

MEMBER NEWS

Alaska Laboratory Tests Blubber, Bear, and Mummy Hair

Everything seems larger-than-life in Alaska: the sky, the fauna, the lengthy stretches of darkness and light, the land itself. The state that calls itself *the last frontier* is more than double the size of Texas and one-fifth the size of the lower forty-eight states combined.

Bernard Jilly, director of the state's public health laboratory for the past 5 years, said sometimes the challenges of working in Alaska seem larger as well. Consider recruitment. Altogether only about 630,000 people call Alaska home. And, until this year there was no in-state bachelor's-level medical technician program. "We mostly have to import staff from the lower 48," said Jilly, who is currently in the market for an environmental health fellow.

Or consider specimen submissions. If there is a tuberculosis (TB) outbreak in a remote village, it can take a week or longer for sputum specimens to reach the main public health laboratory in Anchorage. It is not unusual for specimens to travel via all-terrain-vehicle or snow machine to another village to reach a dirt landing strip and a single-engine aircraft, then to be flown two to three hours to one of only 12 cities with a runway large enough to accommodate a jet, and finally flown via Alaska Airlines to Anchorage. Of course, said Jilly, "weather can play a significant role. Juneau, for example, tends to fog over a lot. If this happens, air traffic may be stalled for a week or so."

Similarly, all supplies and laboratory equipment must come from at least as far away as Seattle and withstand temperatures as low as -40 degrees Fahrenheit during winter transit. "Packaging and shipping costs tend to be pretty expensive," Jilly observed.

But if the challenges are sometimes amplified by weather and terrain, so too are the rewards. Said Jilly, "Nobody's neutral about Alaska; you either love it or you hate it. . . . I fell in love with Alaska the first day I set foot in it."

Today the former pathology professor, who spent years in Chicago, works from a three-year-old, 36,000 square-foot facility that sits alongside protected wetlands on the northeast edge of Anchorage with an expansive view of the Chugach Mountains. He oversees a staff of fifty scientists—about thirty-five in Anchorage and another sixteen at a virology laboratory on the grounds of the University of Alaska in Fairbanks.

Despite the immense dimensions of the state, Jilly said, "Alaska is like a small city." Most residents live within thirty miles of Anchorage and "everyone's on a first name basis because we all meet each other at the grocery store." This collegiality carries over into the laboratory, which has a close working relationship with the state

medical examiner—who is co-located in the Anchorage facility—law enforcement officers, and military personnel. The state public health laboratory is the reference laboratory for local military bases as well as the Navy hospital in Okinawa, Japan.

Last year when the state began surveillance for

West Nile virus—a serious threat because of Alaska's large and locally revered flocks of ravens and eagles—the military collected mosquito pools and sent samples down to its lab in the continental US for analysis, while the state laboratory tested human and avian samples.

As elsewhere, the main laboratory workload reflects the prevailing health concerns of the population; in this case with a heavy emphasis on sexually transmitted diseases, hepatitis, TB, and botulism. (Alaska has by far the highest



Entrance to Alaska public health laboratory in Anchorage.

rate of foodborne botulism in the country, primarily due to the popularity of fermented native foods.) The single highest volume procedure performed by the laboratory is the Aptima™ test for nucleic acid detection of gonorrhea and chlamydia in urine specimens (which are stable for up to a month and present few shipping problems.)

But, this being *the frontier*, laboratory work can sometimes veer off into the bizarre, at least by the standards of the lower 48. Shortly before Thanksgiving last year, Jilly received seventy-five pounds of fermented whale blubber—a delicacy in the bush—to test for botulism. “Of course,” said Jilly, “that came in late on a Friday afternoon.” The Fairbanks branch of the state laboratory commonly receives fox, wolf, and even bear heads to test for rabies. And it is not unusual for the laboratory to perform brucellosis testing on serum or organs from caribou, walrus and seal.

Just last year the laboratory started a chemistry program, so far devoted to forensic toxicology, chemical terrorism and biomonitoring. One of the state’s first biomonitoring projects is a study of mercury levels in local populations that consume large quantities of fish. Although the study is ongoing, preliminary data—based in part on measurements from ancient, mummified hair—show little change in mercury levels over at least the past thousand years. (Even timescales are larger in Alaska.)

In some ways, though, Jilly’s shop shares the frustrations and aspirations of public health laboratories nationwide. What is the biggest challenge facing the Alaska public health laboratory? “The first thing out of any laboratory director’s mouth when you ask that question,” he said. “Money, money, money.”

Like many states, Alaska is undergoing fiscal retrenchment. The Alaska laboratory has suffered a 25% cut in general state funds on top of about a 15% reduction in federal bioterrorism grant funds and a 7% reduction in tuberculosis grant money. About a sixth of

the laboratory’s technical staff has been eliminated. “We’ve been really decimated,” said Jilly.

But assuming the fiscal situation improves, plans are afoot for laboratory enhancements. Jilly has set aside \$1 million for a laboratory information management system that will enable real-time, Web-based specimen tracking and reporting. Said Jilly, “I personally feel that electronic connection here in Alaska is essential to our survival because of the physical challenges of a state like this. I’d like to push the IT (information technology) envelope as far as we can.” Already the laboratory is working with the medical examiner to do remote autopsies.

Jilly also plans to “exploit rapid molecular technologies to the maximum.” “If it takes a week to get a specimen here,” he explained, “you don’t want to wait another week to get an answer.”

Looking at the big picture, Jilly observed that “we went from a rather sleepy infectious disease laboratory to a really cutting-edge, state-of-the-art facility.” Now, he said, even on the frontier it’s time to “go into the twenty-first century full speed ahead.” ■

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—Bernard Jilly, PhD