



Fig. S1. Calibration of speckle contrast perfusion imaging

Rats (n=10) were surgically prepared for perfusion imaging, as well as tracer infusion and arterial blood sampling, and maintained under various anesthesia conditions (halothane, isoflurane, α -chloralose), with or without middle cerebral artery occlusion, to produce a range of regional blood flows within and among animals. Methods for speckle contrast perfusion imaging are detailed in the text. During an interval of stable imaging each animal received a bolus of [^{14}C]iodoantipyrine, was decapitated, and its brain removed and processed for autoradiographic assessment of absolute regional CBF using established methods (detailed in L. Zhao and T. S. Nowak, Jr., *J. Cereb. Blood Flow Metab.* 26:1128-1140, 2006). Regions of dorsal cortex exhibiting locally homogeneous signal intensity were identified in the autoradiographic images and average CBF was determined from several sequential sections. Stereotaxic coordinates were estimated by comparison with a brain atlas and corresponding locations were identified in the speckle contrast images, for which average flux values were then determined, avoiding obvious surface blood vessels. Absolute CBF was a linear function of flux value over the approximately 20-fold range that could be evaluated in this material. The small deviation from a zero intercept likely represents slight residual contribution of small surface vessels to the flux values.