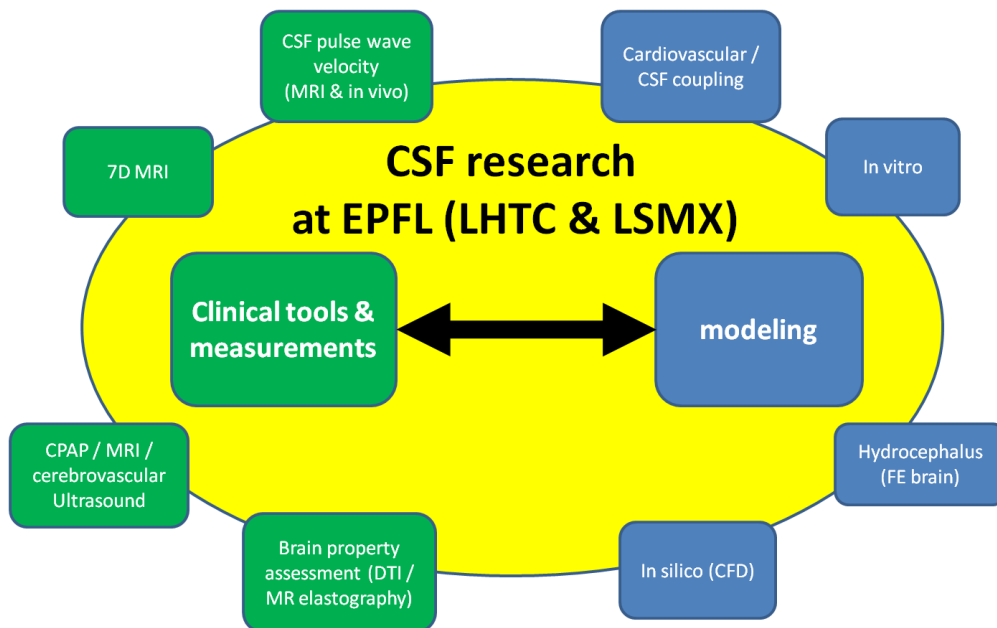


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Cerebrospinal Fluid Dynamics related to Craniospinal Disorders

A water-like fluid called cerebrospinal fluid (CSF) surrounds the brain and spinal cord and resides within fluid reservoirs (ventricles) within the brain. CSF is important because it provides buoyancy, supplies and removes waste products, and helps regulate cerebral blood flow. Yet there remains much to be understood about CSF biofluid mechanics; in particular with regard to craniospinal pathologies such as Chiari malformation, syringomyelia, and hydrocephalus. It is also known that CSF moves in a pulsatile manner around the brain and spinal cord due to a connection with cardiovascular system. Thus, cardiovascular disorders are also expected to have an impact on the CSF system.

LHTC aims to extend their expertise in cardiovascular biomechanics to help advance cerebrospinal fluid research in terms of 1) clinical tools and measurements and 2) modeling (see figure).



This work is conducted in collaboration with the EPFL Computational Materials Laboratory, CHUV Center for and Research in Sleep, CHUV Department of Clinical Neurosciences, CHUV Service of Neurology, The Swiss Center for Biomedical Imaging, CHU Amien Picardie Multimodal Analysis of Brain Function Group, and University of Basel Department of Radiology.