

Curriculum Vitae – Joon Ha

Department of Mathematics, Howard University
Annex III - room 222, College St. NW and 4th St. NW,
Washington, DC, U.S.A.
Email: joon.ha@howard.edu

Position

Aug. 2021 - Current, Associate Professor, Department of Mathematics, Howard University, Washington DC, U.S.A.

Areas of Interest

- Mathematical Modeling of Diabetes and Neuroscience
- Clinical Studies of Diabetes
- Dynamical Systems

Google scholar: <https://scholar.google.com/citations?user=cA-uYOoAAAAJ&hl=en>

Research gate: https://www.researchgate.net/profile/Joon_Ha

Professional Experiences

- Dec. 2010- Aug. 2021: Visiting Research Fellow, Research Fellow, and Federal Government Scientist, Laboratory of Biological Modeling, NIDDK, National Institutes of Health, Mentor: Dr. Arthur Sherman
- Sep. 2008 – Oct. 2010: Post Doctor Fellow, Department of Mathematical Sciences, Indiana University Purdue University Indianapolis, Mentor: Prof. Alexey Kuznetsov

Education Background

- May 2008 Ph.D. in Applied Mathematics, Department of Mathematical Sciences, New Jersey Institute of Technology, Newark, NJ. Advisor: Dr. Amit Bose
- Aug. 2002: Ph.D. Candidate, Division of Applied Math, Brown University, Providence, RI
- Feb. 1996: Military Service in Korean Army and M.S. in Mathematics (focused on Functional Analysis), Mathematics Department, Hanyang University, Seoul, South Korea
- Feb. 1991: B.S. in Mathematics, Mathematics Department, Hanyang University, Seoul, South Korea

Journal Editorial Board

Research Topic Main Editor, Frontier Physiology since Aug. 2021.

Review Editor, Frontier in Computational Physiology and Medicine since May, 2020.

Grants

- AIM-AHEAD Data Training subaward, faculty course buy-out program, with title “Probability and Statistics II with R”, Role: The Single PI, portion: \$30,000
Program Duration: 07/15/2022 – 07/14/2023
Status: Funded
- dkNET New Investigator Pilot Program in Bioinformatics, NIH grant, National Institute of Diabetes Digestive and Kidney Disease, with title “Estimating Relative Beta-Cell Function

During Continuous Glucose Monitoring”, Role: The Single PI, \$230,582, Program Duration: 01/01/2023 – 12/31/2024
Status: Funded

- Invited Scientist to Brain Pool Program by South Korea Government with title “Finding a Robust Early Biomarker of Progression to Type 2 Diabetes Mellitus”, Role: Invited Scientist, Host Institute: Pusan National University Hospital, South Korea, approx. \$130,000, April. 2022. Program Duration: 05/10/2022 – 12/31/2024, Grant number: 20202H1D3A2A01063552
Decision: Funded
- NSF HBCU-EiR, with title “Investigation of the dynamic structure of diabetes with mathematical models and its clinical application”, Role: The Primary PI, portion: \$800,000
Program Duration: 09/1/2023 – 08/31/2027
Status: Pending
- Consortium: Center for Optimized and Personalized Resuscitation Systems (COMPRESS): Villanova University’s College of Engineering (VU) is the lead university of the proposed Engineering Research Center, COMPRESS.
Status: Pending

Publications

2023

- Predictive value of 1-Hour Glucose elevations during oral glucose tolerance testing for Cystic Fibrosis-Related Diabetes, Pediatric Diabetes, Accepted, Andrea Lorenz, Collin Valentine, Laura Pyle, Joon Ha, Arthur Sherman, Melanie Cree-Green, Scott Sagel, Kristen Nadeau, Christine Chan

2022

- The relationship between lipoproteins and insulin sensitivity in youth with obesity and abnormal glucose tolerance, Journal of Clinical Endocrinology & Metabolism 2022 ;107 (6), 1541-1552, ST Chung, LEL Katz, N Stettler-Davis, J Shults, A Sherman, J Ha, Darko Stefanovski, Ray C Boston, Daniel J Rader, Sheela N Magge
- Slow Oscillations persist in pancreatic beta cells lacking phosphofructokinase M, , Biophysical Journal 121 (5), 692-704, Isabella Marinelli, Vishal Parekh, Patrick Fletcher, Benjamin Thompson, Jinhua Ren, Xiaoqing Tang, Thomas L Saunders, Joon Ha, Arthur Sherman, Richard Bertram, Leslie S Satin

2021

- Beta-cell failure rather than insulin resistance is the major cause of abnormal glucose tolerance in Africans: insight from the Africans in America study, *BMJ Open Diabetes Res Care* 2021 Sep;9(1):e002447, M C Sage Ishimwe , Annemarie Wentzel , Elyssa M Shoup , Nana H Osei-Tutu , Thomas Hormenu , Arielle C Patterson , Hadi Bagheri, Christopher W DuBose , Lilian S Mabundo, Joon Ha , Arthur Sherman, Anne E Sumner
- MINMOD Artificially Interprets Strong Insulin Secretion as Weak Insulin Action, *Frontiers in Physiology, Section System Biology*, DOI: 10.3389/fphys.2021.601894
Joon Ha, Ranganath Muniyappa, Arthur Sherman, Michael J. Quon Michael
2020
- The OGTT is highly reproducible in *Africans* for the diagnosis of diabetes: Implications for treatment and protocol design. **Diabetes Research and Clinical Practice** 170, 10852, Oct. 2020, **Journal Impact Factor=4.234**
Ram Jagannathan, Christopher W DuBose, Lilian S. Mabundo, Stephanie T. Chung,
Joon Ha, Arthur Sherman, Michael Bergman, Anne Sumner
- Type 2 Diabetes: One Disease, Many Pathways, **American Journal of Physiology-Endocrinology and Metabolism** 319 (2), E410-E426, Aug 2020, **Journal Impact Factor=4.181**
Joon Ha and Arthur Sherman.
- Improved Detection of Abnormal Glucose Tolerance in *Africans*: The Value of Combining Hemoglobin A1c With Glycated Albumin, **Diabetes Care**, Oct. 2020, 43:10;2607-2613, **Journal Impact Factor=16.019.**
Arsene F Hobabagabo, Nana H Osei-Tutu, Thomas Hormenu, Elyssa M Shoup, Christopher W DuBose, Lilian S Mabundo, **Joon Ha**, Arthur Sherman, Stephanie T Chung, David B Sacks, Anne E Sumner
- Metabolic Characteristics of *Africans* with Normal Glucose Tolerance and Elevated One-Hour Glucose: Insight from the Africans in America Study. **BMJ Open Diabetes Research and Care** 8 (1), e000837, Jan, 2020, **Journal Impact Factor=3.42**
Sara M. Briker, Thomas Hormenu, Christopher W. DuBose, Lilian S. Mabundo, Stephanie T. Chung, **Joon Ha**, Arthur Sherman, Marshall K. Tulloch Reid, Michael Bergman, Anne E. Sumner

Preprint

- Using Data Assimilation of Mechanistic Models to Estimate Glucose and Insulin Metabolism. **arXiv preprint arXiv:2003.06541**
Jami J Mulgrave, Matthew E Levine, David J Albers, **Joon Ha**, Arthur Sherman, George Hripcsak

2019

- A1C Underperforms as a diagnostic test in *Africans* Even in the Absence of Nutritional Deficiencies, Anemia and Hemoglobinopathies: insight from the Africans in

America Study. **Frontiers in endocrinology** 10, 533, Aug. 2019, **Journal Impact Factor=3.519**

Sara Briker, Jessica Aduwo, Regine Mugeni, Margrethe Frost Horlyck-Romanovsky, Christopher DuBose, Lilian Mabundo, Thomas Hormenu, Stephanie Therese Chung, **Joon Ha**, Arthur Sherman, Anne E Sumner

2017

- How adaptation makes low firing rates robust, **The Journal of Mathematical Neuroscience** 7 (1), 1-21 Dec. 2017, **Journal Impact Factor=2.18**, Arthur Sherman and **Joon Ha**
- Time to Glucose Peak During an Oral Glucose Tolerance Test Identifies Prediabetes Risk, **Clinical Endocrinology**, 2017 Nov;87(5):484-491, **Journal Impact Factor=3.380** Stephanie T. Chung, **Joon Ha**, Anthony U. Onuzuruike, Kannan Kasturi, Mirella Galvan-De La Cruz, Brianna A. Bingham, Rafeal L. Baker, Jean N. Utumatwishima, Lilian S. Mabundo, Madia Ricks, Arthur S. Sherman, Anne E. Sumner
- Hemoglobin Glycation Index Is Associated with Cardiovascular Diseases in People with Impaired Glucose Metabolism, **The Journal of Clinical Endocrinology & Metabolism** 102 (8), 2905-2913. , May 2017, **Journal Impact Factor=5.605** Chang Ho Ahn, See Hee Min, Dong-Wha Lee, Tae Jung Oh, Kyoung Min Kim, Jae Hoon Moon, Sung Hee Choi, **Joon Ha**, Arthur Sherman, Kyong Soo Park, Hak Chul Jang, and Soo Lim.

2016

- A Mathematical Model of the Pathogenesis, Prevention and Reversal of Type 2 Diabetes, **Endocrinology**. **Endocrinology**;157(2):624-35, Feb. 2016, **Journal Impact Factor=3.961** **Joon Ha**, Leslie Satin, and Arthur Sherman.
- Chronic glucose exposure systematically shifts the oscillatory threshold of mouse islets: Experimental evidence for an early intrinsic mechanism of compensation for hyperglycemia, **Endocrinology**;157(2):611-23, Feb. 2016, **Journal Impact Factor=3.961** Eric Glynn, Benjamin Thompson, Shusheng Lu, Suryakiran Vadrevu, Robert T. Kennedy, **Joon Ha**, Arthur Sherman and Leslie S. Satin.
- Islets Transplanted into the Eye: Do they improve our insight into islet adaptation to insulin resistance? **Diabetes**. 2016 Sep;65(9):2470-2, **Journal Impact Factor=7.72** Leslie Satin, **Joon Ha**, and Arthur Sherman
- Paracrine Regulation of Glucagon Secretion: The β - α - δ Model", **American Journal of Physiology-Endocrinology and Metabolism** 310 (8), E597-E611, **Journal Impact Factor= 4.181** Margaret Watts, **Joon Ha**, Ofer Kimchi, and Arthur Sherman

- Calcium Effects on ATP Production and Consumption Have Key Regulatory Roles on Oscillatory Islet Activity, **Biophysical journal**, Feb 2016, **110 (3)**, 733-742, **Journal Impact Journal=3.665**
J. P. McKenna, **J. Ha**, M. J. Merrins, L. S. Satin, A. Sherman, and R. Bertram
- Phase Analysis of Metabolic Oscillations and Membrane Potential in Pancreatic Islet β cells, **Biophysical journal**, Feb 2016, **110 (3)**, 691-699, **Journal Impact Journal=3.665**
Matthew J. Merrins, Chetan Poudel, Joseph P. McKenna, **Joon Ha**, Arthur Sherman, Richard Bertram, and Leslie S. Satin

2015

- Pulsatile insulin secretion, impaired glucose tolerance and type 2 diabetes, **Molecular aspects of medicine** **42**, 61-77 , 2015 April, **Journal Impact Factor=7.850**
Leslie Satin, Peter Butler, **Joon Ha** and Arthur Sherman.

2014-

- Frequency switching in the two-compartmental model of the dopaminergic neurons, **Journal of Computation Neuroscience**, 2011 Apr;**30(2):241-54. Journal Impact Factor=1.62**
Joon Ha and Alexey Kuznetsov.
- Interaction of NMDA Receptor and Pacemaking Mechanisms in the Midbrain Dopaminergic Neuron, **PLoS One** **8 (7)**, e69984, **Journal Impact Factor=2.87**
Joon Ha and Alexey Kuznetsov.

Theses

- Ph. D. thesis, Roles of Gap Junctions in Neuronal Networks, May 2008, New Jersey Institute of Technology.
- Master thesis, On A Representation of Certain Operators on Continuous functions, Hanyang University, Korea.

References

- Dr. Arthur Sherman, Lab Chief
Laboratory of Biological Modeling, NIDDK, NIH, Bethesda, MD 20814
asherman@nih.gov
- Prof. Jonathan Rubin, Math Department Chair
University of Pittsburgh, PA
jonrubin@pitt.edu
- Prof. Richard Bertram, Distinguished Research Professor of Mathematics, Director of Biomathematics Program, Florida State University, Tallahassee, FL.
bertram@math.fsu.edu
- Dr. Over Cabrera (Industrial Collaborator)
Principal Research Scientist, Eli Lilly, Indianapolis, IN

over.cabrera@lilly.com

- Dr. Stephanie Chung (Clinical Collaborator)
Assistant Clinical Investigator, NIH, Bethesda, MD
stephanie.chung@nih.gov