

# Genomic Data Leads to Better Understanding of the Genomic Progression of Breast Cancer



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## CURRENT RESEARCH

Computational and machine learning sift through the vast amounts of data to make more accurate predictions

A transformative recent development in biology has been the systematic collection of massive datasets. These datasets capture the state and physical interactions between molecules such as DNA, RNA, and proteins across hundreds of human tissues. Increasingly, the challenge in biology has therefore become computational: scientists must find ways to best make use of this data to understand human biology and disease. Dr. Serafim Batzoglou, of Stanford University, develops computational and machine learning methods to study biological and genomic data in order to make the most accurate predictions. Dr. Batzoglou hopes to understand the progression of cancer, and specifically breast cancer at the genomic level. Dr. Batzoglou's research has important implications in the diagnoses of cancer and ultimately could aid providers and patients in deciding treatment plans. In addition, his work in population genomics helps enable analyses of massive amounts of human genomes more accurately and rapidly than previously used approaches.

Dr. Batzoglou's research may one day allow providers to distinguish between early tumors that become cancerous from early tumors that seem not to be related to the cancer of the patient. Such a finding, would be an important diagnostic for women with early breast tumors who are facing a choice of whether to undergo mastectomy. Moreover, understanding this early progression is important for therapy: the early stage, where few key mutations in the DNA cause the initial cancer phenotype, is the best place for drugs to target for two reasons: (1) because every single cancer cell in a patient's tissue has these early mutations (they are ancestors to later mutations); (2) because early treatment...

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## AFFILIATION

 Stanford University

## EDUCATION

- Ph.D. in Computer Science 2000 ,Massachusetts Institute of Technology
- M.Eng. in Electrical Engineering and Computer Science 1996 ,Massachusetts Institute of Technology
- B.S. in Computer Science 1996 ,Massachusetts Institute of Technology
- B.S. in Mathematics 1996

## AWARDS

- Alfred P. Sloan Fellowship, 2004
- NSF CAREER Award, 2004
- MIT Technology Review Magazine, 100 Top Young Technology Innovators, 2003

## RESEARCH AREAS

Health & Wellness, Longevity, Immortality Research

## FUNDING REQUEST

Your contributions will support Dr. Serafim Batzoglou's continued research as he develops computational and machine learning methods to study biological and genomic data in order to make the most accurate predictions. Donations will support the necessary costs of personnel and sequencing genomes of patients with breast cancer. Your support will play an important role in developing more successful tools for patients with breast cancer and developing important measures to analyze volumes of data.