



Figure S1: Diagram of the experimental setup showing the mouse placed in a stereotaxic frame. An ultrasound matrix array transducer is placed on the depilated head over a layer of ultrasound imaging gel, transmitting at 7.81 MHz controlled by a 1024-channel volumetric system. Microbubbles are continuously infused through the tail vein. Made with BioRender.

Table S1: Statistical  $p$ -values resulting from Kruskal-Wallis one-way ANOVAs performed between wildtype mice and mice with Alzheimer's Disease for all compared parameters in all compared regions, with effect sizes calculated using Cohen's  $d$ . Significant values are shown in bold.

	<b>Brain Volume</b>	<b>Hippocampal Formation</b>	<b>Thalamus</b>	<b>Hypothalamus</b>	<b>Cerebral Cortex</b>
<i>Vessel Density</i>	<b><math>p=0.02</math> <math>d=2.53</math></b>	$p=0.12$ $d=1.17$	$p=0.92$ $d=0.03$	$p=0.17$ $d=0.86$	$p=0.75$ $d=0.33$
<i>Diameter</i>	$p=0.29$ $d=0.03$	$p=0.86$ $d=-0.01$	$p=0.83$ $d=-0.01$	$p=0.74$ $d=-0.06$	$p=0.39$ $d=-0.04$
<i>Velocity</i>	<b><math>p=0.002</math> <math>d=0.10</math></b>	$p=0.29$ $d=0.11$	$p=0.78$ $d=-0.06$	$p=0.46$ $d=0.10$	$p=0.10$ $d=0.12$
<i>Blood Flow</i>	<b><math>p=0.04</math> <math>d=0.09</math></b>	$p=0.38$ $d=0.12$	$p=0.48$ $d=0.08$	$p=0.56$ $d=-0.08$	$p=0.26$ $d=-0.14$
<i>Diameter vs Blood Flow</i>	<b><math>p=0.02</math> <math>d=-2.04</math></b>	<b><math>p=0.05</math> <math>d=-1.72</math></b>	$p=0.08$ $d=1.32$	$p=0.17$ $d=-0.84$	$p=0.12$ $d=-0.94$
<i>Tortuosity</i>	<b><math>p=0.0002</math> <math>d=0.21</math></b>	$p=0.06$ $d=0.14$	$p=0.27$ $d=0.07$	<b><math>p=0.01</math> <math>d=0.34</math></b>	$p=0.21$ 0.11