

# OLAMIDE H. ANIMASAHUN

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## PROFILE

I am a PhD candidate currently working on my thesis where I'm developing systems biology frameworks that integrates multi-omics data to decipher the spatial localization of hepatocytes and other tissue-resident cells in the diseased and healthy liver. These framework incorporates reconstruction of genome-scale model of human metabolism to dissect and compare the prevailing metabolic pathways in the diseased and healthy tissues. Furthermore, I study the paracrine cellular signaling that exists between the hepatocytes and their neighboring cells. My goal is to identify biomarkers for early disease detection and pinpoint targetable small molecules for metabolic-associated disease treatment and prevention.

## EDUCATION

Ph.D. in Chemical Engineering, (CGPA 4.0/4.0), Aug. 2018 – Dec. 2023 (Expected).  
University of Michigan, Ann Arbor, MI. Advisor (Dr. Deepak Nagrath)

Graduate Data Science Certificate Program, (Fall 2022)  
University of Michigan, Ann Arbor, MI.

M.Sc. Chemical Engineering (CGPA 4.0/4.0), Aug.2014 - Dec. 2016  
The Petroleum Institute (PI), Abu Dhabi, UAE.

B. Sc. Chemical Engineering (CGPA 4.83/5.0), Sep. 2006 - Mar. 2012  
Obafemi Awolowo University, Ile-Ife, Nigeria.

## HONORS AND AWARDS

- Rackham Conference Travel Grant, Rackham Graduate School, University of Michigan, Ann Arbor, MI, USA. March 2023
- Dr. James Trevaskis Keystone Symposia scholarship, March 2023.
- Rackham Predoctoral Fellowship, Rackham Graduate School, University of Michigan, Ann Arbor, MI, USA. May 2023-April. 2024.
- Rackham Graduate Student Research Grant, Rackham Graduate School, University of Michigan, Ann Arbor, MI, USA. Sep. 2019.
- Fellowship Award, Chemical Engineering department, University of Michigan, Ann Arbor, MI, USA. August 2018 to Dec 2018.
- Graduate Fellowship Award, The Petroleum Institute, Abu Dhabi, UAE, August 2014 to December 2016.
- Best Graduating Student, Department of Chemical Engineering OAU. December 2012.
- Best Student in Process Design, Department of Chemical Engineering OAU. December 2012.
- Most Outstanding performance award, Ariosh Ltd, Lagos Nigeria. December 2012.

- Second Prize Winner Chemical Engineering Design Contest, Nigerian Society of Chemical Engineers (NSChE), Nov. 2012.

## RESEARCH EXPERIENCE

Graduate Student Research Assistant, University of Michigan.

Developed genome-scale integrative work-flow that incorporates multi-omics data and machine learning to decipher the phenotypic implication of the presence of PNPLA3 genetic variants in human hepatocytes.

Developed machine learning algorithms to identify prognostic and predictive biomarkers in various disease models including lung cancer and food allergy.

Developed customized algorithm to programmatically pre-process raw multi-omics data.

Developed protocols for analyzing metabolites and lipids in Liquid/Gas chromatography- mass spectroscopy equipment

Developed methods for accurate qualification and quantification of analyte of interest in SCIEX LC/MS instrument and Agilent GC/MS instrument.

Integrated genome-scale multi-omics data with machine learning algorithm to identify metabolic collateral lethal targets in cancer.

Delineated and characterized various cell types in tumor microenvironment of pancreatic ductal adenocarcinoma and lung adenocarcinoma via single cell RNA-seq data analysis using SEURAT toolkits and subsequent identification with cell type markers.

Delineating dependency of pancreatic ductal adenocarcinomas on branch chain amino acids using  $^{13}\text{C}$  tracing experiment.

## Peer Reviewed Publications

Nils Haep\*, **Olamide Animasahun**\*, Rodrigo M Florentino\*, Abinav Achreja, Kazutoyo Morita, Takashi Motomura, Ricardo Diaz-Aragon, Lanuza AP Faccioli, Shohrat Arazov, Zehra N Kocas-Kilicarslan, Minal Nenwani, Fulei Wuchu, Noah Meurs, Jaideep Behari, Jonathan Franks, Akinari Morinaga, Kazuki Takeishi, D Lansing Taylor, Ira J Fox, Tomoharu Yoshizumi, Deepak Nagrath, Alejandro Soto-Gutierrez "Lipid metabolism-associated variant induces programmed hepatocyte death in living donor liver transplantation", *Cell Metabolism* (Under revision), 2022.

\* indicates co-first authors.

Kai Han, Fang Xie, **Olamide Animasahun**, Minal Nenwani, Sho Kitamoto, Yeji Kim, Jin Xu, Jinsung Ahn, Xingwu Zhou, Xuehui Huang, Xinran An, May Phoo, Alexander Kim, Yao Xu, Jessica O'Konek, Nobuhiko Kamada, Deepak Nagrath, James J. Moon, "Inulin gel/allergen oral immunotherapy suppresses food allergy through gut microbiome and metabolic normalization/remodeling", *Nature Materials* (In Review), Dec 2022

Abhinav Achreja, Tao Yu, Anjali Mittal, Srinadh Choppara, **Olamide Animasahun**, Minal Nenwani, Fulei Wuchu, Noah Meurs, Aradhana Mohan, Jin Heon Jeon, Itisam Sarangi, Anusha Jayaraman, Sarah Owen, Reva Kulkarni, Michele Cusato, Frank Weinberg, Hye Kyong Kweon, Chitra Subramanian, Max S. Wicha, Sofia D. Merajver, Sunitha Nagrath, Kathleen R. Cho, Analisa DiFeo, Xiongbin Lu, and Deepak Nagrath "Metabolic Collateral Lethal Target Identification Reveals MTHFD2 Paralog Dependency in Ovarian Cancer", *Nature Metabolism* (2022)

Kai Han, Juttaek Nam, Jin Xu, Xiaoqi Sun, Xuehui Huang, **Olamide Animasahun**, Abhinav Achreja, Jin Heon Jeon, Benjamin Pursley, Nobuhiko Kamada, Grace Y. Chen, Deepak Nagrath, and James J. Moon,, Generation of systemic antitumour immunity via 1 the in-situ modulation of the gut microbiome by an orally administered inulin gel, *Nature Biomedical Engineering* (2021).

Pooja Panwalkar, Benita Tamrazi, Derek Dang, Stefan Sweha, Martin Ogrodzinski, Chan Chung, Stefan Bluml, Drew Pratt, Brendan Mullan, Debra Hawes, Fusheng Yang, Chao Lu, Benjamin Sabari, Abhinav Achreja, **Olamide Animasahun**, Christopher Dunham, Stephen Yip, Juliette Hukin, Joanna Phillips, Hugh J.L. Garton, Jason Heth, Karin Muraszko, Carl Koschmann, Deepak Nagrath, David C Allis, Sophia Lunt, Alexander R. Judkins, Sriram Venneti, "Targeting integrated epigenetic and metabolic and pathways in lethal childhood ependymomas", *Science Translational Medicine*, 2021.

Ziwen Zhu, Abhinav Achreja, Noah Meurs, **Olamide Animasahun**, Sarah Owen, Anjali Mittal, Pooja Parikh, Ting-Wen Lo, Janusz Franco-Barraza, Jiaqi Shi, Valerie Gunchick, Mara H. Sherman, Edna Cukierman, Andrew M. Pickering, Anirban Maitra, Vaibhav Sahai, Meredith A. Morgan, Sunitha Nagrath Theodore S. Lawrence and Deepak Nagrath (2020), Tumor-Reprogrammed Stromal BCAT1 Fuels Branched Chain Ketoacid Dependency in Stromal-Rich PDAC Tumors, *Nature Metabolism*, (2020).

Florentino, R.M., Fraunhoffer, N.A., Morita, K., Takeishi, K., Ostrowska, A., Achreja, A., **Animasahun, O.**, Haep, N., Arazov, S., Agarwal, N., Collin de l'Hortet, A., Guzman-Lepe, J., Tafaleng, E.N., Mukherjee, A., Troy, K., Banerjee, S., Paranjpe, S., Michalopoulos, G.K., Bell, A., Nagrath, D., Hainer, S.J., Fox, I.J. and Soto-Gutierrez, A. (2020), Cellular Location of HNF4 $\alpha$  is Linked With Terminal Liver Failure in Humans. *Hepatology Communications*, 4: 859-875. doi:10.1002/hep4.1505

Deanna Glassman, Mark Kim, Meredith Spradlin, Sunil Badal, Pratip Bhattacharya, Prasanta Dutta, Charles V. Kingsley, Katherine Foster, **Olamide Animasahun**, Jin Heon Jeon, Abhinav Achreja, Anusha Jayaraman, Praveen Kumar, Minal Nenwani, Fulei Wuchu, Michael Soth, Jeffrey Kovacs, Emine Bayraktar, Yutuan Wu, Elaine Stur, Lingegowda Mangala, Sanghoon Lee, Timothy A. Yap, Shannon N. Westin, Livia Eberlin, Deepak Nagrath, and Anil K. Sood, "Exploiting metabolic vulnerabilities that develop after anti-VEGF therapy in ovarian cancer", (Under Second Review) *iScience*, 2022

F. Weinberg, Abhinav Achreja, **Olamide Animasahun**, Baharan Meghdadi, Anjali Mittal, Fei Yang, Osama Mohamed, Shari Barnett, Aradhana Mohan, Srinadh Choppara, Gurcharan Kaur, Robert Dickson, Ashootosh Tripathi, Rishindra M. Reddy, Nithya Ramnath, and Deepak Nagrath, "Integrative Analysis of Metabolic, Immunological and Microbial Pathways Predict Cancer Affected Lobes in Patients with Early-stage Non-Small Cell Lung Cancer", *Med* (submitted), 2022.

Aditi Sharma, Abhinav Achreja, Remya Nair, Anjali Mittal, Kamakshi Balakrishnan, Pulkit Gupta, Claudia L. Edgar, **Olamide Animasahun**, Bhakti Dwivedi, Benjamin G. Barwick, Vikas A. Gupta, Shannon M. Matulis, Manoj Bhasin, Sagar Lonial, Ajay K. Nooka, Arun P. Wiita, Lawrence H. Boise, Deepak Nagrath & Mala Shanmugam "Therapeutic targeting of mitochondrial stress-induced proteasome inhibitor resistance in multiple myeloma", *Science Advances*, 2022 Sep 30;8(39).

**Olamide H. Animasahun**, Muhammad N. Khan & Cornelis J. Peters (2018) "New environmentally attractive separation technology for flue gas mixture", *Molecular Physics*, DOI: 10.1080/00268976.2018.1509145

### Conference Presentations

Genome Based Multi-omics data Integration reveals pre-disposition of Human hepatocytes carrying PNPLA3 rs738409 variants to Ferroptosis, ***Short talk & Poster Presentation*** at *Keystone Symposia on Metabolic and Molecular Mechanisms of NAFLD/NASH*, March 2023, Alberta, Canada

Prediction of the CO<sub>2</sub> solubility in Deep Eutectic Solvents: A comparison between PC- SAFT and Cubic Equations of State", *Poster presented at the Abu Dhabi International Petroleum Exhibition & Conference (ADIPEC)*, November, 2017, Abu Dhabi, UAE.

## PROFESSIONAL EXPERIENCE

Piping Design Engineer, Ariosh Ltd, Lagos Nigeria (March 2012 to August 2014)

Extensive use of AutoPlant, Cyclone, E3D, PDMS, Navisworks and AutoCAD softwares  
Other software skills: Aspen-Hysys, Promax, COMSOL Multiphysics, PDMS, E3D, AutoCad, AutoPlant, Cyclone, CSMGem, Navisworks and Microsoft Offices.

## LEADERSHIP EXPERIENCE

- Diversity, Equity and Inclusion Steering Committee Member, Chemical Engineering Department, University of Michigan.
- Graduate Student Vice President. Tau Beta Pi-Michigan-Gamma (Winter 2020)
- Assistant Event Supervisor for University of Michigan Science Olympiad invitational tournament, 2021, 2020.
- High school outreach curriculum development team member, University of Michigan, chemical engineering department.

## TEACHING EXPERIENCE

Fall 2022

Graduate Student Instructor (GSI)

Course: Chemical Engineering Process Dynamics and Control (ChE 466).

Supervisors: Dr. Andrew Allman, Department of Chemical Engineering, University of Michigan, Ann Arbor, MI, USA. 48105.

## **ADVISING EXPERIENCE**

### Summer 2021 & 2022

Research Mentor to High School Students for the Deepak Nagrath's lab Summer Research Experience Program.

Students: Navya Kumar (2021), Harpreet Kaur (2022)

## **OTHER ACTIVITIES**

- Volunteering with Oak Park High School Outreach Team from University of Michigan Chemical Engineering Department
- Volunteering as Mentor with Graduate Student Mentorship Initiative (GSMI) - Científico Latino
- Student Member of several organizations: Nigerian Society of Chemical Engineers (NSCHE), Nigerian Society of Engineers (NSE) and Society of Petroleum Engineers, (SPE).
- Volunteering for down syndrome awareness day organized by Zayed Higher Organization and Emirates' Down syndrome (Abu Dhabi branch), March 23rd, 2016
- Active participation in sport: football and basketball. Silver medalist Intramurals Football competition 2014 and 2016, Petroleum Institute, Abu Dhabi UAE, soccer games, IM Leagues University of Michigan, Ann Arbor MI USA

## **OTHER CERTIFICATE PROGRAM**

- Rackham professional development diversity, equity and inclusion (DEI) certificate, University of Michigan, Ann Arbor, MI.