and the United Kingdom have now added to the earlier results, reporting at the meeting that they, too, have found evidence of SV40 in some of the tumors studied, most strikingly in about a third of the mesotheliomas tested.

But not everyone has been able to confirm the sightings. For example, working with Shah, Strickler and his colleagues tested 50 mesothelioma tumors for SV40 DNA but found none. "We've tried to replicate exactly what [the other researchers] did, and we do not get the same results," adds Ethel-Michele de Villers, who also failed to detect SV40 in 32 tumors other than mesotheliomas with her colleagues at the German Cancer Center in Heidelberg. "We've heard compelling data from both sides—from excellent labs," commented Levine.

The reason for the discrepancy is unclear. The positive results might have come from sequences from the JC and BK viruses. But that seems unlikely because several teams sequenced enough of the DNA to tell whether it came from SV40. Contamination by lab strains of SV40 also seems improbable given the large number of sightings. "It's unlikely that all the positive results can be written off as contamination," says retrovirologist Robin Weiss of London's Institute of Cancer Research.

Assuming that the sightings are authentic, the next step will be to try to pin down a biological connection between SV40 and human cancer. "Just because some of us detect [SV40] in tumors doesn't mean it's causing the tumors," Baylor's Lednicky cautions. Proving that means coming up with results that everyone agrees are valid.

The answer might be important in view of evidence that SV40 exists in human populations, apparently even predating the contaminated vaccine. Over the years, several teams have screened blood samples taken before the vaccine became available, or surveyed isolated populations who have never gotten polio vaccines, for antibodies against SV40 proteins. They find these antibodies in 5% to 12% of those studied. However, those studies did not completely rule out the possibility that the antibodies were detecting JC or BK proteins. "We don't necessarily have good exposure data," Strickler says. "So, it's hard to tell how to interpret the [antibody] findings."

Researchers clearly still have plenty of work to do before they can totally exonerate SV40 as a cause of human cancer. "The main thing is to verify the observations and standardize the techniques," says Garcea. Toward that end, Strickler says his institute is beginning to prepare a panel of samples to be sent out to various labs for testing. And the FDA scientists say they plan to work on developing better PCR procedures and antibody screens. Says Shah: "Unlike mad cow disease, where you don't know what to look for, there's so much intellectual power behind this virus [that] we should be able to find out very quickly what is going on."

–Elizabeth Pennisi

ENVIRONMENT

Mixed Reviews for Habitat Plan

For years, the northern spotted owl has been the focus of a bitter struggle between environmentalists and loggers over the old-growth forests of the Pacific Northwest. Now, it is about to become the poster species of an ambitious new plan for preserving biodiversity.

Last week, federal and state officials signed a 70-year land management agreement to protect a host of species, including the infamous owl, on 650,000 hectares of land managed by the Washington state Department of Natural Resources. Said Secretary of the Interior Bruce Babbitt at the signing ceremony, "We are creating a conservation mosaic across Washington's magnificent forests that will lead to survival, indeed, recovery, of aquatic species and wildlife now endangered or in peril, while offering long-term certainty for rural timber economies."

Based on recommendations from a scientific team from the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and other federal and state agencies, the "habitat conservation plan," or HCP, sets aside prime land—including old-growth forests, buffer strips along streams, and caves, cliff sides, and other specialized habitats—for the region's endangered species while opening other areas to timber harvesting. The plan also allows for the "taking," or harming or killing, of several endangered species during logging operations as long as it does not send the species spiraling into extinction.

The Washington plan is the first statewide, multispecies HCP, and, like other HCPs around the country, it is controversial. As might be expected, it has drawn fire from timber interests. Says Jim Geisinger, president of the Northwest Forestry Association in Portland, Oregon, "When you look at the percentage of the land base that would be made off limits to logging, we believe it will be very difficult to maintain [the plan's projected annual harvest of 655 million board feet]."

Other critics question the plan's ecological underpinnings. Although it is supposed to protect over 285 species, from the grizzly bear and Rocky Mountain elk to the golden paintbrush and Oregon silverspot butterfly, the biologists who worked on the plan looked primarily on the habitat requirements of a handful of species, including the northern spotted owl, the marbled murrelet, and several species of salmon and steelhead trout, according to Martin Raphael of the Forest Services Laboratory in Olympia, Washington, who worked on the plan. The idea is that if these relatively well-studied "indicator" species are protected, the rest will be preserved, too. Laura Hood of the Defenders of Wildlife, an environmental organization in Washington, D.C., counters that this approach promises far more than it delivers: "They should admit that [the plan] covers just a few species."

JOE MCDONALD/ANIMALS, ANIMALS

VIREO

Protected. Northern spotted owl *(top)* and marbled murrelet *(above)*.

Some biologists also question the ecological wisdom of the plan's "no surprises" clause. This provision guarantees that once a deal is struck, the federal government cannot come back and require the state to spend more money on preserving habitat, even if additional species become threatened or already-included species fail to thrive. "That clause could be dangerously inflexible," contends Tim Cullinan, staff scientist at the Washington field office of the National Audubon Society in Olympia.

All ecosystems change over time, whether as a result of hurricanes, fires, disease outbreaks, or invasion by exotic species, points out Gary Meffe, a senior ecologist at the Savannah River Ecology Lab in Aiken, South Carolina. He argues that "['No surprises' language] does not reflect ecological reality and rejects the best scientific knowledge. ... This is a political, not a scientific, perspective."

Still, some ecologists and environmentalists say the HCP is a big step in the right direction. "Washington state has been living hand-to-mouth off its forests," says Cullinan. The HCP may help it build a more sustainable future.

–Jim Kling

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