contributed equally,* # *= corresponding author,* $ *= dual corresponding authors.*

JOURNAL PUBLICATIONS

Work under review & in press

78 Hershkovich, Jeong, Sakai, Kane, Allen, Goldstein, Dunn. Defining the Habitome: Phenotypes of Routine and Their Relationship to Health Outcomes, 17 April 2025, PREPRINT (Version 2) available at Research Square [https://doi.org/10.21203/rs.3.rs-5861743/v2]. Under review, *Nature Medicine*.
77 Khalil, Dunn, Granados, Lovell, Fletcher, Elgendi. Aging with Autonomy: Sensor-Based Smart Wheelchairs for Independent Living. Under review, *Nature Aging*.
76 Liao, Chen, Lin, Dunn, Tian, Qiu, Chen, Yang, Ge, Bergin, Gilliland, Zhang, Chen. Immediate an Sustained Effects of 2025 Los Angeles Wildfires on Physiological Stress and Activity Patterns in Older Adults. Under review, JMIR mHealth and uHealth.
75 Jiang, Spies, Roghanizad, Bhosai, L. Snyder, Burke, MacLeod, Dunn#. Performance of Wearable Pulse Oximetry During Controlled Hypoxia Induction. Under revision. (preprint)
74 Crowson, Tan, Dunn, Bhatt, Schneider, Forger, Celi, Dorotic, Malin. The need to develop health data transaction disclosure requirements to balance transparency, privacy and progressive use. Under review, *The Lancet Digital Health.*
73 Dunn, Mishra, Shandhi, Jeong, Yamane, Watanabe, Chen, Goodwin. Building an Open-Source Community to Enhance Autonomic Nervous System Signal Analysis: DBDP-Autonomic. Under review, *Frontiers in Digital Health* (preprint)
72 RECOVER Consortium. Wearable-derived Sleep Measurements are Associated with Long-COVI in the RECOVER Adult Cohort. Under review, *Nature Medicine*.
71 Elgendi et al. The 2025 Global Roadmap for Wearable and Textile Technologies in Health. Unde review, *Physiological Measurement*.

Work published after appointment at Duke University

70 Jain, Mortazavi, You, Yao, Lam, Elias, Poterucha, Avram, Tison, Pirruccello, Huang, Wiens, Schwamm, Ruan, Dunn, Luo, Spatz, Krumholz. Moving Beyond the Model: Our Perspective on Meaningful AI Research in Cardiovascular Care. Accepted, *JACC*. (2025)
69 Dunn, Strath, Keadle. Advancing Physical Activity Metrics: A Call for Standardization and Benchmarking in Device-Based Data. Accepted, *Journal for the Measurement of Physical Behaviour*. (2025)

68 Taguibao, Ajraoui, Centra, Reid, Daskalopoulou, Freniche, Hamilton, Horstman, Collins, Dunn, Izmailova. Identifying Concepts of Physical Activity Which Are Clinically Meaningful to Patients and Care Providers: A Systematic Review of Qualitative Research. *Journal of Clinical and Translational Science*. (2025) PMCID: PMC11969172

67 Jeong*, Roghanizad*, Master, Kim, Kouame, Harris, Basford, Marginean, Dunn#. Data from the All of Us Research Program Reinforces Existence of Activity Inequality. *npj Digital Medicine*. (2024) PMCID: PMC11700153

66 Akre, Seok, Aguilera, Carini, Dunn, Hotopf, Mohr, Bui, Freimer. Advancing Digital Sensing in Mental Health Research. *npj Digital Medicine.* (2024) PMCID: PMC11655837

#9 Top 10

65 Cho*, Olaye*, Shandhi*, Daza, Foschini, Dunn#. Identification of key factors related to digital health observational study adherence and retention by data-driven approaches: an exploratory secondary analysis of two prospective longitudinal studies. *Lancet Digit Health* (2024) PMCID: PMC11725373

64 Cunningham, Abraham, Bhatt, Dunn, Felker, Jain, Lindsell, Mace, Martyn, Shah, Tison, Fakhouri, Psotka, Krumholz, Fiuzat, O'Connor, Solomon. Artificial Intelligence in Cardiovascular Clinical Trials. *JACC* (2024) PMID: 39505413

63 Wang*, Jeong*, Hershkovich*, Cho, Singh, Lederer, Roghanizad, Shandhi, Kibbe, Dunn#, On Behalf of the National COVID Cohort Collaborative (N3C) Consortium. Tree-based Classification Model for Long-COVID infection Prediction with Age Stratification using data from the National COVID Cohort Collaborative (N3C). *JAMIA Open* (2024) PMCID: PMC11547948

#7 Top 10

62 Jiang, S., Ashar, Shandhi, Dunn#. Demographic Reporting in Biosignal Datasets: A Comprehensive Analysis of the PhysioNet Open Access Database. *The Lancet Digital Health* (2024) PMID: 39358064 – 5th most downloaded preprint in Sociological Research Methods eJournal and 9th most downloaded Digital Health eJournals in March-May 2024

61 Armoundas, Ahmad, Bennett, Chung, Davis, Dunn, Narayan, Slotwiner, Wiley, Khera. American Heart Association Scientific Statement: Data Interoperability for Ambulatory Monitoring of Cardiovascular Disease. *Circulation: Genomic and Precision Medicine*. (2024) PMID: 38779844

60 Dunn, Coravos, Steinhubl, Ginsburg. Remote digital health technologies for improving the care of people with respiratory disorders. *The Lancet Digital Health*. (2024) PMCID: PMC10960683

59 Singh, Armstrong, Wagner, Counts, Skinner, Kay, Li, Shah, Zucker, Neshteruk, Suarez, Kraus, Zizzi, Dunn#. Physical activity and sleep changes among children during the COVID-19 pandemic. *npj Digital Medicine*. (2024) PMCID: PMC10944532

58 Shandhi, K. Singh, Janson, Ashar, G. Singh, Lu, Hillygus, Maddocks, Dunn#. Assessment of Ownership of Smart Devices and the Acceptability of Digital Health Data Sharing. *Nature Partner Journals (npj) Digital Medicine*. (2024) PMCID: PMC10883993 – 3rd most downloaded preprint in Digital Health eJournals and 6th in Lancet Preprints in Jan/Feb 2024

57 Shin, Kowahl, Hansen, Ling, Barman, Cauwenberghs, Rainaldi, Short, Dunn, Shandhi, Shah, Mahaffey, Kuznetsova, Daubert, Douglas, Haddad, Kapur. Real-world walking behaviors are associated with early-stage heart failure: a Project Baseline Health Study. *Journal of Cardiac Failure*. (2024) PMID: 38582256

56 Lederer, Breton, Jeong, Master, Roghanizad, Dunn#. The Importance of Data Quality Control in Using Fitbit Device Data From the All of Us Research Program. *Journal of Medical Internet Research (JMIR) Mhealth Uhealth*. (2023) PMCID: PMC10662681

55 Erickson, North, Counts, Wang, Starr, Wideman, Pieper, Dunn, Kraus. Nightshift Imposes Irregular Lifestyle Behaviors in Police Academy Trainees. *SLEEP Adv*. (2023). PMCID: PMC10630191

54 Charpignon, Carrel, Jiang, Kwaga, Cantada, Hyslop, Cox, Haines, Koomson, Dumas, Morley, Dunn, Wong. Going beyond the means: Exploring the role of bias from digital determinants of health from technologies. *PLoS Digital Health*. (2023) PMCID: PMC10569586

53 Charlton, Allen, Bailón, Baker, Behar, Chen, Clifford, Clifton, Davies, C. Ding, X. Ding, Dunn, Elgendi, Ferdoushia, Franklin, Hasana, Gil, Hernesniemi, Hu, Ji, Khan, Kontaxis, Korhonen, Kyriacou, Laguna, Lázaro, Lee, Levy, Li,, C. Liu, J. Liu, Lu, Marozas, Mejía-Mejía, Mukkamala, Nitzan, Pereira, Poon, Ramella-Roman, Saarinen, Shandhi, Shin, Stansby, Tamura, Vehkaoja,

Wang, Zhang, Zhao, Zheng, Zhu. The 2023 Wearable Photoplethysmography Roadmap. *Journal of Physiologic Measurement*. (2023) PMID: 37494945

52 Gill, Chico, Doherty, Dunn, Ekelund, Katzmarzyk, Milton, Murphy, Stamatakis. The potential impact of wearables on physical activity guidelines and interventions: opportunities and challenges. *British Journal of Sports Medicine*. (2023) PMID: 37549997

51 Chico, Stamatakis, Ciravegna, Dunn, Redwood, Al-lamee, Sofat, Gill. Device-based measurement of physical activity in cardiovascular healthcare – potential and challenges. *British Journal of Sports Medicine.* (2023) PMID: 37549998

50 Jiang, Spies, Bhosai, L. Snyder, Dunn[#]. Investigating the accuracy of blood oxygen saturation measurements in common consumer smartwatches. *PLoS Digital Health*. (2023) PMCID: PMC10337940

49 Pasquale, Welsh, Olson, Yacoub, Moody, Gomez, Bentley-Edwards, McCall, Solis-Guzman, Dunn, Woods, Petzold, Bowie, Singh, Huang. Scalable Strategies to Increase Efficiency and Augment Public Health Activities During Epidemic Peaks. *Journal of Public Health Management and Practice*. (2023) PMID: 37379511

48 Chikwetu, Daily, Mortazavi, Dunn[#]. Automated diet capture using voice alerts and speech recognition on smartphones: A pilot study. *JMIR Formative Research*. (2023) PMCID: PMC10230351

47 Sheikh, Sabotka, Garg, Dunn, Minhas, Shandhi, Molinger, McDonnell, Fudim. Blood pressure variability in clinical practice: Past, present and the future. *J Am Heart Assoc*. (2023) PMID: 37119077

46 Wang, Cesnakova, Goldsack, Dunn. Defining digital measurement of scratching during sleep, or "nocturnal scratch": a systematic review of the literature. *Journal of Medical Internet Research (JMIR*). (2023) PMID: 37071460

#8 Top 10

45 Chikwetu, Miao, Woldetensae, Bell, Goldenholz, Dunn[#]. Does de-identification of data from wearable Biometric Monitoring Technologies give us a false sense of security? A systematic review. *The Lancet Digital Health.* (2023) PMID: 36797124

44 Hughes, Shandhi, Master, Dunn, Brittain. Wearable Devices in Cardiovascular Medicine. *Circulation Research*. (2023) PMCID: PMC9991078

43 Popham, Burq, Rainaldi, Shin, Dunn, Kapur. An algorithm to classify real-world ambulatory status from a wearable device using multimodal and demographically diverse data. *Journal of Medical Internet Research (JMIR) Biomedical Engineering (BME)*. (2023)

42 Shandhi, Dunn[#]. AI in Medicine: Where are we now and where are we going? *Cell Reports Medicine*. (2022) PMID: 36543109

41 Wang, Chen, Hershkovich, Yang, Shetty, Singh, Jiang, Kotla, Shang, Yerrabelli, Roghanizad, Shandhi, Dunn[#]. A Systematic Review of Time Series Classification Techniques Used in Biomedical Applications. *Sensors*. (2022) PMCID: PMC9611376

#1 Top 10

40 Shandhi MMH, Cho P, Roghanizad A, Singh K, Wang W, Enache O, Stern A, Sbahi R, Tatar B, Fiscus S, Khoo QX, Kuo Y, Lu X, Hsieh J, Kalodzitsa A, Bahmani A, Alavi A, Ray U, Snyder M, Ginsburg G, Pasquale D, Woods C, Shaw, Dunn[#]. A Method for Intelligent Allocation of Diagnostic Testing by Leveraging Data from Commercial Wearable Devices: A Case Study on COVID-19. *Nature Partner Journals (npj) Digital Medicine*. (2022) PMCID: PMC9434073

39 Erickson, Wang, Counts, Redman, Parker, Huebner JL, Dunn, Kraus WE. Field-Based Assessments of Behavioral Patterns During Shiftwork in Police Academy Trainees Using Wearable Technology. *J Biol Rhythms*. (2022) PMID: 35416084.

38 Goergen, Tweardy, Steinhubl, Wegerich, Singh, Mieloszyk, Dunn. Detection and Monitoring of Viral Infections via Wearable Devices and Biometric Data. *Annual Review of Biomedical Engineering*. (2022) PMCID: PMC9218991

37 Cho, Yi, Ho, Dinh, Patil, Martin, Singh, Shandhi, Bent, Ginsburg, Smuck, Woods, Shaw, Dunn[#]. Demographic Imbalances Resulting from Bring-Your-Own-Device Study Design. *Journal of Medical Internet Research (JMIR) Mhealth Uhealth*. PMID: 34913871 (2021)

36 Shandhi, Wang, Dunn[#]. Taking the time for our bodies: how wearables can be used to assess circadian physiology. *Cell Reports Methods*. (2021) PMCID: PMC9017161

#10 Top 10
35 Grzesiak, Bent, McClain, Woods, Tsalik, Nicholson, Veldman, Burke, Gardener, Bergstrom, Turner, Chiu, Doraiswamy, Hero, Henao, Ginsburg, Dunn[#]. Assessment of the Feasibility of Using Noninvasive Wearable Biometric Monitoring Sensors to Detect Influenza and the Common Cold Before Symptom Onset. *JAMA Network Open*. 4(9):e2128534. (2021) PMCID: PMC8482058

34 Shandhi, Goldsack, Ryan, Bennion, Kotla, Feng, Jiang, Wang, Hurst, Patena, Carini, Chung, Dunn[#]. Recent Academic Research on Clinically Relevant Digital Measures: Systematic Review. *Journal of Medical Internet Research (JMIR)* (2021) PMCID: PMC8482196

33 Bent, Henriquez, Dunn[#]. cgmquantify: Python and R software packages for comprehensive analysis of interstitial glucose and glycemic variability from continuous glucose monitor data. *IEEE OJEMB*. (2021)

32 Bent, Cho, Wittman, Thacker, Muppidi, Snyder, Crowley, Feinglos, Dunn[#]. Non-invasive Wearables to Monitor Glycemic Health. *BMJ Open Diabetes Research & Care*. (2021)

#5 Top 10
31 Bent, Cho, Henriquez, Wittman, Thacker, Feinglos, Crowley, Dunn[#]. Engineering Digital Biomarkers of Interstitial Glucose from Noninvasive Smartwatches. Nature Partner Journals *(npj) Digital Medicine*. (2021)

#3 Top 10
30 Dunn[*$], Kidzinski*, Runge, Witt, Hicks, Rose, Li, Bahmani, Delp, Hastie[$], Snyder[$]. Wearable Sensors Enable Personalized Predictions of Health Measurements. *Nature Medicine*. (2021)

29 Bent, Enache, Goldstein, Kibbe, Dunn[#]. Reply: Matters Arising 'Investigating sources of inaccuracy in wearable optical heart rate sensors'**.** Nature Partner Journals *(npj) Digital Medicine*. (2021)

28 Bent, Lu, Kim, Dunn[#]. Biosignal Compression Toolbox for Digital Biomarker Discovery. *Sensors.* (2021)

27 Bent, Sim, Dunn[#]. Digital Medicine Community Perspectives and Challenges. *JMIR mHealth and uHealth*. (2020)

26 Bent, Dunn[#]. Wearables in a Pandemic: What Are They Good For?. *JMIR mHealth and uHealth*. (2020)

25 Jiang, Qi, Wang, Bent, Avram, Olgin, Dunn[#]. EventDTW: An Improved Dynamic Time Warping Algorithm for Aligning Biomedical Signals of Nonuniform Sampling Frequencies. *Sensors*. (2020)

24 Bent and Dunn[#]. Optimizing Sampling Rate of Wrist-Worn Optical Sensors for Physiologic Monitoring. *Journal of Clinical and Translational Science*. 1–27 (2020)

23 Bent, Wang, Grzesiak, Jiang, Qi, Jiang, Cho, Zingler, Ogbeide, Zhao, Runge, Sim, Dunn[#]. The Digital Biomarker Discovery Pipeline: An open source software platform for the development of digital biomarkers using mHealth and wearables data. *Journal of Clinical and Translational Science*. (2020)

#4 Top 10
22 Goldsack, Coravos, Bakker, Bent, Dowling, Fitzer-Attas, Godfrey, Godino, Gujar, Ismailova, Manta, Peterson, Vandendressche, Wood, Wang, Dunn[#]. Verification, Analytical Validation, and Clinical Validation (V3): The Foundation of Determining Fit-for-Purpose for Biometric Monitoring Technologies (BioMeTs). (2020) Nature Partner Journals *(npj) Digital Medicine*. (see V3 in Action)

#2 Top 10
21 Bent, Goldstein, Kibbe, Dunn[#]. Investigating Sources of Inaccuracy in Wearable Optical Heart Rate Sensors. Nature Partner Journals *(npj) Digital Medicine*. (2020)

20 Pantell, Baer, Torres, Felder, Gomez, Chambers, Dunn, Parikh, Pacheco-Werner, Rogers, Feuer, Ryckman, Novak, Tabb, Fuchs, Rand, Jelliffe-Pawlowski. Associations between unstable housing, obstetric outcomes, and perinatal health care utilization. American Journal of Obstetrics & Gynecology. (2019)

19 Witt, Kellogg, Snyder, Dunn[#]. Windows into human health through wearables data analytics. *Curr. Opinion in Biomedical Engineering*. (2019)

18 Schüssler-Fiorenza Rose, Contrepois, Moneghetti, Zhou, Mishra, Mataraso, Dagan-Rosenfeld, Ganz, Dunn, Hornburg, Rego, Perelman, Ahadi, Sailani, Zhou, Leopold, Chen, Ashland,

Christle, Avina, Limcaoco, Ruiz, Tan, Butte, Weinstock, Slavich, Sodergren, McLaughlin, Haddad, Snyder. Longitudinal Big Data Approach for Precision Health. *Nature Medicine*. (2019)

17 Human Microbiome Project Consortium. Longitudinal multi-omics of host–microbe dynamics in prediabetes. *Nature*. (2019)

Work published before appointment at Duke University

14 Rego, Dagan-Rosenfeld, Zhou, Sailani, Limcaoco, Avina, Wheeler, Craig, Salins, Rost, Dunn, McLaughlin, Steinmetz, Bernstein, Snyder. High Frequency Actionable Pathogenic Exome Mutations in an Average-Risk Cohort. Cold Spring Harb Mol Case Stud. (2018)

13 Li*, Dunn*, Salins*, Zhou, Perelman, Zhou, Colbert, Runge, Rego, Datta, McLaughlin, Snyder. Digital Health: Tracking Physiomes and Activity Using Wearable Sensors Reveals Useful Health-Related Information. *PLOS Biology* 15(1):e2001402 (2017)

12 Dunn, Qiu, S Kim, Jjingo, Hoffman, C Kim, Jang, Son, D Kim, Pan, Fan, Jordan, Jo. Flow alters genome-wide methylation, regulating endothelial gene expression and atherosclerosis. *J. Clin. Invest*. 124(7):3187–3199 (2014)

11 Annaluru, Muller, Build A Genome Course Students (Dunn, Author #32). Total Synthesis of a Functional Designer Eukaryotic Chromosome. *Science.* 344(6179):55-8 (2014)

10 Dunn*, Gutbrod*, Webb, Pak, Jandu, Bhunia, Berkowitz*, Santhanam*. S-nitrosation of arginase 1 requires direct interaction with inducible nitric oxide synthase. *Mol. Cell. Biochem.* 355(1-2):83-9 (2011)

9 Santhanam, Tuday, Webb, Dowzicky, Kim, Oh, Sikka, Kuo, Halushka, Macgregor, Dunn, Gutbrod, Yin, Shoukas, Nyhan, Flavahan, Belkin, Berkowitz. Decreased S-Nitrosylation of Tissue Transglutaminase by NOS3 Contributes to Age-Related Increases in Vascular Stiffness. *Circulation Research.* 107:117-125 (2010)

PEER-REVIEWED CONFERENCE/WORKSHOP PUBLICATIONS

Note: Conferences and workshops are premier and high-impact publication venues in digital health, like in computer science, serving as key platforms for sharing cutting-edge research in this rapidly advancing field.

10 Lederer, Roghanizad, Janamsetty, Redmore, Kim, Bansal, Liu, Asomani, Baur, Wang, Duan, Goyal, Krzanich, Patel, Zhao, Dunn. VitalWave: An End-to-End Open-Source High-Frequency Wearable Device and Data Collection Platform. Under Review, *IEEE Conference on Body Sensor Networks.* Los Angeles, CA (2025)

Work published after appointment at Duke University

9 Wang, Chen, Yang, Jeong, Hershkovich, Islam, Liu, Roghanizad, Shandhi, Spector, Dunn. WatchSleepNet: A Novel Model and Pretraining Approach for Advancing Sleep Staging with Smartwatches. In Proc. *Conference on Health, Inference, and Learning, CHIL*, Berkeley, CA (Published in *Proceedings of Machine Learning Research, PMLR)*. (2025)

#6 Top 10 8 Wang, Yang, Hershkovich, Jeong, Chen, Singh, Roghanizad, Shandhi, Spector, Dunn. Addressing wearable sleep tracking inequity: a new dataset and novel methods for a population with sleep disorders. In Proc. *Conference on Health, Inference, and Learning, CHIL*, New York, NY (Published in *Proceedings of Machine Learning Research, PMLR)*. (*Winner of Best Paper Award) (2024)

7 Chen, Yang, Wang, Jeong, Ashar, Hershkovich, Shandhi, Dunn. Neurological Outcome Prediction After Cardiac Arrest: A Multi-Level Deep Learning Approach with Feature and Decision Fusion. In Proc. *50th Annual International Conference of Computing in Cardiology, CinC23*, Atlanta, GA (2023)

6 Eom, Kim, Jiang, Chen, Roghanizad, Rosenthal, Dunn, Gorlatova. Investigation of Thermal Perception and Emotional Response in Augmented Reality using Digital Biomarkers: A Pilot

Study. In Proc. *IEEE XR for Healthcare and Wellbeing Workshop (*co-located with *IEEE VR)*, Shanghai, China (2023)

5 Jiang, Wang, Scargill, Rothman, Dunn, Gorlatova. Digital biomarkers reflect stress reduction after augmented reality guided meditation: a feasibility study. In Proc. *ACM Workshop on Emerging Devices for Digital Biomarkers (DigiBiom)* (co-located with *ACM MobiSys)*, Portland, OR (2022)

4 Scargill, Chen, Eom, Dunn, Gorlatova. Environmental, User, and Social Context-Aware Augmented Reality for Supporting Personal Development and Change. In Proc. *IEEE Workshop for Building the Foundations of the Metaverse* (co-located with *IEEE VR*) Virtual (2022)

3 Shen, Dunn, Zavlanos. Risk-Averse Multi-Armed Bandits with Unobserved Confounders: A Case Study in Emotion Regulation in Mobile Health. In Proc. *61st Annual IEEE Conference on Decision and Control*, Cancun, Mexico (2022)

2 Bent, Dunn. Personalized Machine Learning Models for Noninvasive Glucose Prediction Using Wearables. In Proc. *NeurIPS Machine Learning for Mobile Health Workshop*. Virtual (2020)

1 Jiang, Faroqi, Palaniappan, Dunn. Estimating Personal Resting Heart Rate from Wearable Biosensor Data. In Proc. *IEEE Conference on Biomedical and Health Informatics.* Chicago, IL (2019)

BOOK CHAPTERS

1 Peter Jaeho Cho, Karnika Singh and Jessilyn Dunn. Chapter 9 - Roles of artificial intelligence in wellness, healthy living, and healthy status sensing. Editor(s): Lei Xing, Maryellen L. Giger, James K. Min. Artificial Intelligence in Medicine, Academic Press, 2021, Pages 151-172, ISBN 9780128212592

OPEN SOURCE DATASETS

Note: Publishing datasets is a cornerstone of digital health research, akin to its importance in fields like computer science and AI. Openly sharing high-quality datasets demonstrates leadership and marks research at the forefront of the field.

4 Wang, K., Yang, J., Shetty, A., & Dunn, J. (2024). DREAMT: Dataset for Real-time sleep stage EstimAtion using Multisensor wearable Technology (version1.0.0). PhysioNet. https://doi.org/10.13026/dztc-dv77

3 Cho, P., Kim, J., Bent, B., & Dunn, J. (2022). BIG IDEAs Lab Glycemic Variability and Wearable Device Data (version 1.00 & version 1.1.0). PhysioNet. https://physionet.org/content/big-ideas-glycemic-wearable/1.1.0/ ; Previous version (https://doi.org/10.13026/d742-0j82)

2 Bent, B., & Dunn, J. (2021). BigIdeasLab_STEP: Heart rate measurements captured by smartwatches for differing skin tones (version 1.0). PhysioNet. https://doi.org/10.13026/cqfy-d860.

1 Li, Dunn, Salins, et al. (2017). Intel Basis watch data from Stanford integrative Personal Omics Profiling study. http://ipop-data.stanford.edu/wearable_data/Stanford_Wearables_data.tar

EDITORIALS, OPINIONS, & COMMENTARIES

2 Perakslis, McMillan, Dunn. Proposed rules to protect health data in an era of abortion bans fall short. *Stat News*. May 12, 2023. [link]

1 Miscarriage is awful. It just became much worse with abortion pill ruling. *Charlotte Observer*. April 11, 2023.

PATENTS AND PATENT APPLICATIONS

1 Systems and Methods to Treat Depression Using REM Sleep- U.S. Provisional Application No. 63/451,698 (filed March 13, 2023, with Andrew Spector, MD)

FUNDING

ACTIVE PROJECTS

*Amounts listed are total costs

P9. *Duke Provost Interdisciplinary Hub for Rural Health Equity* (PIs: Dunn/Noonan/Sperling/Wilson); 07/01/2025 – 06/30/2028; $1,125,000

P8. *CAREER: Improving Real-world Performance of AI Biosignal Algorithms*; NSF. Award #2339669. (PI: Dunn); 07/01/2024 – 06/30/2029; $598,047

P7. *Designing a data-driven protocol for developing a sensor data based relapse prediction tool*; FDA 1U01FD007857 (PI: Watkins); 09/01/2023 – 8/31/2025; $568,063; Role: Duke PI (UNC/CERSI)

P6. *Digital Health Technologies for Infectious Disease Monitoring*; BARDA 75A50123C00044. (PI: Dunn); 08/14/2023 – 02/14/2025; $740,997

P5. *Mobile technologies to screen for prediabetes and type 2 diabetes in asymptomatic adults*; NIH 1R01-DK133531-01A1 (PI: Dunn); 05/05/2023 – 04/30/2028; $3,024,739

P4. *RECOVER Mobile Health Platform/Mobile Health Repositories, Phase I and II*; NIH OT2HL161847 (PI: Sieberts/Omberg); 12/1/2021 – 12/08/2024; $352,400 Role: Duke PI (Sage BioNetworks/NIH prime)

P3. *Using Wearables for Perioperative Surgical Patient Monitoring*; Duke Science and Technology Launch Seed Grant (PI: Dunn/Hwang); 09/01/2022 – 08/31/2023; $100,000

P2. *CovIdentify Wearable Infection Detection;* Duke Bass Connections Teams; 7/2020-6/2025; $91,107 (new awards annually); Role: Faculty Lead

P1. *CIVICs Study. A Multicenter, Blinded, Randomized, Placebo-Controlled, Dose- Ranging Influenza Challenge Study in Healthy Adult Volunteers to Determine the Optimal Infection Dose and Safety of a Recombinant H3N2 (A/Texas/71/2017 (H3N2), clade 3C3a) Influenza Challenge Virus*; NIH 75N93019C00054 (PI: Walter); 09/16/19 – 08/20/25; $2,712,270; Role: Co-Investigator

COMPLETED PROJECTS

P16. *Wearable Biosensors to Monitor Cardiorespiratory Fitness in Patients with Heart Failure*. AHA GRANT #1025599 (PI: Shandhi); 1/1/2024 - 8/15/2024; $115,692; Role: Postdoc Mentor

P15. *All of Us: Data and Research Support Center;* NIH 1OT2OD035404-01 (PI: Harris) 07/01/2021 – 11/30/2023; $461,989 Total costs; Role: Duke PI (Vanderbilt University Medical Center/NIH prime)

P14. NSF Predictive Intelligence for Pandemic Prevention (PIPP) Phase I Center Award # 2200047 (PI-Nunn); 8/1/2022 – 1/31/25; $1,000,000; Role: Advisor

P13. *Case Studies for the Digital Biomarker Discovery Pipeline*; Google Season of Docs; (PI: Dunn); 05/01/2023-11/30/2023; $8,500

P12. *Outsourcing the Digital Biomarker Discovery Pipeline*; Duke Bass Connections Team; 7/2023- 6/2024; $20,000; Role: Faculty Lead

P11. *PulseOx.AI*; AstraZeneca DCRI #8160; (PI: L. Snyder); 1/19/2021-11/30/2022; $114,298; Role: Co-PI

P10. *Analysis of Holter accelerometry and ECG data from a Phase 2 Trial to Evaluate Verinurad combined with Allopurinol in Heart Failure with Preserved Ejection Fraction (AMETHYST)*; AstraZeneca LP Q-14024; (PI: Dunn); 2/1/2021-8/31/2022 (terminated early due to COVID-19); $394,574

P9. *Hearts and Parks*. American Heart Association #17SFRM33700117; (PI: Armstrong); 5/2021-12/2022; $1,386,547; Role: Co-I

P8. *WhatU8: An automated, hands-free diet monitoring platform to improve prediabetes and type 2 diabetes management;* NSF/ Trustees of Columbia University Workshop on Technology for Automated Capture of Diet, Nutrition, and Eating Behaviors in Context Pilot grant; (PI: Dunn/Mortazavi); 3/1/2021 - 2/28/2022; $15,000

P7. *CovIdentify: Using Commercial Wearable Devices and Smartphones to Detect and Monitor COVID-19*; Microsoft AI in Health Cloud Credit Grant; (PI: Dunn); 11/19/2021-6/30/23; $82,000 in kind cloud credits

P6. *RDS2 (Respondent-Driven Sampling, Respiratory Disease Surveillance): The SNOWBALL Sampling Study*; US Centers for Disease Control and Prevention #75D30120C09551; (PI: Pasquale); 10/2020-9/2022; $1,107,488; Role: co-I/Biometric Lead

P5. *CovIdentify: Using mobile health technologies to detect and monitor COVID-19 in essential workers in North Carolina*; North Carolina Biotechnology Center Pilot Grant 20220-FLG-3884; (PI: Dunn); 8/1/2020-7/31/2021; $20,000

P4. *Expanding the Open mHealth Platform to include a Digital Biomarker Discovery Pipeline (DBDP);* Chan Zuckerberg Initiative for Essential Open-Source Software Grant No. 2020-218599; (PI: Dunn); 6/2020-6/2022; $170,342

P3. *Deep Learning Methods For Human Activity Recognition With Wearable Sensors*; Rhodes Information Initiative Data+ Team. 6/2020 – 8/2020; $25,000; Role: Faculty Lead

P2. *CovIdentify: Using Commercial Wearable Devices and Smartphones to Detect and Monitor COVID-19;* Duke MEDx and the Duke Clinical and Translational Science Institute (CTSI) Pilot Award; (PI: Dunn/Shaw); 4/14/2020 – 6/30/2020; $29,000

P1. *Digital Biomarkers of Glycemic Variability;* Duke MEDx Pilot Program and Duke CTSI; (PI: Dunn/Feinglos);11/1/2018-4/30/2020; $69,000

INVITED PRESENTATIONS

Annotations: # Keynote speaker; ¤ Podium; † Panelist; ° Poster; virtual denoted directly or by no listed location

85 ¤† FDA Science Forum. Session on Patient-Reported Outcomes and other Clinical Outcomes. June 11, 2025.

84 ¤ FDA/CDRH/DHAB DHT Subcommittee Meeting. April 29, 2025.

83 ¤ Banff International Research Station (BIRS) Workshop on Emerging Statistical Methods for Digital Health Data (25w5474). Banff, Alberta, Canada. February 23 - 28, 2025.

82 ¤† Precision Medicine World Conference, Santa Clara, CA, USA. February 5-6, 2025

81 ¤ US Biomedical Advanced Research and Development Authority (BARDA) Innovation Symposium. Washington DC, USA. November 6, 2024.

80 Mobile and Wearable Health Seminar Series. University of Cambridge, Cambridge, UK. (virtual) October 15, 2024. (link)

79 FDA Office of the Commissioner and Office of Digital Health Center of Excellence (DHCoE) (virtual) October 1, 2024.

78 ¤ European Respiratory Society 2024 Congress. Vienna, Austria. (virtual) September 7-11, 2024.

77 # Annual NIH T32 Integrated Training in Engineering and Diabetes (ITED) Retreat. Vanderbilt University. Nashville, TN, USA. September 5-6, 2024

76 ¤† NIH NIDDK Digital Health Technologies Workshop. Bethesda, MD, USA. September 5-6, 2024.

75 † Digital Therapeutics Panel. *Foundation for Wellness*. (virtual) Lafayette, LA, USA. August 6, 2024

74 T-CAIREM Temerty Speaker Series. University of Toronto Temerty Centre for AI Research and Education in Medicine (T-CAIREM). (virtual) Toronto, Canada. April 18, 2024

73 † NC State WolfSens Panel Presentation. Raleigh, NC, USA. May 6, 2024

72 † Mobilise-D Conference (culminating the 5 year, 50M euro effort to develop a standard for digital mobility assessment). Edinburgh, Scotland, UK. March 19-20, 2024

71 † HFC Special Focus Meeting: The Role of AI in the Future of Clinical Trials and Therapeutic Development. March 15, 2024

70 ¤ Pre-ENAR Workshop. Baltimore, MD, USA. March 9, 2024

69 † Making Strides with Digital Measures of Physical Activity: A Digital Strategy for the 6th Vital Sign. DATAcc by DiMe Webinar. February 13, 2024

68 Wearable-technology and mHealth for T2D management. NIDDK Triannual Diabetes Mellitus Interagency Coordinating Committee (DMICC) Meeting. November 16, 2023 (presented by S. Alexopoulos)

67 Centre for Digital Health Interventions University of Zurich, University of St. Gallen, ETH Zurich. (virtual) October 5, 2023

66 ¤ Leveraging Real World Data for Next-Gen Epidemiology. NHLBI Workshop on Big Data Integration for Enhanced Epidemiological Research. September 28, 2023

65 Data Science of Digital Biomarkers. *KDD.* Long Beach, CA, USA. August 6-10, 2023.

64 ¤ Reaping the Benefits of Digital Health Data for Improving Public Health and Biomedical Studies. *JSM*. Toronto, Ontario, Canada. August 5-10, 2023

63 Laboratory for Computational Physiology at MIT. (virtual) June 13, 2023

62 ¤ Foundation for the National Institutes of Health (FNIH) Metabolic Disorders Steering Committee Meeting. Gaithersburg, MD, USA. June 8-9, 2023

61 † Academy of Managed Care Pharmacy (AMCP) Summit: Deep Dive Into Prescription Digital Therapeutics: Data Exchange and Security. June 1, 2023 (link).

60 ¤ Using Wearable Sensors and Big Data to Identify Digital Biomarkers in Sleep, Health, and Exercise Performance. ACSM 2023 Annual Meeting. Denver, CO, USA. Highlighted Symposium. June 1, 2023

59 ¤ National Academies of Sciences, Engineering, and Medicine (NASEM) Standing Committee on Emerging Science for Environmental Health Decisions. Workshop on Developing Wearable Technologies to Advance Understanding of Precision Environmental Health. June 1-2, 2023 (link)

58 Dartmouth Center for Technology and Behavioral Health CTBH Seminar Series. May 26, 2023

57 Mobile technologies to screen for prediabetes and type 2 diabetes in asymptomatic adults. NCDRC Mini-Symposium: Human Studies Consultation Core. May 24, 2023

56 CIA Labs Tek Talk. January 11, 2023

55 Actigraphy/Digital Activity Measurement as Clinical Outcome Assessment and Biomarker for Pulmonary Arterial Hypertension (PAH). Concept Presentation to FNIH Biomarkers Consortium Executive Committee. December 9, 2022

54 Wearables for Disease Detection and Monitoring and Their Role in Women's Health. FDA Office of Womens' Health. December 15, 2022 (provided attendees FDA continuing education credits)

53 Dartmouth Geisel School of Medicine Digital Health Scholars Program. November 30, 2022

52 4th Annual Health Data Science Symposium at Harvard. Cambridge, MA, USA. November 4, 2022

51 NIH NIA Research Centers Collaborative Network (RCCN) Workshop. November 2, 2022 (link)

50 MD2K mDOT Webinar. October 31, 2022 (link)

49 The Lancet Summit: Big Data and AI in Pandemic Preparedness. October 27-28, 2022 (link)

48 † Big Data and Devices for Healthy Longevity Panel. Metabesity. October 12, 2022

47 † Open Data Panel. Chan Zuckerberg Initiative Open Science Annual Meeting. Santa Rosa, CA, USA. September 18-21, 2022

46 AMIA Knowledge Discovery and Data Mining (KDDM) Webinar. July 15, 2022 (link)

45 ¤ Precision Medicine World Conference, Santa Clara, CA. June 28-30, 2022

44 Clinical Research Trial Program: Upping Your Game (CTR). *American College of Cardiology (ACC)*. (virtual) Washington, DC, USA. June 23-24, 2022

43 # 8th International Conference on Ambulatory Monitoring of Physical Activity and Movement (ICAMPAM). Keystone, CO, USA. June 21-24, 2022

42 # Shionogi Global Digital Customer Engagement Summit. May 26, 2022

41 NIH NCI Division of Cancer Epidemiology and Genetics (DCEG) Tech Working Group. April 15, 2022

40 ISAT/DARPA “Wearable Supportive Personalized self-regulation” (WSPR) Workshop. February 15, 2022

39 Society for Laboratory Automation and Screening (SLAS). Boston, MA, USA. February 5-9, 2022

38 FDA Digital Health Measurement Collaborative Community (DATAcc) Expert Workshop on Digital Inclusion Deployment. January 28, 2022

37 † 4th Annual Southeast Center for Mathematics and Biology (SCMB) Symposium Panel on Academic Math-bio Career Trajectories. December 14, 2021

36 The Digital Biomarkers and Digital Measurements Summit Panel Discussion. Aligning Our Incentives for Long Term Data Collection. November 3-4, 2021

35 Workshop on Verification, analytical validation, and clinical validation (V3): the foundation of determining Fit-for-purpose for Biometric Monitoring Technologies (BioMeTs). 43rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society. (virtual) Guadalajara, Mexico. October 31 - November 4, 2021

34 Integrating location (GPS/GIS) data into clinical research: A Roundtable Discussion. NIAID OCICB IBRSP. October 6, 2021

33 † Integrating BHI and AI to Combat Pandemics. 2021 IEEE Healthcare Summit, October 4, 2021 (link)

32 Transparency of Artificial Intelligence/Machine Learning-enabled Medical Devices. FDA Public Workshop. October 14, 2021

31 Carnegie Mellon University Digital Health Symposium. October 6, 2021

30 University of Sheffield, Department of Infection, Immunity and Cardiovascular Disease and the Insigneo Institute. September 8, 2021

29 Defense Threat Reduction Agency (DTRA) TechWatch Seminar. August 25, 2021

28 DEFCON 29 Biohacking Village Conference. August 5-8, 2021

27 † How to define and measure outcomes on digital health for mental health, substance use, and violence. Brown Center for Digital Health. June 22, 2021 (link)

26 † American Telemedicine Association 25th Annual Conference & Expo. June 15, 2021

25 NSF-NIH Workshop: Security, Privacy, and Ethics in Health and Biomedical Research. May 14 – June 1, 2021

24 Department of Biomedical Engineering Seminar Series. The Ohio State University. April 2, 2021

23 American College of Cardiology Clinical Trials Research Session - Plenary 3: Deep Dive into Research Methods, March 12, 2021

22 UC San Diego Health Department of Biomedical Informatics (DBMI) Lecture Series. February 12, 2021

21 Didactic Seminar for the Statistical and Applied Mathematical Sciences Institute (SAMSI) Data Science in the Social and Behavioral Sciences (DS-SBS) Program - Digital Data from Wearable Technology. January 2021

20 Precision Diagnostics Virtual Summit - Precision Medicine Leaders Summit. October 20-21, 2020

19 Novartis One Digital Endpoints Conference. October 20, 2020

18 Institute for Translational Medicine and Therapeutics 2020 Symposium. University of Pennsylvania Perelman School of Medicine. October 12–13, 2020

17 † DIA Digital Technology in Clinical Trials. Evaluation of Digital Technologies to Demonstrate Clinical and Analytical Validation. August 18, 2020

16 Duke Clinical Research Institute Think Tank - Navigating Clinical Trials in the COVID-19 Era: An Accelerated Shift Towards Direct-to-Patient, Virtual and Hybrid Trials. July 29, 2020

15 † Employers Seek Wearable Technology to Track and Stop the Spread of Coronavirus. Future Workplace Summit. July 21, 2020

14 Sensor Technology: A Flexible Solution for Wearables. TechBriefs Webinar. July 9, 2020

13 † Data Science & Advanced Analytics in the Battle Against COVID-19. Data Science Connect Panel. May 14, 2020

12 Banff International Research Station (BIRS) Workshop on the Use of Wearable and Implantable Devices in Health Research (20w5109). Banff, Alberta, Canada. February 23 - 28, 2020

11 # BioNexus KC Annual Dinner. Kansas City, MO, USA. October 11, 2019

10 World Pharma Week Digital Health Pharmaceutical Executive Summit. Boston, MA, USA. June 17-20, 2019

9 DataX: AI in Healthcare. The Digital Physiome: Wearables for Precision Medicine. San Francisco, CA, USA. May 14-15, 2019

8 Harvard Digital Medicine Symposium. Wearables and Algorithms. Cambridge, MA, USA. May 14-15, 2019

7 SAMSI Advances in Precision and Personalized Medicine Conference. Raleigh, NC, USA. March 14-15, 2019 (link)

6 † Data Panel: Fielding Challenges Going from Experiments to Products. 11th Annual Extremely Large Databases (XLDB) Conference, Stanford, CA, USA. April 30-May 2, 2018

5 Dunn, Li, Salins, Snyder. Wearables for Precision Medicine. Precision Medicine World Congress USA 2017, Washington DC, USA. November 7-8, 2017

4 Dunn et al. Personalized Medicine and the Digital Physiome. Sidekick Health/GoodLifeMe. Reykjavik, Iceland. September 18, 2017

3 Dunn, Hicks, Snyder, Delp. Integrative Personalized Omics Profiling and the Digital Physiome. Li Ka Shing East-West Alliance Symposium 2017. Oxford, UK. September 11-14, 2017

2 Dunn et al. Integrative Personalized Omics Profiling and the Digital Physiome. The European Molecular Biology Laboratory - European Bioinformatics Institute (EMBL - EBI). Hinxton, UK. July 10, 2017

1 # Dunn, Salins, Li, Snyder. Integrative Personalized Omics, Physiological, and Physical Profiling of Health and Disease. Annual Stanford Sequencing Center for Genomics and Personalized Medicine User Group Meeting. February 1, 2017

CONFERENCE/WORKSHOP ABSTRACTS & PRESENTATIONS

Annotations: *Dunn Lab Trainee; Presenting author; † Panelist; ¤ Podium; ° Poster

53 Year In Review. AHLI 6th Annual *Conference on Health, Inference and Learning (CHIL)*. Berkeley, CA, USA. June 25-27, 2025.

52 ° Silver*, Hershkovich*, Shandhi*, Shah, Mahaffey, Maron, Rodriguez, Granek, Dunn. Using Observational Data to Guide Early Decision-Making in the Probiotic Development Pipeline: Hypertension as a Case Study. *International Conference on Microbiome Engineering*. Boston, MA, USA. November 13, 2024.

51 ¤† Workshop on Digital Twins for Cardiometabolic Health. *IEEE International Conference on Biomedical Health Informatics (BHI)*. Houston, TX, USA. November 10, 2024.

51 ° Silver*, Singh*, Hershkovich*, Cho*, Jeong*, Shandhi*, Mahaffey, Shah, Dunn. Screening for Atherosclerotic Cardiovascular Disease Risk Using Free-living Smartwatch Data. *IEEE International Conference on Biomedical Health Informatics (BHI)*. Houston, TX, USA. November 10-13, 2024.

50 ° Lederer*, Roghanizad*, Howell, Hwang, Dunn. Analyzing Participant Adherence to Wearables for Perioperative Patient Monitoring. *Device Technologies and Biomedical Robotics Track, Biomedical Engineering Society (BMES) Annual Meeting*. Baltimore, MD, USA. October 23-26, 2024

49 ¤ Y. Jiang*, Spies*, Roghani*, Bhosai, L. Snyder, Burke, Macleod, Dunn. Performance of Wearable Pulse Oximetry During Controlled Oxygen Desaturation. *Biomedical Engineering Society (BMES) Annual Meeting*. Baltimore, MD, USA. October 23-26, 2024

48 ° Silver*, Hershkovich*, Shandhi*, Granek, Dunn. Individual health factors inform the link between gut microbiome and cardiovascular health: Insights from a cross-sectional analysis of resting heart rate. *Biomedical Engineering Society (BMES) Annual Meeting*. Baltimore, MD, USA. October 23-26, 2024

47 ¤ Ashar*, S. Jiang*, Shandhi*, Dunn. Geographic Disparities and Demographic Reporting in the PhysioNet Open Access Database: Implications for Bias in Biosignal Algorithms. *Biomedical Engineering Society (BMES) Annual Meeting*. Baltimore, MD, USA. October 23-26, 2024

46 ° S. Jiang*, Ashar*, Shandhi*, Dunn. Analyzing Demographic Data Gaps in the PhysioNet Database: Toward Mitigating AI Bias in Biosignal Algorithms. *Biomedical Engineering Society (BMES) Annual Meeting*. Baltimore, MD, USA. October 23-26, 2024

45 ¤ Jeong*. Women in Statistics and Data Science (WSDS) 2024. Reston, VA, USA. October 16-18, 2024

44 Amin, Hershkovich*, Shin, Dunn, Shah. Sensor-Based Sleep Metrics And Cardiovascular Health: Results From The Project Baseline Health Study. 73rd Annual Scientific Session of the American College of Cardiology. Atlanta, GA, USA. April 6-8, 2024

43 ¤ Shandhi*, Jeong*, Chen*, Dunn. Building the Digital Biomarker Discovery Project (DBDP): Challenges and Lessons Learned. *IEEE International Conference on Biomedical Health Informatics (BHI)*. Pittsburgh, Pennsylvania, USA. October 15-18, 2023

42 Chen*, Shandhi*, Breton*, Wang*, Yang*, Arney, Pokorney, Dunn. Spectral Image Classification for Arrhythmia Detection with Wearable Electrocardiogram. *IEEE International Conference on Biomedical Health Informatics (BHI)*. Pittsburgh, Pennsylvania, USA. October 15-18, 2023

41 Singh*, Dunn, Armstrong, Wagner, Counts, Skinner, Kay, Li, Shah, Zucker, Neshteruk, Story, Suarez, Kraus, Zizzi. Effect of the Covid-19 Pandemic on Activity and Sleep Habits in Children and Adolescents with Obesity. *Biomedical Engineering Society (BMES) Annual Meeting*. Seattle, WA, USA. October 11-14, 2023

40 Roghanizad*, Lederer*, Howell, Hwang, Dunn. Wearables for Perioperative Patient Monitoring. *Device Technologies and Biomedical Robotics Track, Biomedical Engineering Society (BMES) Annual Meeting*. Seattle, WA, USA. October 11-14, 2023

39 Shandhi*, K Singh*, Janson, G Singh*, Lu*, Hillygus, Maddocks, Dunn. Patients' Ownership and Usage of Smart Devices and Their Willingness to Share Personal Data from Smart Devices for Research. *Biomedical Engineering Society (BMES) Annual Meeting*. Seattle, WA, USA. October 11-14, 2023

38 Roghanizad*, Lederer*, Howell, Hwang, Dunn. Assessing the Efficacy and Utility of Wearables for Perioperative Patient Monitoring. *IEEE-EMBS International Conference on Body Sensor Networks: Sensors and Systems for Digital Health (IEEE BSN)*. Boston, MA, USA. October 9-11, 2023

37 Roghanizad*, Lederer*, Dunn. Workshop On Wearable Systems For Precision Metabolic Health. IEEE-EMBS International Conference on Body Sensor Networks: Sensors and Systems for Digital Health (IEEE BSN). Boston, MA, USA. October 9-11, 2023

36 † Digital health technology data in biocomputing: Research efforts and considerations for expanding access. *Pacific Symposium on Biocomputing*. Big Island, Hawaii, USA. January 3-8, 2023

35 High-Performance Computing meets High-Performance Medicine. *Pacific Symposium on Biocomputing*. Big Island, Hawaii, USA. January 3-8, 2023

34 Shandhi*, Jeong*, Bent*, Carini, Hammond, Shaw, Sim, Dunn. Incorporating Digital Health into Clinical Workflows: The Future of Longitudinal, Remote, and Assisted Patient Monitoring. Workshop organized at the *2022 AMIA Annual Symposium*. Washington DC, USA. November 5-9, 2022

33 ° Shandhi*, Janson, G. Singh*, Lu*, Hillygus, Maddocks, Dunn. Assessment of Ownership of Smart Devices and the Acceptability of Digital Health Data Sharing among Duke Patients. *2022 AMIA Annual Symposium*. Washington DC, USA. November 5-9, 2022 (Distinguished Poster Award Nominee)

32 Shandhi*, Cho*, Roghanizad*, K. Singh*, Wang*, Bahmani, Alavi, Snyder, Ginsburg, Pasquale, Woods, Shaw, Dunn. Leveraging Data from Commercial Wearable Devices to Improve Diagnostic Testing Allocation in Resource-Limited Settings. *Biomedical Engineering Society (BMES) Annual Meeting*. San Antonio, Texas, USA. October 12-15, 2022

31 Shandhi*, Molinger, Inan, Dunn, Fudim. Comparison of Peripheral Tissue Oxygen Saturation between Patients with Heart Failure and Controls during a Submaximal Exercise Test: A Pilot Study. *2022 Heart Failure Society of America (HFSA) Annual Scientific Meeting*. Washington DC, USA. September 30 – October 3, 2022

30 Omidvar, Chikwetu*, Roghanizad*, Ash, Dunn, Mortazavi. Enhancing Continuous Glucose Monitoring-based Eating Detection with Wearable Biomarkers. *IEEE International Conference on Biomedical Health Informatics (BHI)*. Ioannina, Greece. September 27-30, 2022

29 Shandhi*, Cho*, Tseng, Lakhanpal, Ginsburg, Woods, Shaw, Dunn. Analyzing Retention in a Remote Digital Health Study: A Case Study with CovIdentify. *IEEE International Conference on Biomedical Health Informatics (BHI)*. Ioannina, Greece. September 27-30, 2022

28 Shandhi, Cho, Shaw, Dunn. Mitigation of Demographic Imbalances Resulting from Bring-Your-Own-Device Study Design. Grand Challenges in Personal Informatics and AI. ACM Conference on Human Factors in Computing Systems (CHI) Workshop. April 30-May 5, 2022. New Orleans, LA, USA.

27 Singh*, Armstrong, Counts, Skinner, Kay, Perrin, Li, Shah, Zucker, Neshteruk, Story, Suarez, Kraus, Zizzi, Dunn. Effect of the Covid-19 Pandemic on Activity and Sleep Habits in Children and Adolescents with Obesity. *Pediatric Academic Societies*. Denver, CO, USA. April 21-25, 2022

26 † Multi-Modal Data Science for Healthcare: State of the Art, Challenges, and Opportunities (Panel # 3577358). AMIA 2021 Annual Symposium. San Diego, CA, USA. October 30- November 1, 2021

25 Shandhi*, Cho*, Dunn. CovIdentify: Using Commercial Wearable Devices and Smartphones to Detect and Monitor COVID-19. IEEE International Conference on Biomedical and Health Informatics (BHI'21). July 27-30, 2021.

24 The Digital Biomarker Discovery Project: An Open Source Toolbox Biosignal Analysis. JSM Session# 220192. August 8-12, 2021.

23 CovIdentify: Using Commercial Wearable Devices and Smartphones to Detect and Monitor COVID-19. IEEE International Conference on Biomedical and Health Informatics. July 27-20, 2021.

22 Cho*, Dunn. Human Factor Ergonomic Society International Symposium on Human Factors and Ergonomics in Health Care. April 16, 2021

21 Cho*, Shaw, Dunn. NSF Student Conference on COVID-19 Modelling. January 28, 2021

20 ° D'Arcy*, Qi*, Steinberg, Dunn. Semantic Nutrition: Estimating Nutrition with Mobile Assistants. *Machine Learning for Healthcare*. August 7-8, 2020 (link)

19 ¤ Cho*, Bent*, Wittmann, Merwin, Thacker, Feinglos, Dunn. Expanding the Definition of Intraday Glucose Variability. American Diabetes Association's 80th Scientific Sessions 2020-LB-7040-Diabetes; June 12-16, 2020 - *Late breaking Abstract*

18 ° Runge, Zhao, Ogbeide, Dunn. The Digital Biomarker Discovery Pipeline. Special Session on Nonparametric Statistics in Omics Applications at the IEEE International Conference on Biomedical and Health Informatics and Body Sensor Networks, Chicago, Il. May 19-22, 2019

17 ¤ Jiang*, Faroqi, Palaniappan, Dunn. Estimating Personal Resting Heart Rate from Wearable Biosensor Data. *Proceedings of the IEEE Conference on Biomedical and Health Informatics.* May 19-22, 2019 (*11% acceptance rate)

16 ° Dunn, Liang, et al. Smart Diaphragm Study: Multi-omics profiling and cervical device measurements during pregnancy. Keystone Digital Health Symposium, Keystone, CO. January 21-25, 2019

15 ¤ Liang, Dunn, et al. Smart Diaphragm Study: Multi-omics profiling and cervical device measurements during pregnancy. 39th Annual SMFM Pregnancy Meeting, Las Vegas, NV. March 12-15, 2018

14 ¤ Pantell et al. Unstable Housing Is Linked to Adverse Obstetric Outcomes. 39th Annual SMFM Pregnancy Meeting, Las Vegas, NV. March 12-15, 2018

13 ¤ Dunn, Kidzinski, Runge, Delp, Snyder, Hastie. Personalized Vital Sign Modeling to Predict Health Status. AMIA Informatics Summit, San Francisco, CA. March 12-15, 2018

12 ¤ ° Yeh*, Dunn*@, Prieto, Luc, Muppidi, Delp, Snyder@ (*co-first author; @co-corresponding author). Consumer-grade wrist-worn PPG sensors can be used to detect differences in heart rate variability among a heterogenous prediabetic population. IEEE International Conference on Biomedical and Health Informatics, Las Vegas, NV. March 4-7, 2018

11 ¤ Dunn, Runge, Salins, Li, Snyder. Consumer Wearable Devices Reveal Health Status Through Individual Activity Habits and Physiological Responses to Exercise. Biomedical Engineering Society Annual Meeting, Phoenix, AZ. October 11-14, 2017

10 ° Dunn, Salins, Li, Snyder. Consumer Wearable Devices for Health Surveillance and Disease Monitoring. AMIA Joint Summits on Translational Science, San Francisco, CA. March 27-30, 2017

9 ¤ ° Dunn, Hadjimichael, Isparyan, Manral, Runge. MoveIt! Smartphone Application for Promoting Healthy Living. IEEE International Conference on Biomedical and Health Informatics, Orlando, FL. February 16-19, 2017

8 ° Dunn, Salins, Li, Snyder, Delp. Digital Health: Consumer Wearable Devices for Health Surveillance and Disease Monitoring. Precision Medicine World Conference, Mountain View, CA. January 23 – January 25, 2017

7 ° Dunn, Salins, Li, Snyder, Delp. Digital Health: Consumer Wearable Devices for Health Surveillance and Disease Monitoring. NIH Big Data to Knowledge (BD2K) All Hands Meeting, Bethesda, MD. November 29 - December 1, 2016

6 ° Dunn, Salins, Li, Snyder. Consumer Wearable Devices for Health Surveillance and Disease Monitoring. Big Data in Biomedicine, Palo Alto, CA. May 25-26, 2016.

5 [°] Dunn, Salins, Li, Snyder. Consumer Wearable Devices for Health Surveillance and Disease Monitoring. Keystone Symposium on Genomics and Personalized Medicine, Banff, Alberta, Canada. February 7-12, 2016. *Full travel award*

4 [°] Dunn, Qiu, S Kim, Jjingo, Hoffman, C Kim, Jang, Son, D Kim, Pan, Fan, Jordan, Jo. Disturbed Flow Alters Genome-wide DNA Methylation Patterns, Regulating Endothelial Gene Expression and Atherosclerosis. AHA Scientific Sessions. Chicago, IL. November 15-19, 2014 – *Best of AHA Specialty Conferences*

3 [¤] Dunn, Qiu, S Kim, Jjingo, Hoffman, C Kim, Jang, Son, D Kim, Pan, Fan, Jordan, Jo. Flow alters genome-wide DNA methylation, regulating endothelial gene expression and atherosclerosis. Biomedical Engineering Society Annual Meeting. San Antonio, TX. October 22-25, 2014

2 [¤] Dunn, Qiu, S Kim, Jjingo, Hoffman, C Kim, Jang, Son, D Kim, Pan, Fan, Jordan, Jo. Disturbed Flow Alters Genome-wide DNA Methylation Patterns, Regulating Endothelial Gene Expression and Atherosclerosis. Arteriosclerosis, Thrombosis, and Vascular Biology 2014 Scientific Sessions. Toronto, Ontario, Canada. May 1-3, 2014 – *Top 10 percent of accepted abstracts; presentation highlighted in ATVB 2014 Science News*

1 [°] Dunn, Qiu, S Kim, Jjingo, Hoffman, C Kim, Jang, Son, D Kim, Pan, Fan, Jordan, Jo. Disturbed Flow Alters Genome-wide DNA Methylation Patterns, Regulating Endothelial Gene Expression and Atherosclerosis. International Symposium on Biomechanics in Vascular Biology and Cardiovascular Disease. Montreal, Quebec, Canada. April 28-29, 2014

[¤] Dunn, S Kim, Qiu, C Kim, Hoffman, Jang, Jo. Genome-wide Epigenomic Regulation by DNA Methylation in Endothelial Cells. Biomedical Engineering Society Annual Meeting, Seattle, WA. September 25-28, 2013

Institutional presentations and short courses taught

40 [°¤]Lederer*, Roghanizad*, Howell, Turnage, Molvin, Blazer, Knackstedt, Thacker, Dunn, Hwang. Evaluating the Feasibility of Using Wearables for Continuous Monitoring in the Perioperative Setting. *9th Annual Duke Surgery Research Day.* April 30, 2025.

39 Roghanizad*, Lederer*, Dunn. Duke Department of Surgery Research Friday. October 18, 2024.

38 [¤]Dunn and [†]Singh*. Duke Summit on AI for Health Innovation. October 9-11, 2024.

37 Duke Biostatistics & Bioinformatics (B&B) and Duke Clinical Research Institute (DCRI) Clinical Trial Endpoints Working Group. May 17, 2024

36 Duke Engineering AI/ML Tour with Provost Gallimore. February 2, 2024

35 Advances and Challenges in Digital Health. Duke-Margolis Seminar. September 22, 2023

34 Roghanizad*, Jeoung*, Dunn. NIH All Of Us Research Project Office Hours. September 30, 2022 (link)

33 Examples From the Field: Community Engaged Research and COVID Symptoms Monitoring. Duke CTSI CERI. August 25, 2023

32 Cho*, Roghanizad*, Dunn. PIPP Catalysis Meeting. November 4, 2022

31 Ho*, Cho*, Shandhi*, Dunn. Pandemic Divide Conference hosted by Samuel Dubois Cook Center on Social Equity. October 26, 2022

30 Duke Machine Learning Summer School – June 6, 2022

29 Shandhi*, Dunn. Cardiorespiratory Fitness Monitoring Using Wearables. Energetics in Anthropology Workshop. Durham, NC, USA. May 2-3, 2022 (*Early Career Fellowship Award)

28 Optical Sensing for Digital Biomarker Development. Fitzpatrick Institute for Photonics Symposium. March 8, 2022

27 Applications of Machine Learning to Health- Fuqua MQM Workshop on ML. January 26, 2022

26 Duke Research Data Initiative Research Town Hall. November 18, 2021

25 Duke Center for Applied Genomics and Precision Medicine (CAGPM) Program in Precision Medicine. August 26, 2021

24 Duke BERD Seminar. July 9, 2021

23 Duke Industry Statistics Symposium. April 23, 2021

22 Duke+Data Science (+DS) program virtual series: Coronavirus Conversations + Data Science: Ethics of AI and wearables. August 20, 2020

21 Duke+Data Science (+DS) program virtual series: Coronavirus Conversations + Data Science: The opportunity for wearables for early COVID detection. August 18, 2020

20 Public Health Crises of 2020: Combating COVID-19 and Disparities with Data – Duke University School of Medicine Symposium. June 24, 2020

19 Duke Center for Applied Genomics and Precision Medicine. May 7, 2020

18 Duke Center for Health Informatics Seminar. Presented by PhD student Brinnae Bent. April 8th, 2020

17 Duke Mobile App Gateway Lunch & Learn. March 27, 2020

16 Duke MIDS 4th year Medical Student Seminar. February 19, 2020

15 DUSON Digital Health Research Interest Group Presentation. December 10, 2019

14 BIOS900 Research Talk. November 22, 2019

13 Duke +DS In-Person Learning Experience. October 30, 2019

12 Duke Annual Symposium on Big Data and Precision Health. October 24, 2019

11 DCRI Clinical Fellows Research Forum. October 7, 2019

10 The Digital Physiome: Wearables for Precision Medicine. Duke Digital Health Day. September 13, 2019

9 Duke Data Dialogues. September 25, 2019

8 Precision Cardiometabolic Care Through Multi-scale Biomedical Data Integration. Duke Pratt School of Engineering TEER Talks. March 4, 2019

7 Integrative Personalized Omics Profiling and the Digital Physiome. Stanford Prevention Research Center/Primary Care and Population Health Seminar Series. October 26, 2017

6 Dunn, Salins, Li, Snyder. Integrative Personalized Omics, Physiological, and Physical Profiling of Health and Disease. Mobilize Center External Advisory Board Committee Meeting. January 15, 2016

5 ° Salins, Dunn, Li, Perelman, Hall, Snyder. Wearable Devices for Physical and Physiological Monitoring. Stanford Data Science Initiative Retreat. October 5-6, 2015

4 ° Salins, Dunn, Li, Perelman, Hall, Snyder. Wearable Devices Surveillance in the Integrative Personalized Omics Profiling Project. Stanford Genetics Retreat. September 16-18, 2015

3 ¤ Dunn, S Kim, Qiu, C Kim, Jo. Genome-Wide Epigenetic Regulation in Endothelial Cells by Disturbed Flow and its Role in Atherosclerosis. Emory Annual Cardiology Research Symposium. June, 2013

2 ¤ Dunn, S Kim, Qiu, C Kim, Jo. Epigenetics in Atherosclerosis. Emory Annual Biomechanics Meeting, Atlanta, GA, January, 2013

1 ° Dunn, Samper. Effect of Mitochondrial Maintenance Gene Silencing on Endothelial Cell Respiration. Biomedical Engineering Undergraduate Research Symposium, Johns Hopkins University, Baltimore, MD, November 2009

TEACHING

My core teaching obligation is one semester per year (in BME) given my joint appointment (50% BME & 50% in B&B) in which the B&B Department does not require faculty to teach. For BME, I designed the Introduction to Biomedical Data Science course (BME 580.01, formerly 590.X). I also often teach in B&B, and lead Independent Studies and Bass Connections Teams with my lab members, both of which are taken for course credit. I have also led four summer Data+ teams.

Fall 2024

Course	No. Students
Bass Connections ISS 395/795 Infection Detection Platform	9
BME Indep. Study 493 Predictive Health Modeling	1
BME Indep. Study 494 ECG and PPG Interbeat Interval Detection	1
EGR Indep. Study 393 AI Fairness In Biosignals	1

Guest lecture for BME567 / CHEM601 (Biosensors); Instructor: Tuan Vo-Dinh

Spring 2024*

Course	No. Students
Bass Connections BME 590 Wearables Infection Detection	5
Bass Connections ISS 396/796 Digital Biomarker Discovery Project	4
BME Indep. Study 494 ECG Analysis of Arrhythmias	1
BME Indep. Study 791 Augmented Reality For Emotions (co-advised w/ Gorlatova)	1

*Maternity leave semester

Spring 2023

Course	No. Students
BME 580 An Introduction to Biomedical Data Science	26
Bass Connections BME 290/590; ISS 396 Wearables Infection Detection	9
BME Indep. Study 494 AR For Thermal Perception (co-advised w/ Gorlatova)	1
BME Indep. Study 791 B&B Team Minnesota Youth Survey for Public Heath	3
BME Indep. Study 791 Sleep Analysis	1
BME Indep. Study 791-47 Wearable Device Design	1
EGR Indep. Study 393 EEG Signal Analysis	1

Fall 2023

Course	No. Students
Bass Connections BME 290/590; ISS 395 Wearables Infection Detection	8
Bass Connections ISS 395/795; BME 791 Digital Biomarker Discovery Project	8
BME Indep. Study 493 ECG Analysis of Arrhythmias	1
BME Indep. Study 792 Gold Standard Study	1

Fall 2022

Course	No. Students
BIOSTAT 707 Statistical Methods for Learning and Discovery	21
Bass Connections BME 290/590; ISS 290/395 COVID-19 detection from wearables	12
BME Indep. Study 493 Augmented Reality For Emotion Regulation (co-advised w/ Gorlatova)	1
BME Indep. Study 494 ML Detection of Flu	1
BME Indep. Study 791 Detecting REM Sleep	1

Summer 2022

Course	No. Students
BME Indep. Study 899 Summer Research Projects	2

Spring 2022

Course	No. Students
BME 580 An Introduction to Biomedical Data Science	30
BME Indep. Study 493 EEG Emotion Recognition	1
BME Indep. Study 791 Deep Learning For CT	1
BME Indep. Study 792 Eses Discharge Detection (co-advised w/ X. Hu)	1
BME Indep. Study 792.06 ECG Seizure Classifier (co-advised w/ X. Hu)	1

Guest lecture for AI Health *Clinical Research for Electronic Health Records* Course (Goldstein), March 13th, 2022- Mobile and Digital Health Data

Fall 2021

Course	No. Students

BIOSTAT 707 Statistical Methods for Learning and Discovery	27
HLTHPOL 395/795 Bass Connections COVID detection from wearables	11
BME Indep. Study 791 Sleep Medicine	1
BME Indep. Study 791 Eses Discharge Detection (co-advised w/ X. Hu)	1

Spring 2021

Course	No. Students
BME 590 An Introduction to Biomedical Data Science	12
Bass Connections HLTHPOL 395/795 COVID detection from wearables	11
BME Indep. Study 791 Data Compression	1

Guest lecture for BME THRIVE (ENGR790 Walker)

Fall 2020

Course	No. Students
BME 590.04 An Introduction to Biomedical Data Science	29
HLTHPOL 395/795 Bass Connections COVID detection from wearables	11
BME493 Technology In Health Analytics	1
EGR393 Human Activity Recognition	1
BME791 Health Data Analysis	1

Spring 2020

Course	No. Students
BME 590 An Introduction to Biomedical Data Science	22
BME494 Healthy Adaptive Suggestions	1
BME493 Move-It App Dev	1
BME493 Digital Biomarkers	1
BME792 PPG Arrhythmia Detection	1

Fall 2019

Course	No. Students
BME 590.04	18
BME 493 Move-It App Development	
BME 494 Digital Biomarker Data Science	1
BME 493 Human Behavior Modification	1
BME 494 Flu Prediction Via Biomarkers	1
BME791 Blood Pressure Variability	1
BME791 PPG Arrhythmia Detection	1

Spring 2019*

Course	No. Students
BME 494 Wearable Infection Detection	1
BME 494 Algorithms For Biomedical Data	1
BME 493 Biomedical Data Engineering	1

** New faculty teaching relief*

Fall 2018*

Course	No. Students
BME 493 Wearable Infection Detection	1
BME 493 Data Flow Construction	1
BME 493 Algorithms For Biomedical Data	1

** Visiting Assistant Professor*

TRAINEE MENTORSHIP / SUPERVISION

Sabbatical Trainees:

Dr. John Valdovinos, Associate Professor of Electrical and Computer Engineering at California State University, Northridge.

Postdoctoral Fellows:

Postdoctoral Trainee	Years	Current Role	Current Institution	Notes / Major Achievements
Mahmud Shekh Islam, PhD	2024 – current	-	Duke University BIG IDEAs Lab	
Marie Louise Meng, MD	2023 – current		Duke University	Informal mentor
Lucy Esteve, MD	2022-2024	Clinician – Endocrinology, Diabetes & Metabolism	Texas Diabetes and Endocrinology	Endocrinology T32 Mentor
Ali Roghanizad, PhD	2021-current	Research Scientist Sr.	Duke University BIG IDEAs Lab	

Julianna Prim, PhD	2021-2022	Postdoctoral Research Fellow	UNC Center for Women's Mood Disorders	Informal mentor (UNC)
Md Mobashir Hasan Shandhi, PhD	2020-2024	Tenure-Track Assistant Professor	Arizona State University, ECEE Department	AHA Postdoctoral Fellow 2023-2025
Joshua D'Arcy, MD, MS	2019 – 2020	Adjunct Assistant Professor	Northwestern University	Startup company (Edge Analytics) acquired in 2024

PhD students:
*Completed Certificate in College Teaching

Predoctoral Trainee	Years	Dissertation Title	Current Role	Current Institution	Notes / Major Achievements
Brinnae Bent, PhD*	2019-2021	Discovering Digital Biomarkers of Glycemic Health from Wearable Sensors	Faculty Member (Entrepreneur in Residence)	Duke AI for Product Innovation Program	Startup company (Edge Analytics) acquired in 2024
Lucy Chikwetu, PhD (ECE)	2020-2023	Toward real-time, high-performance, and generalizable eating episode detection and postprandial carbohydrate content classification methods using non-invasive wearables	Engineering Associate	Goldman Sachs	Dunn: Primary PhD advisor for 3 years; Thesis committee chair: Younes
Will (Ke) Wang	2019-2024	Improving Wearable Sleep Tracking and Discovering Sleep Digital Biomarkers	Postdoctoral Fellow	Columbia University	CHIL 2024 Best Paper Award ($300 prize); Pratt Gardner Fellow
Peter Cho	2019-2025	Influenza-Like Illness Detection via Commercial Wearable Devices	Lead Data Scientist	VivoSense, Inc.	Bass Connections Team Leader; PIPP Scholar
Karnika Singh	2019-current	Developing Digital Biomarkers of Diabetes and Prediabetes using Digital Health Technologies	Planned defense 10/2025	-	Duke Margolis Scholar
Yihang Jiang	2020-current	-	-	-	Duke AI Health Data Science Fellowship
Hayoung Jeong	2022-current	-	-	-	NIH F31
Leeor Hershkovich	2022-current	-	-	-	
Anita Silver	2023-current	-	-	-	NSF GRFP
Bill Chen	2023-current	-	-	-	NSF GRFP Honorable Mention; Duke Scholars in Molecular Medicine (2025)

Lauren Lederer	2023-current	-	-	-	NSF TAST NRT Fellow (2025); Duke Rhodes Information Initiative Fellowship (2024)
Jerry Yang	2023-current	-	-	-	

Rotation PhD students:
CBB: Kalyani Kottilil (2020) (F31 recipient)

Master's students:

BME Master's Students: Connor Davis (startup company (Edge Analytics) acquired in 2024), Yuankai Qi, Geetika Singh, Baiying Lu, Fangyi Chen, Yu Miao, Amanda Breton, Lauren Lederer, Jerry Yang, Ayush Shetty, Bill Chen, Qinyi Tian, Fangrui (Lori) Liu, Mengde Liu, Annika Kumar, Shreya Chindepalli
Biostatistics Master's Students: Gauri Kamat, Mengjie Xu, Oana Enache, Jackson Dial
ECE Master's Students: Doyinsolami Samuel Olaoye
MIDS (Masters of Interdisciplinary Data Sciences): Daniel Witt, Ikponmwosa Ogbeide, Joshua D'Arcy, Alena Kalodzitsa, Joe Hsieh, Xiao Lu

Undergraduate students:

BIG IDEAs Lab Research Assistants: Emilia Grzesiak, Ellie Wood, Orgil Batzaya, Christina Le, Sabrina Qi, Vishal Dubey, Harish Yerra, Arthur Zhao, Jerry Huang, Kyle Zingler, Chentian Jiang, Aman Ibrahim, Joe Kim, Maria Henriquez, Andrew Brown, Himanshu Jain, Ryan Chen, Ethan Ho, Matthew Lee, Jiayu Gao, Harrison Kane
Data+ Team (2024): Gavin Li, Xiyue Zhang, Aljazi waleed Alomairy, Amy Liu, Misha Aganin
Data+ Team (2022): Sarah Jiang, Ashley Chompre, Peining Yang
Data+ Team (2021): Emmanuel Mokel, Alyssa Shi, Sean Fiscus, Yamil Lopez-Ruiz, Alina Feng
Data+ Team (2020): Kush Gulati, Noah Lanier, Annie Hirsch, Nathan Warren
Bass Connections – 2024-2025: Krish Bansal, Amy Duan, Arthur Zhao, Jamee Krzanich, Naomi Patel, Luke Redmore, Cindy Wang, Aseda Asomani, Lauren Baur
Bass Connections Team 1 – 2023-2024 (Infection Detection): Anna Zhang, Aseda Asomani, Dina Habboosh, Ritvik Janamsetty, Luke Redmore, Krish Bansal
Bass Connections Team 2 – 2023-2024 (DBDP): Harrison Kane, Shun Sakai, Ellie Vogel, Mercy Guriyire, Pomelo Wu
Bass Connections 2022-2023: Danica Bajaj, Philjae Chang, Sarah Jiang, Adam Nadim Kaakati, Qi Xuan Khoo, Shun Sakai, Muhang Tian, Michelle Jessica Tanyu Van, Jingxing Wang, Lauren Lederer, Ashley Chompre, Peining Yang, Daniel Feinblatt, Melinda Guo
Bass Connections 2021-2022: Qi Kuan Khoo, Yvonne Kuo, Amrita Lakhanpal, Tommy Tseng, Sean Fiscus
Bass Connections 2020-2021: Amanda Stern, Aneesh Patil, Bilge Tatar, Ethan Ho, Jaclyn Xiao, Jeremy Yi, Libba Lawrence, Rami Sbahi, Yen Dinh, Jason Shang.

Endocrinology T32, Nursing T32, and NCDRC P30 Mentor (2023-current)
Lucy Esteve, MD (Duke Endocrinology Fellow) (2021-2024)

Trainee Awards, Honors, and Invited Talks:
1. ACM SIGHPC Computational & Data Science Fellowship (Perisa Ashar, 2025)
2. Bass Connections Student Research Award (Harrison Kane, 2025)
3. Pratt Research Fellowship (Perisa Ashar, 2024)
4. Graduation with Departmental Distinction (Matthew Lee, 2024; Ethan Ho, 2023)

5. Rhodes Graduate Fellowship for Interdisciplinary Research, 2024-2025 (Lauren Lederer)
6. Duke Heart Center and Translating Duke Health Research $50,000 grant "Artificial Intelligence and Wearable Sensors to Detect and Track Cancer Treatment-Related Cardiotoxicities" (Mobashir Shandhi, 2024– relinquished due to faculty offer at ASU)
7. AHA postdoctoral fellowship (Mobashir Shandhi, 2023)
8. Duke AI Health Spring Seminar Series (Mobashir Shandhi, May 2023)
9. Presentation to Minnesota Department of Health (Sofia Pozsonyiova, Shannon Murphy, Mairead Dillon)
10. Margolis Scholar (Karnika Singh)
11. BME Dept. TA Award (Zachary Quinn, 2023)
12. Rhodes Scholarship (Qi Xuan Khoo, 2022)
13. BME Master's Research Fellowships (Bill Chen, Lauren Lederer, and Jerry Yang, 2022)
14. TriCEM Graduate Fellowship (Peter Cho, 2022)
15. Duke Health Data Science (HDS) Summer 2022 Research Fellow (Yihang Jiang, 2022)
16. Duke Institute for Brain Sciences (DIBS) CCN Colloquium Series (Mobashir Shandhi, February 2022)
17. Rhodes Graduate Fellowship (Karnika Singh, 2021; Peter Cho, 2021)
18. Duke TEDx Speaker (Brinnae Bent, 2021)
19. Duke AI for Product Innovation Program (Mobashir Shandhi, September 2021)
20. Duke Research in Engineering Program (DukeREP) (Mobashir Shandhi, June 2021)
21. Duke GradEngage Fellowship (Karnika Singh, 2020)
22. MIDS Team Lead (Peter Cho, 2020)
23. Bass Connections Team Lead (Peter Cho, 2020)
24. National Academy of Engineering Scholarship (Emilia Grzesiak, 2018-2020)
25. FORGE Fellowship (Brinnae Bent, 2019-2021)
26. BME Second Year Fellowship (Will Ke Wang, 2020)
27. BMES Career Development Award (Brinnae Bent, 2020)
28. BME Master's Research (Yuankai Qi, 2019)
29. BME Fellowship (Peter Cho, 2019)
30. Pratt Gardner Fellowship (Will Ke Wang, 2019)
31. IEEE BHI travel award (Chentian Jiang, 2019)
32. Duke Research Computing Symposium Best Poster Award- 3rd place (Emilia Grzesiak, 2019)
33. NAE Scholar (Emilia Grzesiak, 2019)

BME PhD Thesis Committees:
Current: Daniela Chanci Arrubla (PI: Kamaleswaran), Sophie Shi (PI: Tim Dunn), Derek Pang (PI: Luck), Nusrat Sadia Khan (PI: Randles), Afarin Aghassizadeh (PI: Chilkoti), Srikar Katta (PI: Rudin), Daniel Marshall (PI: Grill); Samreen Tahia Mahmud (PI: Randles), Alex Ma (PI: Bissig), Hrshita Gowda (PI: Reker), Zachary Quinn (PI: Chilkoti/Chatterjee), Ben Neubert (PI: L. David), Zilu Zhang (PI: Reker)
2025: Yuanchi Ha (PI: You), Billy Carson (PI: Carlson)
2024: Timothy Scargill (PI: Gorlatova), Mitchell Abrams (PI: Bass)
2023: Yinhao Ren (PI: Joseph Lo), James A. Coppock (PI: Lou DeFrate), Kay Palopoli (PI: Grill)
2022: Jacob Heggestad (PI: Chilkoti), Jinyuan Jia (PI: N. Gong), Nadia Abutaleb (PI: Truskey), Anders Dohlman (PI: Shen/David).
2021: Rui Xi (PI: Xiling Shen), John Gilbert (PI: Grill)
2020: Kristina Barth (PI: Viventi), Nicholas Giroux (PI: Xiling Shen)

BME Masters Thesis Committees:
2025: Emilie Pauwels
2023: Sophie Shi, Ayush Shetty, Juming Xiong, Qinyi Tian, Sihan Lyu, Ramana Balla
2022: Jinchhang Li, Yiaoyu Qi
2021: Zanchen Li, Shujin Zhong, Xinghong Tang

B&B Masters Thesis Committees: Mingxuan Wang (PI: Goldstein), Scott Sun (PI: Goldstein), Sofia Pozsonyiova (PI: Pieper)

ECE PhD Thesis Committees:
Current: Sarah Eom (PI: Gorlatova)

CS PhD Thesis Committees:
Current: Xenia Konti (Zavlanos)

Evolutionary Anthropology PhD Thesis Committees:
2022: Claire Parker (PI: Ponzter)

External Thesis Committees:
2023: University of Deusto, Bilbao, Spain. Danyal Maheswari (PI: García-Zapirain Soto)

SERVICE

EDITORIAL / ADVISORY BOARDS / SERVICE

2025 – 2032	Association for Health Learning and Infernence (AHLI) Board of Directors
2025	Technical Program Co-Chair. *IEEE Body Sensor Networks (BSN)*. Los Angeles, CA, USA. November 3-5, 2025.
2025	Journal of the American College of Cardiology (JACC) AI Advisory Committee
2025	Scientific Advisory Council (SAC) for the Health Unit of the American Society for Microbiology (ASM).
2025	Workshops & Tutorials Co-Chair; Area Chair. *IEEE BHI.* Atlanta, GA, USA. October 26-29, 2025.
2025	Reviewer, NIH Special Emphasis Panel Panel (ZRG1 HSS-R(90)). April 17-18, 2025.
2025	Reviewer, NSF IUCRC Panel (P 251681). March 13 - 14, 2025.
2025	Program Co-Chair. AHLI 6th Annual *Conference on Health, Inference and Learning (CHIL)*. Berkeley, CA, USA. June 25-27, 2025.
2025	Reviewer, Nature, Mayo Clinic Proceedings: Digital Health, Nature Reviews Drug Discovery, Nature Communications, The Lancet Digital Health, Physiological Reviews, American Journal of Respiratory and Critical Care Medicine
2025	Guest Editor, *npj Biosensing*. Special Issue on AI-Driven Innovations in Biomedical Sensing.
2025	Academic Advisory Committee, Digital Medicine (DiMe) Society report: Advancing the Use of Sensor-Based Digital Health Technologies (sDHTs) for Mental Health Research and Clinical Practice.
2024	Area Chair. *IEEE BHI*. Houston, TX, USA. November 10-13, 2024.
2024	Track Co-Chair, Global Health Technologies. *BMES* 2024. Baltimore, MD, USA. October 23-26, 2024.
2024	Technical Program Co-Chair. *2024 IEEE HI-POCT*. Tucson, AZ. September 19-20, 2024.
2024	Reviewer, 2025 *Pacific Symposium for Biocomputing* Research Parasite Award
2024	Reviewer, NIH SBIR Panel (ZRG1 CCHI-E10). August 2024.
2024	Reviewer, Nature, Nature Medicine, Nature Biomedical Engineering, Nature Communications, The Lancet Digital Health, npj Digital Medicine, JMIR mHealth and uHealth, Diabetes Therapy, NeurIPS2024 Data Track, CHIL2024, ACM IMWUT 2024,

2023	Guest Editor, ACM Transactions on Intelligent Systems and Technology (*ACM TIST*). Special Issue on Reliable Artificial Intelligence for Digital Health.
2023	Organizer of Special Session: Open-Source Initiatives in Digital Health: Challenges Faced and Lessons Learned. *IEEE BHI*. Pittsburgh, Pennsylvania, USA. October 15-18, 2023.
2023	Co-chair, NHLBI Workshop on Big Data Integration for Enhanced Epidemiological Research. September 27-28, 2023 (Day 1 and Day 2 webcasts)
2023	Reviewer, NSF SBIR/STTR Program. August 2023
2023	NSF CISE III SMALL Panel P232354. June 20-21, 2023.
2023	Reviewer, Information Sciences, Nature Medicine, JAMA Network Open, IEEE JBHI, JMIR, etc.
2023	Reviewer. NIH Special Emphasis Panel (ZHL1 PPG-Z M2). March 10, 2023.
2023	Reviewer. NSF-NIH Smart and Connected Health (SCH) Panel (P231036). January 25-26, 2023.
2023 – 2026	Technical Committee Member, *IEEE WBSS.*
2023	Session Organizer. Digital health technology data in biocomputing. *Pacific Symposium on Biocomputing*. Big Island, Hawaii. January 3-8, 2023.
2022	Microsoft Academic Research Advisory Board (MARCAB) Member.
2022	NIH CIDH Study Section Ad Hoc Member. June 8-9, 2022.
2022	Workshop Organizer. Incorporating Digital Health into Clinical Workflows: The Future of Longitudinal, Remote, and Assisted Patient Monitoring". *2022 AMIA Annual Symposium*. November 5, 2022. [Workshop Link]
2022	Session Chair, *IEEE BHI-BSN*. Machine learning, deep learning, and decision support
2022	ACC Clinical Trial Research Program Faculty. June 24, 2022
2022	Workshop Organizer. Digital Biomarkers for Physiological and Mental Health Monitoring: Potential, Challenges, and Areas for Future Development. *UbiComp*. Atlanta, GA, USA. September 15, 2022. [Workshop Link]
2022	Verily Baseline Health Study Digital Biomarker & Cardiometabolic Working Group Member
2022	FNIH PAH Working Group Member
2022	AMIA-KDDM2022: Program Committee Member
2022	Technical Program Committee for MobiSys '22 Workshop: Emerging Devices for Digital Biomarkers
2022	Reviewer, Nature Metabolism, Journal for the Measurement of Physical Behaviour, Nature Communications, JMIR, ACM Transactions on Computing for Healthcare, MHLC 2022
2021 - 2023	Associate Editor, Nature Partner Journals (npj) Digital Medicine
2021	NIH CIDH Study Section Early Career Reviewer. October 19 – 20, 2021.
2021	Track Co-chair, Device Technologies and Biomedical Robotics. BMES 2021 Annual Meeting. Orlando, FL. October 6-9, 2021.
2021	Associate Editor, 2021 IEEE EMBC Conference
2021	Member, FDA Network of Digital Health Experts (NoDEx)
2021	Reviewer, JAMA Network Open, Nature Medicine, Management Science
2021 - present	DiME Digital Health Measurement Collaborative Community (DATAcc)
2021	Organizing Committee Member, US Frontiers of Engineering Meeting
2021	Guest Editor, Sensors (Special Issue on Biomedical Signal Processing for Healthcare Applications)
2021	IEEE BHI-BSN Conference Special Session Chair (08 – New Technologies for the Future of Prenatal Health)
2020	Participant in the Digital Medicine Society *Playbook* Tour of Duty

2020	Participant, World Economic Forum Workshop on Managing Epidemics with Consumer Wearables
2020	Guest Editor, Int. Journal of Environmental Research and Public Health
2020	Associate Editor, 2020 IEEE EMBC
2020	Reviewer, The Lancet Digital Health, Nature Digital Medicine, Cell Reports, PloS Genetics, Patterns Cell Press
2019 – present	Editorial Board Member, IEEE Open Access Journal of Engineering in Medicine and Biology (OJEMB).
2019	Scientific Program Committee, AMIA 2020 Informatics Summit
2019	Session Chair- Health Informatics, 2019 IEEE EMBC
2019	Associate Editor, 2019 IEEE Engineering in Medicine & Biology Society (EMBC)
2019	Associate Editor, 2019 IEEE BHI
2019	Reviewer, IEEE Transactions on Biomedical Engineering and MDPI
2018	Scientific Program Committee, AMIA 2018 Annual Symposium
2018	Reviewer, Journal of Biomedical Informatics
2017 – 2019	STRONG-D Study Advisory Board Member (NIH 5R01DK081371)
2017	Technical Program Committee, 2018 IEEE Biomed Health Informatics
2017 - present	Managing Editor, Journal of Biomedical and Health Informatics
2017 – 2020	Biomedical Engineering Society Ethics Subcommittee Member
2016	Associate Editor, 2017 IEEE Biomedical and Health Informatics
2016	Reviewer, 2017 AMIA Joint Summits on Translational Science
2015	Reviewer, Journal of Inflammation
2015 – 2016	Team Lead, Redaptor (platform to support reproducible science)
2011 – 2012	Georgia Institute of Technology Graduate Leadership Program

Duke Committees/Service

2025	Duke Computing Initiative Advisory Committee
2024	Duke CTSI CRU Advisory Board
2024	FIP Research Program Co-Director of the AI & Photonics Program
2024	Domain Faculty Team member for Duke's Information Technology Advisory Council (ITAC) comprehensive assessment of research IT needs
2024	Reviewer, Duke Nursing And Engineering Science: Creating A Transdisciplinary Scientific Community DUSON-Pratt Spring Pilot Proposals
2024	Electrical and Computer Engineering Faculty Search Committee Support (hire: Xiang Cheng, chair: Larry Carin)
2023 – 2027	Duke Academic Council
2023	Biomedical Engineering Department Strategic Visioning Committee
2023	Biostatistics & Bioinformatics Faculty Search Committee (hire: Monica Agrawal, chair: Ben Goldstein)
2023	BME Data Science Certificate Committee Member
2022	Research Data Initiative Advisory Group Member on Data Management & Analysis to help revamp the research data policy at Duke
2021	Duke FIRST Faculty Recruitment Administrative Core
2021	Duke I&E Education Working Group
2021	Reviewer, BME701 Preliminary Exam Documents
2020 –	Steering Committee Member, Duke Master of Engineering and Certificate Program in AI for Product Innovation
2020	Reviewer, Duke MEDx Award
2020	Reviewer, Duke CTSI Multidisciplinary Vision Program (MVP) Award
2020	Program committee for the new Masters of Engineering in AI for Product Innovation (AIPI)

2020	Biostatistics & Bioinformatics Faculty Search Committee for Track V ML for Health (hires: Matthew Englehard and Nrupen Bhavsar, chair: David Page)
2020	Biomedical Engineering Department Data Science Faculty Search Committee (hire: Daniel Reker, chair: Xiling Shen)
2019	Program committee for the BME Masters in Health Data Science Certificate
2019	GreEngineering Team Member

PROFESSIONAL ASSOCIATIONS

Association for Computing Machinery
Digital Medicine Society
The Institute of Electrical and Electronics Engineers: Engineering in Medicine and Biology Society
American Medical Informatics Association
Biomedical Engineering Society
American Diabetes Association
American Heart Association
American Statistical Association

OTHER PROFESSIONAL EXPERIENCE

2025 – Present	Google Consumer Health Advisory Panel
2025	Scientific Advisor, Biio, Inc.
2021 – 2024	Scientific Advisory Board, Veri, Inc., Helsinki, Finland (acquired by Oura, Inc in 2024)
2022	Completed Scientific Community Engagement Fundamentals Course with the Center for Scientific Collaboration and Community Engagement (CSCCE)
2016 – 2018	California Preterm Birth Initiative Scholar
2015 – 2018	Mobilize Distinguished Postdoctoral Fellow, Snyder Lab, Department of Genetics, and Mobilize Center, NIH Big Data 2 Knowledge (BD2K) Center of Excellence, Stanford University
2010 - 2015	Graduate Research Fellow, Jo Lab of Vascular Mechanobiology and Disease, Georgia Tech and Emory University, Atlanta, GA.
2014	Molecular Biology and Bioinformatics Intern, Booz Allen Hamilton at the Centers for Disease Control and Prevention, Atlanta, GA.
2007 - 2010	Undergraduate Research Assistant, Berkowitz Lab of Vascular Aging, Johns Hopkins University, Baltimore, MD.
2009	Visiting Scientist in the Regenerative Cardiology Department at the Fundación Centro Nacional de Investigaciones Cardiovasculares Carlos III in Madrid, Spain.
2008 - 2009	Drug Discovery Researcher, Arginetix, Baltimore, MD.

OUTREACH

Annotations: † Panelist

20 † Ask Me Anything Panel. Duke BME Retreat. May 21, 2024

19 Singh, Chen, Shandhi, Choudhary, Dunn. Workshop for high school students from the North Carolina School of Science and Math (NCSSM) on hands on digital biomarker development. Durham, North Carolina, USA. January 19, 2024

18 Shandhi, Jeong, Wang W, Chen B, Mortazavi, Dunn. Workshop on Unraveling Challenges in Time Series Analysis with Open Source Tools for Digital Health Applications. *IEEE International Conference on Biomedical Health Informatics (BHI)*. Pittsburgh, Pennsylvania, USA. October 15-18, 2023 [link]

17 Tutorial on the Digital Biomarker Discovery Project: Sleep Health Monitoring Using Wearables. NHLBI Workshop on Big Data Integration for Enhanced Epidemiological Research. September 27, 2023

16 † Women In Action Panel. Microsoft. March 28, 2023

15 DBDP Medium Blog [link]

14 Shandhi, Jeong, Bent, Carini, Hammond, Shaw, Sim, Dunn. Incorporating Digital Health into Clinical Workflows: The Future of Longitudinal, Remote, and Assisted Patient Monitoring. Workshop organized at the *2022 AMIA Annual Symposium*. Washington DC, USA. November 5-9, 2022 [link]

13 Shandhi, Jeong, Wang, Jiang, Dunn. Digital Biomarkers for Physiological and Mental Health Monitoring: Potential, Challenges, and Areas for Future Development. *UbiComp*. Atlanta, GA, USA. September 15, 2022. [link]

12 Lederer, Breton, Jeong, Master, Roghanizad, Dunn. Considerations while using Fitbit Data in the All of Us Research Program. *All of Us Research Program Blog*. 2022 [link]

11 † Women Thriving In STEM. Duke University, Durham, NC, USA. March 22, 2022

10 Disseminating Research to the Public. Duke Office of Scientific Integrity Virtual Research Town Hall. February 23, 2022

9 Sirius XM Radio - Top of Mind - October 18, 2021

8 Sirius XM Radio - NYU Docs - August 9, 2021

7 After Office Hours – Duke Engineering Podcast. June 2021 (link)

6 Knowable Magazine Livestreamed Panel - Monitoring our health with smartwatches. May 26, 2021 (link)

5 Collaborations for Novel Solutions (CNS) Summit. Fireside Chat- May 24, 2021 (link)

4 Singh, Dunn. Virtual Workshop for high school students from the North Carolina School of Science and Math on introduction to wearables and hands on digital biomarker development. March 4, 2021.

3 † Preparing Future Engineering Faculty (PF*e*F) Program. December 17, 2020

2 Rate of Change - Duke Engineering Podcast. October 13, 2020 (link)

1 Technology and Health. Life Effects Podcast. January 2, 2019 (link)

MEDIA COVERAGE

2024

WRAL News. Duke study analyzes a smartwatch's ability to detect infections, sickness
Duke Daily Fighting disease with a smartwatch? That's genius. 1/26/2024
Pratt News Launching an AI and Photonics Initiative at Duke

2023

Stat News With Biden finalizing an Apple Watch ban, Apple needs to decide its future in health
Managed Healthcare Executive 'Deidentified' Health Data Not So Deidentified After All - also covered by AMIA News In Brief, July 2023
MobiHealthNews Deidentifying wearable data may not be enough to protect privacy
WRAL News. Duke's BIG IDEAS Lab seeks more diversity in digital health studies

2022

Fortune Heart rate variability could be the key to improving your body's response to stress. Here's how to get started – republished by Yahoo! Finance
Forbes Massive Digital Library Released To Accelerate Clinical Research And Cut Costs
WRAL News Duke researchers using smart watches to detect early signs of COVID-19 infection.
Drug Discovery News Biometric data from smartwatches might predict COVID-19.

Raza, Venkatesh, Kvedar. npj Digital Medicine Intelligent risk prediction in public health using wearable device data
Upworthy Science Health breakthroughs of 2022 that should have made bigger news
New Atlas Wearable system detects COVID two days before symptoms appear
Wonderful Engineering This New Wearable System Can Detect COVID Two Days Before Symptoms Appear

2021
Stat News Digital health measures are gaining traction, but research on privacy and ethics is lagging
Becker's Health IT Digital health monitors are booming, but where's the research on privacy and ethics?
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