

New lipids discovery could reduce deaths from stroke and heart attack

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Researchers at Cardiff University have discovered a new family of lipids (fats) that plays a key role in controlling clot formation. The new discovery could lead to novel ways of reducing the risk of excess clotting, called thrombosis, potentially preventing deaths from many killer diseases such as heart attacks, strokes and deep vein thrombosis.

Professor Valerie O'Donnell, co-director of Systems Immunity Research Institute at Cardiff University, and lead of the research said: "While clot formation is an essential response to injury, the formation of unwanted clots is central to many killer diseases. The most obvious are stroke or heart attack where a blood clot blocks a vessel and causes oxygen deprivation and organ damage, but subtle changes in blood clotting are involved in many inflammatory diseases too, such as sepsis, diabetes and even cancer."

Professor Peter Collins, Professor of Haematology and co-lead of the study, added: "With the discovery of new lipids that promote [clot formation](#), we can find new ways to prevent unwanted clots being generated and even use these lipids to help reduce blood loss where excessive bleeding is a problem, such as hereditary bleeding disorders or bleeding during childbirth."

The new lipids, formed by white cells and platelets in the blood, form a surface on cells helping a [clot](#) to develop more effectively.

After discovering the lipids and making them in the lab, the researchers

carried out several tests with them, including adding them to plasma to see if they could change clotting activity, and observing how they affected bleeding in mice. They found that mice that do not make these lipids bleed much more and are also protected against thrombosis. They also found that administering the lipids locally reduced bleeding.

The researchers will continue this work with an end goal of discovering how to target the new lipids to develop new therapies.

The new research 'Effective haemostasis requires networks of oxidized lipids in cell membranes that support calcium-dependent coagulation factor binding' is published in *Science Signalling*. Further information is contained in a related study published earlier this year 'Enzymatic [lipid](#) oxidation by eosinophils propagates coagulation, haemostasis and thrombotic disease' (*Journal of Experimental Medicine*) led by colleagues at the University Hospital Erlangen, working with the Cardiff group.

More information: Stefan Uderhardt et al. Enzymatic lipid oxidation by eosinophils propagates coagulation, hemostasis, and thrombotic disease, *The Journal of Experimental Medicine* (2017). [DOI: 10.1084/jem.20161070](#)

Provided by Cardiff University

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