

Ultrasound-Guided Boiling Histotripsy to Dissolve Intraventricular Hemorrhagic Clots in a Longitudinal Piglet Model

ISTU 2026 | Trondheim, Norway

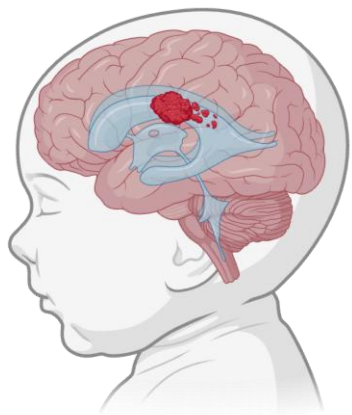
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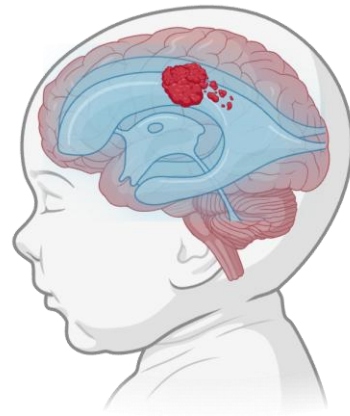
² University of Toronto, Toronto, ON, Canada

Motivation

What is IVH?

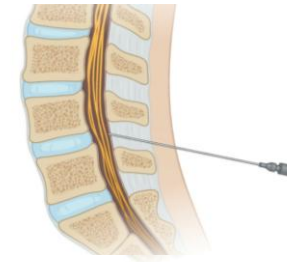


Intraventricular
Hemorrhage
(IVH)

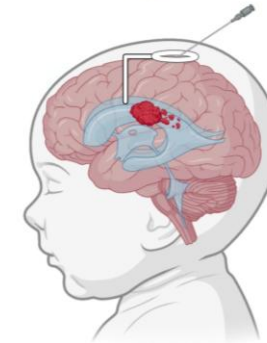


Post-hemorrhagic
Hydrocephalus
(PHH)

Current Treatments



Lumbar Punctures



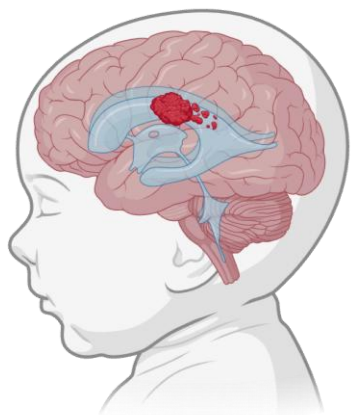
Ventricular Reservoirs



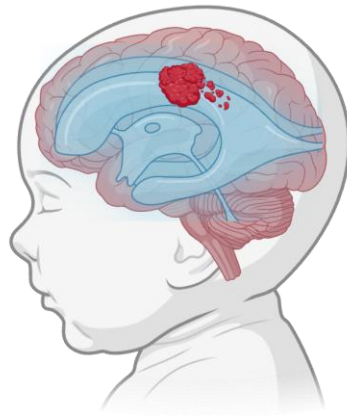
Permanent Shunts

Motivation

What is IVH?

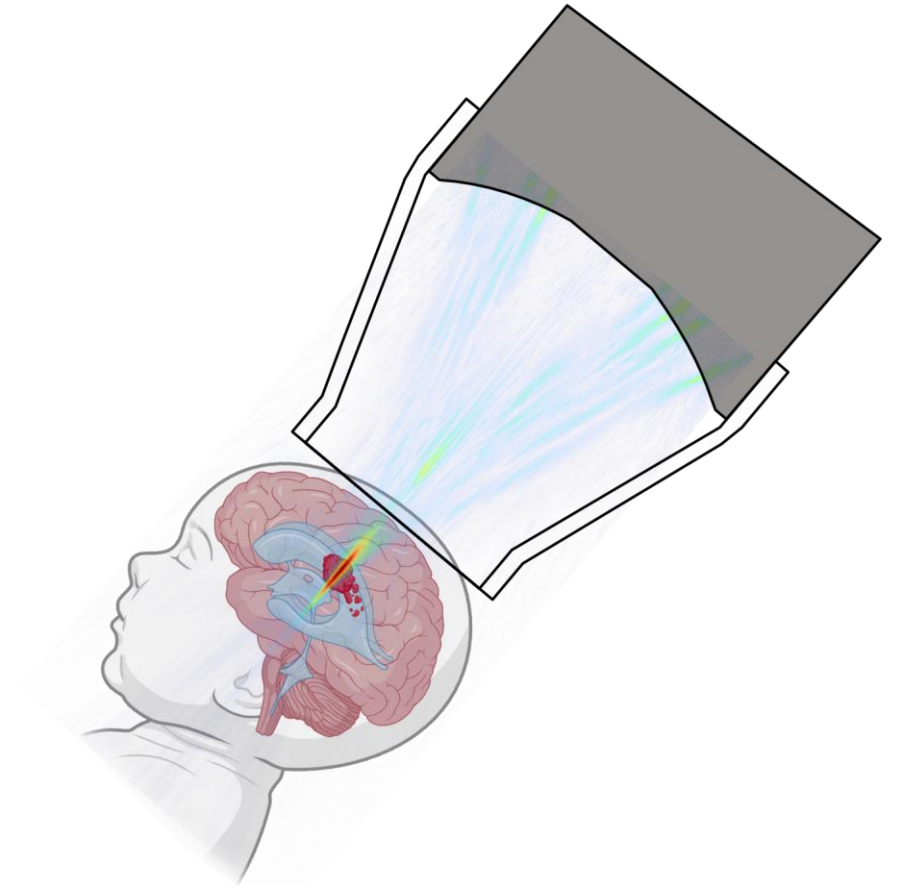


Intraventricular
Hemorrhage
(IVH)

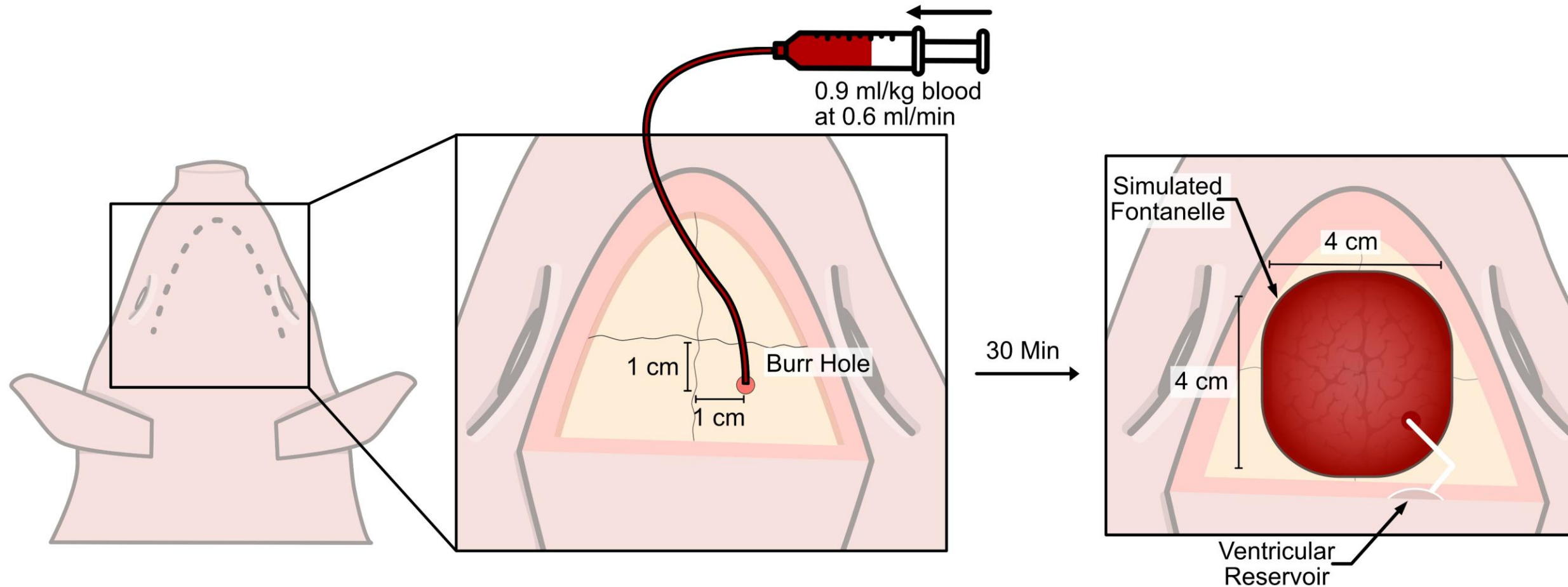


Post-hemorrhagic
Hydrocephalus
(PHH)

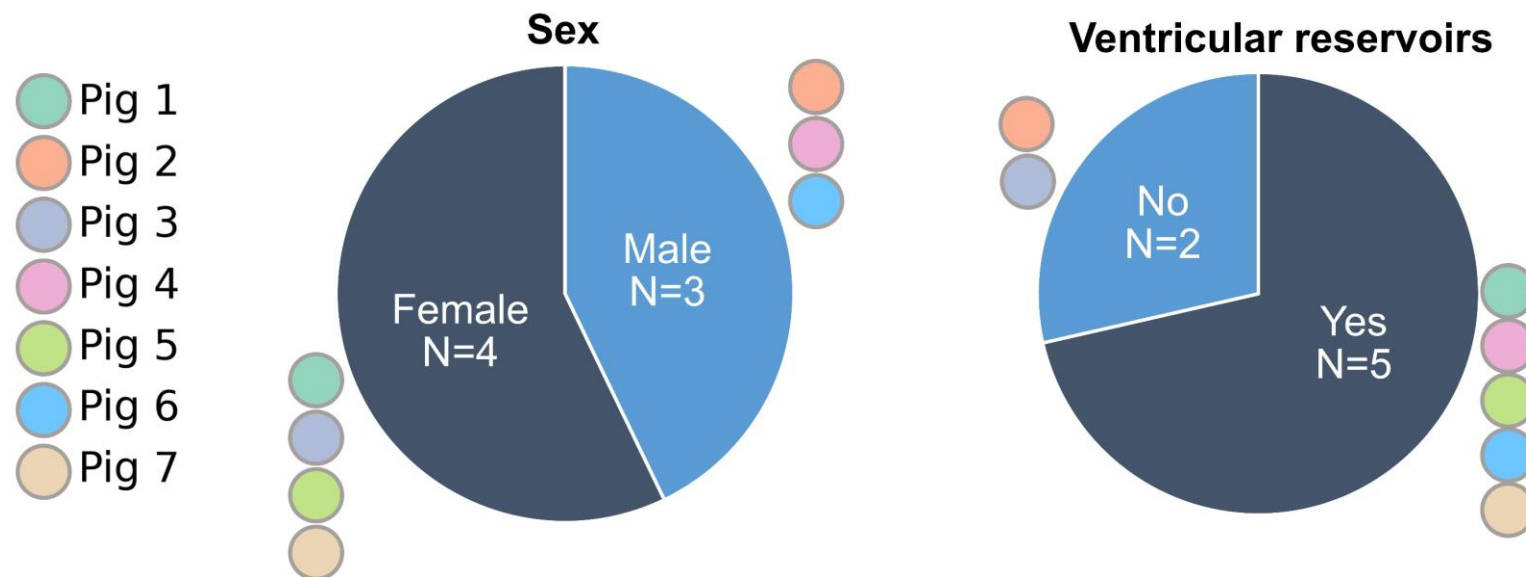
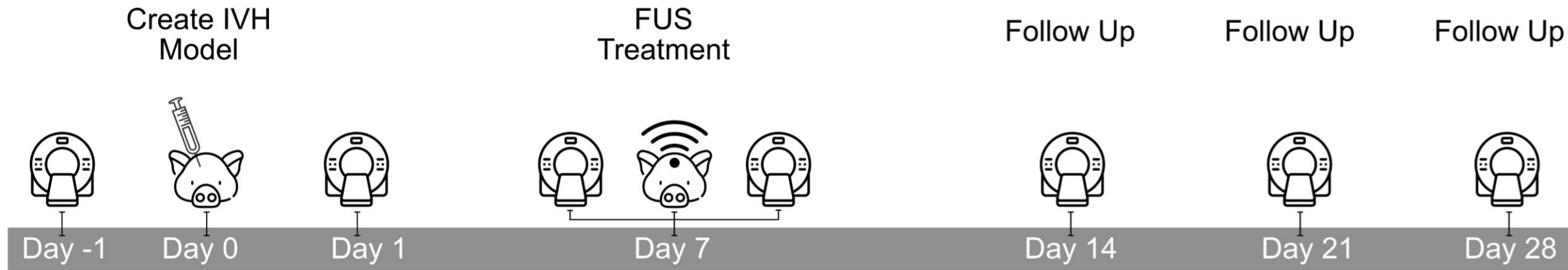
Study Aim



Methods - Piglet IVH Model



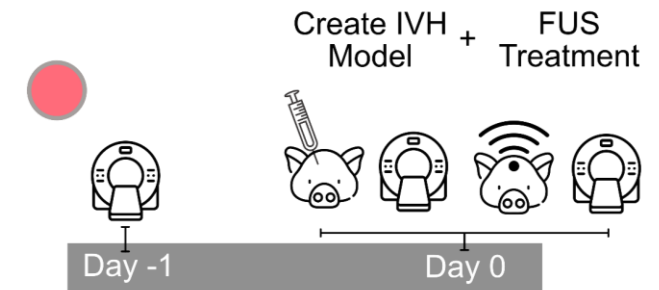
Methods - Experimental Design



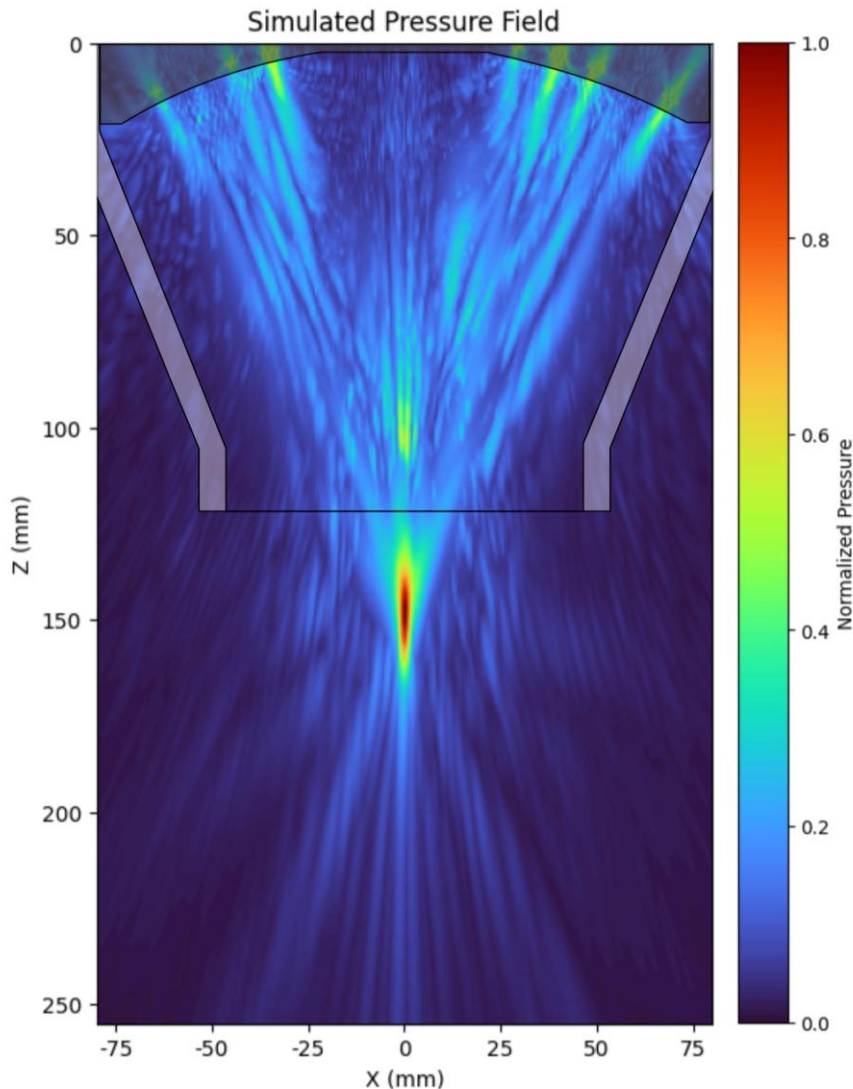
Early Endpoints

● - Day 15, Several seizures

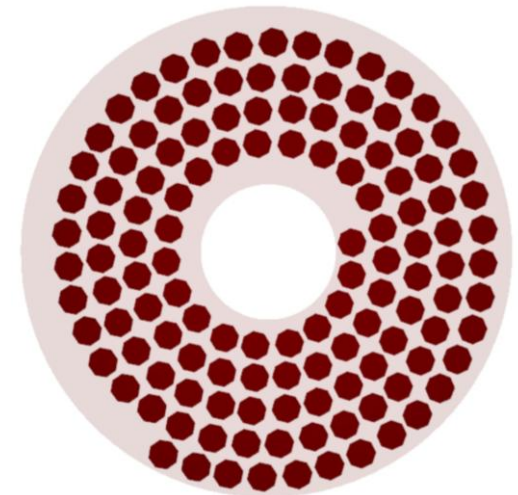
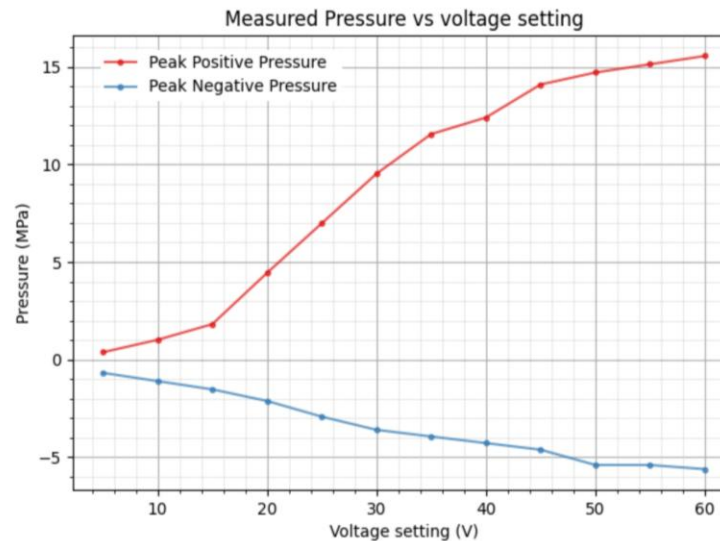
Acute Animal



Methods – Sonication Parameters

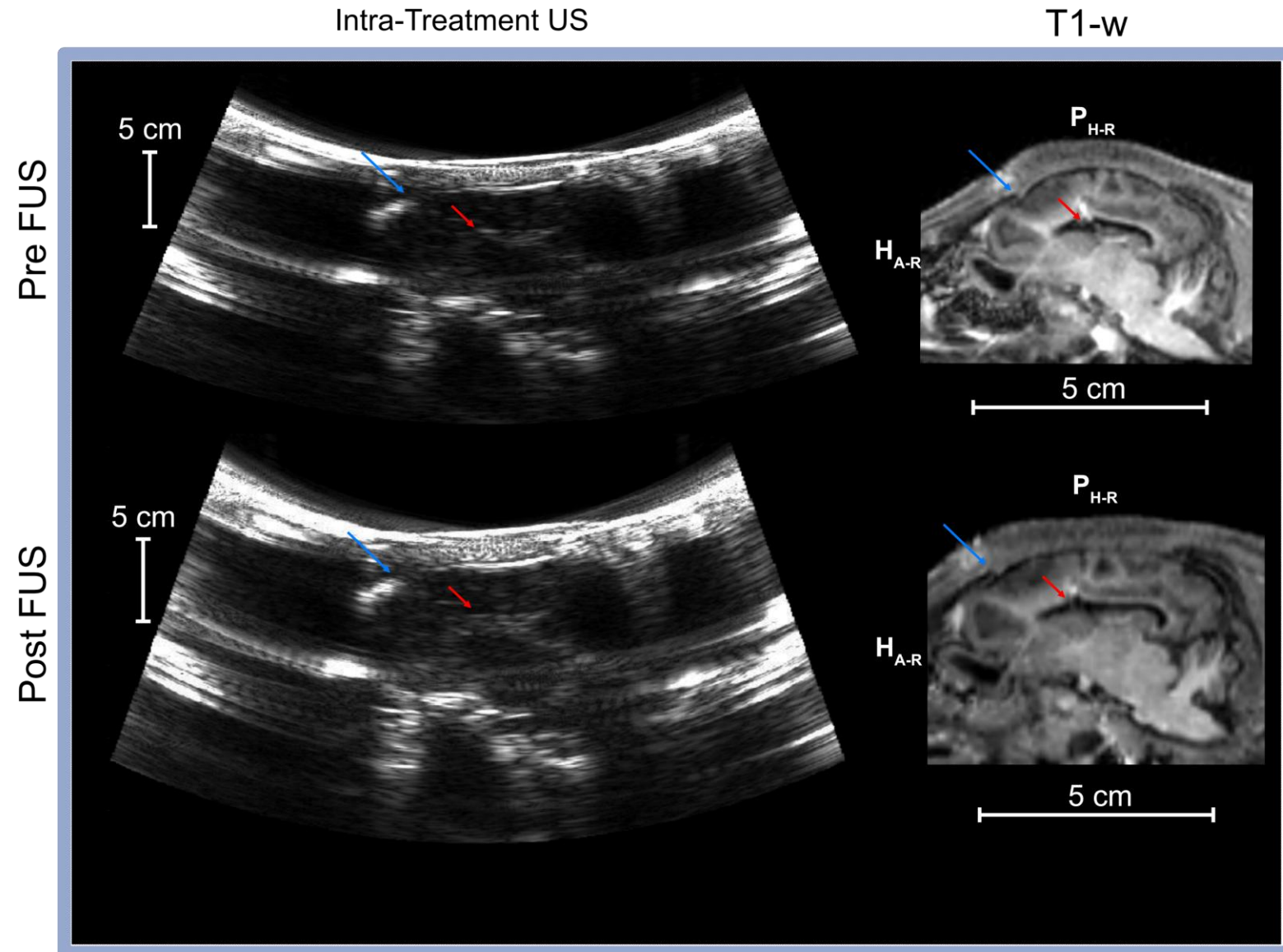


- Sonic Concepts H301 Transducer
- Ø150 mm, f/1.0 transducer
- f_0 : 1.1 MHz, BW: 40%
- FWHM: 1.4mm by 10.7 mm
- PD: 5ms, PRF: 1Hz, P-: 4.85 MPa
- Imaging probe: Sonic concepts IP-104 3.5Mhz
- Verasonics Vantage 256 System

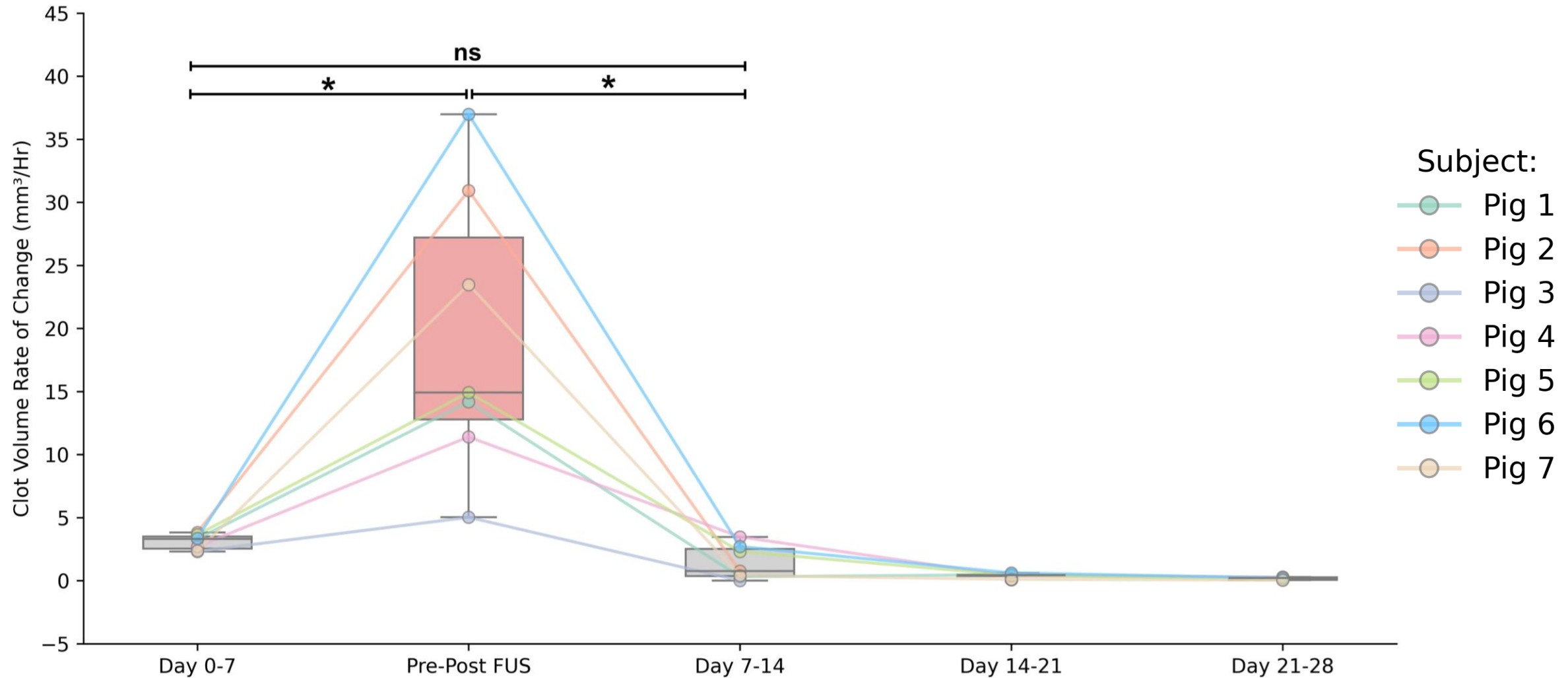


(Jenkins et al. ISTU2025)

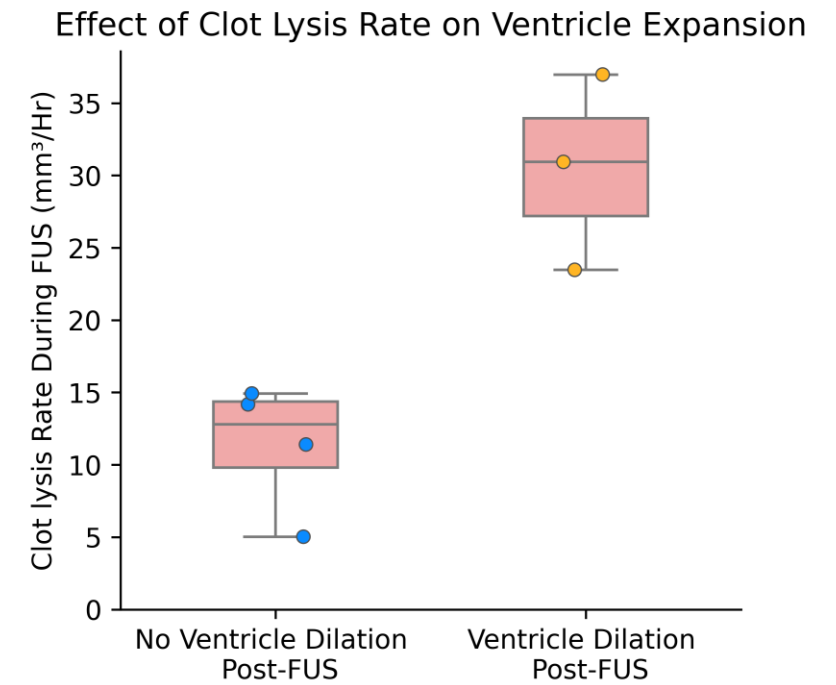
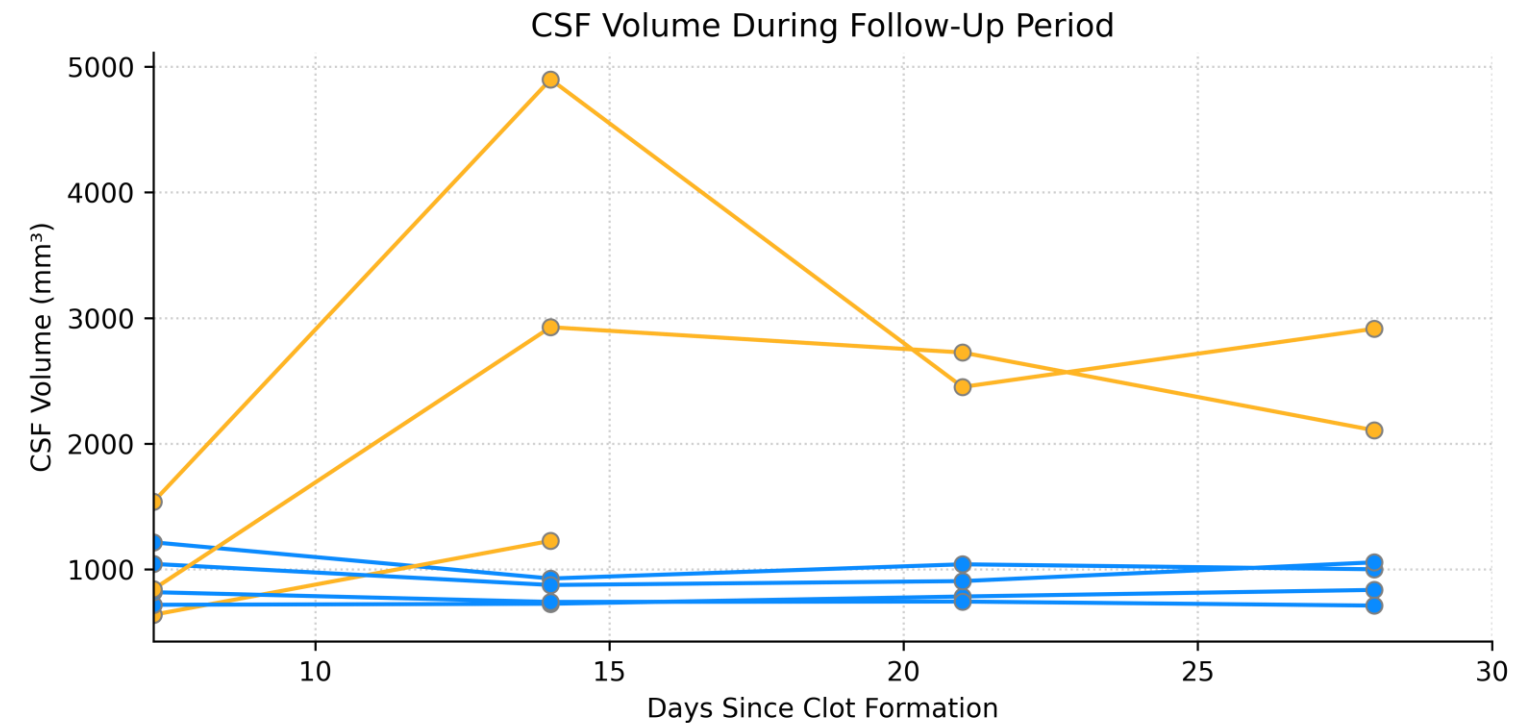
Methods – Targeting



Results – Clot Rate of Change in Survival Pigs

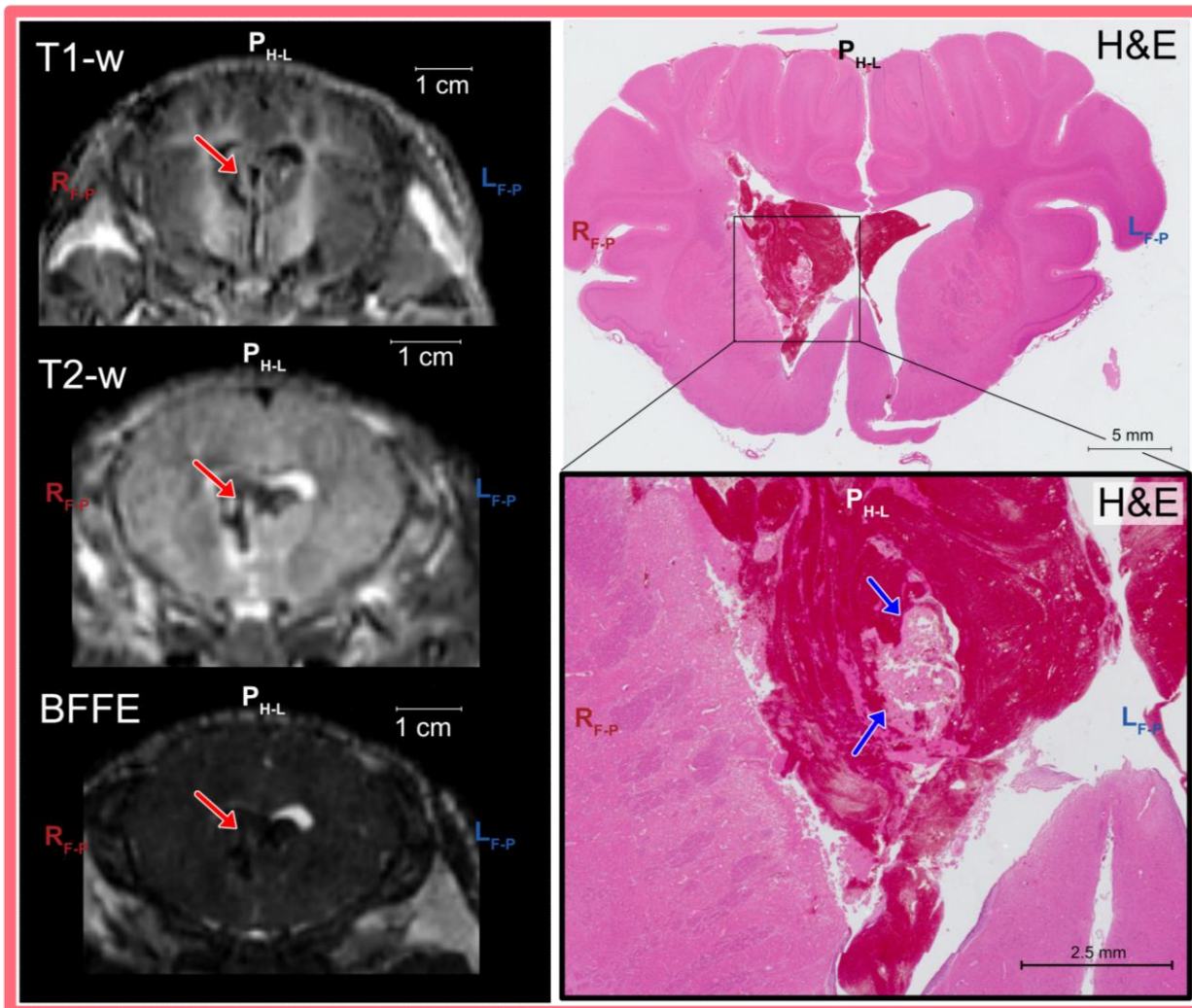


Results – Follow-up

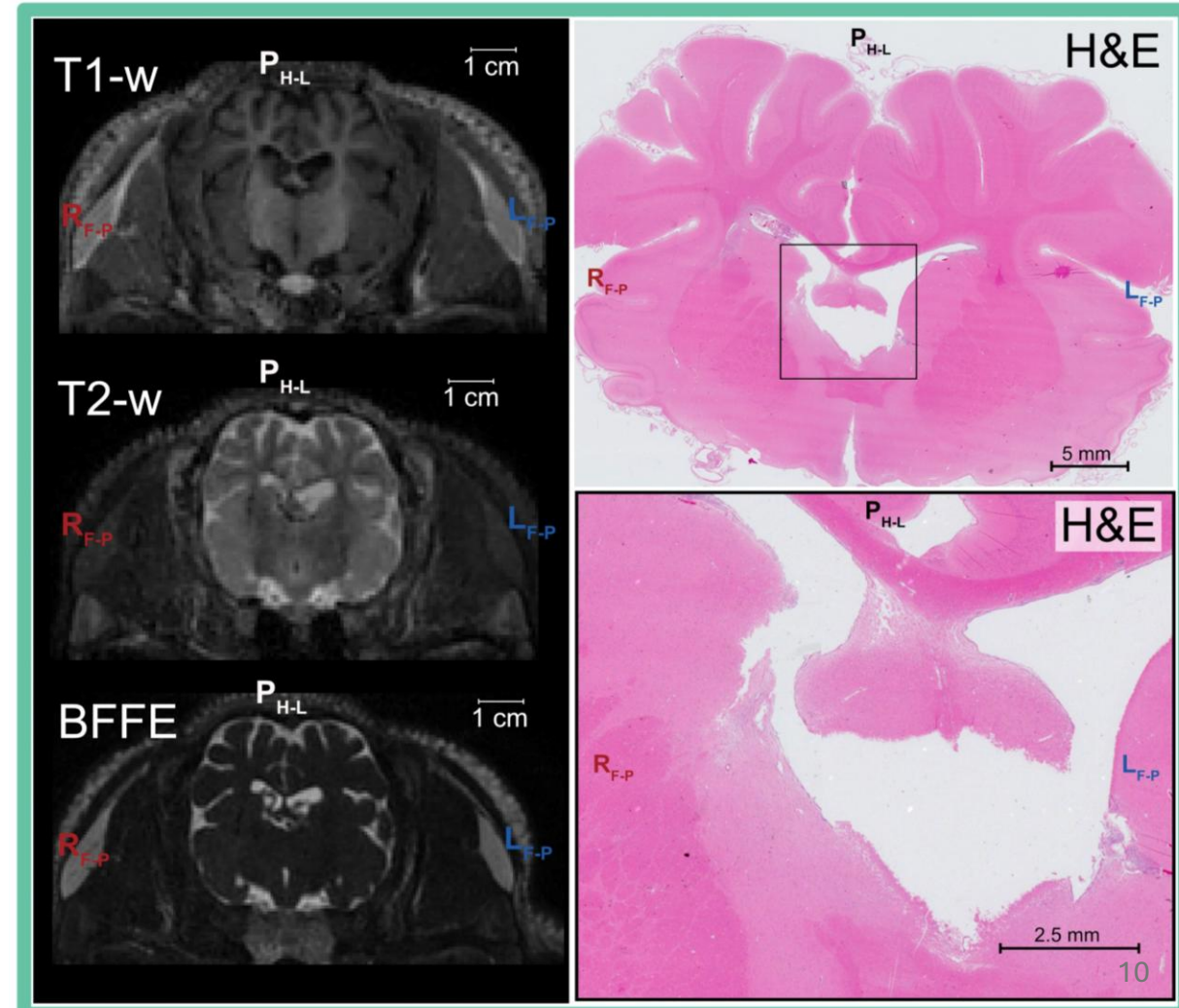


Results – Histology

Acute – Positive Control



Day 28



Acknowledgements

SickKids®



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Dr. Sebastian Coleman

Dr. Flavia Venetucci Gouveia

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