

First analysis of AACR Project GENIE data published

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Cancer cell during cell division. Credit: National Institutes of Health

The first analysis of nearly 19,000 de-identified genomic records from the American Association for Cancer Research (AACR) international data-sharing initiative known as AACR Project Genomics Evidence

Neoplasia Information Exchange (GENIE) was published today in *Cancer Discovery*, a journal of the AACR.

In addition to the genomic analysis, the report includes examples of how the AACR Project GENIE genomic data can be used to facilitate clinical research, including:

- Analysis showing that more than 30 percent of the samples had mutations that are clinically actionable, meaning that they are suggestive of a specific treatment that is either already approved by the U.S. Food and Drug Administration or is being tested in clinical trials.
- Analysis showing that the rate at which patients with samples in the AACR Project GENIE registry would match with arms of the NCI-MATCH trial reflected the actual accrual rates for the trial.
- Details of two additional studies underway that are linking certain genetic characteristics of metastatic breast cancer with clinical and pathological features of the tumors, as well as with patient outcomes.

"There has been a lot of discussion about the potential of data-sharing initiatives to accelerate the pace of progress against cancer," said Charles L. Sawyers, MD, FAACR, who is the AACR Project GENIE Steering Committee chairperson and an author on the paper. "This paper shows that AACR Project GENIE has made the first steps to delivering on this promise.

"We are particularly excited by the clinical actionability analysis," continued Sawyers, who is also chairperson of the Human Oncology and Pathogenesis Program at Memorial Sloan Kettering Cancer Center in New York, and a Howard Hughes Medical Institute investigator. "Prior studies looking at how often tumor genome sequencing identifies a

clinically actionable mutation have yielded variable results, leading some to question its clinical utility. The huge number of samples in our study and the high rate of clinical actionability give us confidence that tumor genome sequencing can have an important role in clinical care."

AACR Project GENIE is a multi-phase, multi-year, international data-sharing project that was launched by the AACR in partnership with eight global academic leaders in clinical [cancer](#) genomics in November 2015. Just over a year later, in January 2017, the AACR Project GENIE consortium made public nearly 19,000 de-identified genomic records collected from patients who were treated at the eight international institutions participating in the first phase of the [project](#).

"This paper describes the AACR Project GENIE consortium and provides a landscape overview of the first public GENIE data release," said Ethan Cerami, PhD, director of the Knowledge Systems Group and lead scientist in the Department of Biostatistics and Computational Biology at the Dana-Farber Cancer Institute in Boston, and an author on the paper. "By showing that we can share data across multiple institutions in the United States, Canada, and Europe to obtain results none of the institutions could have obtained alone, we have put AACR Project GENIE at the forefront of data-sharing efforts to accelerate scientific discovery and ultimately improve patient care."

The paper provides detailed information about the data collected at the different institutions, highlighting that even though the types of sequencing and size of the gene panels used at the individual institutions differ and are evolving over time, the data can be compared across institutions. The high-level analysis of the nearly 19,000 de-identified genomic records made public by the consortium also shows many similarities with the data in The Cancer Genome Atlas (TCGA). The paper also highlights several differences with TCGA data, which the authors speculate are a result of a greater proportion of the AACR

Project GENIE records coming from patients with recurrent or relapsing disease.

The eight institutions who participated in AACR Project GENIE phase 1 are: Dana-Farber Cancer Institute, Boston; Gustave Roussy Cancer Campus, Paris-Villejuif, France; The Netherlands Cancer Institute, Amsterdam, on behalf of the Center for Personalized Cancer Treatment, Utrecht, The Netherlands; Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, Baltimore; Memorial Sloan Kettering Cancer Center, New York; Princess Margaret Cancer Centre, Toronto; University of Texas MD Anderson Cancer Center, Houston; and Vanderbilt-Ingram Cancer Center, Nashville, Tennessee.

Provided by American Association for Cancer Research

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