

DAC Study Group Bioanalytics

June 15, 2006

The Bioanalytics Task Force has been converted into a Study Group by the 2005 Annual Meeting (AM). The Minutes of the 2005 AM included our first report. Here we report our activities done since then and our opinions on how we should continue our work.

We shall follow here the terms of reference of our Task Force.

1. *"setting up bioanalytical subdivisions in the analytical chemistry divisions of the national societies "*

George Horvai has convened four young **Hungarian** bioanalytical chemists and discussed with them the possibilities of setting up a bioanalytical section within the analytical division of the Hungarian Chemical Society. Their response was very positive. They invited another ca. 10 colleagues in January 2006 and founded the section. They also plan a special session on bioanalysis in October 2006. This fits also our second term of reference.

Among the rather large number of members of the AC Division of the **Slovak** Chemical Society, there is still a very limited number of bioanalysts. They are in informal contact at some lectures, projects but not organized yet.

In the case of the **Spanish** Society, the critical mass of people working actively on bioanalytical chemistry appears to be not big enough to create a bioanalytical division.

2. *"including bioanalytical sessions in meetings, conferences and continuing education courses in analytical chemistry"*

Jan Labuda is a coordinator of the Medical Engineering Centre at the **Slovak** University of Technology in Bratislava. Among activities of the Centre there are joint lectures and projects covering also Bioanalytics and education in bioanalytical and clinical laboratory methods.

In **Spain**, in all the Society meetings they currently include sessions devoted to bioanalysis. As an example a section from the program of the next meeting in Barcelona is here:

“The Conference seeks to bring together contributions to the development of Separation Sciences, Atomic and Molecular Recognition and Others related to modern Analytical Chemistry, as well as their applications in the different fields of science and technology, with special emphasis on:

Environmental

Foods
Bioanalytical Chemistry
Proteomics Analytical Approaches
Instrumentation Innovative Approaches Sample and Data Management
Regulatory Compliance “

George Horvai attended the **HPLC 2005 conference** in Stockholm. Perhaps due to the strong Swedish biotech interest this conference was a good example of mixing conventional analytical chemistry and a lot of bioanalysis (<http://www.hplc2005.com/programme.asp>). Here are the three lectures of the opening session as an example of heavy bio-orientation (2 of the 3 are bio):
LCxLC: Making the product productive
Peter Schoenmakers, Gabriel Vivó Truyols (University of Amsterdam)

Analysis of proteins at the single-molecule level by proximity ligation
Ulf Landegren, Malin Jarvius, Sigrun Gustafsdottir, Edith Schallmeiner, Ola Söderberg (Uppsala University)

Towards comprehensive proteomic analysis of complexes, organelles and cells
John Yates (The Scripps Research Institute, United States)

Jose Pingarron participated in the ESEAC 2006 meeting (European Society for Electroanalytical Chemistry) in Bordeaux. One of the symposia was entirely devoted to Bioelectroanalysis with a good number of contributions.

3. "Integrate bioanalysis into analytical chemistry education (curricula). Achieve that basic analytical chemical considerations and methodology should be adequately included in bioanalysis or biochemistry curricula."

In **Hungary** universities are in progress of setting up the MSc courses according to the Bologna process. As head of the Department of General and Analytical Chemistry at the Budapest University of Technology and Economics George Horvai was in position to make an agreement with the Department of Biochemistry to set up a bioanalysis course in the Master program and to include more bioanalytical chemistry in the analytical chemistry course. The two departments shall share the teaching and the lab courses.

At the Slovak Technical University in **Bratislava** (STU), they have accreditation of the Ministry of Education of SR for Bc, Ms (Eng) and PhD study. At the Faculty of Chemical and Food Technology of STU, there is the Ms (Eng) study program Analytical Chemistry with two separate topics (lectures, seminars) on Bioanalytical Chemistry where Jan Labuda is the lecturer.

At the Faculty, Jan Labuda is also a person responsible for the Ms (Eng) and PhD study programs entitled Medical Engineering where they have the

lectures/examination on Bioanalytical Chemistry (Eng) and Clinical Laboratory Methods (PhD).

At present, Jan Labuda is a supervisor of two PhD students on Medical Engineering directed to bioanalytical chemistry and biosensors.

In **Spain** they are now trying to develop new postgraduate programs and, happily, bioanalysis is one of the matters considered in almost all Master designs in chemistry and biochemistry. A similar approach to that followed in Budapest is being implemented in Complutense University of Madrid. Furthermore, Jose Pingarron is co-director of a Master on Clinical Analysis.

4. "Collect and disseminate information on educational materials and activities (such as curricula, courses, books, textbooks, etc.) which integrate analytical and bioanalytical chemistry."

George Horvai has received a copy of A. Manz et al's textbook (Bioanalytical Chemistry (Paperback) by Andreas Manz, Nicole Pamme, Dimitri Iossifidis, ISBN: 1860943713)

and also bought a similar textbook by F. Scheller and colleagues (Analytische Biochemie: Eine Praktische Einführung in das Messen mit Biomolekülen (Paperback) by Ulla Wollenberger, Frank F. Bier, Frieder W. Scheller, Reinhard Renneberg, ISBN: 3527301666).

Both are reasonably good, clear textbooks on undergraduate level.

Jose Pingarron also uses the Manz textbook for teaching. Other titles on the topic he has found are:

"Nanobiotechnology. Concepts, applications and perspectives", Niemeyer, Christof M./Mirkin, Chad A. (eds.), 2004 ISBN 3-527-30658-7 Wiley-VCH.

"Bioanalytical Chemistry", Susan R. Mikkelsen, Eduardo Corton, 2004, Wiley

5. "Find the important representatives of the bioanalytical community and establish links to them or convince them to join us."

A few interesting names have been collected, partly through interviewing some colleagues internationally. This list is very provisional and needs further checks.

Righetti (Verona),
Abersold (Switzerland),
Irth (Netherlands),
Mann, Matthias (Germany),
Nicholson, Jeremy (GB),
Uhlen (Uppsala),
Bonn and Guttman (Innsbruck).
Scheller (Potsdam)
Manz (Dortmund)
Marko-Varga (Sweden)
Hjerten (Sweden)

Mascini (Florence)
Hall, Elisabeth H. (Cambridge)

6. “Collect and disseminate information on standardization, reference materials, etc. in bioanalysis.”

Hendrik Emons' Unit at IRMM in Geel was very active (again) in research for new reference materials, international harmonization and networking at CCQM and European level (areas such as health, proteins, GMO, microbiology, pathogens,...). They reported their achievements in the Annual Report 2005 of IRMM (www.irmm.jrc.be, "what's new") under specific headings for bioanalysis/biotechnology.

7. We have not worked on the following agenda points:

Consider a web page for disseminating information. (A European institution or a big library with continuous funding should be persuaded.)

Try to give a definition of bioanalytical chemistry (define the range of activities and the required qualifications for specialists in bioanalytical chemistry).

Other information:

Jan Labuda has been nominated to the Analytical Chemistry Division of IUPAC from 2006 for Bioanalytical Chemistry, so it seems that he shall have an opportunity to act and to transfer information between DAC EuCheMS and AC Division of IUPAC. Concerning this role at IUPAC Division, he has to act also as a member of the task group for Biological Chemistry of the Division III, Organic and Biomolecular Division.