of pancreatic tumor development, allowing researchers to isolate and analyze each stage of disease.

"Using this progression model is very different from implanting cancer cell lines into mouse models and watching them grow as cancer cells," says study co–senior author David Tuveson, MD, PhD, director of the Lustgarten Foundation Pancreatic Cancer Research Laboratory at Cold Spring Harbor Laboratory in New York. "With this new system, the cells appear to be reprogrammed so that they start out as a low-grade and become, over time, a high-grade neoplasm."

The model also allows organoids to be generated rapidly from tiny needle biopsies, eliminating a barrier for researchers. To date, there has been limited access to tissue samples because 85% of pancreatic cancer patients are ineligible for surgical resection due to the advanced stage of their disease at diagnosis or because their tumor is enmeshed in critical vasculature.

Gene expression and proteomic analyses conducted as part of the study revealed that nucleoporins—a family of proteins that make up the nuclear core complex—were broadly upregulated in the neoplastic mouse organoid models and that the expression increased measurably along with cancer progression, says Tuveson. The unexpected finding suggests that nucleoporins, which have been previously implicated in cancer, should be a focus of future pancreatic cancer research.

The investigators also established an organoid with a wild-type *KRAS* gene, an uncommon manifestation of pancreas cancer, says Clevers. Studying these organoids may help identify new driver genes and molecular pathways with therapeutic relevance.

"We're hoping that organoid technology will provide a platform from which researchers will be able to identify actionable mutations for pancreas cancer," says Clevers. Concurring, Tuveson notes that "the organoid model may be a way to actually deliver on the promise of personalized medicine." ■

AACR, ASCO Call for E-cigarette Regulation

Use of electronic cigarettes (e-cigarettes) and other electronic nicotine delivery systems (ENDS) has skyrocketed in recent years. However, robust and conclusive data on the products' health effects and efficacy as smoking cessation tools—as they're often marketed—are lacking, say the American Association for Cancer Research (AACR) and the American Society of Clinical Oncology (ASCO) in a joint policy statement (Clin Cancer Res 2015 Jan 8 [Epub ahead of print]).

While some states and local governments have restricted the sale or use of ENDS, the products aren't currently regulated by the FDA. They should be, according to the organizations, which call for more ENDS-related research, particularly on their health effects and impact on smoking behavior. In addition, the statement says manufacturers should be required to report ingredient lists to the FDA and be prohibited from selling products flavored like fruit or candy that appeal to children.

Roy Herbst, MD, PhD, chief of medical oncology at Yale Comprehensive Cancer Center in New Haven, CT, chaired the committee that wrote the joint statement. He says the AACR and ASCO have become alarmed at the sharply increasing use of ENDS, both among patients and in the general population.

"We don't know the long-term health consequences of e-cigarettes," he says. "People are selling ENDS under false pretenses—as smoking cessation tools—but there are insufficient data to support that benefit."

Herbst says cancer patients and their oncologists need to know that people who smoke should be aggressive in their cessation efforts, but should use FDA-approved medications like nicotine gum or patches, varenicline (Chantix), or bupropion (Zyban or Wellbutrin) instead of ENDS.

Radiation oncologist Graham Warren, MD, PhD, from the Medical University of South Carolina in Charleston, serves on the AACR's tobacco and cancer subcommittee, chairs the ASCO tobacco control subcommittee, and helped draft the policy statement. He notes that ENDS need to be regulated, in part, because they raise complicated, contextual questions that will be difficult for researchers to answer.

For example, "smoking is so detrimental that almost anything would be better, and arguably e-cigarettes might be safer than smoking, but we just don't know," he says. "But if people who have never smoked before start using e-cigarettes, you've got to think that breathing these chemical vapors is going to be harmful."


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E-cigarettes are battery-operated devices that vaporize nicotine-containing fluid instead of burning tobacco like traditional cigarettes.

Warren notes he rarely heard about the products from his cancer patients 4 or 5 years ago. "Now, probably more than 80% of smokers I see have used e-cigarettes or want to try them," he says. He tells those patients that because the effects of ENDS on overall health or on cancer treatment are unknown, using FDA-approved products for smoking cessation is a better strategy.

When the FDA finalizes the deeming document (available at www.fda.gov) it released last April, which classifies ENDS as tobacco products, ENDS will be regulated at the federal level. In the meantime, both Warren and Herbst say they hope the policy statement will encourage further regulation of ENDS at other levels of government and lead to research on the behavioral and clinical effects of ENDS. ■

IOM Report Calls for Culture of Data Sharing

A new report from the Institute of Medicine (IOM) recommends that sharing clinical trial data—supported by new technology platforms and shared funding—should become the norm in the medical research community to encourage secondary analyses and maximize trial participants' contributions.

Noting that a large proportion of clinical trial data is never published or made public, the authors of *Sharing Clinical Trial Data: Maximizing Benefits, Minimizing Risk* propose a practical framework that provides incentives for

researchers to share their results (available at http://iom.edu/Reports/2015/Sharing-Clinical-Trial-Data.aspx). They recommend specific strategies aimed at expanding access for other researchers and the public while protecting patient privacy and creating safeguards for sponsors' intellectual property. The IOM, the health arm of the National Academy of Sciences, assembled a committee of 14 experts in medical research and health policy to compile the report.

"Sharing allows others to reproduce published findings and carry out secondary analyses—and maximizes the contributions of participants and the effort and funding for trials," said committee chair Bernard Lo, MD, president of the Greenwall Foundation in New York, NY, and former director of the Program in Medical Ethics at the University of California, San Francisco, at a press conference. "We think that the question today is not whether you share clinical trial data, but instead, what types of data do you share, when do share it, and how do you share it?"

Those details should be included in a data-sharing plan submitted when registering a clinical trial, the IOM report recommends. Upon study completion, summary results should be made available within 12 months, and complete data within 6 months of publication or no later than 18 months after the close of the trial. Full data on products submitted for regulatory approval should be published 30 days after approval, or within 18 months if the application for approval is abandoned.

To encourage investigators to make data available, various stakeholders could require data sharing as part of their agreements with researchers. For example, funders and sponsors could require it as a condition of funding, and medical journals could ask for a data-sharing plan when a manuscript is submitted for publication.

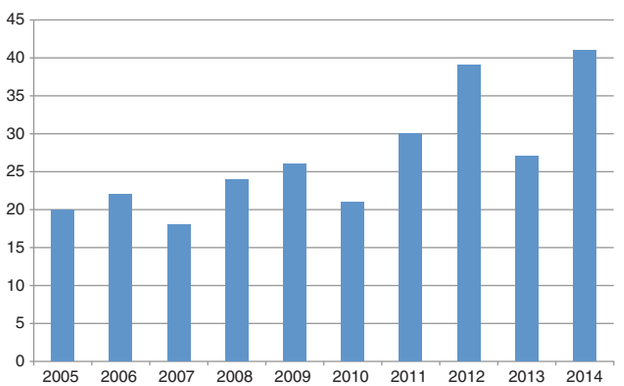
Investigators should also detail who should have access to the data and when, the committee recommends.

The committee notes several significant obstacles to achieving its recommendations, including developing compatible technology platforms to store and manage information. Success also hinges on establishing a sustainable funding model.

"Currently, a small subset of sponsors and funders of trials bear the full cost of clinical trial data sharing," said Lo. "That's not a sustainable or fair model. We recommend that those who benefit from sharing clinical trial data should also bear a fair share of the cost." ■

BY THE NUMBERS

Drugs Approved by the FDA, 2005–2014



In 2014, the FDA approved 41 novel new drugs, the most since the agency approved 53 in 1996, and ahead of its yearly average of 25 from 2005 through 2013. Nine of the 41 new drugs were approved for the treatment of cancer, and four of those were considered to be first-in-class agents: blinatumomab (Blincyto; Amgen), pembrolizumab (Keytruda; Merck), olaparib (Lynparza; AstraZeneca), and idelalisib (Zydelig; Gilead).

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- Cambridge, MA–based **Foundation Medicine announced that it will "enter into a broad strategic collaboration" with Roche,** giving the Swiss pharmaceutical giant an ownership stake in the company of up to 56%. Roche's total investment will exceed $1 billion. Foundation Medicine develops assays to determine molecular alterations in a patient's cancer and match them with targeted therapies and clinical trials.
- **Myriad Genetics of Salt Lake City, UT, is giving up efforts to prevent other companies from offering tests for *BRCA1* and *BRCA2* mutations,** bringing several lawsuits to an end. Myriad has reached settlements with LabCorp, Invitae, and Pathway Genomics and is in talks with Ambry, Quest Diagnostics, GeneDx, and Counsyl.
- **The American Lung Association released its 13th annual "State of Tobacco Control" report,** which concluded that little happened on the state or federal levels in 2014 to reduce tobacco use (see www.stateoftobaccocontrol.org). No state passed a comprehensive smoke-free law or significantly increased tobacco taxes, and no state earned an "A" grade for providing access to quit-smoking treatments.
- A published analysis found that **many women with breast cancer lack knowledge of their disease's characteristics, including tumor stage, grade, and receptor status** (Cancer 2015 Jan 26 [Epub ahead of print]). Only 20% to 58% of 500 women surveyed reported the characteristics correctly.
- **The American Society of Clinical Oncology (ASCO) for the first time named its Advance of the Year: the transformation of treatment for adults with chronic lymphocytic leukemia.** The Advance of the Year was part of its *Clinical Cancer Advances 2015: ASCO's Annual Report on Progress Against Cancer* (see www.cancerprogress.net/cca).
- **Human Longevity, Inc. (HLI) announced a multiyear agreement with Genentech to conduct whole-genome sequencing on tens of thousands of deidentified tissue samples.** Based in La Jolla, CA, HLI aims to build the world's most comprehensive, integrated human genotype and phenotype database.

For more news on cancer research, visit *Cancer Discovery* online at http://CDnews.aacrjournals.org.