Thomas Hart

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EDUCATION

Weill Cornell Medical College, New York, NY — Expected Jan 2021
MS, Computational Biology

Columbia University, New York, NY — Expected May 2021
Certificate, *Postbaccalaureate Biomedical Sciences*

University of California, Los Angeles, Los Angeles, — June 2015
BA, Economics

RESEARCH EXPERIENCE

Weill Cornell Medical Center, New York, NY — Mar 2020 – present
Department of Computational Biology, Krumsiek Lab

- Currently developing methods for inferring metabolic networks from spatial metabolomic data
- Currently developing web-based performant visualization methods for metabolomic networks

Columbia University Irving Medical Center, New York, NY — Sep 2016 – Aug 2019
Department of Hematology-Oncology, Research Assistant

- Adapted methods from spatial statistics in R and python for analysis of histopathology image data
- Developed multicancer analysis pipeline in melanoma, head and neck, hepatopancreatic, RB and glioblastoma data
- Lead purchasing, provisioning and maintenance of lab server infrastructure worth more than $50,000

Hollywood Sunset Free Clinic, Los Angeles, CA — Nov 2015 – July 2016
Clinical Assistant

- Coordinated with multidepartment team of doctors to provide free healthcare to underserved communities
- Supervised blood sample collection, handling and processing of more the 50 patients per day
- Ensured confidentiality of patient records by maintaining strict protocols for access to patient health information

University of California, Los Angeles, Los Angeles, CA — Nov 2014 - Aug 2015
Department of Mathematics, Student Researcher

- Developed open source convolutional neural network framework in Matlab (pre-Tensorflow)
- Achieved 91% accuracy on open source MNIST handwriting dataset using developed software package
- Presented and documented progress to department heads on a weekly basis

PUBLICATIONS

Selected Papers

1. 4, **Hart TD**, Thiyagarajan S, Jellbauer S, Laoui D, van Ginderachter JA, Spanos WC, Saenger Y, Sikora AG. Immunomodulation enhances immune checkpoint inhibitors and radiation in established tumors. Science Translational Medicine.
2. 4, **Hart TD**, Santegoets SJ, Laoui D, Spanos C, Parikh F, Jayaraman P, Zhang B, Van der Burg SH, Van Ginderachter JA, Melief CJM, Sikora AG. Tumor microenvironment modulation enhances immunologic benefit of chemoradiotherapy. https://www.ncbi.nlm.nih.gov/pubmed/30646957
3. 3, **Hart TD**, Enzler T, Rizk E, Pradham J; Marks DK, Geski L, Saenger YM. Bayan CY, Lopez A, Gartrell RD, Komatsubara Kim, Rao N Chen C, \textbf{Hart TD}, Enzler T, Rizk E, Pradham J; Marks DK, Geski L, Saenger YM. https://www.ncbi.nlm.nih.gov/pubmed/30426304
4. 4, **Hart TD**, Enzler T, Rizk E, Pradham J; Marks DK, Geski L, Saenger YM. https://www.ncbi.nlm.nih.gov/pubmed/30145781
5. 2, **Hart T**, Horton P, Cheng S, Taback B; Horst B, Saenger YM. Complete intracranial response to talimogene laherparepvec (T-Vec), pembrolizumab and whole brain radiotherapy in a patient with melanoma brain metastases refractory to dual checkpoint-inhibition. https://www.ncbi.nlm.nih.gov/pubmed/29622046
6. 2, **Hart T**, Li G, Davari D, Wu A, Blake Z, Lu Y, Askin K, Monod A, Esancy C, Stack E, Jia DT, Armenta P, Fu Y, Izaki D, Taback B, Rabadan R, Kaufman H, Drake C, Horst B, Saenger Y. Quantitative Analysis of Immune Infiltrates in Primary Melanoma. https://www.ncbi.nlm.nih.gov/pubmed/29467127

Selected Abstracts

1. 5, **Thomas D Hart**, Yvonne M Saenger, Peter D Canoll, James H Garvin, Michael Kazim, Ashley Campbell. Characterization of Pediatric Optic Nerve Glioma with Next Generation Sequencing and Multiplex Immunofluorescence.
2. 1,**Thomas Hart**, Robyn D Gartrell, Yvonne Saenger, Helen Remotti, Armando Del Portillo. Evaluation of Effect of Carcinoembryonic Antigen Expression on Colorectal Cancer Immune Microenvironment Using Quantitative Multiplex Immunofluorescence Image Analysis.
3. 4,**Thomas D Hart**,, Douglas Kanter Marks, Alexander Raufi, Yan Lu, Subha Perni, Pan Kim, Christian Monsalve, Susan Elaine Bates, Yvonne M. Saenger, David Paul Horowitz. Quantitative Multiplex Immune Fluorescence Reveals that Chemoradiation Therapy Favorably Modulates the Immune Micro-Environment of Pancreatic Ductal Adenocarcinoma.
4. 5, **Thomas D Hart**, Camden L Esancy, Helen Remotti, Yan Lu, Yvonne Saenger. Impact of microsatellite instability status and sidedness of the primary tumor on immunophenotype of colorectal cancer.
5. 2, **Thomas D Hart**, Yan Lu, Camden L Esancy, Zoe Blake, Bret Taback, Basil Horst, Yvonne M. Saenger. Quantitative multiplex immunofluorescence (qmIF) and genomic evaluation of tumor microenvironment (TME) identifies candidate biomarkers in Stage II/III melanoma.
6. 4, **Thomas D Hart**, Camden L Esancy, Yan Lu, Hanina Hibshoosh, Eileen Connolly, Kevin Kalinsky, Yvonne M. Saenger. Akt inhibition associated with change in immunophenotype of tumor microenvironment (TME) in breast cancer (BC) [abstract].
7. 8, **Thomas D Hart**, Larisa J. Geskin, Bret Taback, Richard D. Carvajal, Gary K. Schwartz, Basil Horst, Yvonne M. Saenger. Quantitative multiple immunofluorescence identifies candidate biomarkers of response to anti-PD1 in metastatic melanoma [abstract].
8. 5, **Thomas D Hart**, Camden L Esancy, Yan Lu, Fabrizio Remotti, Helen Elaine Remotti, Yvonne M. Saenger, Gary K. Schwartz. Interrogating the Sarcoma Immune Microenvironment (iME) Using Multiplex Immunohistochemistry (mIHC) [abstract].
9. 5, **Thomas D Hart**, Margaret Borgardus, Yan Lu, Douglas Kanter Marks, Jessica Yang, Adriana Lopez, Codruta Chiuzan, Basil Horst, Bret Taback, Larisa J. Geskin, Brian P. Marr, Gary K. Schwartz, Yvonne M. Saenger, Richard D. Carvajal. Characterization and Spatial Localization of the Tumor Immune Microenvironment in Metastatic Uveal Melanoma [abstract].
10. 3, **Thomas D Hart**, Yan Lu, Camden L Esancy, Hanina Hibshoosh, Eileen Connolly, Kevin Kalinsky, Yvonne M. Saenger. Characterization of the tumor immune microenvironment (TIM) with multiplex immunohistochemistry (mIHC) in patients with breast cancer following treatment with MK-2206 [abstract].
11. 3, **Thomas D Hart**, Edward Stack, Yan Lu, Camden L Esancy, Camille Gerard, Danielle Rose Davari, Dan Tong Jia, Paul Armenta, Ashley White-Stern, Margueritta El Asmar, Zoe Blake, Yichun Fu, Basil Horst, Yvonne M. Saenger. Characterizing the tumor microenvironment (TME) in primary melanomas using multiplex immunohistochemistry (mIHC) [abstract].
12. 3, **Hart T**, Saenger YM, Rabadan R. Inferring cellular interactions in the tumor microenvironment via pair correlation analysis of immunofluorescence images.
13. 2, **Hart T**, Stack E, Lu Yan, Gerard, C, Jia D, Paul A, Izaki D, Beck K, White-Stern A, Fu Y, Blake Z, Horst, B, Saenger YM. Defining critical features of the immune microenvironment in melanoma [presentation].

SKILLS

Languages: C/C++, Java/Swing
Scripting: Python, Shell
Scientific: R/S-Plus, Python, Matlab
Web: Dart/Flutter
Cloud: GCP, AWS

ADDITIONAL EXPERIENCE

Columbia University Medical Center, New York, NY — Jan 2018 – Jan 2019
Master Set Builder

- Developed novel low-cost mechanism for kabuki curtain drop which had a 100% successful operation rate
- Procured more than $10,000 worth of set materials and ensured safety during building construction efforts
- Designed uniquely styled sets to specifications requested

University of California, Los Angeles, Los Angeles, CA — Sep 2016 – June 2017
Instructor, John Wooden Center

- Designed and implemented year-long training programs and goal tracking for classes of size 30-60 people
- Developed a dynamically adjustable teaching style to adapt to students' needs in real time
- Assisted in the training of new hires by implementing a shadowing program

Mt Pinos Nordic Ski Patrol, Mt. Pinos, CA Nov 2015 - July 2016
Nordic Patroller

- Coordinated efforts with National Forest Service to ensure safety of more than 18 miles of trails
- Communicated updates of patient status to local emergency services to ensure efficient emergency care
- Acted as team leader during patient recovery to ensure safety of patients in a wide variety of environments

HONORS&AWARDS

Top 25 Track and Field Athlete of 2010-2019 Decade 2019
Track and Field News
Merit Scholarship 2010-2014
University of California, Los Angeles
Merit Scholarship 2006-2010
St. Augustine High School

CERTIFICATIONS

Machine Learning

Feature Engineering Sep 2019
Google Cloud
Mathematics for Machine Learning Specialization Dec 2018
Imperial College London
Machine Learning Specialization Oct 2018
University of Washington

Computational Neuroscience

Principles of fMRI 2 May 2020
Johnson Hopkins University
Principles of fMRI 1 Mar 2020
Johnson Hopkins University

Cloud Computing

Machine Learning with Tensorflow on Google Cloud Platform Oct 2019
Google Cloud

Projects

Deep Learning NLP: Training GPT-2 from Scratch Dec 2020
Coursera Network Project
AWS: Publish a NodeJS Website from Scratch Dec 2020
Coursera Network Project
Interactive Machine Learning Dashboards using Plotly Dash Dec 2020
Coursera Network Project