

Mussel goo inspires blood vessel glue

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(Phys.org)—A University of British Columbia researcher has helped create a gel – based on the mussel's knack for clinging to rocks, piers and boat hulls – that can be painted onto the walls of blood vessels and stay put, forming a protective barrier with potentially life-saving implications.

Co-invented by Assistant Professor Christian Kastrup while a postdoctoral student at the Massachusetts Institute of Technology, the gel is similar to the amino acid that enables mussels to resist the power of churning water. The variant that Kastrup and his collaborators created, described in the current issue of the online journal *PNAS* Early Edition, can withstand the flow of blood through [arteries and veins](#).

The gel's "sheer strength" could shore up weakened [vessel walls](#) at risk of rupturing – much like the way putty can fill in dents in a wall, says Kastrup, a member of the Department of Biochemistry and Molecular Biology and the Michael Smith Laboratories.

By forming a stable barrier between blood and the vessel walls, the gel could also prevent the inflammation that typically occurs when a stent is inserted to widen a narrowed artery or vein; that inflammation often counteracts the opening of the vessel that the stent was intended to achieve.

The widest potential application would be preventing the rupture of blood vessel plaque. When a plaque ruptures, the resulting clot can block blood flow to the heart (triggering a heart attack) or the brain (triggering

a stroke). Mice treated with a combination of the gel and an anti-inflammatory steroid had more stable plaque than a control group of untreated mice.

"By mimicking the [mussel](#)'s ability to cling to objects, we created a substance that stays in place in a very dynamic environment with high [flow velocities](#)," says Kastrup, a member of UBC's Centre for Blood Research.

Provided by University of British Columbia

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