# Saving Heart Muscle After a Heart Attack: Nature Reports PeriFlow's First-in-Class Capillary-Selective Vasodilator

*CLN-2501 a first-in-class drug candidate is designed to restore capillary blood flow after Acute Myocardial Infarction.*

BOSTON, MA, UNITED STATES, October 15, 2026 /EINPresswire.com/ -- A study published today in Nature reports a new therapeutic strategy for one of the major unresolved problems in the treatment of Acute Myocardial Infarction (AMI): Capillary No-Reflow (CNR).

Modern catheter-based intervention can rapidly reopen an occluded coronary artery, typically deploying a stent. Yet reopening the artery does not always restore blood flow to heart tissues. Even after successful reperfusion, capillaries can remain pathologically constricted, preventing oxygenated blood from reaching the tissue. CNR affects a majority of STEMI AMI patients; even with a successful stent, patients with CNR experience larger infarct size (heart tissue death), more heart failure and markedly worse survival. There is currently no approved therapy specifically targeting CNR.

Building on earlier evidence demonstrating that myosin proteins drive CNR "hypercontractions," Dr. András Málnási-Csizmadia and his biochemistry research team in Budapest and Boston identified a smooth-muscle-myosin inhibitor that directly binds to myosin in the capillaries and relaxes the pathological hypercontraction. This work led to CLN-2501, the first Capillary-Selective Vasodilator and the first drug candidate developed specifically to treat CNR.

In preclinical models, CLN-2501 reopened the capillaries and restored blood flow within seconds. Treatment substantially reduced tissue injury and improved survival, while preserving normal vascular autoregulation and systemic hemodynamics. The therapeutic principle was also demonstrated in a clinically relevant large-animal model of myocardial infarction.

"We have been searching for solutions to the problem of CNR for over 30 years," said C. Michael Gibson, MD, Professor at Harvard Medical School, President and CEO of the Baim Institute for Clinical Research, and Chief Medical Advisor at PeriFlow. "Stents have been a revolution in clearing the blockage and re-opening the arteries, but we still need an effective treatment to be sure that the capillaries are also opening. Every week we treat patients who have worse outcomes because of this problem."

The ultimate objective is not simply to reopen capillaries, but to save functioning heart muscle. “We are excited to move toward clinical trials with CLN-2501,” said Kevin Bainey, MD, of the Mazankowski Alberta Heart Institute, University of Alberta and President of the Canadian Association of Interventional Cardiology. “This new drug has the potential to save lives, to decrease the risk of heart failure and repeat hospitalizations, and to enable patients to more fully recover after a heart attack. This is an exciting opportunity for interventional cardiologists to advance the care of these patients.”

The biology extends beyond AMI. Capillary hypercontraction also represents a therapeutic target in acute kidney injury, ischemic stroke and organ transplantation.

PeriFlow Therapeutics is building a portfolio of highly selective myosin inhibitors that target pathological hypercontraction across several specific tissue types. CLN-2501 is PeriFlow’s lead development program.

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