

Genome Institute Reaches Milestone with a Mighty Microbe

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Shewanella baltica OS185 is a tiny, ocean-dwelling microbe that could be an answer to cleaning up certain kinds of radioactive contamination, but for a few days this month the microbe is in the spotlight at Los Alamos for another reason. Los Alamos scientists working as part of the Department of Energy's Joint Genome Institute (JGI) recently finished the genetic code of *Shewanella baltica* OS185 as its 100th genomic sequence.

Finishing a genome is the process of finding and eliminating any gaps in sections of genetic code that were not initially sequenced correctly by automated sequencing methods.

"The finishing of *S. baltica* is being celebrated as a Los Alamos milestone for a couple reasons," said Chris Detter, leader of the JGI Sequencing Technology Team, "Not only is it our 100th completed genomic sequence, but it's also appropriate because *S. baltica* has shown potential for use in confining and cleaning up uranium-contaminated areas, such as the Laboratory's legacy waste sites. The microbe might someday be put to work right here at Los Alamos for the bioremediation of uranium contamination at nuclear waste sites because of its unique abilities."

While solid in most forms, uranium can break down over time in the natural environment leading to the possible contamination of groundwater. Taken from the depths of the Baltic Sea, the *S. baltica* microbe has a unique ability to convert uranium dissolved in

groundwater into an insoluble form called uranium dioxide, or uraninite, which prevents the uranium from mixing with water and from migrating into and with groundwater flows.

Los Alamos specializes in developing techniques to take raw sequence data from the high-throughput JGI facility in Walnut Creek, California, and transform it into finished genomes. The Laboratory began finishing sequences for JGI in 2003. Making advancements in genome technology and chemistry over the years, more components of the process have become automated, speeding up finishing rates as a result.

In addition to Detter, other leaders in the JGI-LANL include David Bruce, Tom Brettin, and Cliff Han, and 35 exceptional scientists, technicians, and support staff.

Source: Los Alamos National Laboratory

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