

The **International Leibniz Graduate School Systems Biology Lab on a Chip** (S-BLOC) is a co-operation between the Leibniz-Institut für Analytische Wissenschaften – ISAS – e.V., the department of Systemic Cell Biology of the Max Planck Institute of Molecular Physiology and the departments of Chemical Biotechnology and Micro Structure Technology at the Technische Universität Dortmund. This interdisciplinary environment gives ideal prospects to develop novel cell analysis methods and procedures for systems biology based on lab on a chip technology as well as the possibility to acquire comprehensive knowledge of the various scientific and technological fields.

S-BLOC seeks for applicants for

4 PhD positions (m/f)

(60% TV-L 13, for up to 3 years)

in one of the following projects:

- Development of novel detection strategies and quantitation workflows for glycosylations, which are carbohydrate-based post-translational modifications to proteins. Despite its profound impact on various cellular functions, the analysis of this complex modification form is still a major challenge to analytical research due to its enormous structural complexity. The Glycoproteomics Group at ISAS therefore employs various state-of-the-art nano-scale chromatographic, mass spectrometric and bioinformatic techniques to deal with current problems of protein biochemistry. This includes e.g. development of dedicated enrichment strategies for glycopeptides and the mass spectrometric based identification of carbohydrate and peptide moiety constituents – both in a qualitative and quantitative fashion.

For this position we look for a candidate with a strong background in biochemistry, chemistry or biology. Knowledge in proteomics or glycomics techniques as well as computer programming skills (e.g. JAVA) is considered a benefit but is no prerequisite.

For informal queries referring to the topic of the thesis, please contact Dr. Urs Lewandrowski, Leibniz-Institut für Analytische Wissenschaften – ISAS – e.V., Otto-Hahn-Str. 6b, 44227 Dortmund, Phone: +49(0)231-1392-4142, email: urs.lewandrowski@isas.de (Index No 7/11).

- Investigation of small cell ensembles with high field NMR. So far, statements describing the metabolism of cells are purely statistical. The new ISAS slotted microstrip NMR probe offers a detection limit that is five orders of magnitude lower than that of conventional NMR instrumentation. A microfluidic chip accessory for the NMR probe shall be developed, that serves both as a cage for a small cell ensemble and allows for metabolic monitoring over several hours. When decreasing the size of the cell ensemble as far as detection sensitivity allows, information on the metabolism of individual cells are anticipated.

For this position we look for a candidate with strong background in chemistry, biochemistry, chemistry or biology.

For informal queries referring to the topic of the thesis, please contact Dr. Roland Hergenröder, Leibniz-Institut für Analytische Wissenschaften – ISAS – e.V., Bunsen-Kirchhoff-Str. 11, 44139 Dortmund, Phone: +49(0)231-1392-178, email: roland.hergenroeder@isas.de (Index No 8/11).

- Development of pulse techniques for a low field (1 Tesla) NMR machine for systems biology studies. Cheap low field NMR instrumentation shall be used for massively parallel characterization and quantification of metabolites in high throughput experiments. The low resolution and strong coupling effects in low field NMR necessitate the development of efficient spin system selective excitation techniques. These „Strongly Modulating Pulses“, a concept adopted from NMR quantum information processing, will be generated by optimal control based strategies of coherent control.

For this position we look for a candidate with a strong background in physics. Programming skills in MATLAB or C++ and a sound knowledge of group theoretical concepts are advantageous but are no prerequisite.

For informal queries referring to the topic of the thesis, please contact Dr. Roland Hergenröder, Leibniz-Institut für Analytische Wissenschaften – ISAS – e.V., Bunsen-Kirchhoff-Str. 11, 44139 Dortmund, phone: +49(0)231-1392-178, email: roland.hergenroeder@isas.de (Index No 9/11).

- Improvement of methodology for enrichment, detection and quantification of less explored protein glycosylation modifications and will include both organic synthesis and bioanalytical work. Glycosylation is a common co- and post-translational modification involved in a number of biological functions critical both at cellular and whole-organism levels. Fetus development, cell growth, cell differentiation, immune responses, inflammation, cancer metastasis, viral and bacterial infections, are examples of such biological events in which protein glycosylation play a role.

For this position we search for a candidate with a strong background in organic chemistry, biochemistry or chemical biology.

For informal queries referring to the topic of the thesis, please contact Dr. Ulrika Westerlind, Leibniz-Institut für Analytische Wissenschaften – ISAS – e.V., Otto-Hahn-Str. 6b, 44139 Dortmund, phone +49(0)231-1392-4215, email: ulrika.westerlind@isas.de (Index No 10/11).

All successful applicants will have a willingness to be involved in cutting-edge research strategies and will be highly motivated as well as interested in basic life-science analytical research. We expect self-initiative, responsibility and the ability to work in an interdisciplinary team. For admission to the S-BLOC program, he/she must hold a Masters, Diploma or equivalent degree in science that allows direct admission for doctoral studies in Germany. The degree should include an experimental research experience of at least four months. Applications by those awaiting the award of their degree are most welcome. Further information can be found at www.sbloc.org.

S-BLOC is an equal opportunities employer.

Please send your **written application** for the position starting at September 1, 2011 together with a curriculum vitae, copies of certificates and the names of two referees (including e-mail) **until May 1st, 2011** to:

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-Personalabteilung-
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