Department of General Microbiology

Georg-August University Göttingen

PhD position in Microbiology

Available from September 1st, 2012, funded for three years

The project

Bacillus subtilis, a spore-forming soil bacterium, is the best-studied Gram-positive microorganism. In addition to its role in basic research, *B. subtilis* strains are used in a variety of industrial applications. We are interested in the regulation of glutamate biosynthesis in *B. subtilis*. Glutamate biosynthesis is one of the most important metabolic intersections because glutamate is the major amino group donor for nitrogen-containing compounds in all organisms (1, 2). In *B. subtilis* glutamate biosynthesis is controlled by a direct protein-protein interaction between a catabolically active glutamate dehydrogenase and the transcription activator of the glutamate synthase genes (3). We want to elucidate the molecular details of this regulatory protein-protein interaction by various biochemical approaches. Recently we have observed that the bacteria respond to perturbation of glutamate homoeostasis by the rapid accumulation of suppressor mutations (4). The specific and extremely fast activation and inactivation of genes involved in glutamate homoeostasis in *B. subtilis* strongly resembles the Lamarckian form of evolution (5). It will be interesting to address the question how the bacteria sense the need to change their genetic make-up to maintain glutamate homoeostasis. Students interested in applying protein biochemistry, bacterial genetics and different microscopic techniques to questions of central importance for biology are welcome to apply.

References

1. Sonenshein (2007) *Nat Rev Microbiol* 5: 917-927.
2. Gunka & Commichau (2012) *Mol Microbiol, in press.*
3. Commichau *et al.* (2007) *Mol Microbiol* 65: 642-654.
4. Gunka *et al.* (2012) *J Bacteriol* 194: 1036-1044.
5. Koonin & Wolf (2009) *Biol Direct* 4: 33.

Contact

Dr. Fabian M. Commichau
E-mail: fcommic1@gwdg.de
Phone: +49-551-393923
Web: http://genmibio.uni-goettingen.de/index.php?id=130