

Study Group / Task Force Name: **Bioanalytics Study Group**

Study Group / Task Force Members and Affiliations:

Head of Study Group: George Horvai – Hungarian Chemical Society

Guenter Gauglitz – Gesellschaft Deutscher Chemiker (GDCh)

Jens Andersen – Danish Chemical Society

Hendrik Emons –IRMM-JRC, European Commission

J.M. Pingarron – Spanish Royal Society of Chemistry

Jan Labuda – Slovak Chemical Society

Raluca-Ioana van Staden – Romanian Chemical Society

Jacobus Frederick van Staden – South African Chemical Institute

Objectives:

The aim of the Bioanalytics study group is to search ways for bringing closer the analytical and bioanalytical chemistry community. This is still a formidable task because a community of bioanalytical chemists does not appear to have formed yet. Many biochemists do analytical work but their emphasis is mostly on biochemistry itself. On the other hand there has been a growing trend for chemists and analytical chemists to do more and more bioanalytical work. Certain groups of (analytical) chemists have had a natural tendency for this, e.g., food chemists, pharmaceutical chemists and forensic chemists. The tendency of moving biosciences into the molecular dimension continues which can also be described as intensifying the marriage between biology and chemistry. This holds also particularly true for the analytical activities in bio- and life sciences.

Activities and Outputs in 2012-2013:

Professors Labuda and Gauglitz continued their efforts to have a chapter on bioanalytics in the Orange Book of IUPAC. In Romania (professors van Staden) there is a high interest in bioanalytical chemistry – there are courses taught at the 3rd year and MSc levels. In national institutes of research there are Centers/Departments of Bioanalysis. At the 1st International Conference on Analytical Chemistry, RO-ICAC 2012, Analytical Chemistry for a Better Life, special sessions on Bioanalysis and Biomedical Analysis were organized with: 3 plenary lectures, 2 keynote lectures, 12 oral presentations and 13 posters. One poster from the section on bioanalysis was awarded with the Best Poster Award. At an international workshop in Romania “Challenges in Food Chemistry” there were 5 keynotes, 1 oral presentation and 7 posters presented in the field of bioanalysis. At the Hungarian Academy of Science (G. Horvai) a series of highly visible lectures are organized on biochemical topics for chemistry professors and researchers to bring them closer to biochemical challenges. These include topics like new paradigms in DNS biochemistry, biotechnological methods for drug production and their analytical control, and the chemistry of novel biomarkers.

At IRMM (professor Emons) the focus of bioanalytical work continues in three EU priorities:

- enabling reliable healthcare measurements
- allowing comparable GMO (genetically modified organisms) analysis
- advancing microbiological analysis.

Recent activities at IRMM include:

- providing reference materials to measure GMOs in products reliably at GM mass fractions of 0.1 %,
- establishing reference measurement systems for the diagnostics of new biomarkers for chronic diseases such as Alzheimer or autoimmune diseases,
- introducing quality assurance concepts into 'qualitative analysis' (namely, identification methods, using also new technologies such as microarrays or deep-sequencing).

Some recent publication of IRMM in these topics may be found in Eur. Food Res. Technol. 236 (2013) 181-192, Clinical Chemistry 58 (2012) 165-168, Clin. Chem. 59 (2013) 1074-1083. Professor Emons is also requesting manuscripts for ABC for a special topical collection "Nucleic acid quantification – progress and pitfalls".

Activities planned for 2013-2014:

At Euroanalysis 2013 in Warsaw one full session will be devoted to biomedical and forensic analysis. The University of Tübingen (professor Gauglitz) organizes a workshop on Trends in Diagnostics for PhD students of diverse fields between October 7 and 9, 2013. The 2nd International Conference on Analytical Chemistry, RO-ICAC 2014: Analytical Chemistry for a Better Life, will be held between 17-21 September 2014 with special sessions on Bioanalysis and Biomedical Analysis.

Report submitted by: George Horvai

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