Minimal changes alter an enzyme dramatically

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A new study by a research team at Uppsala University shows how new functions can develop in an enzyme. This can explain, for example, how resistance to toxins can occur so simply. The findings are now being published in the *Journal of Biological Chemistry.*

Every biological being needs a large number of enzymes for the many functions of cells. In the spirit of Darwin, enzymes in an organism can change over time to meet new needs. This is done by alterations in the enzymes' building blocks that are caused by mutations in the DNA.

The new study, directed by Professor Bengt Mannervik, shows that new functions can develop in an enzyme through point mutation, that is, a single one of the enzyme's building blocks is deleted or replaced. The findings may explain how resistance to toxins can simply emerge without any major structural alterations of a gene.

"The findings are important for the development of resistance in insects to pesticides, in viruses and bacteria to drugs, and in tumors to chemotherapy," explains Bengt Mannervik.

More information: doi:10.1074/jbc.M109.07475

Provided by Uppsala University

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