

Presidential Address

by Han Brunner, President of the ESHG

For the times they are a-changing

Human genetics in Europe is changing in several ways at the same time. This is bewildering to some, a challenge to most of us, as well as a joy to our patients who can look forward to benefit from unprecedented opportunities for diagnosis, including whole genome and whole exome sequencing and noninvasive prenatal testing. In addition, the ability to call CNVs from exome sequence is starting to challenge the independent use of genomic microarrays in diagnostic practice. Thus, we see a rapid succession of new technologies, mostly based on next generation sequencing. In this respect, it is useful to remember that genomic microarrays have been around for only 10 years, and their full impact has not yet been realized in all countries in Europe.



The new technologies of whole exome and whole genome sequencing are currently so expensive that they accentuate the division between the richer and less developed countries in Europe. ESHG recognizes that one of its main aims should be to work towards equitable access to these technologies and services across Europe. This may seem like an ambitious aim, given the current financial situation in many countries. Nonetheless, there is no question that we need to keep trying to achieve this in the longer term.

The realization that human genetics, once seen as a small and not always relevant curiosity is actually at the core of all of medicine means a shift of focus for all of us. With the increasing power to diagnose genetic disease comes the broad realization that a significant fraction of all human disease is genetic, and that the genetics community needs to interact with most if not all other medical specialties. Clearly, the time is right for human genetics to become more involved with the mainstream of clinical medicine. Human Genetics has the potential to be a driver of the current focus to create a more personalized medicine. In this regard, the decision by the British Society of Human Genetics to change its name to the British Society of Genetic Medicine signals the changing role

of human genetics in Europe. We are becoming increasingly part of the fabric of all of medicine rather than a set of specialties that care for a limited number of patients with very rare diseases.

At the same time, developments in the field of rare diseases are also progressing steadily. The year 2013 is when all EU member states put together their national plan for rare diseases. A document released by the European Union Committee of Experts on Rare Diseases (EUCERD) in January 2013 provides insight in what the future may hold. This document calls for European Reference Networks for rare diseases that should grow from national centres of expertise in the different countries. This is important, since 1 in 17 individuals will develop a rare disease in their lifetime, and most of these are genetic. Clearly, human geneticists should aim to be involved with setting up and leading these national centers of expertise. The ESHG board has requested participation in the newly established EU expert group on rare diseases, that will draw up guidelines and recommendations, provide advice on implementing EU actions, and foster international cooperation on rare diseases.

Interpreting genomic information depends heavily on shared knowledge on individual variants and their phenotypic consequences. Unfortunately, such information is often dispersed, and some of it is difficult or even impossible to find. A case in point is the situation in the US where Myriad Genetics has information on many thousands of BRCA1 variants that it regards as proprietary information not to be shared with others. As argued by Cooke-Deegan and colleagues in their article in the European journal of Human Genetics earlier this year, this current practice of proprietary databases may hinder interpretation of genomic data and impede the advance of personalized medicine. ESHG feels strongly, that sharing information on genomic variants and their clinical impact on patients should be the rule and not the exception. In June, ESHG signed a letter of intent to become one of more than 70 medical, research and advocacy organizations active in 41 countries that have agreed to create an organized way to share genetic and clinical information. The aim of this "Global Alliance" is to put the vast and growing trove of data on genetic variations and health into databases — with the consent of the study subjects — that should be open to researchers and doctors all over the world, not just to those who created them. The vision of the Global Alliance is that ultimately data will be stored in platforms built on interoperable standards, such that platforms will enable sharing and

learning from data wherever it is stored.

The Professional Policy and Publications Committee chaired by Martina Cornel has published a thoughtful reflection on the implementation of genome-wide sequencing technologies, and their introduction into health care. On the one hand, the paper by van El and colleagues in the European Journal states that when possible, it is preferable to use a targeted approach first in order to avoid unsolicited findings or findings that cannot be interpreted. On the other hand, if an unsolicited genetic variant is detected which is indicative of serious health problems, then a health-care professional should report such genetic variants. This seems quite a reasonable way forward, but the best way of using these powerful technologies will remain an issue that needs more discussion in an open and informed environment. In this regard, it is notable we welcome that the SPC has planned to have just such a discussion at our meeting in Milan next June. We look forward to an interesting and probably lively debate.

Starting 2012, ESHG has developed a partnership with the European School of Genetic Medicine (ESGM), in order to promote advanced training in human-medical genetics and preventive medicine in Europe. The European School of Genetic Medicine will organize 3 courses in May and June 2014 in Bertinoro, Italy, on Genetic Counselling, on Next Generation Sequencing, as well as its annual course on Medical Genetics. These courses offer an unique opportunity for young professionals to discover a broad overview of the exciting developments in our field. ESHG hopes to expand this portfolio with further courses. The courses are offered at a competitive price, and fellowships are available to allow more students from less privileged countries to participate.

With its 50th birthday coming up in 2017, ESHG has started documenting its history under the guidance of Professor Peter Harper, who has previously initiated the Genetics and Medicine Historical Network from 2002. Several board members and other interested individuals have already agreed to contribute by interviewing those geneticists who have helped create the field of Human and Medical Genetics in Europe, and who started and developed our Society, its Journal, and the School.

All in all, we need to welcome these changes. As someone famously said: "This is not the end, it is not even the beginning of the end, but it may be the end of the beginning". Our Society is more relevant than ever, and there is much work to do. We invite all members to think with us to help shape the future of our field!

Han Brunner

EUCERD 2009-2013: What was achieved?

by *Helena Kääriäinen, President-elect of the ESHG*

The term of the first constitution of European Union Committee of Experts on Rare Diseases (EUCERD) expired last summer. During its about 3,5 years of existence this Committee strongly promoted the activities in the field of rare diseases, under the experienced chairmanship of Segolène Aymé.



The European Union Committee of Experts on Rare Diseases was formally established via the European Commission Decision of 30 November 2009 (2009/872/EC). The Committee had 51 members, nominated following specific calls for expression of interest. This included:

- 1 representative of each of the 27 European Union Member states;
- 4 representatives of patient organisations;
- 4 representatives from the pharmaceutical industry;
- 9 representatives of ongoing and/or past Community projects in the field of RD financed by programmes of Community action in the field of health (including 3 representatives of existing pilot networks of European Reference Networks);
- 6 representatives of ongoing and/or past RD projects financed by the Community Framework Programmes for Research and Technological Development;
- Representatives of DG Sanco, DG Research, DG Enterprise and Eurostat;
- 1 representative of the European Centre for Disease Prevention and Control (ECDC).

The representatives were allowed to have also alternates in the EUCERD meetings and especially the patient organisations and pharmaceutical industry took this opportunity to have a wider representation in the Committee. Of the member State representatives as well as RD projects' representatives several were active members of ESHG which enabled fluent information change between ESHG and EUCERD.

One of EUCERD's tasks was assisting the Commission in the monitoring, evaluating and disseminating the results of measures taken at Community and national level in the field of rare diseases. During these years, the Member States were in the process of drafting, accepting and implementing their national plans related to RD, according to

the Council Recommendation on an action in the field of Rare Diseases, from 2009. EUCERD followed this development by reports of the MS representatives which created an inspiring atmosphere of a shared European goal where the national plans were the blocks laying the foundation.

EUCERD drafted and had accepted several recommendations and other papers which can be found at EUCERD website at <http://www.eucerd.eu/>. Some examples are listed below.

- EUCERD Recommendations on Quality Criteria for Centres of Expertise for Rare Diseases in Member States (Adopted October 2011)
- EUCERD Recommendations on the Clinical Added Value of Orphan Medicinal Products Information Flow (Adopted September 2012)
- EUCERD Recommendation on European Reference Networks for Rare Diseases (Adopted January 2013).
- Recommendations on patient registries and data collection for rare diseases & core indicators for rare disease national plans/strategies (Adopted June 2013)

In addition, EUCERD published yearly comprehensive Reports on the State of the Art of RD Activities in Europe. At present, the Commission is looking for expressions of interest (http://ec.europa.eu/health/rare_diseases/docs/dec_expert_group_2013_en.pdf) to appoint a new Commission expert group to continue the European level work for better treatment and care of RD. ESHG hopes to have unofficial or even official representation in this group as health care and research related to rare diseases is one of the main interests of ESHG.

Helena Kääriäinen
Member State representative of Finland in former EUCERD

The new ESHG Board Members

Prof. MUNIS DUNDAR

He was born May 2, 1961. He took undergraduate degree at Erciyes University, Faculty of Medicine in 1985. He made Ph.D. on Medical Genetics at Duncan Guthrie Institute of Medical Genetics, University of Glasgow/Scotland in 1994 and he took



specialization in Medical Genetics at Osmangazi University in 1996. He is founder and head of Medical Genetics Department at Erciyes University and he has been currently carrying out various administrative tasks since 1996. He took part as Project Coordinator and Assistant Investigator in many research projects and many prepared articles out of them have been publishing in international journals. He is former president of the Turkish Medical Genetics Association. He is currently president of the EBTNA (European Biotechnology Thematic Network Association). He has published more than 60 papers in reputed journals.

Dr TRINE PRESCOTT

After receiving my medical degree in Oslo and doing an internship in northern Norway, I trained as a pediatrician at McMaster University in Hamilton, Ontario in Canada. I worked at Frambu Center for Rare Disorders (www.frambu.no) for several years after moving back to Norway in 1994. Subsequently, I completed a medical genetics residency program in Oslo and I now work as a consultant clinical geneticist at Oslo University Hospital. The main focus of my clinical and research efforts is rare diseases and disorders, primarily in the pediatric age group. I enjoy teaching medical students and medical genetics trainees as well as writing and lecturing for lay and professional audiences alike. It is a privilege to be able to participate in the ongoing diagnostic revolution in the field of rare disorders and in the development of "next generation" clinical genetics.



Prof JULIE McGAUGHRAN

I am a clinical geneticist and Director of Genetic Health Queensland, which provides genetic services to the state of Queensland in Australia. I trained in Manchester in the UK and have also worked in New Zealand. I am a past President of the Human Genetics Society of Australasia and am its representative to the IFHGS. I have also been a member of the BSGM for many years. My main clinical areas of interest are dysmorphology and cardiac genetics. I have been a member of ESHG for many years and regularly attend meetings. I wanted to be on the council as we all collaborate internationally and the challenges we face are common across countries. I hope that I can bring some experience from Australia and help with the work and aims



of the ESHG.

I have now been in Brisbane, a sub-tropical city, for 12 years and can let people know, you really don't get tired of beautiful weather and warm temperatures!

Short Report of the Executive Officer on ESHG 2013, Paris

By Jérôme del Picchia, Executive Officer of the ESHG

The ESHG 2013 in Paris has been the most successful meeting in the 45 years since ESHG's creation in 1967.

3.175 active participants from 80 countries, 117 exhibiting companies and institutions, translating to over 1500 m² of stands, mark an all time high in participation. France was, *naturally* the nation with the Highest number of participants in 2013, with 660 delegates.



The Grand Amphithéâtre during the opening plenary.

The following nations do complete the top-ten list: The Netherlands: 203, Italy: 185, United Kingdom: 175, Germany: 174, United States: 144, Turkey: 119, Spain: 111, Belgium: 78 and Canada: 74 delegates.

But also science-wise, the 2013 meeting broke all records. 2.707 abstracts from 80 countries were submitted.

Based on the peer reviewing process, 2.512 submissions were accepted for presentation, 126 in 20 concurrent sessions and one plenary, 1642 were eventually presented as a poster. The remainder was accepted for publication in the electronic abstract supplement of the European Journal of Human Genetics.



A total of over 900 persons attended the conference party in the Grande Galérie de l'Evolution.



T. Frébourg and ESHG president S. Lyonnet

The improved 2.0 version of the ESHG conference app was downloaded over 1400 times, showing clearly that ESHG's participants have adopted of this new technology. Improvements and new features are planned for the 2014 Conference in Milan in 2014.

European Human Genetics Conference 2014 - Milan

Besides another fantastic programme, we will introduce an innovation at ESHG meetings in 2014. For the first time, a web cast, transmitting the plenaries on Tuesday over the internet, is planned, together with an interactive panel discussion.

2014 also mark a change in the schedule of the meeting. The opening day (Saturday) will already start at 10.15 hrs with educational sessions and workshops and be concluded with a series of concurrent sessions from submitted papers.

In parallel, the exhibition will open already on Saturday morning, and close on Monday evening.

The current programme (including accepted speakers) is now online at www.eshg.org/eshg2014

We look forward to seeing you at the MiCo conference center in Milan, Italy from May 31 - June 3 2014!



Representatives of the ESHG and French Society of Human Genetics enjoying the conference party.

The Winners of the ESHG 2013 Young Investigator Awards in Paris

Each year the ESHG Young Investigator Awards are granted to young scientists showing outstanding research performance. These four letters written by award winners, tell about the excitement of presenting in big international meetings, the great joy of getting acknowledged by such awards and the views of young, talented geneticists on the future of genetics and ESHG Conferences.

Marjolein H. Willemsen

I was very honoured to receive the Isabelle Oberle award at the ESHG conference 2013. It was a very great surprise to me, because I also received this award last year. In 2012, in Nürnberg, I talked about the overall results of my PhD project involving the clinical and molecular identification and definition of genetic disorders with intellectual disability. Receiving this prize made me feel incredibly proud about my work, and was a great incentive for the following months till my thesis defence in October 2012. During my talk at this year's conference I highlighted one topic of my studies. With this



presentation I aimed to illustrate that the combination of clinical, molecular and functional studies in both humans and animal models is a powerful strategy to establish novel genes and syndromes associated with intellectual disability.

The last five years, I visited the conference each year. It has become a very good tradition and an excellent occasion to get an overview of, and to participate in, the broad and fast moving field of genetics. Furthermore, it is a great opportunity to meet colleagues from all over the world, to share experiences and get inspired by each other. For me, one of this year's highlights were the discussions about all the challenges that we are facing with the clinical implementation of whole exome sequencing, including ethical implications, bioinformatic challenges, challenges in interpretation of variants, data sharing etc. It was also impressive to hear about all the advances that have been made in the understanding of genetic and molecular mechanisms of disease pathways. Unravelling of these pathways is the first step on the path towards therapy. I was impressed by the hope for therapy, even for neurodevelopmental disorders, as was for example demonstrated in the presentation of professor Alain Prochiantz in the second plenary session on Sunday, and the Mendel Lecture by professor Huda Zoghbi. But there is also still a long way to go. I hope that, during the coming years, we will more and more move along the path toward the development of therapies.

Because the field is moving so fast, I find it difficult to foresee how the ESHG conference will look like 10 years from now, but apart from the move toward the development of causal therapies, I think the clinical implementation of personalized genomics, including genetically guided therapy for all kinds of diseases, will become an increasingly important topic.



Brunhilde Wirth, Chair of the SPC, Felix Mitelman, ESHG Award Lecturer, Huda Zoghbi, Mendel Lecturer, The ESHG Young Investigator Award Winners 2013 and Han Brunner, President of the ESHG

NEWSLETTER YOUNG INVESTIGATOR AWARD WINNERS

In addition, with the clinical implementation of whole genome sequencing around the corner, the handling and interpretation of the enormous amount of data that are being generated, will become even more complex. Besides the collection and sharing of all these data, major challenges will be the unravelling of more complex inheritance models, including digenic and polygenic models, gene-environment interactions, and the role of epigenetics and changes in non-coding genomic regions. Definitely, a wealth of inspiring topics to deal with in the next years.

Vikram Sharma

Winning the coveted prize at this year's conference was both a (pleasant) shock and a real honour in equal measure! I knew the story behind my novel disease gene discovery was a good one and to share it with friends and colleagues from around the world on such a fine international stage was a real privilege. By speaking in one of the first plenary sessions, I also had a unique opportunity to convey the salient points of my research to a captive audience and so have maximum impact. Afterwards, I received lots of positive feedback from colleagues and the networking evening and social dinner/after party allowed free exchange of ideas with many experts and the establishment of future collaborations.



As for the ESHG 2013 conference itself, there were numerous highlights for me and I highly commend the organising/scientific committee for running such a well organised, diverse and interesting congress (including a very well designed smartphone app!). This allowed me to attend many lectures and learn from a variety of experts from other world-class institutions. Additionally, as a clinician dealing with craniofacial malformation, I found the dysmorphology sessions especially interesting, useful and thought provoking, and it has better informed my own practice back in the UK. The trade stands I visited were excellent, allowing me to talk to representatives from a variety of companies from which our lab purchases consumables. The numerous posters on display were also very interesting, allowing me to gain a snap shot of allied research from many different groups. The Mendel lectures on the final day gave an amazing overview and insight into the life and careers of 2 leading experts in the field of human genetics.

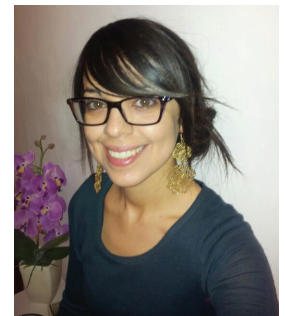
Finally, it was also very nice to see entries from highly-talented school children who are very likely to win prestigious awards at international meetings in the future (such as that run by the ESHG). They all showed great potential to win an award such as the Young Investigator of the Year in the next 10 years, which will no doubt propel them to becoming research leaders of the future. Overall, I felt my whole experience at the meeting was superb and I look forward to attending more of them in the coming years!



The 2013 ESHG Poster Award Winners and Finalists

Elisa Giorgio

When I received the e-mail from the European Society committee, writing me that I was selected for an oral presentation, I was worried and excited at the same time: this was both my first talk at a big European congress and my first time at the ESHG Congress. What a great opportunity and responsibility!



I followed a lot of interesting lectures at ESHG: the main topic was the application of next generation sequencing (NGS) and the new era of genetics. A lot of scientists explored the power of NGS to discovery new diseases genes or to improve diagnostics with diseases-specific arrays. The availability of very large amounts of data, however, needs large efforts to be analyzed. I was also impressed by the development of new therapies in human genetic diseases.

My work combined the molecular mechanisms with clinical aspects of the genetics: I described a position effect mutation causing overexpression of LMNB1 gene and mimicking LMNB1 duplication as cause of Autosomal Dominant Leukodystrophy. I was very proud and thrilled to receive the Young Investigator Award for Outstanding Science. This unexpected price is a fabulous recognition for years of work and rewards me as well as my team, named, the LabA17 Team. My colleagues shared my excitement and their hugs in Paris were mirrored by electronic hugs from Torino (the lab knew in seconds I was awarded!).

Where will we be in 10 years? It is very hard to say! We will exponentially develop genome sequencing and other technologies. But we will have solved almost all genetics basis of Mendelian disorders, and cured several genetic diseases, an unbelievable aim a few years ago. Personal medicine will have developed, but we will still have a lot to discover.

Pier Francesco Palamara

I was very honoured to receive the Lodewijk Sandkuijl Award at the ESHG in Paris. It was my first time attending the European meeting, and I was a bit unlucky to catch a bad cold on the way to Paris that accompanied me throughout the meeting and during my talk. I was forced to skip several presentations, but I was impressed by the quality of the work that I did have a chance to see reported, and it was a great opportunity to meet several collaborators (needless to say, Paris was a beautiful landscape for all this science...). It is an exciting time for human genetics, and it is hard to predict what the ESHG meeting might look like 10 years from now. Thanks to reduced costs of data collection, data-driven studies are becoming increasingly convenient. This offers great new scientific opportunities but also requires the development of new methodology. The efficiency of high-throughput genomic technologies, in particular, is growing faster than that of computational technologies, and this will likely result in the need for new statistical and computational tools that are able to effectively process very large amounts of data while restraining computational complexity. It also seems reasonable to think that in ten years we will have made substantial progress towards personal genetics, and I would imagine personalized medicine will be a central topic of the ESHG meeting by 2023.



Courses in collaboration with the European School of Genetic Medicine (ESGM)

The European Society of Human Genetics (ESHG) has developed a partnership with the European School of Genetic Medicine (ESGM), in order to promote advanced training in human-medical genetics and preventive medicine in Europe. The European School of Genetic Medicine organizes courses in the charming venues of Bertinoro (Italy). These courses began in 1988 with the first course in Medical Genetics of the European School of Genetic Medicine directed by Prof. Victor A. McKusick. For detailed information about the School visit: www.eurogene.org

Plan to attend the next ESGM-ESHG Courses in Bertinoro:

Course on Genetic Counselling: April 28 - May 6, 2014

27th Course on Medical Genetics: May 10-15, 2014

3rd Course on NGSequencing: May 6-10, 2014

ESHG Fellowships are available!

Selected Meetings from the ESHG Conference Calendar

See www.eshg.org/101.0.html for the full list.

American Society of Human Genetics 2013

Boston, MA, United States, October 22-26, 2013
<http://www.ashg.org/2013meeting/>

NGS2013 Manchester: Applications & Bottlenecks

Manchester, UK, November 5-6, 2013
<http://conference.biotexcel.com/ngs-2013-manchester/>

Public and Private Health – Genomics, Medicine and Society

Heidelberg, Germany, November 7-8, 2013
<http://events.embo.org/science-society-conference>

Fifth European Course in Clinical Dysmorphology “What I know best” and Eurodysmoclub”

Rome, Italy, November 14-16, 2013

5th TECHGENE knowledge network meeting

Copenhagen, Denmark, November the 21st 2013
<http://www.techgene.eu/55-news/119-5th-techgene-kn-meeting>

Clinical Genomics & Informatics Europe

Lisbon, Portugal, December 4-6, 2013
<http://www.clinicalgenomicsinformatics.com/>

Regional European Biomedical Laboratory Science Congress and the 4th Greek Medical Laboratory Technologists Conference

Athens, Greece, December 5-8, 2013
<http://www.ebsc2013.com/>

2nd International Congress on Research of Rare and Orphan Diseases RE(ACT) Congress 2014

Basel, Switzerland, March 5-8, 2014
<http://www.react-congress.org/>

3rd Central-Eastern European Symposium on Free Nucleic Acids in Non-Invasive Prenatal Diagnosis

Aula Magna, Martin, Slovakia, April 16-17, 2014
<http://kongres-kami.sk/prenat/>

7th European Conference on Rare Diseases and Orphan Products - ECRD

Berlin, Germany, May 6-11, 2014
<http://www.rare-diseases.eu/>

The European Human Genetics Conference 2014

Milan, Italy, May 31 - June 3, 2014
www.eshg.org/eshg2014

International Clinical Cardiovascular Genetics Conference 2014

Brisbane Convention and Exhibition Centre, August 6-9, 2014
<http://www.iccg2014.com/>