

## **History of the European Federation of Clinical Chemistry and Laboratory Medicine (EFLM)**

The Forum of European Societies of Clinical Chemistry (FESCC) and the European Community Confederation of Clinical Chemistry (EC4) merged to form the European Federation of Clinical Chemistry (EFCC) in 2007 at the General Meeting held at EuroMedLab in Amsterdam. FESCC was the Regional organisation representing IFCC in geographical Europe, EC4 was formed to represent the National Societies within the European Union (EU); as the EU expanded the overlap between FESCC and EC4 interests coalesced and made merger the logical move. EC4 had been working on registration for European Clinical Chemists (Eur Clin Chem) based on attainment and experience. The history therefore consists of four elements: FESCC; EC4; EFCC (latterly EFLM); European registration.

### **FESCC**

In the 1970s it was becoming clear to Clinical Chemists in a number of European countries that there was concern for the comparability of the profession in Europe. Those undertaking this initiative included: Ad Jansen (NL), Stephen Richardson (UK), Ann Kelly (UK), Vic Blaton (BE) Charles Sachs (FR), Paul Brombacher (??), Gerard Sanders (NL), Dolphe Kutter (LU) (& Detleff Laue (DE)) wrote a Directive for the profession, the aim was to match those being written for other professions in advance of the Directive then being developed for the EU. This failed.

At the 1987 IFCC World Congress at the Hauge, Gerard Sanders, then President of the Netherlands society, convened a meeting of all European society Presidents to consider writing a Training Programme for a vocational programme to achieve recognition; there were a number of meetings; Gerard Siest, President of the French society held a meeting at Pont-a-Mousson. There are several routes to becoming a Clinical Chemist, however in some countries only medically qualified individuals can attain this role, who were defensive of this right, which caused difficulties. From this the societies in the EU countries were joined by non-EU European societies; from this FESCC developed. Prof Hermann Wisser (DE) was nominated as President and wanted a structure that would enable FESCC to be a European branch of IFCC which was supported by the IFCC President Gerard Siest.

Under Prof Valdique a Steering Committee was formed to develop a structure for FESCC comprising: Hermann Wisser (DE), Gerard Sanders (NL), J Bienvenue (FR); the document was circulated to constituent National Societies for comment during 1992; FESCC was formally constituted at the EuroMedLab meeting in Nice on 25<sup>th</sup> April 1993. FESCC was recognised by IFCC as it's Regional representative in Europe.

FESCC represented the interests of clinical chemistry in the geographical area of Europe whilst EC4 represented these activities within the EU. A wider representative organisation, ECLM, encompassing Clinical Chemistry, Haematology, Immunology, Microbiology and Parasitology led by Prof Dybkaer (DK) was formed in 1993, but due to the considerable overlap of activities support from FESCC societies was withdrawn in 2003.

As the EU expanded and activities overlapped an initiative at the General Assembly in Glasgow in 2005 proposed a merger of FESCC and EC4; Mike Hallworth and Rob Jansen for EC4 worked with FESCC to propose the merged organisation of EFCC, this was accepted at the General Assembly in Amsterdam in June 2007.

## President

1990-1991 Hermann Wisser (DE) Founding President  
1991-1993 P Valdique (FR)  
1993- 1996 Josep Queralto (SP)  
1996-1999 Vladimir Palicka (CZ)  
2000-2006 Victor Blaton (BE)

## Secretary

1993- ?? Josep Queralto (SP) Founding Secretary

## Treasurer

1993- ?? Stephen Richardson (UK) (Founding Treasurer?)

## Member at Large

1993-1996 Victor Blaton (BE)

## European Education

One of the principle activities of FESCC was to provide a mechanism for education in Clinical Chemistry, an activity in which Prof Blaton in particular was active (Appendix)

## European Communities Confederation of Clinical Chemistry: EC4

EC4 was originally initiated as an informal body of some of the then EC (European Community) national society representatives by Ad Jansen (father of Rob Jansen) in 1977-8 at Bergeyk, Netherlands; we do not have the minutes, but we do have the signed menu for the dinner! (Appendix). The intention was to achieve a Sectorial Directive for Clinical Chemists comparable to the Medical Directive; a meeting with Dr Hjelm, a representative of the European Commission, was held on April 21<sup>st</sup> 1978 in Munich. As the minutes show [Appendix] it was agreed that an inventory of education and training in the various countries would be initiated; discussion between the representatives of the societies present: Belgium, Denmark, France, Germany, Ireland, Italy, The Netherlands and the United Kingdom had realized the disparate nature of training and status of non-medical clinical chemists; the responses from the West German and United Kingdom societies is in the Appendix.

The somewhat cumbersome full name of EC4 was chosen as there already existed a European Community Committee on Chemistry, as this was already known in Brussels it was felt that a similar name would be helpful in promoting Clinical Chemistry. The Activity declined after 5 years or so as there had been no success, however EC4 was re-launched in 1993, with its first Board meeting being held at the 2002 the 10<sup>th</sup> European Congress for Clinical Chemistry in Nice (Euromedlab) meeting.

The first Working Groups (WG) to be established were Professional, to advance professional standards and Accreditation.

From the outset there was cooperation with EDMA (European Diagnostics Manufacturers Association) to develop quality standards, the essential criteria were first formally reported in 1997 (Jansen et al 1997). This was a fruitful collaboration influencing the TC212 development of the first ISO 15189. The key individuals were Rob Jensen, Victor Blaton, David Burnett, Wim Huisman, Josep Queralto, Simone Zerah, Desmond Kenny & B Allman (EDMA). Robust intervention in 2004 was needed to ensure that European Accreditation adopted ISO 15189, when a crisis meeting was held between EC4 and the EA Board as there was vigorous debate as

to whether ISO 17025 was adequate, but it was recognised that ISO 15189 was an overarching system relevant to the practice in medical laboratories and was supported by EDMA as the IVD industry representative organisation. From around the year 2000 there was collaboration with UEMS, which enabled a more co-ordinated approach in promoting Laboratory Medicine.

EC4 produced the first syllabus in 1991 [ref] that would reflect the attainment needed to be recognised as Eur Clin Chem, which would then form the basis of a European Register, the next revision was in 1999, we are now (2016) on the fourth revision.

At the time of the original proposal there was an EU policy that would require a Common (Training) Platform; this would allow mutual recognition of qualifications across the EU.

The first certificates recognizing Eur Clin Chem individuals were awarded in 1998 in (see appendix EC4).

The key event was the adoption of the Directive on Professional Qualifications [European Directive on Recognition of Professional Qualifications, 2005/36/EC] EC4 activity was aimed at ensuring that appropriate standards were met. While efforts to influence the European Commission (EC) in the need for and the preparation of the Directive, they soon realized that the same problems were being faced by other professions, specifically the Liberal Professions i.e. a profession where the practitioner has to have specified levels of competence and attainment and they apply these precepts in delivering their professional role to a client/service user. CEPLIS (Conseil Européen des Professionnels Libérales) represented some of these professions and EC4 worked through them; they have been very influential within CEPLIS, particularly Rob Jensen, Gerard Sanders and Simone Zerah, she recently served as the CEPLIS Vice President.

The revision of the Directive in 2014 was also influenced by EC4 and CEPLIS resulting in recognition that a Common Training Programme was more relevant than a Common Training Platform.

EC4 President: 1996-1999 Gerard Sanders (NL) (Founding President)  
1999-2005 Rob Jansen (NL)  
2005-2007 Mike Hallworth (UK)

EC4 Secretary: 1996-1999 Ann Kelly (UK) (Founding Secretary)  
1999-2002 Graham Beastall (UK)  
2002-2005 Mike Hallworth (UK)  
2005-2007 Rita Horvath (HU)

EC4 Treasurer 1996-1999 Joseph Breuer (DE) (Founding Treasurer)  
1999-2002 Klaus Kohse (DE)  
2002-2007 Peter Schuff-Werner (DE)

Member 1996-2002 Paolo Mocarelli (IT) (Founding Member)  
1999-2002 Marrku Parviainen (FI)  
1999-2002 Simone Zerah (FR)  
2002-2005 Mario Pazzagli (IT)  
2002-2005 Paivi Laitinen (FI)  
2002-2005 Pika Mesko Brgulian (SL)

Register Commission

Chairman 1997-2002: Eberhard Gurr (DE)

	2003-2011 Simone Zerah (FR)
	2011-2013 Rob Jansen (NL)
	2013-2016 Inez-Anne Haagen (NL)
Secretary	1997-2003 Marrku Parviainen (FI)
	2003-2011 Janet McMurray (UK)
Registrar	1997-2003 Gerard Sanders (NL)
	2003-2011 Janet McMurray (UK)
	2011-2016 Jean-Phillipe Brochet (FR)
WG Accreditation	1997-2007 Wim Huisman (NL)
WG ISO/CEN	1997-2006 Des Kenny (IR)

## EFCC/EFLM

The European Federation of Clinical Chemistry and Laboratory Medicine (EFCC) was formed in 2007 with the then President of EC4, Mike Hallworth, becoming EFCC President-Designate and the then President of FESCC, Victor Blaton, serving as President.

EFCC absorbed the Committees and Working Groups of EC4, this enabled continuity of on-going work and to identify new directions.

Committees for Science (Chair Sverre Sandberg (NO)), Education & Training (Chair Bernard Gouget (FR)), Quality Management (Chair Jean-Claude Libeer (BE)), Professional (Chair Simone Zerah (FR)), Finance (Chair Peter Schuff-Werner (GE)).

FESCC had been the European Region of IFCC, EFCC took on this role as the successor organisation, formal agreements were established to define the relationship and the responsibilities around the Euromedlab meeting, which are regularly updated. As a new organisation we registered as an Association Internationale Sans But Lucratif (AISBL) registered in Brussels, though the administrative office remained in Milano.

The European Federation for Clinical Chemistry and Laboratory Medicine was originally abbreviation to EFCC in 2007, subsequently it was agreed that reflecting the Laboratory Medicine element better reflected the specialty and the abbreviation EFLM was adopted in 2012.

EC4 activity was paralleled by Professional Committee activity, EC4 particularly addressed Registration, but there was lobbying activity, through CEPLIS, enabling discussions with the rapporteur on the Qualifications Directive; this Directive passed into European Law in 2015.

The office bearers to date were:

### President

2007-2008 Victor Blaton (BE)  
 2008-2009 Michael Hallworth (UK)  
 2009-2011 Andrea (Rita) Horvath (HU)  
 2011-2013 Ian Watson (UK)  
 2014-2016 Mauro Panteghini (IT)  
 2016-2017 Sverre Sandberg (NO)

### Secretary

2007-2009 Hans van Pelt (NL)  
 2009-2011 Hans van Pelt (NL)  
 2011-2013 Ana-Maria Simundic (HR)

2014-2015 Ana-Maria Simundic (HR)

2016-2017 Ana-Maria Simundic (HR)

#### Treasurer

2007-2009 Peter Schuff-Werner (GE)

2009-2011 Peter Schuff-Werner (GE)

2011-2013 Peter Schuff-Werner (GE)

2014-2015 Huib Storm (NL)

2016-2017 Huib Storm (NL)

#### Members at Large

2007 – 2009: Mario Pazzagli (IT)

Kari Pulkki (FI)

2009 – 2011: Mario Pazzagli (IT)

Kari Pulkki (FI)

2011 – 2013: Huib Storm (NE)

Tomas Zima (CZ)

2014 – 2015: Grazyna Sypnieweska (PL)

Tomas Zima (CZ)

2016 – 2017: Grazyna Sypnieweska (PL)

Tomas Zima (CZ)

### European registration

EC4 recognised the need for equivalence of Clinical Chemists across the European Economic Community (EEC) and that to do this required the establishment of attainment criteria based on qualifications, experience and role. On October 19, 1990 a meeting was held at the Hotel Eden au Lac, Echternach, Luxembourg from which a paper entitled 'A Strategy for Recognition of Clinical Chemists in the EEC' [Appendix]; the issue was raised at the European Commission (EC) in March 1991 following this a meeting in November 1991 in Brussels was convened to address concerns from the Commission, leading to the adoption of a European syllabus.

Work to engage with the EC continued from 1993 – on. With the establishment of criteria that the EC4 members agreed that recognised the standard to award an individual Registration as European Clinical Chemist, using the post-nominal: Eur Clin Chem; this commenced in 1989-1990 [Appendix]; with the move towards referring to the profession as Laboratory Medicine and its practitioners as Specialists in Laboratory Medicine this was adopted by EC4 and the post-nominal was amended to EUSpLM.

Following the adoption of the Directive on the Recognition of Professional Qualifications by the EU in 2004 (2005/36/EC) enabling free movement of qualified individuals between member states, EC4 were keen to progress the case for recognition of Clinical Chemists. Progress was slow due to the difficulty faced of harmonization to a Common Platform.

The Directive was revised based around a common training framework as a Regulation and adopted by the EU Parliament and Council in 2014 as the European Union (Recognition of Professional Qualifications) Regulations 2015. Work continues to have sufficient member states recognise the training framework, which when a sufficient number have agreed would enable EU-wide adoption of the criteria for EU Clinical Chemists.

*Dr Ian D Watson*

**TFG-History Chair**

## FESCC: ACTIONS ON EDUCATION, ORGANISATIONS AND QUALITY MANAGEMENT IN EUROPE

*Victor Blaton*

*KU-Leuven and Department Clinical Chemistry  
Az St Jan Av Ruddershove 10, 8.000 Brugge (Be)*

FESCC main target is »Serving Clinical Care and Laboratory Medicine in Europe«. Laboratory specialists are confronted with a new way of thinking concerning the management and the daily practice of their laboratories.

FESCC mission is to support and to promote laboratory medicine in Europe, to aid communication between IFCC (International Federation of Clinical Chemistry and Laboratory Medicine) and the National Societies, to promote education and quality, and to encourage young European scientist to take an active role and part in the above described activities.

FESCC plays an important role in education, evaluation, exchanges and implementation of new developed diagnostic techniques and diseases. We started in 2000 our annual meetings on continuous postgraduate courses in Laboratory Medicine at the Interuniversity Centre of Dubrovnik. Europe has a long tradition and history in educations, schools, colleges, and universities for centuries and also science and biochemistry have longest traditions. FESCC is using these traditions to teach the profession in summer schools and courses. The aim of FESCC is also to collect and disseminate guidelines and models for postgraduate training and accreditation. The goal is also to get together the medical and scientific postgraduate training of laboratory specialist in co-operation with UEMS.

FESCC started discussions with the Charles University of Prague in 2001 and signed an agreement on the Interuniversity cooperation and the main

aims are to advance science and medicine in general, to hold scientific and educational events, to coordinate activities in the field and to seek to further European cooperation and harmonization.

The »European Education and Training Centre in Laboratory Medicine FESCC-Charles University Prague« organized last November a discussion forum on differences and similarities in post graduate training in the European countries.

FESCC now proposes to the Russian Society for Clinical Diagnostics a joint project on »Harmonization in postgraduate education in Laboratory Medicine in the Russian Federation« as a joint project for application to tempus (Tacis).

The project is focused on the improvement of the higher education system in the field of laboratory diagnostics as one of the most important part of health systems disciplines. The aim of the project is also to harmonize and improve postgraduate education incorporating basic principles of the Bologna declaration into its content.

FESCC has an organisation that is able to sustain the project and to develop the progress of the project to a high level. The board of FESCC is international composed of high educated persons and is related to the scientific and education divisions of IFCC. The project goals are defined and should be treated with the consortium members in separate workshops. Prof Ana Stavljenic-Rukavina is nominated by the FESCC board as the coordinator of the activities and take care of the composition of the list of lecturers. A plan is prepared to follow the progress

**Address for correspondence:**

Prof. Dr. Victor Blaton  
KU-Leuven and Department Clinical Chemistry Az  
St Jan Av Ruddershove 10  
8.000 Brugge (Be)

<sup>1</sup> Presented on Symposium for Balkan region on Education, Management and Standards in Laboratory Medicine, Belgrade, June 10–12<sup>th</sup>, 2005.

of the courses and a list of evaluation items is present to evaluate the interactive systems seen by lecturers and the participants. A last part of our project are the plans to screen and to examine the participants in their growing knowledge in laboratory medicine. Also the coordinators of the different centres need an evaluation through the participants and the board members of FESCC.

FESCC-EB decided to accept the organisation of the joint Tempus project between European and Russian universities and is responsible for the success of the project.

The professional duties of the specialist in clinical chemistry differ from country to country in Europe. According to the strategic plan of FESCC one of the main goals is the promotion of a high scientific and professional level. The content dictates the post-graduate speciality training. FESCC organises continuous Post-graduate courses in clinical chemistry in the Inter-University Centre Dubrovnik. Conferences and Workshops on »quality and accreditation of Medical Laboratories« were implemented in non EU countries. FESCC is occupied with the harmonization of our profession in Europe in accordance with WHO, especially in education, training and accreditation enabling flexibility within Europe.

The consequences of this training in relation to the EC4-EU register for Chemists are being discussed. Five main aspects of Laboratory Medicine can be discussed and discerned: Research, Analytical aspects, Clinical aspects, Management and Organisation and Education. These are all part of every speciality in this field. Laboratory specialists are at the same time Professionals and Lab Managers. The link between both is that professional contents influence management issues. All previously described aspects are included in the EC4 syllabus for postgraduate training in Clinical chemistry.

In the EU, entering post-graduate training in clinical chemistry, is open for every one who has a proper university degree in medicine or pharmacy or chemistry. The outcome of it is a common one, irrespective of the degree at the start of the training, it is the result of the specialist training that counts, an equal degree should lead to an equal position. This will help governments and hospital management, it ensures consumer protection, and it will promote free circulation of the professionals in the EU. An overview shows that in nearly all EU countries a legally recognized register for MD's in clinical chemistry exists; in five other countries national clinical chemistry societies have formed their own national register.

Consequences of the proposal for a directive of the European parliament and of the council on the Recognition of Professional Qualifications will be discussed. Closer contacts between the national societies have resulted in comparable programs for post-graduate training and closer similarity of contents and practice of the profession. During the last ten years many activities have taken place in the field of quality systems of medical laboratories and supported the forthcoming international ISO standard.

»Quality management for the medical laboratory«. The forthcoming international standard ISO 15189 is a document of great importance for the development of quality systems and accreditation of medical/clinical laboratories. Important items for the future of our profession are described in the FESCC strategic plan and should be treated and related to the past.

Prof. Dr. Victor Blaton President of FESCC

# Meeting of the Presidents of European Societies of Clinical Chemistry

Pont-à-Mousson - October 1988



**Seated, 1st row, from left, to right**  
Montalbetti - Zaidman - Stalvjenic - Siest - Rousselet - Dummler - Salvatore.

**Standing, 2nd and 3rd rows**  
Pikaranein - Kallner - Stamm - Waldenstrom - Moss - Love - Naskalski - Halpern - Goberna - Scott - Riesen - Deom - Kutter - Dibkaer - Galimany - Breuer.

**Standing, 4th row**  
Den Boer - Pentilla - Valdiguie - Sanders - Bienvenu - Blaton - Prokovitz.

EC4



WESTFÄLISCHE  
WILHELMS-UNIVERSITÄT  
MÜNSTER

PROF. DR. IUR. G. W. WITTKÄMPER  
DIREKTOR  
DES INSTITUTS FÜR POLITIKWISSENSCHAFT

4400 Münster, 15.10.1990  
Scharnhorststraße 100  
Telefon Durchwahl (0251) 834371  
Sekretariat (0251) 834370  
Telefax (0251) 83-4372  
Telex 892529 UNIMS d

**A STRATEGY FOR RECOGNITION  
OF CLINICAL CHEMISTS IN THE EEC**

October, 19, 1990:

**EC-4 MEETING AT HOTEL EDEN AU LAC  
ECHTERNACH, LUXEMBOURG**

**Pictures of first Eur Clin Chem awards on October 3rd 1998 in Helsinki**



*Eberhard Gurr presents one of the first registration certificates to Paivi Laitnen*





*First recipients of EC4 Registration certificates, Gerard Sanders, Paivi Laitinen, Marku Parviainen*



*Mariam Klouche, Janet McMurray, Simone Zerah, Camelia Grigore EuroMedLab Innsbruck 2009*



*Bernard Gouget, Rob Jansen, Simone Zerah, Gerard Sanders and wife, Phillippe Gillery, Janet Smith EuroMedLab 2005*



*Simone Zerah and Graham Beastall at Glasgow EuroMedLab 2005*

# European Federation of Clinical Chemistry and Laboratory Medicine

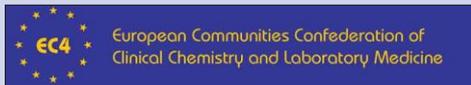
*formed by the union of EC4 and FESCC*



## EC4 and FESCC become EFCC!

The European Communities Confederation of Clinical Chemistry and Laboratory Medicine (EC4) was established in 1993, but its roots date back to 1975. EC4 is the European Union subgroup of FESCC-IFCC. EC4 coordinates and promotes the harmonization of practice and quality across the EU countries, with particular emphasis on laboratory accreditation and professional regulation. It operates the EC4 Register of Specialists in Clinical Chemistry and Laboratory Medicine, whose members are awarded the qualification Eur Clin Chem. EC4 has been responsible for raising the profile of Clinical Chemistry and Laboratory Medicine within the European Union, now 27 countries.

The Forum of European Societies of Clinical Chemistry and Laboratory Medicine arose during 1980s through the initiatives of representatives of European National Societies. It originally provided a forum for collaboration between the Presidents and the Societies of Clinical Chemistry in Europe, and under its first President, Prof Herman Wisser (Germany), developed into the European branch of IFCC. The first statutes were approved in April 1993 in Nice. FESCC has provided European leadership and worldwide exchanges in Clinical Chemistry and Laboratory Medicine to national professional societies, to the diagnostic industry and to governmental and non-governmental organizations in order to serve the public interest in health care. FESCC has played a major role in training and education in laboratory medicine.



# EFCC



## The European Federation of Clinical Chemistry and Laboratory Medicine

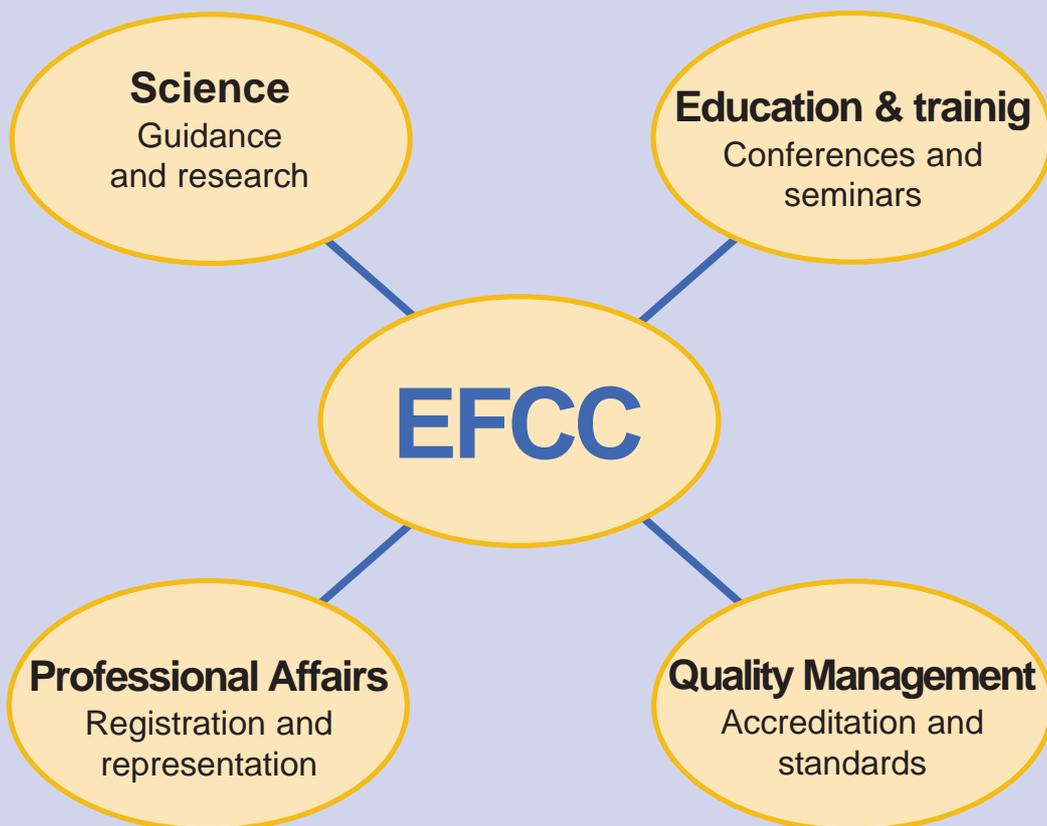
Formed in Amsterdam, June 2007  
The new European Regional Branch of IFCC

# European Federation of Clinical Chemistry and Laboratory Medicine

*formed by the union of EC4 and FESCC*



## What will EFCC do?



**Formation of EFCC from EC4 & FESCC at EuroMedLab 2007, Amsterdam, General Assembly.**



*Bogdan Solnica and Janet McMurray with poster explaining the merger of EC4 and FESCC to form EFCC*



*FESCC President Victor Blaton presenting to the General Assembly seeking approval for the formation of EFCC; EC4 President Mike Hallworth shares the platform.*



*The General Assembly delegates listening attentively*



*Voting to form EFCC*



*The EFCC Executive Board: Mario Pazzagli, Karri Pulkki, Andrea (Rita) Horvath, Mike Hallworth (ex-EC4 President), Hans van Pelt, Victor Blaton (ex-FESCC President).*



*EFLM EB 2015 From left: Silvia Cattaneo (Office), Grażyna Sypniewska, Sverre Sandberg, Mauro Panteghini, Tomas Zilva, Ian Watson, Huib Storm, Ana-Maria Simundic (not present)*



*Simone Zerah, Janet McMurray and Camelia Grigore in Antalya 2008 as EC4 representatives*



*M Vergnaud, Prof Theodore Koutrabas (Director General CEPLIS), Simone Zerah (CEPLIS Vice-President) and Mme Vergnaud MEP (Rapporteur for the Directive on Qualifications) in Dubrovnik 2012 (2<sup>nd</sup> EFLM-UEMS Congress).*

## **EFLM Appendix**

Refer to [www.eflm.eu](http://www.eflm.eu)

### **EC4 information:**

#### **1993:**

WG Accreditation (see recollections from Wim Huisman)

Rob Jansen: [NL] chair 1993-1999

Wim Huisman [NL]: 1993-1999 and chair 1999- 2010

David Burnett: [UK] 1993-2005

Jose Queraltó [SP]: 1993-2008

Simone Zerah [FR]: 1993-2010

Victor Blaton [BE]: 1993-2009

Ferruccio Ceriotti [IT]: 1997-1999

Mario Plebani [IT]: 1999-2003

Desmond Kenny [IR]: 1999-2006

Representatives of EDMA 1993-2000

### **Publications:**

Role of a quality manual in a quality management system.

*Ann Biol Chem* 1994;52:457-61

Quality and accreditation systems in Europe.

*Eur J Clin Chem Biol* 1995;33:393-8

The role of the European Communities Confederation of Clinical Chemistry (EC4) in the harmonization of clinical chemistry in the European Union (letter).

*Sanders GT, Kelly AM, Breuer J, Mocarelli P.*

*Clin Chem Lab Med* 1995;33:947-8

Essential Criteria for Quality Systems in Medical Laboratories.

*Jansen RTP, Blaton V, Burnett D, Huisman W, Queraltó JM, Zerah S, Allman B.*

*Eur J Clin Chem Clin Biol* 1997;35:121-32

The European Register for Clinical Chemists.

*Sanders GT, Kelly AM, Breuer J, Kohse KP, Mocarelli P, Sachs C.*

*Eur J Clin Chem Clin Biochem* 1997;35:795-6

European Communities Confederation of Clinical Chemistry. Guide to the EC4 Register: European clinical chemist.

*Eur J Clin Chem Clin Biochem* 1997;35:797-803

Additional Essential Criteria for Quality Systems of Medical Laboratories.

*Jansen RTP, Balton V, Burnett D, Huisman W, Queraltó JM, Zerah S, Allman B.*

Clin Chem Lab Med 1998;36:249-52

Recent activities of EC4 in the harmonization of clinical chemistry in the European Union.

*Sanders GT, Jansen RT, Beastall G, Gurr E, Kenny D, Kohse KP, Zérah S.*  
Clin Chem Lab Med 1999;37:477-80

The EC4 Register of European Clinical Chemists and EC4 Activities.

*Jansen RTP.*  
Clin Chim Acta 2002;319:143-48

The Practice of Clinical Chemistry in the European Union.

*Sanders GT, Beastall GH, Kohse KP, Zérah S, Jansen R, Köller U, Blaton V, Lund E, Parviainen M, Charret J, Gurr E, Nicholou H, Kenny D, Pazzagli M, Opp M, Willems H, Martins Mdo C, Queraltó JM, Landin B, Yu A, McMurray J.*  
Clin Chem Lab Med 2002;40:196-204

The European Register for Specialists in Clinical Chemistry and Laboratory Medicine: Guide to the Register Version 2-2003 and Procedure for Re-registration.

*Gurr E, Koller U, Blaton V, Lund E, Harmoinen A, Zerah, et al.*  
Clin Chem Lab Med 2003;41:238-47

The European Register for Specialists in Clinical Chemistry and Laboratory Medicine: Code of Conduct.

*Sanders G, Opp M, McMurray J, Koeller U, Blaton V, Lund E, et al.*  
Clin Chem Lab Med 2004;42:563-5

EC4 European Syllabus for Post-Graduate Training in Clinical Chemistry and Laboratory Medicine: version 3-2005.

*Zerah S, McMurray J, Bousquet B, Baum H, Beastall GH, Blaton V, et al.*  
Clin Chem Lab Med 2006;44:110-20

The European Register for Specialists in Clinical Chemistry and Laboratory Medicine: Code of Conduct – Version 2-2008.

*McMurray J, Zerah S, Hallworth M, Koeller U, Blaton V, Tzatchev K, et al.*  
Clin Chem Lab Med 2009;47:372-5

The European Register for Specialists in Clinical Chemistry and Laboratory Medicine: Guide to the Register, Version 3-2010.

*McMurray J, Zerah S, Hallworth M, Schuff-Werner P., Haushofer A, Szekeres T, et al.*  
Clin Chem Lab Med 2010;48:999-1008