

9 October 2009

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## Developing enzymes to clean up pollution by explosives

Scientists at the University of York have uncovered the structure of an unusual enzyme which can be used to reverse the contamination of land by explosives.

The discovery, by scientists in the York Structural Biology Laboratory and the Centre for Novel Agricultural Products, will support the development of plants that can help tackle pollution caused by royal demolition explosive, also known as RDX.

Researchers at York have identified bacteria that use RDX as a food source and used that knowledge to develop transgenic plants that can draw pollutants out of the soil and break them down.

The latest findings, published in *The Journal of Biological Chemistry*, focus on the XplA enzyme which plays an important role in that process.

Dr Gideon Grogan, from the York Structural Biology Laboratory, said: "The biological process for tackling the pollution caused by RDX already exists but we need to find ways of making it work faster and on the scale required.

"This research significantly improves our understanding of the structure of this enzyme and is therefore an important step towards exploiting its unusual properties."

Professor Neil Bruce, from the Centre for Novel Agricultural Products, said: "RDX is toxic and a possible carcinogen so it is important to identify ways of stopping it polluting land and water supplies.

"We have already had significant success in engineering plants that can perform this task and this research will help further refine that technique."

The research is funded by the Centre of Excellence for Biocatalysis, Biotransformations and Biocatalytic Manufacture (CoEBio3), Biotechnology and Biological Sciences Research Council and the Strategic Environmental Research and Development Program (SERDP) of the US Department of Defense.

### Notes to editors:

- The research *The 1.5 Å structure of XplA-heme, an unusual cytochrome-P450 heme domain that catalyses reductive biotransformation of royal demolition explosive (RDX)* can be read in full at: <http://www.jbc.org/content/early/2009/08/19/jbc.M109.031559.abstract>.
- The Centre for Novel Agricultural Products (CNAP) is an academic research centre which specialises in gene discovery for plant and microbial-based applications using biology to benefit society and to provide a sustainable future. More information at <http://www.cnap.org.uk/>
- The York Structural Biology Laboratory (YSBL) uses and develops methods to determine, analyse and exploit the structure of proteins and their complexes with other molecules. The research provides insights into biological function and finds application in drug discovery and the

exploitation of enzymes as biocatalysts. More information  
at <http://www.ysbl.york.ac.uk/>.