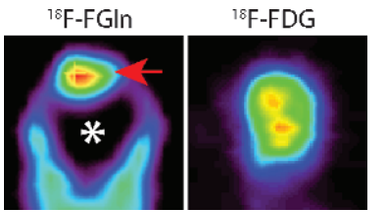

Sriram Venneti, MD, PhD

Researchers used two different radiolabeled tracers to create PET images of a mouse's brain: ^{18}F-FDG, which is traditionally used, and ^{18}F-FGln. ^{18}F-FGln (left) clearly shows the location of a glioma (red arrow) and normal brain tissue (white asterisk). Normal brain cannot be differentiated from tumor in the ^{18}F-FDG image.

clearly delineated the same tumor in its entirety—which is important, Venneti notes, because gliomas are highly invasive.

"Hopefully, this agent performs as well outside the brain," says Peter Choyke, MD, director of the NCI's molecular imaging program in Bethesda, MD. "It will be particularly interesting to see whether glutamine uptake in tumors leads to clinical responses for a new generation of drugs targeting glutamine transport and metabolism." ■

Parsing Pancreatic Cancer

In a recently reported study, whole-genome sequencing of 100 pancreatic ductal adenocarcinomas identified four tumor subtypes based on DNA structural variation, distinctions that may help guide treatment choices in the future (Nature 2015;518:495–501).

Current treatments for pancreatic cancer are often toxic and work in only a subset of patients. Matching treatments to patients who might benefit remains an urgent need, says study co-director Andrew V. Biankin, MD, PhD, of the University of Glasgow in Scotland and the Garvan Institute of Medical Research in Sydney, Australia.

In collaboration with the International Cancer Genome Consortium, the researchers performed deep whole-genome sequencing and copy number–variation analysis on tissue from early-stage tumors. The study extended previous exome sequencing analysis, and found both known and new genes mutated at moderate or high frequency and many genes mutated at low frequency. More importantly, Biankin says, the whole-genome approach revealed structural aberrations that contribute significantly to the overall mutational burden in tumors, including the deletion, amplification, and rearrangement of large pieces of DNA.

Analysis of patterns of structural variation identified four distinct tumor types: stable, locally rearranged, scattered, and unstable. The stable group had the fewest DNA rearrangements, while the locally rearranged and scattered groups showed an intermediate level, clustered on one or two chromosomes or distributed among multiple chromosomes, respectively. The unstable group, accounting for 14% of tumors, showed the most frequent structural changes, with more than 200 per genome. Most of the tumors in this group had mutations in key maintenance and repair enzymes—BRCA1, BRCA2, or PALB2—or displayed a mutational signature of DNA repair deficiency.

Because DNA repair deficiency may impart sensitivity to DNA-damaging drugs, the researchers looked at outcomes for patients who had received platinum-based chemotherapy. Of eight patients in the study treated with platinum agents, four of the five with unstable genomes and/or a mutational signature of DNA repair deficiency responded to treatment. Three patients with other tumor subtypes did not respond.

"These are small numbers, so we have to be cautious, but this is a potential biomarker for us to take forward into clinical trials and start to test whether we can better select patients for specific treatment," Biankin says.

That possibility excites Steven D. Leach, MD, of Memorial Sloan Kettering Cancer Center in New York, NY, who was not involved in the work. "For the first time in pancreatic cancer, we see genomic data that may have predictive value in terms of what therapies are likely to work for subsets of patients," he says. ■

NOTED

- **Eli Lilly and Company and Beijing, China's Innovent Biologics announced that they will collaborate** on the development and potential commercialization of at least three cancer treatments over the next decade. The collaboration will include Lilly's cMet monoclonal antibody (mAb) for possible treatment of non–small cell lung cancer and Innovent's mAb targeting CD-20 for possible treatment of hematologic malignancies.
- **Apple launched a mobile app to track quality of life of breast cancer survivors.** Data will be used to study why some survivors recover faster than others, why symptoms vary, and what can be done to improve problems such as fatigue, mood and cognitive changes, and sleep disturbances. The app is part of Apple's ResearchKit, which is designed to expand participation in research studies.
- At the Endocrine Society's 97th annual meeting in San Diego, CA, researchers presented results of a phase II trial of sunitinib (Sutent; Pfizer) showing that **19 of 24 patients with advanced-stage differentiated thyroid cancer experienced either significant tumor shrinkage or stable disease.** The median progression-free survival was 241 days. Sunitinib is approved for the treatment of renal cell carcinoma and imatinib-resistant gastrointestinal stromal tumors.
- **Bloomberg Philanthropies and the Bill & Melinda Gates Foundation launched the Anti-Tobacco Trade Litigation Fund** to help combat the tobacco industry's use of international trade agreements to threaten countries and prevent them from passing strong tobacco-control laws. The fund, established with $4 million from the organizations, will help low- and middle-income countries draft and defend tobacco-control laws.
- **Two out of three people diagnosed with cancer will survive at least 5 years,** according to a report published by the Centers for Disease Control and Prevention. The most common cancers continue to be prostate, female breast, lung and bronchus, and colon and rectum, the report noted. The full report, "Invasive Cancer Incidence and Survival—United States, 2011" is available at www.cdc.gov/mmwr.

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