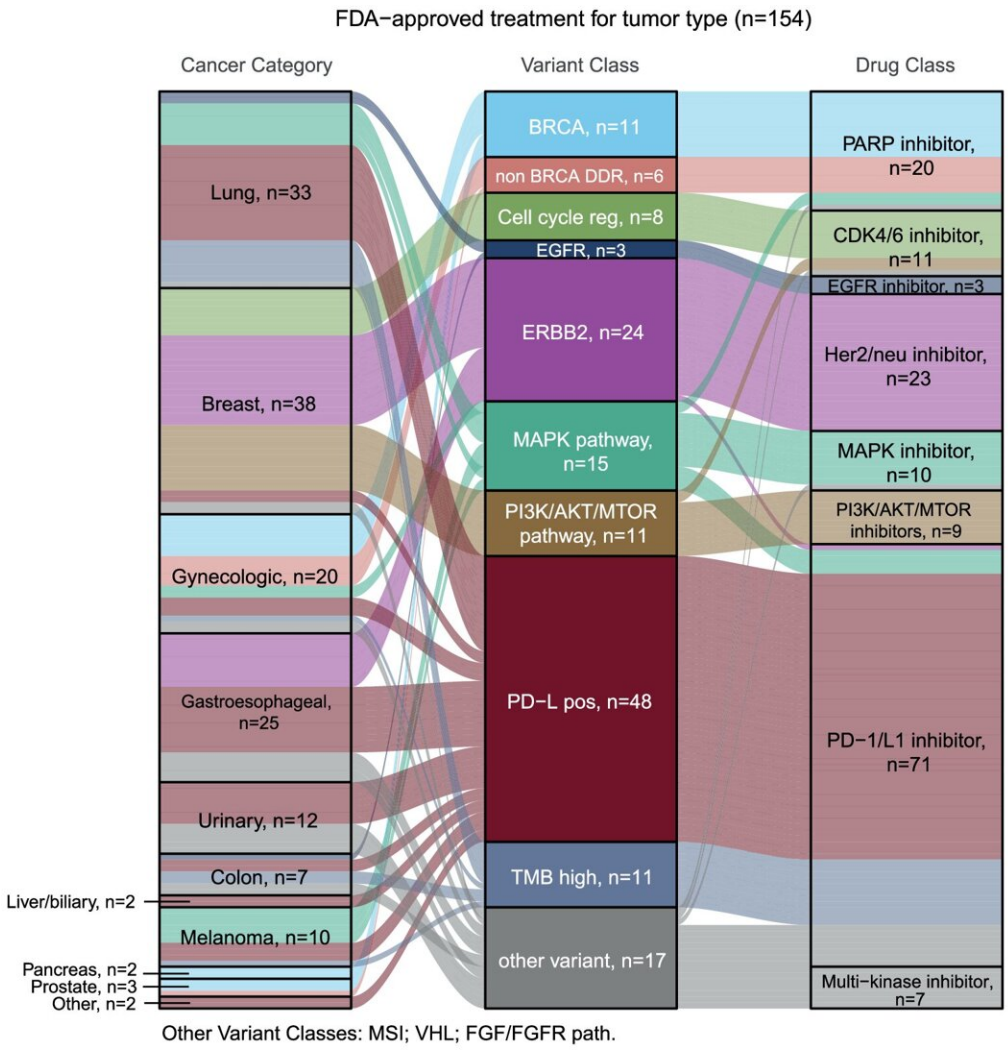
Study indicates that cancer patients gain important benefits from genome-matched treatments

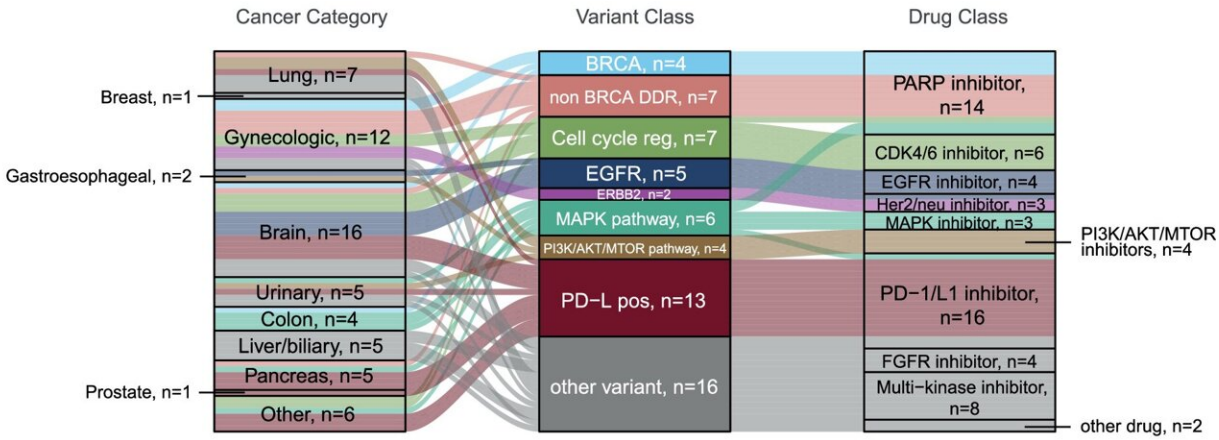
May 1 2024, by Mark Wanner

(a)



Other Variant Classes: MSI; VHL; FGF/FGFR path.

(b)



Other Cancer Categories: Unknown. Other Variant Classes: FGF/FGFR path.
Other Drug Classes: idh inhibitor; smo inhibitor.

Cancer category, variant category, and drug class for genome matched treatments (GMTs). a 154 GMTs FDA approved for the same tumor type. b 64 GMTs FDA approved for a different tumor type. See Table 2 for clinical trials. Each line represents one GMT. Some patients contribute multiple lines if they received multiple GMTs. Height represents the number of cases. Colors determined by variants. Other primary sites of cancer include unknown primary. Other variants identified include: FGF/FGFR path, MSI, VHL, ARID1A. Other drug classes include: ret inhibitor, idh inhibitor, smo inhibitor. Credit: *npj Precision Oncology* (2024). DOI: 10.1038/s41698-024-00547-4

In 2016, The Jackson Laboratory (JAX) launched the Maine Cancer Genomics Initiative (MCGI) to bring the latest progress in cancer care to rural Maine patients. Now, after successfully expanding access to genome tumor testing and targeted cancer treatments throughout Maine, the MCGI team provides compelling evidence that genome-matched treatments can provide significant patient benefit.

The MCGI report, published recently in *npj Precision Oncology*, presents data showing that only 17% of patients received genome-matched treatment through MCGI, signaling a large gap between testing and delivery of treatment based on genomic information.

However, those who did receive genome-matched treatment were 31% less likely to die within one year compared to those who did not receive matched treatment. While this is an observational study, the findings clearly point to the potential for a significant one-year survival benefit from genomic tumor testing and matched treatments.

In this observational study, there were many reasons why cancer patients didn't receive genome-matched treatments after the program sequenced the tumor's DNA. A certain percentage of patients did not have an actionable tumor variant detected, so they received standard of care.

"For the rest, it was a matter of care delivery," said Jens Rueter, M.D., chief medical officer of JAX and medical director of MCGI. "Patients may have had an actionable tumor variant but only through participation in a clinical trial that isn't available in rural Maine, or a patient's community hospital may not have been able to deliver a treatment that's already on the market."

Spearheaded by Rueter, who is also associate director for translational education at JAX Cancer Center and Edison Liu, M.D., former JAX President and CEO., the impetus for launching MCGI in 2016 was the lack of local access to recently developed genomic testing and targeted therapy strategies for cancer patients in Maine. In addition, most patients lacked the time and means to travel to Boston or New York for care. Therefore, JAX created MCGI to bring the latest technology in precision oncology and treatment to patients.

In only four years, through 2020, MCGI had partnered with every oncology practice in Maine (there are 13 of them) and enrolled more than 1,600 of their patients. Leah Graham, program director of MCGI, described that early work focused on providing genomic education to oncologists and other health care professionals, free access to genomic tumor testing for their patients, and detailed consultation about test results with precision oncology experts through a genomic tumor board.

Follow up with the MCGI patients revealed that of the 1,052 who did not receive genome-matched treatments, 399 (37.9%) died within 365 days of consent. This compares with 30.6% (63 of 206) in the genome-matched group. After adjusting for baseline characteristics, the analysis showed that the genome-matched group was 31% less likely to die within the first year than those who received standard care, even though only 9% were able to participate in a clinical trial, a smaller share than previously reported by other studies and might be explained by the rurality of Maine.

The percentage of tested patients who received genome-matched treatments in the MCGI study—17%—exactly matched the figure found in a larger 2019 Veteran Affairs study, suggesting that delivery of cancer care is not just limited to Maine.

Moving forward, the MCGI program will focus more on enabling effective precision oncology care delivery, whether it's through its Genomic Tumor Board program, providing access to more biomarker-driven clinical trials within Maine, or using mobile outreach to bring treatments directly to patients who might not be able to access it otherwise.

The study carries with it several limitations. Patients were primarily white and non-Hispanic, reflecting the population characteristics in Maine; the genomic tumor testing was provided free of charge, potentially expanding its use; and the study population also had variable cancer sites and stages.

"Nonetheless, we've been offering this program for seven years now, and we can see some really positive impacts on patient outcomes," said Rueter. "And in the future, we want to do on a population level what we're now doing in Maine with MCGI, meaning that every patient receives genomic tumor testing and a thorough biomarker analysis. How we deliver care and how we expand access to clinical trials through MCGI can be a blueprint for other states across the country, especially those with significant rural areas."

More information: Eric C. Anderson et al, Genome-matched treatments and patient outcomes in the Maine Cancer Genomics Initiative (MCGI), *npj Precision Oncology* (2024). DOI: 10.1038/s41698-024-00547-4

Provided by Jackson Laboratory