**New Researchers, Research Projects and Proposals (2012)**

**Simone Bottan**

****[Phantom Model of Physiologic Intracranial Pressure and Cerebrospinal Fluid Dynamics](http://www.ltnt.ethz.ch/people/bottans/index)

Simone Bottan received the M.Sc. degree in bioengineering from Politecnico di Milano, Milan, Italy, in 2008. He is currently employed and is a PhD candidate at the Laboratory of Thermodynamics in Emerging Technologies, ETH Zurich, Switzerland, as member of "The Smartshunt – The Hydrocephalus Project" (Swiss National Science Foundation, Project K-32K1\_120531). His research interests include understanding of mechanics and fluid dynamics of biological systems, and the design and development of biomedical devices.

 **Theresia I. Yiallourou**

["Comparison of 4D Phase-Contrast MRI Flow Measurements to Computational Fluid Dynamics Simulations of Cerebrospinal Fluid Motion in the Cervical Spine"](http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0052284)

["Cerebrospinal Fluid Dynamics Related to Craniospinal Disorders"](https://csfinfo.org/download_file/view/347/254/)

Theresa Yiallourou is currently a PhD student at Ecole Polytechnique Federale de Lausanne (EPFL) in Switzerland, in the Laboratory of Hemodynamics and Cardiovascular Technology. She is working in the lab of Prof. Nikolaos Stergiopulos on cerebrospinal fluid dynamics research related to craniospinal disorders, under the supervision of Dr. Bryn Martin. Theresa attended the University of Cyprus and graduated from the Department of Mechanical and Manufacturing Engineering, where she ranked first in all four years of study.

[Neurohydrodynamics and Medical Technology Lab](http://www.neurohydrodynamics.com/wiki/index.php?title=Main_Page)

**Serge El-Khoury, M.S.**

"[Does Spinal Cord Position Influence Chiari Anatomy?](https://csfinfo.org/download_file/view/345/254/)" (PDF) - In this poster presentation, which was presented on October 28, 2010 at the 2010 CSF Hour of Hope, Twinsburg, OH fundraiser, Sergio El-Khoury presented some of his work on the relationship between Arnold Chiari Malformation and Tethered Cord Syndrome.

Serge El-Khoury, M.S. is a doctoral student at the Chemical & Biomedical Engineering Department at the Cleveland State University (CSU). He is part of the Applied Biomedical Engineering (ABE) program between CSU and the Cleveland Clinic (CC). Serge is pursuing his doctoral research under the supervision of his adviser Dr. Mark Luciano, M.D., Ph.D. with the Pediatric and Congenital Neurosurgery (PCNS) Laboratory at the Neurological Institute, Cleveland Clinic. Serge's research interest and focus is in the hydrodynamics and morphological aspects of the Cerebrospinal Fluid (CSF) and Intracranial Pressure (ICP) in neurological disorders such as Chronic Hydrocephalus, Arnold Chiari Malformation, and Syringomyelia.

**Dr. Bryn A. Martin**

[The influence of coughing on cerebrospinal fluid pressure in an in vitro syringomyelia model with spinal subarachnoid space stenosis](http://www.fluidsbarrierscns.com/content/6/1/17)

Dr. Bryn Martin is currently a scientific collaborator in the Laboratory of Hemodynamics and Cardiovascular Technology at the École Polytechnique Fédérale de Lausanne in Switzerland working under the direction of Prof. Nikolaos Stergiopulos. His research interest is in biofluid mechanics and biomechanics, and more specifically in craniospinal hydrodynamics and pathologies of the cerebrospinal fluid system (CSF) and cranial blood flow. Dr. Martin's thesis work focused on a pathology of the CSF system called syringomyelia and was conducted under the direction of Dr. Francis Loth at the University of Illinois at Chicago and University of Akron Biofluids Laboratory. Dr. Martin is also active in medtech R&D and technology transfer.

**Christina Ann Markunas**

[Genetic Dissection of Chiari Type I Malformation](https://csfinfo.org/download_file/view/346/254/)

[View Christina Markunas' lecture on this topic](https://vimeo.com/42785306)

Christina Markunas received a BS in Biological Sciences and a minor in Genetics from North Carolina State University in 2006. While an undergraduate, she was a student intern at the National Institute of Environmental Health Sciences (NIEHS). Following graduation, she began a human genetics postbaccalaureate IRTA research fellowship at the NIEHS for a little over a year prior to entering the University Program in Genetics and Genomics at Duke University. Currently, Christina is a third year PhD student conducting research at the Duke Center for Human Genetics under the mentorship of Drs. Allison Ashley-Koch and Simon Gregory. Her training has been focused in both genetic epidemiology and molecular genetics. For her doctoral dissertation, she will focus on dissection of the genetic basis of Chiari Type I Malformation (CMI). Christina and colleagues will perform a genome-wide linkage screen using CMI families to identify regions of the genome likely to harbor CMI susceptibility genes. In addition, she will use genomic and statistical approaches in order to gain a better understanding of the clinical, radiological, and genetic factors that contribute to variation in disease presentation.

**The Cerebrospinal Fluid Laboratory is dedicated to investigation of the underlying biomechanical and hydrodynamic mechanisms responsible for pathologies of the cerebrospinal and cerebrovascular systems.**

**Purpose**

1. Foster collaboration and discussion between cerebrospinal fluid and cerebrovascular researchers
2. Provide in vivo and in vitro experimental data to computational researchers
3. Increase interest in cerebrospinal fluid and craniospinal disorder research

*Revised 11/2012*