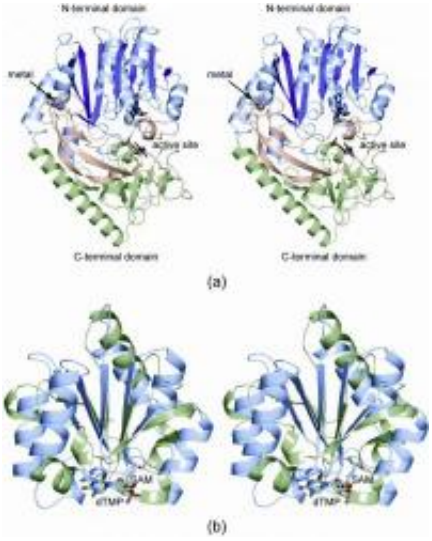
Middle school students co-author research on enzyme for activating promising disease-fighters

July 29 2010



These computerized images show the innermost structure of a key bacterial enzyme that helps activate certain antibiotics and anti-cancer agents. Credit: American Chemical Society

Grown-ups aren't the only ones making exciting scientific discoveries these days. Two middle school students from Wisconsin joined a team of scientists who are reporting the first glimpse of the innermost structure of a key bacterial enzyme. It helps activate certain antibiotics and anti-cancer agents so that those substances do their job.

Their study appears in ACS' weekly journal *Biochemistry*. The student co-authors of the study are from Edgewood Campus Middle School in Madison and participated in Project CRYSTAL, a special program that provides middle school students with hands-on laboratory experience.

In the report, study leader Hazel Holden and colleagues note intense scientific interest in a chemical process called methylation, which increases the activity of DNA, proteins, and other substances in the body by transferring methyl (CH3) groups to them. Special enzymes called methyltransferases make methylation possible, and these proteins are very important in a myriad of key biological processes.

Holden and colleagues studied a bacterial methyltransferase involved in the production of tetronitrose, a component of the promising anti-cancer agent, tetrocarcin, and the antibiotic kijanimicin. The methyltransferase seems to play a key role in activating these disease-fighters. The scientists identified the 3D structure of this methyltransferase, a key step in determining how it works and how it might be modified for potential use in medicine.

More information: "Molecular Architecture of a C-3'-Methyltransferase Involved in the Biosynthesis of D-Tetronitrose, *Biochemistry*.

Provided by American Chemical Society