

BIASP & NANSIG Summer Bursary Report 2026

By Hannah George

Investigate how embolisation to new vascular territories (ENT) occurs during thrombectomy

Please provide a written brief report of your experience as a proud recipient of the BIASP Summer Bursary, your views on the Bursary and its usefulness, your experience on how you were selected, along with your involvement in your chosen project.

I am deeply grateful to have been awarded the BIASP Summer Bursary this year. Over six weeks, I gained invaluable experience and developed skills I simply would not have acquired without this opportunity.

My project focused on how biological and mechanical properties of blood clots influenced embolisation during mechanical thrombectomy under real-world operating conditions. This is because embolisations are associated with less favourable patient outcomes. I fabricated five distinct clot types from porcine blood, ranging from fibrin-rich to red blood cell (RBC)-rich, and confirmed their composition using Fourier Transform Infrared spectroscopy. I then explored how composition translated to mechanical behaviour; mechanical testing measured clot strength whilst rheometry characterised viscoelastic properties across different shear rates. Working alongside two MSc students, I helped build a patient-derived Circle of Willis silicone model with branched arterioles which was produced via 3D printing. This model was connected to a peristaltic pump to simulate physiological blood flow. Clots were placed in the M1 segment of the middle cerebral artery and retrieved using either a Solitaire stent or aspiration.

We found that RBC-rich clots fragmented and embolised into vessel calibres ≤ 1 mm, whereas fibrin-rich clots remained intact, conforming to vessel shape. These observations were also explained by the mechanical testing and rheometric results: compressive strength increased from RBC-rich to fibrin-rich clots, while viscosity was significantly higher in RBC-rich clots. This reveals the fluid's distinctive non-Newtonian behaviour, linking its internal structure to how it performs under blood flow.

This bursary was an extraordinary learning experience. It allowed me to apply knowledge gained during sixth form and medicine to frontier research but also to explore a part of the underlying physics in medicine, a topic I seldom encounter in my standard medical curriculum. It also served as a wonderful introduction to research life, as collaborating and networking with Stroke physicians, PhD and MSc students at the research centre gave me an eye-opening perspective on how evidence shapes clinical practice and drives constant improvement in patient care.

I was fortunate to gain such supportive guidance from my supervisor, as she helped me work through problems systematically and taught me the fundamental habits of rigorous research. This placement opened doors I never knew existed, while stretching my practical abilities and teaching me just how broad a skillset effective laboratory work demands. Moreover, seeing medical concepts in action has deepened my understanding and will help me retain and contextualise what I learn throughout my degree. I realised that clinicians' hands-on involvement in cross-disciplinary research is important for bridging the gap between bench and bedside, providing clinical insight into unmet needs that can help translate discoveries in laboratories into meaningful patient-centred innovation.

Finally, the application and interview process aligned perfectly alongside my studies; deadlines and outcomes were timed perfectly, well ahead of my final-year exams, and the guidance provided was consistently clear. I cannot thank BIASP enough for this summer elective, as it has been an experience that has genuinely shaped how I see my future in medicine and research.