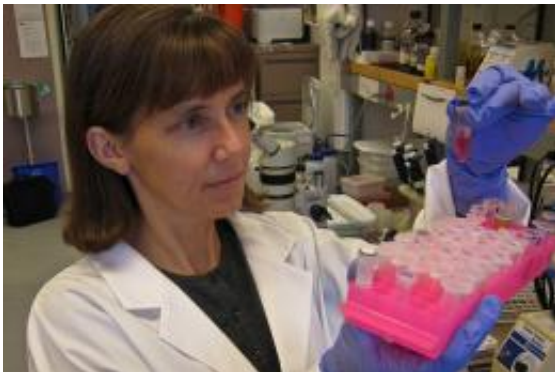


# Researchers trace source of cocaine-driven TB outbreak

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Fiona Brinkman

(PhysOrg.com) -- Simon Fraser University researchers are the first to combine the latest techniques of whole bacterial genome analysis with social networking surveys to track down the puzzling origins of a tuberculosis (TB) outbreak in a B.C. community.

The researchers, led by SFU microbiology professor Fiona Brinkman, worked with the BC Centre for Disease Control (BCCDC). They applied the latest methods in gene-sequencing analysis to obtain maps of the complete genetic codes of the [TB bacteria](#) genomes from 36 sufferers in the affected community. They also sequenced bacteria from a former TB outbreak in the area to see if it had mutated.

Even though conventional [DNA](#) fingerprinting showed the bacteria all

had the same [genotype](#), the full genome analysis uncovered a previously hidden layer of [genetic diversity](#) – about 200 locations in a genome of four million “letters” that distinguished the different samples from each other.

Researchers then produced a “family tree” of the two TB strains, showing which samples were related. By combining that information with the social network surveys the BCCDC had collected from infected individuals, they could determine each TB strain’s path through the community.

“Thanks to this combination of social-network surveys and genomics, we were able for the first time to link a TB outbreak with an increase in crack cocaine use within a community,” says Brinkman. The researchers were also able to identify several infected individuals who were “super spreaders” – giving the disease to many others.

“It used to cost millions of dollars to sequence one full genome like this, but now it's much cheaper, more like hundreds of dollars,” says Brinkman, who has a generous grant from SFU’s Community Trust Endowment Fund to develop these computer-based methods for analyzing genome sequences. She’s hoping the new computational tools that her team is developing will soon be able to find answers within a few weeks or less, leading to better control measures.

More information about Brinkman’s research will be published in the *New England Journal of Medicine* on Feb. 24.

**More information:** [www.nejm.org/](http://www.nejm.org/)

Provided by Simon Fraser University

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