CLOSTNET - My Research

Zhen Zhang, University of Helsinki, August 2011

I am fortunate to be granted the fellowship of Marie Curie Initial Training Network (CLOSTNET) and began my PhD program guided by Prof. Miia Lindström and Prof. Nigel Minton at University of Helsinki in January 2010. My current research focuses on *Clostridium botulinum*, a pathogenic species producing a most potent substance—botulinum neurotoxin. I am interested to know how neurotoxin is formed in *C. botulinum* and try to understand the underlying regulatory mechanism of neurotoxin production by molecular genetics methods, such as ClosTron mutagenesis and pMTL80000 modular plasmids, which are recently developed by team of Prof. Nigel Minton and bring site-specific mutagenesis and recombinant expression in *C. botulinum* into being.

So far, I fulfilled the identification of a novel two-component signal transduction system (TCS) playing negative regulation of neurotoxin expression in C. botulinum type A strain ATCC3502. The TCS is composed of classical histidine sensor kinase and ompR family response regulator, which both are highly conserved ($>$ 90%) in group I *C. botulinum*. The role of TCS in neurotoxin expression is verified by mutagenesis of TCS genes and complementation rescue. Now I am working on the identification of TCS regulon and composing my first research article of the PhD program.

Besides research, I have attended a serial of complementary trainings of Marie Curie CLOSTNET. I accomplished the course study of 18 ECTS, attended Transcriptomics Workshop of CLOSTNET in Technical University of Munich and four international conferences with oral or poster presentation.