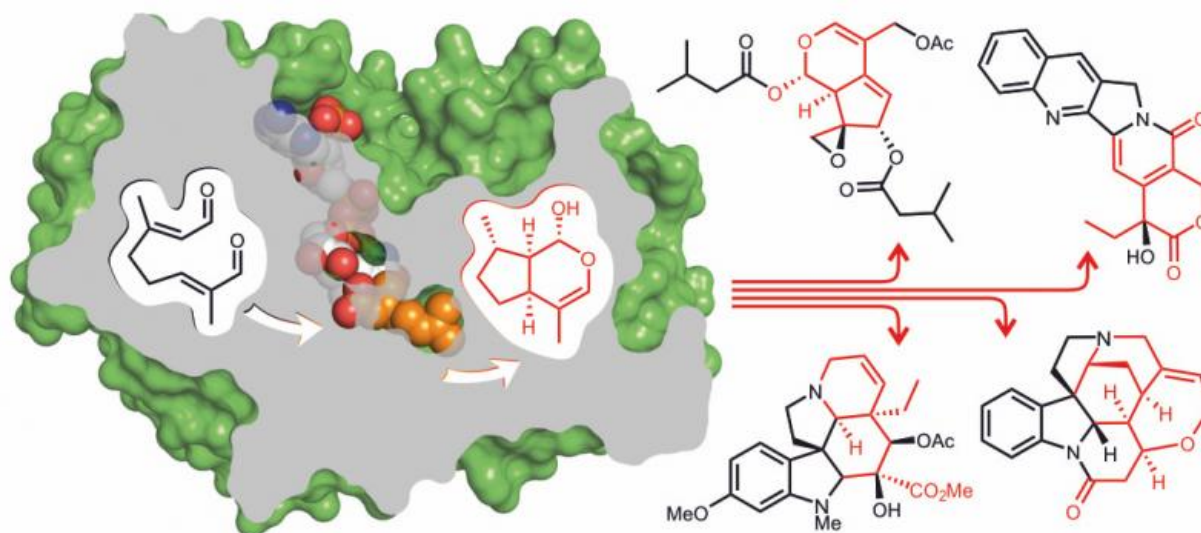


3-D structure of enzyme critical to creation of anticancer compounds in plants identified

November 9 2015



The biosynthesis of iridoids, a class of bicyclic monoterpenes, features an atypical cyclization reaction catalyzed by iridoid synthase (ISY). Crystallographic and biochemical characterization of ISY from *Catharanthus roseus* provides insights into the ISY enzymatic mechanism and highlights similarities with the homologous progesterone 5 β -reductase. Credit: The John Innes Centre

Scientists identify 3D structure of enzyme critical to the creation of anticancer and antimalarial compounds in plants

In a paper published today in *Nature Chemical Biology*, Professor Sarah

O'Connor and Dr Dave Lawson have identified, for the first time, the 3D structure of the enzyme iridoid synthase responsible for a very specific form of cyclisation of monoterpenes which creates anticancer and [antimalarial drugs](#).

The enzyme iridoid synthase plays a crucial role in the biosynthesis of a large class of plant natural products, the iridoids. Iridoids are the starting precursors for a large group of products such as the anticancer agent vinblastine, the antimalarial quinine and the [active ingredient](#) of catnip. Iridoid synthase generates the core of iridoid natural products by cyclizing a monoterpene precursor in a mode that is fundamentally different from other enzymes acting on monoterpenes.

The first gene of an iridoid synthase has only recently been discovered. In their paper they report the three-D structure of this [enzyme](#) which provides more detailed information on the mechanism of iridoid synthase.

More information: Structural determinants of reductive terpene cyclization in iridoid biosynthesis, *Nature Chemical Biology*, [DOI: 10.1038/nchembio.1955](#)

Provided by John Innes Centre

Citation: 3-D structure of enzyme critical to creation of anticancer compounds in plants identified (2015, November 9) retrieved 19 April 2024 from <https://phys.org/news/2015-11-d-enzyme-critical-creation-anticancer.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--