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## Helmholtz – CSC – Fellowships 2010

**Helmholtz Centre:** Helmholtz Zentrum Muenchen  
**Research Field:** Virology  
**Research Project:** **Aptamers binding to the hepatitis B virus capsid**  
**Position:** PhD Student  X      Sandwich PhD Student       Postdoc

**Department/Supervising scientist: Prof. Volker Bruss, Institute of Virology**

**Research Area:**

Hepatitis B is an important human infectious disease cause by the hepatitis B virus (HBV). Current options for the therapy of chronic infections are not satisfying. The HBV particle is formed by budding of an icosahedral cytoplasmic nucleocapsid through cellular membranes containing viral envelope proteins. This process is driven by a specific protein-protein interaction between a domain (MBD) of the capsid protein and a domain of an envelope protein [Pairan, Bruss (2009) Functional surfaces of the hepatitis B virus capsid. *J Virol* 83:11616-11623]. The crystal structure of the HBV capsid is known and capsids can be produced in bacteria in large amounts. The aim of the project is to select aptamers (short single stranded nucleic acid molecules) by a SELEX approach [Ellington, Szostak (1992) *Selection in vitro of single-stranded DNA molecules that fold into specific ligand-binding structures. Nature* 355:850–852] binding to the MBD on capsids and thereby blocking nucleocapsid envelopment. Such an aptamer could be a starting point for the development of new antiviral substances against a new target of the HBV.

**Specific Requirements:**

The student should have a strong background in virology and experience in molecular biology techniques like plasmid constructions and PCR. Knowledge in cell culture techniques is favourable.

**Work Place:** Institute of Virology  
Helmholtz Zentrum München, Schneckenburger Strasse 8, Munich

**Earliest Start** (between September 2010 and February 2011): September 2010

**Language Course:**

**Further Information:**

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