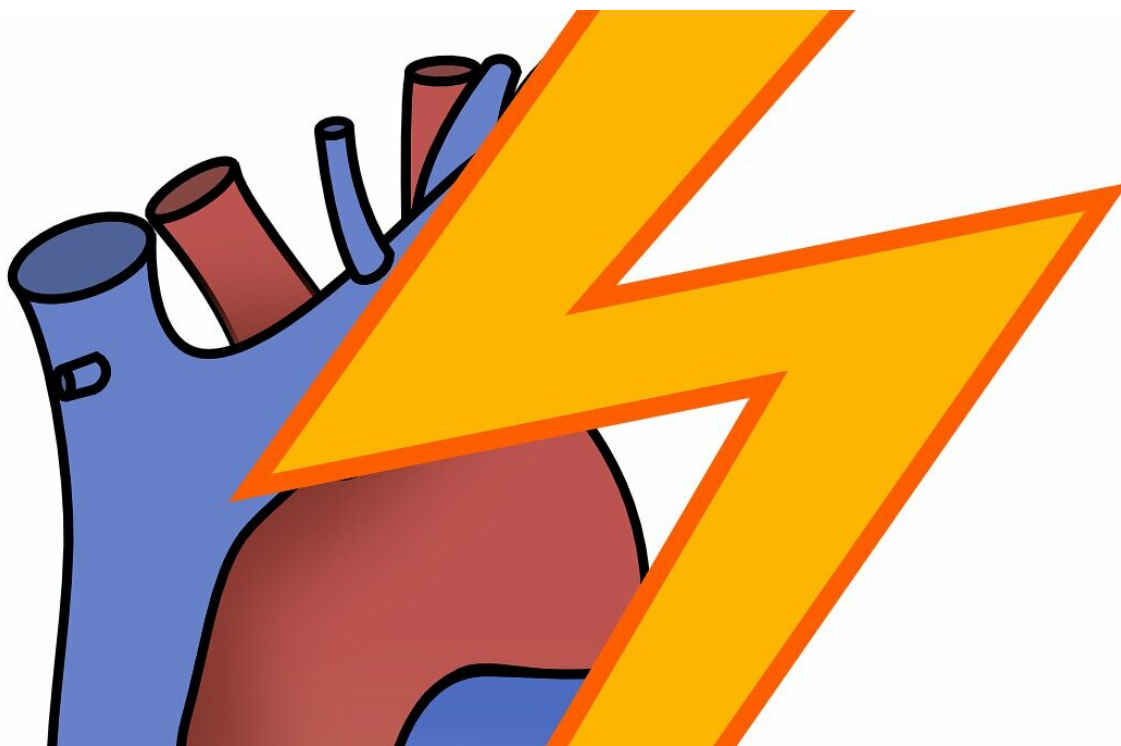


Vanderbilt collaboration yields promising compound to treat arrhythmia

February 22 2019, by Heidi Hall



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A collaboration between Vanderbilt University professors of chemistry and medicine yielded a promising compound to treat arrhythmia from an unlikely place: the fungal natural product verticilide.

Jeffrey Johnston, Stevenson Professor of Chemistry, said the natural

product isn't active except in insects, but the synthetic mirror-image version – or enantiomer – created in his lab is potently active in mammals against [ryanodine receptor](#) type 2, whose dysfunction can cause irregular heartbeats. Currently, many patients who suffer from arrhythmia are dependent on [implantable cardioverter-defibrillators](#) to keep their hearts working properly.

Johnston worked with Bjorn Knollmann, director of the Vanderbilt Center for Arrhythmia Research and Therapeutics, to show the synthetic compound inhibited calcium leak from ryanodine receptors, thus preventing [arrhythmia](#).

In addition to establishing potency, the team's tests on cells and, later, mice showed that even high doses of the unnatural version caused no ill effects.

Their work appeared Feb. 21 in the *Proceedings of the National Academy of Science* in a paper titled "Unnatural verticilide [enantiomer](#) inhibits type 2 ryanodine receptor-mediated calcium leak and is antiarrhythmic."

The next steps will be establishing pharmacological properties, and, ultimately, develop a drug that could address the underlying problem and reduce the need for defibrillator implantations.

More information: Suzanne M. Batiste et al. Unnatural verticilide enantiomer inhibits type 2 ryanodine receptor-mediated calcium leak and is antiarrhythmic, *Proceedings of the National Academy of Sciences* (2019). [DOI: 10.1073/pnas.1816685116](https://doi.org/10.1073/pnas.1816685116)

Provided by Vanderbilt University

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