

Researchers help find natural products potential of frankia

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Soil-dwelling bacteria of the genus Frankia have the potential to produce a multitude of natural products, including antibiotics, herbicides, pigments, anticancer agents, and other useful products, according to an article in the June 2011 issue of the journal "Applied and Environmental Microbiology." University of New Hampshire professor of microbiology and genetics Louis Tisa, a Frankia expert, contributed the genomic analysis to this study.

"We were able to use cutting-edge techniques to identify unexpected compounds in this organism, Frankia," Tisa says. The researchers, led by Bradley Moore of the Scripps Oceanographic Institute, found genetic structures in Frankia that resemble those of various valuable natural product categories that produce the majority of the natural antibiotics used as drugs.

Frankia are nitrogen-fixing bacteria that live in symbiosis with actinorhizal plants (whose ranks include beech and cherry trees); they have not previously been exploited partly because these bacteria are difficult to grow in the lab. But new [genetic methods](#) make it easier to transplant genes for promising natural products from Frankia into more user-friendly host bacteria for production.

"We found something unique that nobody thought to look for in these bacteria," says Tisa, who worked with his former graduate student and current lab technician Nicholas Beauchemin, on the project.

Tisa's lab provided insight on the biology that contributed to the genome mining, a recent technique that involves searching for genetic sequences, that was critical to the results and "complementary to the far more laborious traditional natural product drug discovery that has gone unchanged for decades," Moore says.

Provided by University of New Hampshire

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