



Helio Costa

Affiliate, Biomedical Informatics (BMI) graduate training program

CLINICAL OFFICE (PRIMARY)

- **Molecular Genetic Pathology Laboratory**

3375 Hillview Ave Rm 2201

MC 5563

Palo Alto, CA 94304

Tel (650) 723-6574 Fax (650) 724-1567

Bio

BIO

Helio Costa, PhD, is a medical geneticist specializing in oncology, genomics, computational biology, data science, artificial intelligence, and product development. His work focuses on developing new cancer therapies and medical software to improve cancer patient care. He currently serves as Senior Medical Director and Head of Molecular Therapeutics & Drug Development at Natera and is an Adjunct Clinical Assistant Professor in the Department of Pathology at Stanford Medical School.

Dr. Costa's research spans the entire drug development pipeline, from discovery to FDA-approved therapies. He leads efforts in developing innovative cancer treatments by integrating advanced genomics, computational biology, and AI-driven methodologies. His team focuses on the creation of targeted molecular therapeutics, using large-scale genetic data to identify novel treatment pathways and predict patient responses. In addition to drug discovery, Dr. Costa oversees the clinical trials necessary for validating these therapies, ensuring they meet rigorous standards for safety and efficacy. Furthermore, he manages the product development and commercialization process, guiding new treatments from initial research through to market-ready, FDA-approved cancer therapies.

In addition to his therapeutic work, Dr. Costa has led the development and implementation of genetic diagnostic tests and clinical algorithms used to support therapeutic decisions at Stanford Health Care. His contributions include the creation of DNA and RNA cancer diagnostic tests, as well as algorithms that analyze large-scale laboratory datasets and electronic medical records to predict patient outcomes. As a co-investigator with the NIH Clinical Genome Resource (ClinGen) Consortium, Dr. Costa oversaw developing FDA-recognized medical software used by healthcare providers, researchers, and biotech companies to assess the clinical relevance of genes and mutations.

He is the founding director of the Stanford Clinical Data Science Fellowship, where post-doctoral medical fellows engage in interdisciplinary clinical research and implement real-world health data solutions within Stanford Health Care. Dr. Costa is also an Attending Medical Geneticist for the Molecular Genetic Pathology Laboratory at Stanford Health Care, where he previously served as Assistant Lab Director.

Dr. Costa holds a BS in Genetics from the University of California, Davis, a PhD in Genetics from Stanford University School of Medicine, and completed his ABMGG Clinical Molecular Genetics and Genomics fellowship training at Stanford University School of Medicine.

CLINICAL FOCUS

- Molecular Oncology
- Molecular Pathology
- Medical Genetics
- Clinical Pathology

ACADEMIC APPOINTMENTS

- Member, Maternal & Child Health Research Institute (MCHRI)

ADMINISTRATIVE APPOINTMENTS

- Attending Medical Geneticist, Molecular Genetic Pathology Laboratory, (2017- present)
- Founding Director, Stanford Clinical Data Science Fellowship, (2018-2021)
- Assistant Lab Director, Molecular Genetic Pathology Laboratory, (2017-2021)

PROFESSIONAL EDUCATION

- Board Certification: Technologist in Molecular Biology, American Society for Clinical Pathology (2018)
- Fellowship, Stanford University School of Medicine , ABMGG Clinical Molecular Genetics and Genomics (2017)
- Doctor of Philosophy, Stanford University School of Medicine , Genetics (2015)
- Bachelor of Science, University of California, Davis , Genetics (2010)

LINKS

- LinkedIn: <https://linkedin.com/in/helio-costa>

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biomedical Data Science (Phd Program)
- Biomedical Data Science (Masters Program)

Publications

PUBLICATIONS

- **Increasing Clinical Trial Accrual via Automated Matching of Biomarker Criteria.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
Chen, J. W., Kunder, C. A., Bui, N. n., Zehnder, J. L., Costa, H. A., Stehr, H. n.
2020; 25: 31–42
- **LitGen: Genetic Literature Recommendation Guided by Human Explanations.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
Nie, A. n., Pineda, A. L., Wright, M. W., Wand, H. n., Wulf, B. n., Costa, H. A., Patel, R. Y., Bustamante, C. D., Zou, J. n.
2020; 25: 67–78
- **Genomic Evidence for Local Adaptation of Hunter-Gatherers to the African Rainforest.** *Current biology : CB*
Lopez, M., Choin, J., Sikora, M., Siddle, K., Harmant, C., Costa, H. A., Silvert, M., Mouguiama-Daouda, P., Hombert, J., Froment, A., Le Bomin, S., Perry, G. H., Barreiro, et al
2019

- **Structural Variation Detection by Proximity Ligation from Formalin-Fixed, Paraffin-Embedded Tumor Tissue.** *The Journal of molecular diagnostics : JMD*
Troll, C. J., Putnam, N. H., Hartley, P. D., Rice, B., Blanchette, M., Siddiqui, S., Ganbat, J., Powers, M. P., Ramakrishnan, R., Kunder, C. A., Bustamante, C. D., Zehnder, J. L., Green, et al
2018
- **Gene-specific criteria for PTEN variant curation: Recommendations from the ClinGen PTEN Expert Panel.** *Human mutation*
Mester, J. L., Ghosh, R., Pesaran, T., Huether, R., Karam, R., Hruska, K. S., Costa, H. A., Lachlan, K., Ngeow, J., Barnholtz-Sloan, J., Sesock, K., Hernandez, F., Zhang, et al
2018; 39 (11): 1581–92
- **Tumor Molecular Profiling Aids in Determining Tissue of Origin and Therapy for Metastatic Adenocarcinoma in a Patient With Multiple Primary Malignancies** *JCO PRECISION ONCOLOGY*
Costa, H. A., Reyes, R., Mills, M., Zehnder, J. L., Sledge, G., Curtis, C., Ford, J. M., Suarez, C. J.
2018; 2
- **Detection and surveillance of bladder cancer using urine tumor DNA.** *Cancer discovery*
Dudley, J. C., Schroers-Martin, J. n., Lazzareschi, D. V., Shi, W. Y., Chen, S. B., Esfahani, M. S., Trivedi, D. n., Chabon, J. J., Chaudhuri, A. A., Stehr, H. n., Liu, C. L., Lim, H. n., Costa, et al
2018
- **Promoting appropriate genetic testing: the impact of a combined test review and consultative service.** *Genetics in medicine*
Suarez, C. J., Yu, L., Downs, N., Costa, H. A., Stevenson, D. A.
2017
- **Identification of a Novel Somatic Mutation Leading to Allele Dropout for EGFR L858R Genotyping in Non-Small Cell Lung Cancer** *Molecular Diagnosis & Therapy*
Costa, H. A., Neal, J. W., Bustamante, C. D., Zehnder, J. L.
2017
- **Discovery and functional characterization of a neomorphic PTEN mutation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Costa, H. A., Leitner, M. G., Sos, M. L., Mavrantoni, A., Rychkova, A., Johnson, J. R., Newton, B. W., Yee, M., De La Vega, F. M., Ford, J. M., Krogan, N. J., Shokat, K. M., Oliver, et al
2015; 112 (45): 13976-13981
- **Transcriptome sequencing from diverse human populations reveals differentiated regulatory architecture.** *PLoS genetics*
Martin, A. R., Costa, H. A., Lappalainen, T., Henn, B. M., Kidd, J. M., Yee, M., Grubert, F., Cann, H. M., Snyder, M., Montgomery, S. B., Bustamante, C. D.
2014; 10 (8)
- **High-throughput Sequencing of Subcutaneous Panniculitis-like T-Cell Lymphoma Reveals Candidate Pathogenic Mutations.** *Applied immunohistochemistry & molecular morphology : AIMM*
Fernandez-Pol, S. n., Costa, H. A., Steiner, D. F., Ma, L. n., Merker, J. D., Kim, Y. H., Arber, D. A., Kim, J. n.
; 27 (10): 740–48