Vasodilation in Mature Arterialized Collateral Capillaries Increases Flow in Ischemic Arterial Tree
Kenneth Gouin, Sara Hellstrom, Josh Cutts, Trevor R. Cardinal
Biomedical Engineering, Cal Poly State University, San Luis Obispo, CA

Introduction
The presence of a native collateral circulation (i.e., arteriole-arteriole anastomoses) is thought to improve the prognosis for patients with ischemic disease. In animal models lacking a native collateral circulation, collateral capillary arteriogenesis can occur, resulting in de novo arteriole-arteriole anastomoses. Although arterialized collateral capillaries (ACCs) restore perfusion to the ischemic tissue, they initially lack vasodilatory function. However, it is not known if vasodilation in mature ACCs increases flow in the ischemic tree.

Project goal: test the hypothesis that vasodilation in ACCs increases flow in the ischemic tree.

Spinotrapezium Feed Artery Ligation
The lateral feed artery in the spinotrapezium muscle was ligated to model arterial occlusion and stimulate arteriogenesis of collateral capillaries (see Figure 1).

ACC Vasodilation Increases Flow
Vasodilation in mature ACCs increases flow in the ischemic tree. However, it is unknown if vasodilation in mature ACCs increases flow in the ischemic tree.

Future Work
Investigate vasodilation-induced increases in blood flow in mice with relevant comorbidities such as hypercholesterolemia or obesity.

Optimize laser speckle and brightness field imaging protocols to measure changes in blood flow in smaller diameter vessels (e.g., in the arterIALIZED collateral capillaries).

References
[4] Sheppko Research Group, UCSD.

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