in the Amazonian medicine ayahuasca—can produce similar results.

Nor is taking a drug even necessary. Investigators seem to agree that the salutary effects come not from the compounds themselves but from the spiritual epiphany they produce, so nonpharmacologic ways of achieving the same outcome should be just as beneficial. For example, many people use meditation to attain a transcendent state similar to that produced by psilocybin, and evidence indicates that the changes in brain activity evoked by the drug mimic those seen in Buddhist monks while meditating. Ross pointed out that throughout history, people have used prayer, fasting, dancing, and even sex to expand consciousness.

“Palliative-care doctors will tell you people can have these shifts toward the end of life that really transform the relationship of the patient to the dying process, so we know that humans are capable of [profound changes],” said Roland Griffiths, Ph.D., professor of behavioral biology at Johns Hopkins University, who has studied psilocybin in healthy volunteers and is now recruiting subjects with cancer.

Despite these encouraging findings, it will probably be a while before magic mushrooms become part of the standard oncology regimen. Grob warned that the studies to date have all been small, the subjects carefully selected. “Before psilocybin leaves the research setting, probably several hundred subjects will have to be studied,” he said. He speculated that someday, doctors may become certified to use this treatment.

Bossis said he hopes this research will draw clinicians’ attention to the spiritual and existential distress that afflicts so many patients with terminal illnesses. After all, he explained, “it is a key part of suffering.”

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High-Throughput Sequencing Set To Enter Patient Care

By Karyn Hede

Tumor boards may soon include a medical geneticist to discuss how to treat an individual’s tumor on the basis of its genomic characteristics, with genomic medicine poised to enter mainstream medical care. Before that, ongoing research and clinical trials are probing at how genomic knowledge may improve patient care.

By the end of the year, the first fully genome-driven clinical trial will launch for patients with metastatic solid tumors resistant to treatments. The two-year WINTHER trial will be conducted at four institutions around the globe: the University of Texas M. D. Anderson Cancer Center in Houston; the Vall d’Hebron Hospital in Barcelona, Spain; the Chaim Sheba Medical Center in Tel Aviv, Israel; and the Gustave Roussy Institute in Villejuif, France. The trial will enroll 200 patients in two arms: One group will receive treatment according to tumor DNA characteristics, and the other will receive comprehensive analysis of RNA, microRNA, and DNA of both tumor and normal tissue, along with a bioinformatics-driven score designed to estimate the odds of response to several treatment options.

Also this year, a research team at the Fred Hutchinson Cancer Research Center at the University of Washington in Seattle expects to launch a high-throughput DNA sequencing test to detect minimal residual disease (MRD) in a broad range of hematopoietic malignancies. The test’s improved sequencing technology allows patient samples to be processed in less than a week, and it carries a low rate of false positives and negatives. Specifically, the test identifies genetic rearrangements in the T-cell receptor that genetically define the leukemia. The presence of abnormal cells after treatment can indicate relapse and a need for further treatment to eliminate the remaining cancer cells. The researchers have applied for a patent and have licensed the technology to Adaptive Biotechnologies, which has applied for U.S. Food and Drug Administration approval to market the test.

The research team, led by Harlan Robins, Ph.D., a computational biologist at the Fred Hutchinson Cancer Research Center, reported in the May 16, 2012, issue of Science Translational Medicine that they could detect MRD in T-lymphoblastic leukemia patients at almost twice the rate of flow cytometry, the current “gold standard” in the U.S.

“I was really excited to see this paper because I think it does address for the hematopoietic malignancies a really interesting and important advance,” said Elaine Mardis, Ph.D., codirector of the genome institute at Washington University in St. Louis. Mardis, who was not involved in the research, leads a team that provides high-throughput sequencing to several cancer-related research projects. She pointed out that the cost of stem cell treatment for leukemia can run $300,000–$800,000, and using a more sensitive technology to identify patients most likely to benefit from treatment could actually save money.

“We’re at the point where we can handle significant throughput, and the price point is already competitive with what they do now.”
A Tale of Two Countries: Lung Cancer Care in Brazil and China

By Merrill Goozner

Lung cancer persists throughout the world, but wide disparities in care exist, particularly between developing countries and advanced industrial nations. Even developing countries with high-growth economics face obstacles not often encountered in developed nations. Screening is not as widely available, so diagnoses often come late, decreasing survival rates.

Brazil and China are two examples of high-growth developing countries facing challenges in delivering lung cancer care, as revealed at the 2012 annual meeting of the American Society of Clinical Oncology in Chicago.

Antismoking Campaigns

Brazil has been a global leader in smoking reduction. Beginning in the early 1990s, the nation of 190 million banned smoking in public places, restricted tobacco advertising, hiked cigarette taxes, and initiated smoking-cessation counseling through its public health system. In 2003, Brazil became one of the first countries to sign the World Health Organization’s (WHO) Framework Convention on Tobacco Control.

Smoking rates dropped dramatically, going from nearly a third of the adult population in the late 1980s to 17% in the 2000s. The ongoing campaign has aimed to reduce...