

many more pathogenic germline variants. —*Alissa Pob* ■

Group Aims to Make 1,000 Cancer Cell Lines

An international group announced its intent to create 1,000 new cancer cell lines, nearly doubling the number currently available. They aim to address challenges with current cancer cell lines, such as the lack of data on the tumors of origin and cancer subtypes that are missing or poorly represented.

The Human Cancer Models Initiative (HCMI) is a joint effort of the NCI, Cancer Research UK and the Wellcome Trust Sanger Institute in the UK, and Hubrecht Organoid Technology (HUB) in the Netherlands. The collaborators aim to meet their goal in the 3-year pilot phase of the project. If they're successful, the organizers might continue and increase their

output to about 10,000 lines total, which they estimate would be enough to represent the diversity of human cancer types. The NCI has issued a call for applications to host one of three U.S. cell-line development centers; HUB and Sanger Institute will also be generating new cell lines.

“It's becoming painfully obvious that for many genetic subtypes of cancer, we sometimes don't have any models, or only one or a handful of models, to work with,” says Louis Staudt, MD, PhD, director of the NCI's Center for Cancer Genomics. Even for the cell lines available, scientists often have no way of knowing if they mutated in culture over time, or how much they differ from the original tumor.

“Many existing lines bear little resemblance to the tumor types they were derived from,” says Adi Gazdar, MD, a professor of pathology at The University of Texas Southwestern Medical Center in Dallas. Crucial data, such

as patient responses to particular treatments, are often unavailable on the tumors from which the cell lines were derived. The new lines will be linked to both genome sequences of the original tumors and clinical outcomes.

Advances in cell-line production methods over the past few years have made the initiative seem feasible. Two techniques in particular, Staudt says, are likely to be employed: Organoid technology, developed by Hans Clevers, MD, PhD, of HUB, uses the Wnt activator R-spondin and 3-dimensional scaffolds to generate cell lines. Separately, conditional reprogramming relies on a Rho kinase inhibitor and a feeder layer of irradiated mouse fibroblasts.

Although the main goal is to assess the practicability of making so many new lines, diversity of the panel is a priority for the HCMI organizers as well. They want cell lines from rare and pediatric tumors, both of which are lacking in the current spectrum of lines available to scientists. Staudt also hopes to collect tumors from people of various ethnicities, many of which are also poorly represented among the cancer cell lines available now. To promote diversity, the NCI, in its call for applications, has stated these tumor types are a priority.

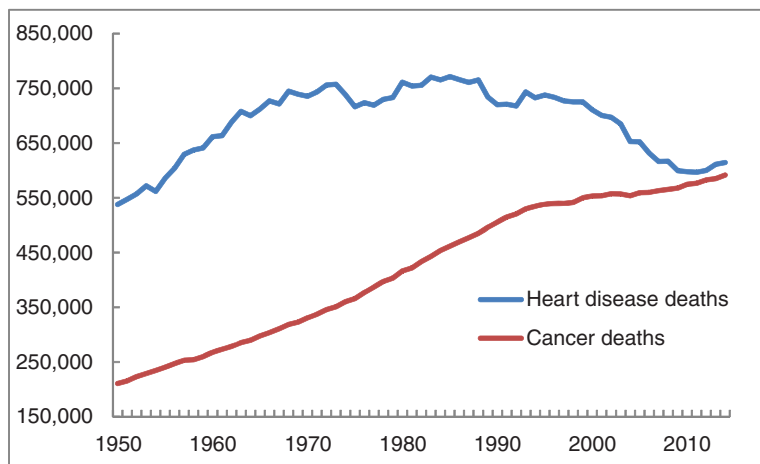
Making the project an international collaboration, rather than an effort spearheaded by a single institution, should speed up the generation of cell lines, says Mathew Garnett, PhD, a group leader at the Sanger Institute. “It really draws on the different strengths of the organizations: the expertise of HUB in developing organoid technology, the large-scale biology approach of the Sanger Institute, the clinical network of Cancer Research UK, and the wide strategic view of the National Cancer Institute,” he says. Representatives from each organization will meet regularly to share what they've learned.

“They are very ambitious,” says Gazdar. “It would be a great, enormous scientific help if they can achieve their aims.”

The project will make the cell lines available to researchers as soon as possible, says Staudt, who predicts that the first ones will be ready in early 2017. —*Amber Dance* ■

BY THE NUMBERS

Mortality Burden of Heart Disease and Cancer, 1950–2014



In the United States, heart disease has been the leading cause of death overall for decades, with cancer second. The total number of deaths from each has increased since 1950, largely due to the nation's aging population, but the gap between the two has narrowed greatly.

Although heart disease still ranks first overall, cancer became the leading cause of death in 22 states in 2014. In 2000, it killed more people in just two states—Alaska and Minnesota. The 20 states added to that once-short list are Arizona, California, Colorado, Delaware, Idaho, Kansas, Kentucky, Maine, Massachusetts, Montana, Nebraska, New Hampshire, New Mexico, North Carolina, Oregon, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Complete data are available through the National Center for Health Statistics at the Centers for Disease Control and Prevention, www.cdc.gov/nchs/products/databriefs/db254.htm.