

<b>Project Title</b>	MRI phantom to enable imaging of lymphatic vessels
<b>Supervisor</b>	Prof Jimmy Moore Jr
<b>Theme(s)</b>	<p>Biomechanics and Mechanobiology</p> <p>Biomechanics and Medical Devices</p> <p>Biomedical Sensing Diagnostics and Imaging</p> <p>Image Acquisition and Signal Processing</p> <p>Microfluidic Technology Development</p>
<b>Project Type</b>	Lab based
<b>Project Description</b>	<p>Lymphatic vessels are notoriously difficult to image. They are mostly &lt;1mm in diameter, and lymph moves at small velocities on the order of mm/sec. Furthermore, the vessels contract strongly as part of their pumping function and thus empty out most of any contrast medium within.</p> <p>We are collaborating with MRI physicists who aim to develop novel imaging protocols targeting lymphatic vessels. This process would be greatly facilitated by an in vitro flow phantom that imitates in vivo lymphatic movement and flow.</p> <p>The project would involve constructing such a phantom using some combination of 3D printing, polymer casting, and pumping actuation. To be usable with MRI, there must be no metal components. This presents an interesting design challenge with potential to help revolutionise clinical capabilities to image a medically important system.</p>