PEOPLE

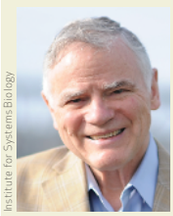
President Barack Obama has awarded the National Medal of Science to 12 eminent researchers and the National Medal of Technology and Innovation to 11 distinguished inventors. The National Medal of Science recognizes individuals who have made outstanding contributions to various scientific fields. The National Medal of Technology and Innovation honors those who have made lasting contributions to America's competitiveness and helped strengthen its technological workforce.

Three of the recipients have made significant contributions to cancer research.

University of Missouri

M. Frederick Hawthorne, PhD, and **Leroy Hood, MD, PhD,** received the National Medal of Science.

Hawthorne directs the International Institute of Nano and Molecular Medicine and serves as a distinguished professor of chemistry and radiology at the University of Missouri in Columbia. He developed an investigational technique known as boron neutron capture therapy to kill cancer cells.



Institute for Systems Biology

Hood, president and cofounder of the Institute for Systems Biology in Seattle, WA, began his career at the California Institute of Technology. There, he and his colleagues developed DNA and protein sequencers and synthesizers, devices that led to the mapping of the human genome.

M. Scott Brauer

Robert Langer, ScD, received the National Medal of Technology and Innovation. A professor of chemical engineering at Massachusetts Institute of Technology in Cambridge, MA, he has developed novel drug-delivery systems based on polymers, including materials that allow large molecules of a protein to pass through membranes to inhibit angiogenesis, as well as materials that release drugs over time.

Viral Treatments Halt Tumor Growth

A combination of anticancer viral treatment and chemotherapy was more effective at halting metastatic tumor growth than chemotherapy alone, according to preliminary results from a phase III clinical trial in patients with head and neck cancers announced by Oncolytics Biotech of Calgary, Alberta, Canada, in December.

"To the best of our knowledge, this is the first successful double-blinded randomized data from a clinical study using an intravenously administered oncolytic virus," says Brad Thompson, PhD, chief executive officer of Oncolytics.

Known as Reolysin, the Oncolytics treatment is a reovirus similar to that which causes the common cold. Engineered reoviruses, such as the Oncolytics therapeutic, exploit the antiviral immunity defects that tend to accumulate in cancer cells. Moreover, Reolysin can only survive and replicate in cancer cells with an activated RAS pathway, says Matt Coffey, PhD, Oncolytics chief operating officer, who led early studies of reoviruses as potential anticancer agents.

Eventually, cancer cells become packed with so many viral particles that they burst and die, Coffey explains. But because normal cells lack activated RAS, they avoid a similar fate after viral treatment.

In the ongoing study, 167 patients with advanced head and neck cancers are receiving either carboplatin and paclitaxel followed by Reolysin, or the chemotherapy agents only. Reolysin doses amounting to an estimated 1 trillion viral particles were administered intravenously once a day for 5 consecutive days.

The current results apply only to a subset of 105 patients with metastatic tumors in the liver, lungs, or lymph nodes. Six weeks after treatment, 86% of those patients treated with Reolysin had achieved metastatic tumor stabilization or shrinkage, compared with 67% of control patients who did not receive viral therapy. Side effects were limited to minor flu-like symptoms.

Results for the entire cohort, including patients who do not have metastatic disease, will be presented at a later date, Coffey says.

Oncolytics conducted the subset analysis after a preliminary assessment revealed that patients with metastatic illness had achieved more substantial improvements in progression-free survival (PFS) after Reolysin treatment than did patients whose primary tumors had not metastasized. Given those findings, a review panel at the U.S. Food and Drug Administration (FDA) recommended that Oncolytics evaluate Reolysin's effects specifically on metastasized tumors.

The difference in PFS between patients with or without metastatic illness makes sense, Coffey says, because metastatic tumors tend to have better circulation—and therefore better access to viral particles—than do their corresponding primary malignancies.

"Moreover, activated RAS drives the metastatic phenotype," Coffey says. "Because of that, metastatic tumors are particularly homogenous with respect to RAS activation and that makes them uniquely responsive to treatment."

Although viral treatments for cancer have been studied for many years, none has been approved by the FDA. One other likely contender is Amgen's OncoVEX, which has been evaluated as a treatment for melanoma in a phase III trial whose results have not yet been announced. ■

Ponatinib Joins TKI Club for Leukemias

Ponatinib (Iclusig; ARIAD Pharmaceuticals) will become the fifth tyrosine kinase inhibitor (TKI) available to treat chronic myeloid leukemia (CML).

In December, the FDA gave expedited approval to the drug for patients with CML or Philadelphia chromosome–positive acute lymphoblastic leukemia. For both of the BCR–ABL mutation protein cancers, the drug is approved for patients who have developed resistance to other TKIs.

The FDA go-ahead came just 5 days after results from the 449-patient PACE phase II trial were presented at the annual meeting of the American Society of Hematology (ASH). Those results demonstrated that ponatinib