

# Combination of Deep-Learning Models Provides Significant Risk-Assessment of Survival in Pancreatic Cancer Patients, Holding Promise as a Prognostic Technology

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*NantHealth, ImmunityBio and NantOmics Presented Results at the 2020 AACR Virtual Special Conference: Pancreatic Cancer*

CULVER CITY, Calif.--(BUSINESS WIRE)-- [NantHealth](#), Inc. (NASDAQ: NH), a next-generation, evidence-based, personalized healthcare company, presented virtually with NantOmics and ImmunityBio on September 29-30 2020, a session entitled “*Deep-learning image-based tumor, stroma and lymphocytes spatial relationships and clinical features that affect survival in pancreatic cancer patients,*” at the [American Association for Cancer Research \(AACR\)](#) virtual special conference on pancreatic cancer. This Nant technology is an example of how digital pathology solutions may support the treatment of cancer.

Prepared in collaboration with [NantOmics](#), [ImmunityBio](#), and the University of Colorado School of Medicine, the presentation examined differential survival in pancreatic cancer patients via stromal and lymphocyte density. In this study, the contributing researchers developed an automated deep-learning system to provide risk assessment upon spatial relationships between tumor, stroma, and lymphocyte regions in pancreatic pathology images from 82 pancreatic adenocarcinoma patients who underwent chemotherapy. Using Gaussian mixture models, researchers identified optimal thresholds in the image-based features and organized patients into unsupervised clusters, then linked those to differences in survival. Risk models were generated on standard clinicopathological features and used to compare against the proposed image-based risk models.

The study’s key findings include:

- Cox PH models trained on image features more significantly stratified risk on unseen test patients than an optimal set of clinicopathological features
- Image-based models suggest low-risk patients have:
  - Higher tumor-infiltrating lymphocytes despite having fewer overall lymphocytes
  - Higher tumor-adjacent stroma
- The combination of both risk-models proved to be superior in training and testing sets and achieved better separation in survival curves than either model by itself
- Image-based risk-associated features are independently prognostic of clinicopathological features
- Even with a limited sample-size, the results showed significance to warrant a larger study

“Our combined analysis with NantOmics, ImmunityBio and the University of Colorado School of Medicine, provided results with a level of significance that show great promise for future studies using deep-learning models as a prognostic tool for pancreatic cancer patients,” said Christopher Szeto, Director of Machine Learning, NantHealth. “These results provide a strong clinical platform not only to better understand pancreatic cancer for evidence-based prognosis but also reinforce the essential nature of advanced technology in the continued evolution of medicine.”

The AACR Virtual Special Conference: Pancreatic Cancer is a conference focused on bringing together experts across industries to better understand and further advance pancreatic cancer research and treatment. The conference attracts a range of attendees, including those in government, clinical roles, patient advocacy, and companies who make groundbreaking technology and discoveries in oncology.

### **About NantHealth, Inc.**

NantHealth, a member of the NantWorks ecosystem of companies, provides leading solutions across the continuum of care for physicians, payers, patients and biopharmaceutical organizations.

NantHealth enables the use of cutting-edge data and technology toward the goals of empowering clinical decision support and improving patient outcomes. NantHealth's comprehensive product portfolio combines the latest technology in payer/provider platforms that exchange information in near-real time (NaviNet and Eviti), and molecular profiling services that combine comprehensive DNA & RNA tumor-normal profiling with pharmacogenomics analysis (GPS Cancer®). For more information, please visit [nanthhealth.com](https://www.nanthhealth.com) or follow us on [Twitter](#), [Facebook](#) and [LinkedIn](#).

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