European Federation For Immunogenetics

NEWSLETTER

January 2017 - Issue 81

.....from the EFI President

Dear EFI members,

Happy New 2017!

When I started writing for this current issue of the newsletter, the first thought I had was to express my deep gratitude to our long time Editor in Chief of the EFI Newsletter - Frans Claas for his hard work and dedication to the EFI community. As an Editor in Chief for almost 15 years Frans Claas made an outstanding contribution to the EFI Newsletter, and created an excellent platform for sharing information, generating ideas for new projects and promoting the EFI activities worldwide. Thank you so much, Frans, on behalf of all EFI members! At same time I would like to welcome Sebastiaan Heidt - the new Editor in Chief of the EFI Newsletter and to encourage him to further develop what's already been achieved by his predecessors in the context of the new time and challenges.

As usual in autumn, the work schedule was quite busy with many committee meetings. A teleconference of the EFI officers took place during which actions agreed following the Kos EC meeting were reviewed, and the October meeting in Leiden was scheduled as well. The ECC and EC meetings which were held were very productive and when I looked through the minutes I realized what a huge amount of work has been done by the EFI committees. My heartfelt thanks goes to all members of those committees for their valuable input to the EFI. I would like also to thank Ingrid and Sonja for the great organization of the meetings and their continuous help in ensuring normal activities run smoothly for all of the committees.

How is the collaboration with our sister organizations? During the ASHI meeting in Saint Louis, a regular face to face meeting with Anat Tambur (ASHI President), Mike Gautreaux (ASHI President Elect), Rhonda Holdsworth (APHIA Past President) took place. The main focus of the discussion was the content of the Memorandum of Understanding between the three societies. It was agreed to expand our collaboration in the scientific, educational and clinical H&I fields, bound with a more formal agreement. Until now there have been agreements related to certain activities such as the organization of the summer school, which outline mutual benefits for the presidents and the members of the three associations, etc. There is an on-going realization of issues arising due to uploading the presentations from the previous Summer schools on the websites of each of the three associations. The decision to formulate approved guidelines for planning the international workshops and conferences was therefore an important step forward. Essentially, large regions of the world remain outside the catchment of these three associations, so it is necessary to join our efforts to create a more expanded global policy in the field of H&I. And I strongly believe that there is a ground for a broader cooperation requiring more formal rules which could be discussed during the next 17th IHIWS. The Executive Committees of the three Societies confirmed the content of the MoU and hopefully it will be signed soon.

The collaboration with other sister organizations has also developed, and is now in advanced stages of arrangement. The contacts made with the Board of the European Federation of Immunological Societies (EFIS) and the European Society for Blood and Marrow Transplantation (EBMT) had a positive response. The MoU and the procedure manual for the organization of joint sessions with either - EFIS, ESOT or EBMT will promote EFI and increase the exchange of knowledge. It is also

continue on page 5

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http://www.efiweb.eu
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....FROM THE EDITOR'S DESK

First of all, a happy new year to all EFI members! Hopefully, 2017 will be a great year with lots of new challenges and opportunities. In front of you lies the first EFI newsletter that has been compiled by your new editor. I would hereby like to thank Frans Claas for his excellent work as an editor of the EFI newsletter for the last 15 years, and thank the EFI board for their trust.
In this issue you will find an overview of the topics that will be discussed in the upcoming EFI meeting in Mannheim/Heidelberg coming May. This year will be a joint meeting with the German Society for Immunogenetics (DGI). There are many topics of great diversity, so there should be something of interest for everyone! Also this year, the Summer School will be organised in Europe. This joint effort of EFI, ASHI and APHIA will be held in the city of Dublin and is a great opportunity to receive high quality education on histocompatibiliy and immunogenetics, as well as expanding your network.
The candidates for this year's elections are also presented in this Newsletter. There are two candidates for president elect and six candidates for three vacancies for EFI councillor. I hereby urge all EFI members to vote for their favourite candidates.
Also in this edition of the Newsletter, the second chapter on epitope matching by Rene Duquesnoy can be found. As the date of the 17th International Workshop is slowly coming closer, this makes great reading material to get an insight into serological epitopes and their relevance to transplantation. A third and final chapter will be published in the next issue of the Newsletter.
I hope you will enjoy reading this Newsletter and I very much look forward to your contributions for the next edition.

Sebastiaan Heidt

Deadline for contributions to EFI Newsletter 82 is, April 10, 2017.
Please send your contributions by e-mail to s.heidt@lumc.nl

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LIFECODES® HLA-SSO Typing

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expected that EFI will make contact with the European Society of Organ Transplantation (ESOT).

Finally, I would like to announce two major events to be held in 2017.

Firstly, the Annual 31st EFI Conference will be held in Manheim/Heidelberg, Germany, and will jointly be organized with DGI. The local organizers Caner Süsal, Volker Daniel, Sabine Scherer, Michael Müller-Steinhardt, and Hien Tran have selected an attractive venue for the scientific, educational and social programs. With the motto **"Translational Immunogenetics"** we expect to have an exciting scientific program covering the latest developments in the field of Immunogenetics. Please, don't miss the possibility to participate in this event which is important to all of us.

Secondly, the Summer school which will take place in Dublin, in July next year is being organized by Richard Hagan. As you know, this is a result of the international collaboration and is an exceptional opportunity for advanced training in the fields of Immunogenetics and Histocompatibility, especially for those (young people) just entered the field.

Thank you all for giving me opportunity to work with you this year. It has been an honour and great experience for me. Dear colleagues, dear friends, let me finish this letter by wishing you all and your families a healthy, prosperous and peaceful 2017!

Elissaveta Naumova
EFI President

MEMBERSHIP UPDATE

Since the last issue of the EFI Newsletter we received a lot of applications forms from new members. Hereby we would like to welcome the following new EFI members:

K. Padros, Buenos Aires, Argentina
C. André – Botté, Vandoeuvre, France
A.W. Hauge, Copenhagen, Denmark
J. Jones, Liverpool, UK
C.M. Carrier, Long Island City, USA
R. Aggarwal, Chandigarh, India
E.M. Schwich, Essen, Germany
D. Barker, London, UK
A. Nowocin, Potters Bar, UK
V. Zakharova, Moscow, Russia

REPORT OF THE EFI EXECUTIVE COMMITTEE AUTUMN MEETING HELD IN LEIDEN OCTOBER 23RD 2016

EFI secretary: Mats Bengtsson

The Executive Committee meets two times a year, at the annual conference and at an autumn meeting usually in central Leiden as this year. At the same time many other EFI committees meet and work so it is a very intense but productive meeting for EFI. The members of the EC and all the committees would all like to thank Ingrid Abelman and Sonja Geelhoed for the excellent organization.

New members

The EC met on Sunday October 23, after having had the meeting with the co-ordinators the day before. This was the first EC meeting for three new councillors, Teresa Kauke, Valeria Miotti and Fatma Oguz and they were all welcomed by the EFI president Elissaveta Naumova. Katia Gagne was also welcomed as new Deputy-Treasurer as well as Dave Roelen as new Deputy-Secretary.

Relationship with other organisations

The meeting started with reviewing the action points from the minutes from the previous meeting in Kos. The president then reported from her meeting with the presidents from our sister societies, ASHI and APHIA on September 29 in St Louis. A more formal agreement on how the three societies will work together in science, education and clinical H&I testing is underway. Previously we had agreements that members of one society will have the same benefits for the annual meetings as members of the organizing society. One of the items that the president has worked hard on the last year is also how EFI can plan and participate in joint sessions at meetings with ESOT, EFIS and the EBMT, a MoU template for how this will work will be sent to the other organizations. The president ended with reporting from her participation in the 2nd Shanghai Pujiang symposium on Translational and Clinical Immunogenetics in Transplantation and Medicine. A report from the meeting was published in the September Issue of the newsletter.

EFI elections

The EFI Secretary, Mats Bengtsson updated the committee on the upcoming elections. At the Kos meeting the procedure was slightly changed for how nominations are requested. Nominations from the membership will now be received prior to the EC autumn meeting. The nominations are presented elsewhere in this newsletter. This will be the second time we use electronic voting and all members should check that their contact details are up to date.

Bursaries

During 2016 both bursaries for education and training, as well as personal

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bursaries for attending conferences have been awarded, besides the bursaries for attending the EFI annual meeting.

EFI budget

The EFI budget was presented by Gwendaline Guidicelli. Before knowing the result from the Kos meeting the budget had a negative balance but since the profit from Kos was more than expected the budget is now projected to have a positive balance and also cover the losses from last year. A roadmap on how to better integrate the accreditation budget with the EFI "general" budget was also presented.

EFI newsletter

The EFI President welcomed the new Editor-in-chief for the EFI newsletter Sebastiaan Heidt. The EC is very pleased with how easy the transition from Frans Claas to Sebastiaan has worked. The future of the newsletter was discussed and it was concluded that the format seems mostly up to date and that more focus should be on scientific material as in the last issue with the excellent article by Rene Duquesnoy and Marilyn Marrai.

EFI webpage

Eric Spierings started with an overview of the demographics of the visitors of the EFI webpage. Very much to the surprise of the EFI secretary, detailed information about gender and age besides geographical location could be presented. Most users of the website are among the younger group, 18-34 years old. One troublesome thing is that webpage is currently created with Typo3 that needs to be replaced by a more flexible and secure tool in the future. Eric and Ingrid were asked to look into this in more detail.
Some members have also expressed their frustration on the fact that the website can these days only be accessed with the address www.efiweb.eu and no longer www.efiweb.org. This will be corrected in the near future.

EFI conferences

Presentations were given from the most recent EFI conference in Kos and future Conferences.. The meeting in Kos was, as all of you that attended know, yet another very successful and enjoyable EFI meeting. Youla Varla-Leftherioti presented data showing that there were 653 participants from 45 different countries with 314 scored abstracts. The benefit for EFI from the meeting was also outstanding and the EFI President once more congratulated the organizers. Next year's meeting will be in Mannheim and Caner Süsal presented an update. The organisation of the sessions and social activities are well on schedule. It will be a combined meeting with DGI. Valeria Miotti then continued with a presentation about the plans for the 2018 meeting in Venice and also here things are going as planned.
The presentation about the upcoming meetings was then followed by a very much appreciated analysis of past meetings from the councillor Paul Costeas. the main conclusion was that the income from the participants should always cover the cost meaning that sponsor money should be benefit to the conference.

In addition the Executive committee discussed nominations for the Ceppellini lecture and the EFI medal. As always a very busy day.

The Julia Bodmer Award and EFI Annual Conference Bursaries

Applications are invited for the prestigious Julia Bodmer Award, to be delivered during the opening session at the next EFI conference in Mannheim, Germany. The Julia Bodmer Award is given to a young scientist in recognition of their outstanding work within the Immunogenetics field. The award also acknowledges the laboratory in which the scientist has performed their research. Any member of EFI can propose a candidate for the Julia Bodmer Award. The application must include the candidate's CV with a list of publications and a letter of support from the head of the candidate's laboratory. Candidates must be an EFI member (or become a member at the time of application) and be no more than 10 years past completion of their doctoral thesis if applicable; candidates who have not undertaken or completed a doctoral thesis are also eligible.

All applications will be reviewed by the Scientific Committee who will make the final decision on who will receive the award. The winner of the award will be invited to give a presentation at the Opening Ceremony of the EFI conference and to contribute a dedicated "Julia Bodmer Review" to HLA, the official EFI journal. He/she will receive € 1000 in addition to the expenses for registration, travel and lodging for attending the EFI Conference

All proposals must be sent in writing to the EFI Secretary via Ingrid Abelman at the EFI Central Office, (I.L.Abelman@lumc.nl) before the **15th of March 2017**.

EFI Personal Bursaries for the annual EFI Conference to be held in Mannheim on May 30th-June 2nd 2017

Full details on how to apply for EFI personal bursaries are given on the EFI website in the document entitled *"EFI Personal Bursaries"*. The application form for the EFI Personal Bursaries is also available on the EFI website.
In addition to the deadlines given for personal bursary applications, an additional deadline of the **15th of March 2017** has been set for applications for bursaries specifically to support attendance at the annual EFI conference in Mannheim.
Preference for these applications will be given to members who have been selected to present an abstract at the EFI conference (either oral or poster presentation). Only one bursary per laboratory will be awarded.
All bursaries are awarded on the strict condition that the recipient submits a report of ~1 page on any scientific session of the conference, which will be published in the EFI newsletter, following the conference.
For all bursary applications the following are required: completed "EFI Personal Bursary Application Form"; CV of applicant; letter of support from lab director; submitted abstract where appropriate and confirmation of selection for oral or poster presentation as soon as this is available.
These must be sent to the EFI Secretary via Ingrid Abelman at the EFI Central Office, (I.L.Abelman@lumc.nl).

Mats Bengtsson, EFI Secretary.

2017 Joint Meeting 30 May–2 June Mannheim / Heidelberg, Germany

Translational Immunogenetics

www.efi2017.org

The Scientific Program will cover the following topics:

1. Organ and stem-cell transplantation
2. Tolerance
3. Biomarkers
4. Immunology of liver transplantation
5. Humoral rejection
6. Antibody monitoring (HLA/non-HLA)
7. Epitope matching
8. Big data
9. Personalized medicine
10. Immunology of pregnancy
11. Cell therapy and tissue engineering
12. Next generation sequencing
13. Evolution, genetics and regulation of HLA
14. HLA and diseases
15. Stem cell biology
16. Preparative and therapeutic apheresis
17. Modern immunosuppression

Plenary Sessions
Organ Transplantation, Stem Cell Transplantation, Immunotherapy, Autoimmunity, Novel Technologies

Pro-Con Debates

Teaching Sessions

Meet the Expert Sessions covering "All you ever wanted to know (but were afraid to ask)"

Luncheon Sessions and Satellite Meetings allowing companies to present their most recent developments.

The DGI program with the DGI General Assembly and MTA Workshops.

Opening Ceremony and Welcome Reception Tuesday, May 30th
The Opening Ceremony with the **„Sound of Mannheim Performance by the City of Mannheim"** in the Hall of the Muses, Rosengarten, Mannheim. Immediately after the Opening Ceremony we invite you to the Welcome Reception at the EXHIBITION AREA.
Free of charge

Gala Dinner at Heidelberg Castle Thursday, June 1st

Confirmed Speakers

Andreani, Marco
Cathomen, Toni
Cereb, Nezih
Claas, Frans
Dickinson, Anne
Döhler, Bernd
Emre, Sükrü
Fleischhauer, Katharina
Gröne, Hermann-Josef
Hannifa, Muzlifah
Hansen, Hinrich
Haskins, Katie
Heinemann, Falko
Hsu, Kathy
Loupy, Alexandre
Marsh, Steven
Mauri, Claudia
Meuer, Stefan
Morath, Christian
Müller, Carlheinz
Mytilineos, Joannis
Naumova, Elissaveta
Reinke, Petra
Ruggeri, Annalisa
Schaub, Stefan
Sollid, Ludvig M.
Subklewe, Marion
Süsal, Caner
Sykes, Megan
Tönshoff, Burkhard
Turner, David
Unterrainer, Christian
Vago, Luca
Volk, Hans-Dieter

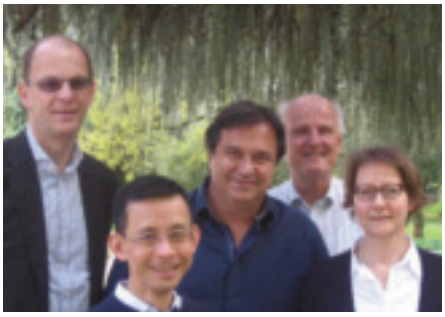
President of the Joint Meeting
Prof. Dr. med. Caner Süsal
Institute of Immunology
University of Heidelberg, INF 305
69120 Heidelberg, Germany
www.immungenetik.de

Three Best Abstract Awards

EFI Bursaries
Travel bursaries can be applied for by abstract presenters (www.efiweb.eu/bursaries.html)

Exhibition and Sponsoring
All companies are asked to register their stand until January 31, 2017 through the congress website www.efi2017.org.

The Local Organizing Committee



Michael Müller-Steinhardt, Hien Tran, Caner Süsal, Volker Daniel, Sabine Scherer

Important Deadlines

January 31 Abstract Submission
January 31 Exhibition
February 28 Early Registration

Congress Bureau

m:con
VISION INTO CONVENTIONS

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68165 Mannheim, Germany

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Standards Committee Report

The current EFI Standards v6.3 became active on October 1st 2015. According to our new extended revision cycle aiming to publish new versions with broader changes, the goal is to have next version 7.0 active in October 2017. The revised version will be published in a new format. The idea with the new version is not to rewrite the standards, just to reorganize them in a more logical way.

With the new format we have clearly separated methods from clinical applications e.g. methodological standards concerning Chimaerism Monitoring from Haematopoietic Stem Cell Transplantation. Also standards for individual methods have been separated from each other, e.g. Sanger sequencing and next generation sequencing. Current standards have been relocated according to the planned index. In addition to changes in Standards format, also new standards have been introduced. For Haematopoietic Stem Cell Transplantation, standards describing which party takes responsibility of the histocompatibility component of the transplant have been introduced. Also standards for other immunogenetics markers e.g. KIR are under development.

For the new format we have planned the following index

A General Policies
B Personnel Qualifications
- B1 Director and/or Co-Director
- B2 Technical Staff
- B3 Competency Evaluation and Continuous Education

C Quality Assurance
- C1 Management
- C2 Technical
- C3 Preanalytical

D External Proficiency Testing (EPT)
- D1 Procedure of EPT
- D2 Reporting of EPT results
- D3 Laboratory performance

E Analysis Processes
- E1 Reagents
- E2 Equipment
- E3 Computer Assisted Analysis
- E4 Methods
- E5 Clinical Applications

F Post-Analysis Processes
- F1 HLA Alleles and Antigens
- F2 Other immunogenetics markers
- F3 Records and Test Reports

Abbreviations
Definitions

Comments to the version 7.0 will be asked from the membership as soon as the draft-version is ready for comments.

We have two vacancies for membership in our committee, as our very experienced members Christien Voorter and Susan Fuggle will rotate of after full service at the Standards Committee. I would like to invite members with an interest to standards and quality assurance to apply to these positions. To apply, please complete the application form that can be found on the EFI website under "EFI Committees" (the link to the site is: http://www.efiweb.eu/efi-committees.html.The deadline for applications is March 13th 2017.

Juha Peräsaari (Helsinki, Finland)
juha.perasaari@bloodservice.fi
Chair of the EFI Standards and Quality Assurance Committee

Update from the EFI Education Committee December 2016

EFI/ASHI/APHIA Summer School

Planning for the 2017 Summer School, being hosted by EFI, is underway. The meeting will be held in Trinity College in the heart of the city of Dublin, Ireland, 24th-26th July. The concept of the Summer School is that it provides a focused, relatively intense course on all aspects of Immunogenetics and Histocompatibility, both theoretical and applied. The course is limited to a small group of participants from EFI, ASHI and APHIA to encourage discussion and it represents a great opportunity for those studying towards higher H&I specific qualifications as well as a chance to meet others working in the field from different parts of the world. Information on applying for the course will be available soon. EFI will be providing bursaries for participation in this event.

European Specialisation in H&I (ESHI) Diploma

The ESHI Diploma has now been available as a qualification for a number of years. It was set up to address a perceived need within EFI for a 'higher' qualification for senior staff working within clinically focused H&I laboratories. The qualification is provided under the auspices of the Union Europeene des Medicins Specialistes (UEMS), via the European Board for Transplant Immunology (EBTI), a body with close links to EFI. The Diploma is 'modular' in that candidates must apply for at least one of the mandatory areas (Solid Organ Transplantation or HSCT) with two other optional modules available (Disease Association and Transfusion).

The requirements for an individual to apply for the exam are detailed in the 'Portfolio' document which is available on the UEMS website (http://www.uemssurg.org/divisions/transplantation/transplant–immunology2). In short, applicants must be able to demonstrate a period of sustained training (3 years for medics and 5 years for scientists) within H&I, undertaken in an EFI accredited lab under appropriate supervision. Training is demonstrated by participation in national and international meetings and courses (such as the Summer School), publication of papers, undertaking local H&I related qualifications where they exist and visiting other host labs to learn aspects of the syllabus that the local lab may not be able to provide. Once a Portfolio logbook has been accepted as suitable by the EBTI Board the candidate will then be invited for examination.

The ESHI examination is an oral exam in which the candidate will be asked questions based on their Portfolio logbook as well as two clinical cases and a paper which they will be

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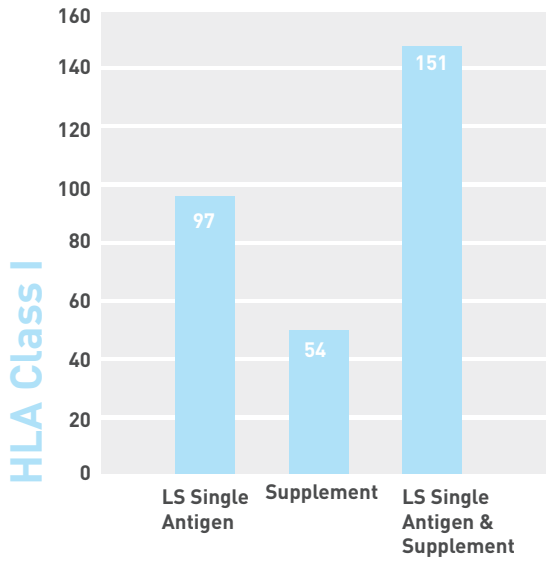

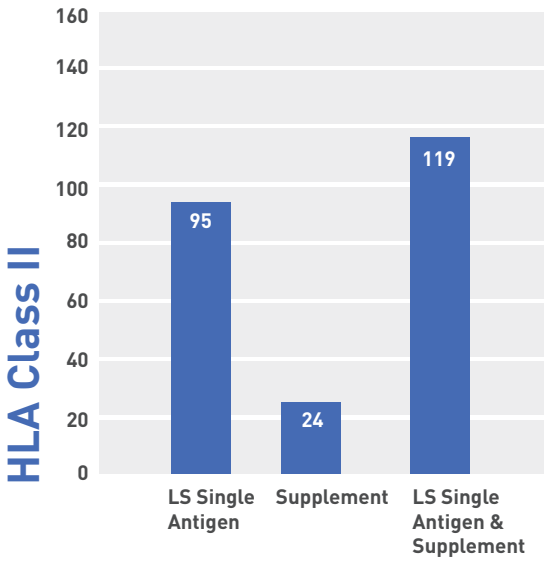

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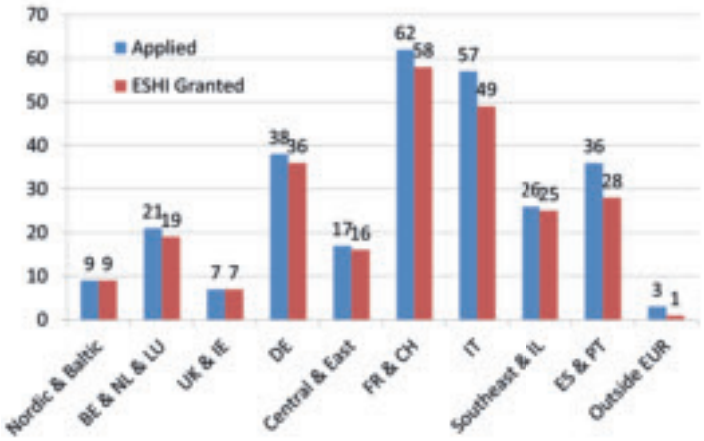
given one hour before the exam. The candidate must be able to demonstrate that they can give a clinically relevant interpretation of the clinical cases and that they can identify the important aspects of the given paper. Questions can be given on any aspect of the syllabus as detailed in the Portfolio document, although this depends on which modules of the Diploma a candidate has applied for.

The Diploma Syllabus document has been updated to reflect the fact that the only route now available for award of the ESHI Diploma is via examination, following successful completion and review of an individual's ESHI Diploma Portfolio logbook. A writable Word version of the portfolio is now also available. The next exam will be at the EFI meeting in Mannheim in May/June 2017. The application deadline is 28th February 2017. Applications for the examination should be made via the Section of Surgery/Transplantation/Transplant Immunology page of the UEMS website (http://www.uemssurg.org/divisions/transplantation/transplant-immunology2) where documents can be uploaded. Payment can now be undertaken via Paypal upon application.

The award of the Honorary ESHI Diploma to the EBTI expired on the 31st August 2015. A total number of 276 applications for the Honorary ESHI Diploma have been received since the program launched in July 2013, and the EBTI Executive Committee is still in the process of reviewing some of these applications via regular teleconference meetings. We wish again to thank those members who have applied for the ESHI Diploma but are still awaiting news of the award for their patience. So far a total of 248 ESHI Honorary Diplomas have been granted. The distribution of ESHI Honorary diploma applications received and granted within the EFI regions is displayed in Figure 1.

Figure 1: Distribution of ESHI Honorary Diploma Applications received and granted among the EFI regions.



Finally, we congratulate the following colleagues who have successfully applied for the ESHI Honorary Diploma since the last issue of the EFI Newsletter:

Name	Surname	City	Country
Maria	Apostolaki	Athens	Greece
Agnes	Basire	Marseille	France
Agnès	Batho	Caen	France
Katarzyna	Bogunia-Kubik	Wroclaw	Poland
Abdelali	Boudifa	Paris	France
Marie	Dobrovolna	Prague	Czech Republic
Elisabetta	Durante	Treviso	Italy
Norma Maria	Ferrero	Torino	Italy
Andres Avelino	Franco Maside	Tenerife	Spain
Hendrikus Stephanus Paulus	Garritsen	Brauschweig	Germany
Catherine	Giannoli	Lyon	Italy
María Francisca	González Escribano	Sevilla	Spain
Anna Maria	Gronkowska	Warsaw	Poland
Richard	Hagan	Dublin	Ireland
Melanny	Hidajat	Mechelen	Belgium
Sandra	Iannelli	Bologna	Italy
Cédric	Le Marechal	Brest	France
Jorge Mauricio	Martinez-Laso	Madrid	Spain
Donata	Mininni	Bari	Italy
Pellegrino Biagio	Minucci	Naples	Italy
Olga	Montes Ares	Las Palmas de Gran Canaria	Spain
Javier Gonzalo	Ocejo Vinals	Santander	Spain
Elvira	Poggi	Rome	Italy
Erwann	Quelvennec	Caen	France
Ricardo	Rojo-Amigo	A Coruna	Spain
Maria Rosario	Sancho	Lisbon	Portugal
Eva	Santos Nunez	London	United Kingdom
Kleopatra	Spanou	Athens	Greece
Caroline	Suberbielle	Paris	France
Ioannis	Theodorou	Paris	France
Hanjörg	Thude	Hamburg	Germany
Sabine	Wenda	Vienna	Austria
Paula (Maria Pinto)	Xavier	Porto	Portugal

Nominations for EFI Executive Committee vacancies and the electronic election process

Next year will be the second time the election process will be undertaken with Electoral Reform Services. Further information regarding this organisation can be found at www.electoralreform.co.uk

Within this newsletter, the nominations received for the position of President-Elect and three EFI Councillor positions are presented.

All active EFI members (having paid their membership fees for 2016), will receive notification by email regarding the election procedure. So please ensure that the email address EFI holds for you is up-to-date.

If you do not want to participate in the electronic election but would like to vote on paper, please notify Ingrid Abelman at the EFI Central Office and we will arrange for you to receive a postal application.

A limited number of postal applications will be sent to EFI members should there be problems with their email addresses e.g. invalid addresses.

Following are the nominations received for the vacant positions. This information will also be made available electronically during the voting process. Elections of candidates to take up post during the EFI General Assembly, 2017.

Two nominations have been received for the position of President-Elect:

Marcel G.J. Tilanus

As an EFI member since 1991, I have had many opportunities to meet many friendly and open-minded colleagues. We have always found ways to collaborate and exchange knowledge, both of which are essential for the field to progress and to ensure high quality standards. I have always aspired to promote research and diagnostics from bench to bedside, and to stimulate interdisciplinary collaboration. A clear example was the EFI annual meeting 2013, in Maastricht, which showed the importance of interaction between the various components of the H&I field. In addition, I have always been one of the driving forces in IHIWS components to introduce state of the art sequencing based typing techniques. For many years, I have been actively involved in EFI as a member of the EFI board as councillor, secretary and since 1996 as an International Councillor Histocompatibility Testing.
As EFI president, I will continue to support and stimulate collaboration and promote exchange of education and research. I will strive to inspire young people to actively participate in EFI and promote new initiatives to bring our research findings to the clinic. My professional network will facilitate the interaction between Histocompatibility and Clinical organizations worldwide.

Joannis Mytilineos

Joannis Mytilineos was born in Athens/Greece. He graduated from Heidelberg Medical School in 1986, and received his PhD and Adjunct Professor's degree in Immunology (1986-2004). After 15 years as head of the HLA Laboratory in Heidelberg he took the lead of the Department of Transplantation Immunology in Ulm where he is still employed. Dr. Mytilineos was appointed as IHWG councillor in 2004 and has been serving twice as an EFI, as well as ASHI board member. He served as EFI commissioner for 9 years and as a member of the EFI Standards committee for 6 years. Since October 2019 he is the chair of the EFI education committee where, with the support of the UEMS, he created the European Specialization in Histocompatibility and Immunogenetics (ESHI) Diploma. Finally, Dr. Mytilineos has been co-chairing two EFI conferences, 2009 in Ulm and 2016 in Kos. After 15 years of being focussed in the field of solid organ transplantation, working closely with Gerhard Opelz within the Collaborative Transplant Study (CTS), Dr. Mytilineos's clinical work in Ulm has been concentrating in the area of hematopoietic stem cell (HSC) transplantation, currently supporting more than 20 allogeneic HSC transplant programs with HLA and Donor Search services.

Six nominations have been received for the three vacancies for EFI Councillors:

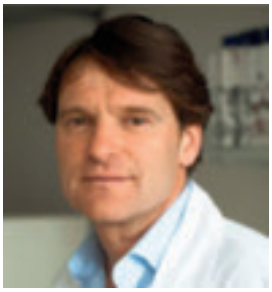
Neema Mayor

I am a Senior Postdoctoral Research Scientist at the Anthony Nolan Research Institute and have worked there since 2001. My research is focussed in two areas, firstly the development and implementation of novel methods to detect genetic polymorphism and secondly, analysing the impact of HLA and non-HLA genetic variants on the outcome of Unrelated Donor (UD) Haematopoietic Stem Cell Transplantations (HSCT) in the UK transplant population. My PhD studies demonstrated the impact of NOD2 gene polymorphisms on relapse rates and mortality for UD-HSCT recipients with an Acute Leukaemia. Recently I was responsible for the development of the Third Generation Sequencing method Single Molecule Real-Time (SMRT) DNA sequencing for clinical HLA typing and aided in the transition of the technology from a research tool to an ISO 15189 accredited technique.
I have been a member of EFI since early on in my career and have appreciated the opportunities it has offered me to develop my knowledge and interests. As a Councillor I would be keen to support EFI in the development of the next generation of H&I scientists and believe that my research background will help EFI continue to promote its educational programmes.

Thibaut Gervais

I was born in Belgium in 1963. After graduating in Clinical Chemistry in 1984, I obtained a Master in Biomedical Sciences in 1986 at the Faculty of Medicine of the UCL in Brussels. I am currently co-director of the HLA laboratory at Cliniques Saint-Luc-Brussels. I obtained the honorary ESHI diploma in 2016. After a few years in blood banking and flow cytometry, I joined the HLA lab in 1990. I have been in charge, ea, of implementing molecular techniques and, in 1992, for applying to the ASHI accreditation. We obtained it the next year, and kept it through 2006, when we moved to a full EFI accreditation. The laboratory recently relocated to an integrated molecular biology platform. This allowed us access to a great range of technologies (Real-time or NGS instruments), and facilitated getting an ISO15189 accreditation in 2011. I have been actively involved in quality assurance : EFI inspector for many years, member of the standards committee for 10 years, FACT-NETCORD inspector and former NETCORD accreditation committee member. I would like to use this experience and contribute with the executive committee to promote evolution of our accreditation system to stay in phase with evolving national requirements.

Jean Villard

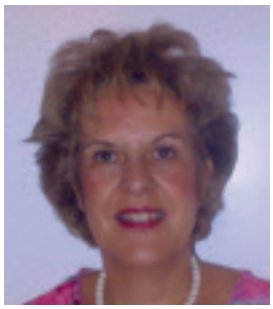


Jean Villard is professor of clinical and transplant immunology at the Geneva University Hospital, head of the transplant immunology unit and the National Reference Laboratory for Histocompatibility (UIT / LNRH). After a complete clinical training in internal medicine, he specialized in Immunology and Allergology. In addition to his activity as medical director of the HLA laboratory and his clinical activity, he is involved as PI in several research projects in the field of transplant immunology and immunogenetics. Jean Villard has also undertaken at the national level the reform of the Swiss system of allocation of renal transplants as president of the medical committee of the foundation Swisstransplant. Jean Villard co-organized and chaired the 2015 EFI conference in Geneva.

Antonio Nunez-Roldan

I obtained my MD degree at Sevilla Medical School in 1972. Between 1972 and 1975, I accomplished the Residency in Haematology. During 1975 and 1976, I was research fellow in the St. Louis Hospital in Paris, working in the laboratory of Prof. Dausset, where I was trained in histocompatibility and immunogenetics.
In 1977, I organized the first HLA laboratory in Seville, that, together with laboratories in Barcelona and Madrid were the seed for the Spanish Transplant Organization. Since then, I have been Director of the HLA reference laboratory in Seville. Between January 1982 and August 1987, I was working as Director of Immunogenetics at the Hospital for Joint Diseases, New York. In 1987, I was appointed Chairman of the Department of Immunology in the Hospital "Virgen del Rocio", and, since 2008, full Professor of Immunology at Seville Medical School. From 1998 to 2007, I was Chairman of the EFI accreditation program. From this position, together with Aad van Leeuwen, Gotfried Fisher and all other Commissioners and inspectors, we helped in promoting quality laboratory practice in every single HLA laboratory in Europe. I now want to place my experience to approach new challenges in the future of EFI.

Katerina Tarassi

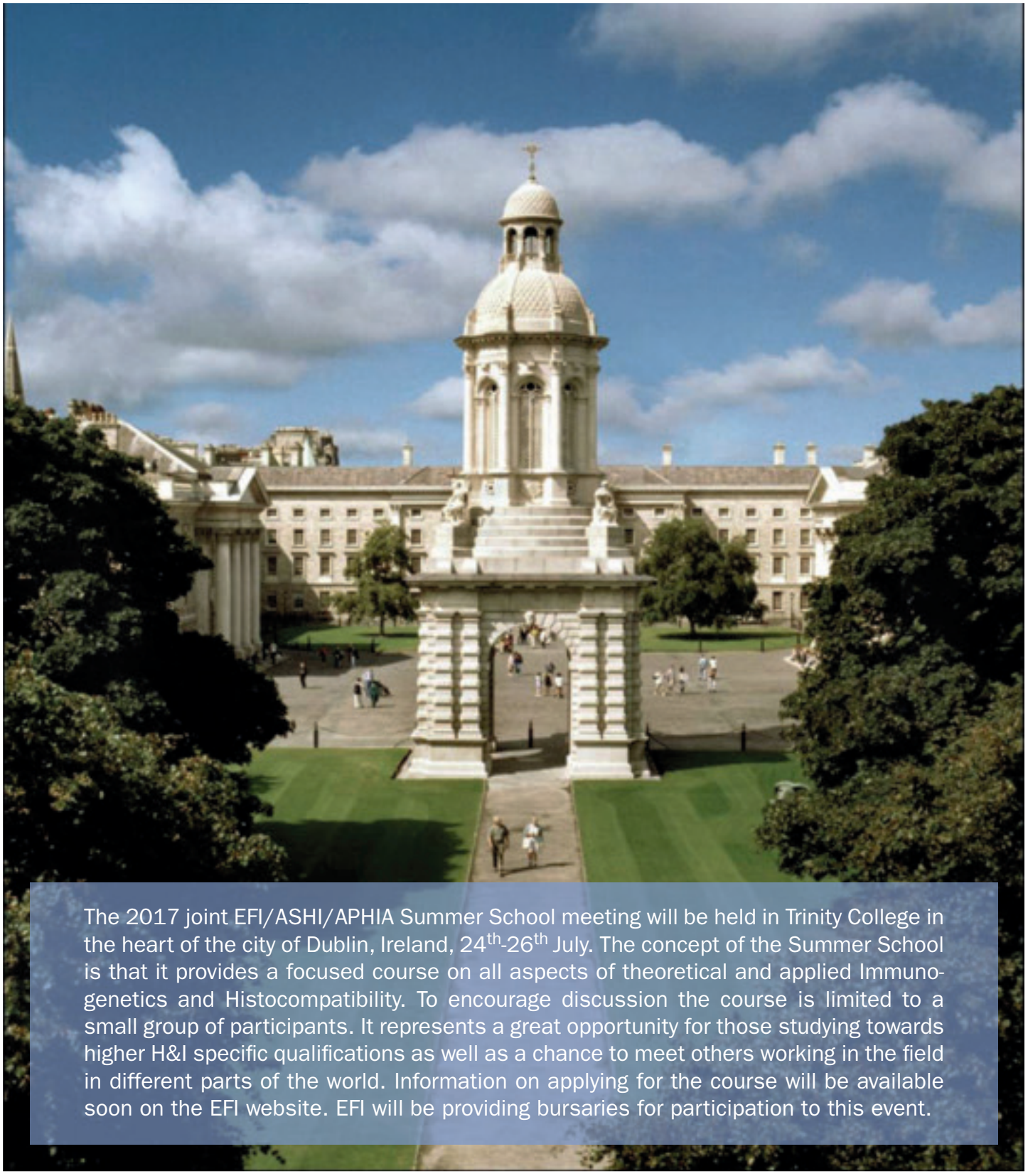


I was born and educated in Greece. After graduating from the Medical School (1984), I completed my specialization in Medical Biopathology (1990) and my PhD Thesis (1997). My interest in H&I dates back to 1990 when I started working as Registrar in Immunology-Histocompatibility Dept of "Evangelismos" Hospital in Athens. I still work in the same Dept, being Director since 2010. Additionally, I reinforced my knowledge in molecular techniques, trained in ARC Epidemiology Research Unit, Manchester-UK (1995 & 1996), in Immunology Laboratory of Hospital "Virgen de Rocio", Seville-Spain (1998) and in H&I and Disease profiling Laboratory at Stanford Medical School-USA (2015). I was also involved in research through publications, research projects and active participation in IHIWs since 1991. I was entitled to Honorary ESHI Diploma since July 2014.
I have been an EFI member since 1991 and EFI Inspector since 2009. Throughout the years, I have had the pleasure to collaborate with several colleagues, especially from Balkan countries, some of whom became true friends. So, I would be happy to serve as EFI Councillor and, obviously, I will try to do my best in order to promote collaboration between different countries and to support young scientists.

Pierre-Antoine Gaurraud

Pierre-Antoine Gourraud has been Professeur des Universités Praticien-Hospitalier of the School of Medicine of the Nantes University in France and associate professor at the Department of Neurology of the University of California at San Francisco (UCSF), USA since 2015. After an M.P.H. received from University Paris XI in 2002, he got his Ph.D. in Immunogenetic Epidemiology from Toulouse University in 2005. He relocated to USA to perform a postdoctoral research in Neuro-Immunogenetics of Multiple Sclerosis at UCSF in 2009 and joined the UCSF faculty in 2011. Prof. Gourraud has established many research collaborations all over the world: he developed bioinformatics tools for the study of immunogenetic markers with, he performed numerous genetic association studies on various diseases (rheumatoid arthritis, multiple sclerosis (incl. for HLA and KIR genes)), in various ancestral backgrounds. He developed software dedicated to statistical genetics and designed algorithms to support decision making for the treatment of haematological diseases and Multiple Sclerosis. Over 100 publications and more than 3,000 citations attest to his achievements thus far. He has received many awards: the EFI Julia Bodmer award in 2012, the Nancy Davis Race to erase MS fellowship in 2013, the FAF-YL selection 2014, the Connect-Talents prize in 2015.

Summerschool Notification 2017



The 2017 joint EFI/ASHI/APHIA Summer School meeting will be held in Trinity College in the heart of the city of Dublin, Ireland, 24th-26th July. The concept of the Summer School is that it provides a focused course on all aspects of theoretical and applied Immunogenetics and Histocompatibility. To encourage discussion the course is limited to a small group of participants. It represents a great opportunity for those studying towards higher H&I specific qualifications as well as a chance to meet others working in the field in different parts of the world. Information on applying for the course will be available soon on the EFI website. EFI will be providing bursaries for participation to this event.

EFI Education and Training Bursaries

To promote training in the field of Immunogenetics and Histocompatibility, the EFI Executive Committee allocates a fixed number of bursaries for EFI members wishing to visit another laboratory for 1 to 4 weeks to learn new techniques and to develop research collaborations. A bursary of up to € 1500 is provided to support travel and accommodation for an EFI member's visit in order to gain new skills relevant to their own job. In addition there is also a € 500 bench fee available to the host laboratory. There are now 3 deadlines per annum for receipt of applications for these bursaries; February 1st, June 1st and October 1st and applications must be submitted at least three months prior to the planned education and training visit. The procedure describing the application and review process for the Education and Training Bursaries is available on the EFI website under Bursaries, alongside the application form; "EFI Education and training bursary application procedure" and *"EFI Education and training bursary application form"*.

Report on the International Congress of The Transplantation Society, Hong Kong

First of all, I would like to thank the EFI committee for the bursary to attend the 26th International Congress of The Transplantation Society (TTS) which was held in the spectacular city of Hong Kong from 18-23rd August 2016. During the congress, the 50th TTS Anniversary was also celebrated and the participants, for the first time, had the chance to enjoy the 'Historical Mini-Theatre' where past TTS presidents' filmed interviews on the advances in transplantation (Tx) over the last 50 years were shown. The meeting program of the congress was excellent with many high quality lectures and presentations on a variety of topics including solid organ Tx, cell/composite tissue/intestine/pancreas/islet/multivisceral Tx, xeno-Tx, surgical techniques, immunosuppression, histocompatibility, basic & translational sciences, ethics and many more. The scientific program was very rich and included 22 early morning sessions, 4 plenary sessions, 30 state-of-the-art sessions, 60 oral sessions, 4 industry symposium as well as campfire and poster sessions. Many different scientists, researchers and clinicians came together from all over the world and had the opportunity to meet the experts and to exchange ideas and experiences.

Among the many notable sessions I attended, of particular interest to me was the state-of-the-art session on the importance of non- HLA antibodies in chronic rejection. Although the role of HLA antibodies both in acute and chronic rejection is well documented, the role of non-HLA antibodies is not fully understood and for this reason non-HLA Ab screening has not yet been introduced into the routine practice. The Session started with a great talk given by Professor Rudolf Oehler who presented non-HLA antigen targets in kidney transplantation (KTx). He mentioned that allo-reactive Abs against non-HLA antigens in patients before KTx are associated with a higher incidence of chronic rejection, while the reason why patients develop these Abs is still unclear. He enumerated and briefly discussed the Abs against the following non-HLA antigen targets: MICA, MICB, Angiotensin II type 1 receptor (AT1R), endothelin-1 type A receptor (ETA-R), fibronectin, collagen IV, LG3 fragment of perlecan, vimentin and ka1-tubulin. He also presented a proteomic analysis from his centre to characterize non-HLA target proteins of allo-reactive Abs in sera of patients awaiting for KTx. He found that patients, contrary to healthy volunteers, contained Abs against a variety of different proteins with most common tubulin β-chain, vimentin, lamin B1 and Rho-GDP dissociation inhibitor 2. Another interesting finding was that patients had Abs against a specific vimentin isoform that was under-expressed in their own lymphocytes (resulting in the absence of autoreactivity) in contrast with the activated cells from healthy volunteers, possibly explaining the alloreactivity that was observed between cells from healthy persons and sera from vimentin antibody positive patients.

The following fascinating speaker of the session, Prof. Duska Dragun presented in more detail Abs against G-Protein Coupled Receptors (GPCRs). Both AT1 and ETA-receptors are prototypic GPCRs involved in pathobiology of vascular and epithelial remodelling in different organ systems. Numerous recent studies implicate anti-AT1R and anti-ETA-R Abs as prognostic biomarkers of acute and chronic immunologic complications in solid organ Tx, stem cell Tx and systemic autoimmune vascular disease. Anti-AT1R Abs have

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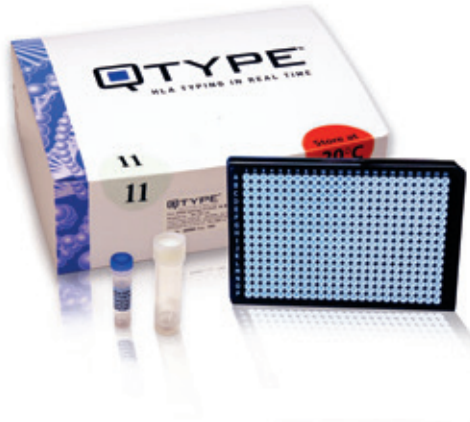

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been found in patients with antibody mediated rejection (AMR) and vascular rejection. Even though AT1R-Abs belong to complement fixing IgG subclasses, they do not act by complement activation. Instead, AT1R-Abs recognize conformational antigens contained in the second extracellular loop of the AT1R and induce intracellular signalling and transcription programs involved in rejection. AT1R and ETA-R antibodies exert their pathophysiologic effects either alone, or in synergy with HLA-DSA. Transplant candidates positive for anti-AT1R Abs are in high immunologic risk of developing HLA DSA post-Tx, especially HLA DSA class II and have the poorest survival rate. It was suggested anti- AT1R Abs screening to be performed at least once before Tx, and therapeutic intervention should be considered in positive AT1R Ab patients. Therapeutic implications in patients with pre-Tx AT1R Ab levels >10U/mL include pre-emptive PPH, induction with Thymoglobulin, immunosuppression (Tac+MPA+steroids) and AT1R-blocker (sartanes). The session closed with a comprehensive overview of the literature on the role of anti-vimentin abs after KTx, given by Prof. Caner Süsal.

Another outstanding session entitled "Epitopes-The Target of HLA Antibodies" was very informative on the theory of HLA epitopes, on approaches on epitope identification and immunogenicity as well as on the current literature of epitope matching in clinical transplantation. Three eminent experts in the epitope field, Prof. Frans Claas, Prof. Anat Tambur and Prof. Chris Wiebe, presented data that suggest that it might be beneficial to move from the HLA matching to the HLA epitope matching as it will:

a) Improve the outcome of virtual crossmatching
b) Enable prediction of acceptable HLA mismatches that will enhance kidney allocation to highly sensitized patients awaiting transplantation
c) Guide immunosuppressive therapy post-Tx moving from "empirical" to "personalized" medicine
d) Diminish the chance for de novo DSA development and thus improve graft outcome
e) Minimize the risk of allosensitization post-Tx, especially in children and young patients who will likely need re-transplantation later in their life.

The need for further and more intense collaboration of all centres across the world in the epitope field was highlighted and especially the need to collect data from various ethnic backgrounds in order to determine epitopes' immunogenicity. For this reason all the participants were invited to participate in the epitope component of the 17th International HLA and Immunogenetics Workshop, which will take place in San Francisco in 2017.

In summary, TTS2016 was for me a memorable congress not only scientifically, but also in terms of networking with other participants across the world. My participation would not have been possible without the generous EFI support, for which I express again my sincere gratitude.

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Report on the educational visit to the department of transplantation immunology at the Maastricht University Medical Center

Firstly, I would like to thank the EFI Education Committee for granting the bursary that gave me the opportunity to perform an educational visit to the Tissue Typing Laboratory in Maastricht for two weeks in October 2016.

Next generation sequencing offers an alternative approach to the classical Sanger method. In contrast with short-read sequencing technologies, long-read sequencing technologies, which were launched few years ago, promise to solve assembly problems for large and complex genomes. However, existing long-read technologies still have several limitations that complicate their use for many laboratories, as well as in large and/or complex genome analyses. In 2014, Oxford Nanopore released the MinION® device, a small and low-cost, but high capacity single-molecule nanopore sequencer, which gives the possibility of sequencing long DNA fragments.

This new technology provides several advantages: the device is small and low cost, the library construction involves a simplified method, and data acquisition and analysis occur in real time. The laboratory in Maastricht reported at the EFI conference in Kos that, with the application of single molecule sequencing, they are able to create ultra-long reads, up to 13 kilobases.

I visited the laboratory in Maastricht in order to explore the utility value of this new method for our laboratory. The more precise aim of my visit was to compare the results of the previous typings by Sanger SBT (AlleleSEQR HLA-SBT Reagents, Abbott) and another NGS platform (Roche reagents with the Roche GS Junior system) with typings on the Oxford Nanopore MinION device. My training in the lab started with a practical presentation of the whole procedure by Thuur Slangen, who was a very kind and enthusiastic supervisor during my entire visit. Later in the afternoon Prof. Marcel Tilanus gave me a comprehensive and very impressive presentation about the MinION tech-

nology. Dr. Christien Voorter helped me with the analysis of the obtained results and arranged a wide and interesting training program which allowed me to type all provided samples for loci HLA-A, B and C on MinION. Results obtained by MinION are very promising and this method will be soon implemented in the routine work of the host laboratory. Since the Maastricht team also developed full-length hemizygous Sanger sequencing which will be implemented in the 17th IHWS, I typed some of the interesting samples from Ljubljana with their reagents. In this way I have started the contribution to the IHWS component by obtaining full-length sequences of some rare alleles and one new allele encountered in our laboratory. In addition, I was also able to get acquainted with DNA extraction from buccal swab and HLA typing with Real-Time PCR.

My visit in Maastricht was very inspiring and I am looking forward to implement these new methods in our laboratory as the time and labour required are definitely much more favourable.

I would like to thank for the warm hospitality, professional and personal support that the laboratory team offered me. My deep gratitude goes especially to Professor Marcel Tilanus and Dr. Christien Voorter for hosting me and arranging my training program, their interesting and impressing discussions, strong encouragement and support.

Sendi Montanič
Blood Transfusion Centre of Slovenia
Ljubljana, Slovenia

Report on an educational visit to the Transplant Immunology Department of the Institute of Transfusion Medicine and Immunogenetics, Ulm, Germany

"I hear and I forget. I see and I remember. I do and I understand." This famous Confucius quote perfectly describes the knowledge I gained during my educational visit to the Transplant Immunology Department of the Institute of Transfusion Medicine and Immunogenetics (ITMI) in Ulm, Germany. It was a great learning and professional-development opportunity for me. I had two main objectives for applying for an EFI bursary. First, I needed to complete some modules of the ESHI Diploma syllabus related to HLA typing methodologies and other practical aspects of H&I not available in our laboratory. Second, due to the opening of the first Transplant Centre in Armenia, the Armenian Bone Marrow Donor Registry (ABMDR) expects to be more involved in related/unrelated donor-search processes for local patients in local and international donor databases.

The Department of Transplant Immunology of ITMI is one of the biggest facilities of its kind in Europe. I was very pleased and honoured to learn that the Department of Transplant Immunology had agreed to host me as a trainee for two weeks. Our German colleagues have always been willing to provide us with training and expert consultations on any professional matter. The main activities of the HLA typing laboratory of the Transplant Immunology Department are high-throughput SBT via Sanger and NGS, as well as Luminex. In addition, they perform HLA antibody screening by Luminex and CDC for crossmatching.

On the first day, we were given an introductory tour of the facility. The structure of the department completely met my training needs in terms of laboratory methods used and other activities related to HSCT. At first glance, the laboratory looked very quiet. But later, when I saw the daily workload, it became apparent that the "tranquillity" was due to a perfect system of laboratory work organization, a high level of automation, and the application of IT technologies which synchronized various laboratory software and databases, all of which made data transition from sample entry to reporting of results smooth and effective.

I started my training from the samples-accessioning unit (Tube Manager software), where all samples were sorted according to sample requisition forms and internal IDs were assigned to them. They were entered into the laboratory software, where all laboratory workers could see the tests to be performed for a particular sample and the status of each test. For patients and donors, A, B, C, DRB1, DRB3/4/5, DQB1, and DPB1 high-resolution typing was performed using mainly NGS. The Luminex platform or Sanger sequencing were used in cases which did not require typing of all alleles at high resolution or testing of all loci. Locally produced IVD kits were used for Sanger sequencing. Each DNA sample was amplified with locus and allele-group specific primers. PCR products were purified and sequenced with locus and exon-specific primers (cycle sequencing). After cycle sequencing, products were purified to remove non-inserted dNTP and ddNTPs to avoid sequencing artefacts during the run on the sequencing apparatus. For the sequencing run, DNA Analyzer 3730S by Applied Biosystems was used. I was introduced also to the primer design principles, as well as the parameters needed to be taken into account while designing new primers.

The Illumina MiSeq NGS System was used for high-throughput HLA typing. Genomic regions of interest were amplified using locus-specific primers. Oligonucleotide adapters and DNA barcode indexes were attached to sequencing templates to facilitate their binding to the solid phase in the flow cell and allow multiplexing. During library preparation, all unused components were completely removed, using magnetic beads. For library quantification, PicoGreen assay was used, which allowed automation of this stage. Once library preparation was completed (MiSeq reagent kit), the final product is pipetted into the cartridge, and, together with the flow cell, placed into the Miseq sequencing device. Following a defined run time, MiSeq returned the raw reads. Raw data were analysed using HLA NGS analysis software (Sequence Pilot-HLA SBT allele Identification Software). Upon initial data analysis, results are set as technically validated. By this status it is confirmed that the sequence was checked for errors and plausibility. The second staff member qualified for medical validation confirms the data and the sample is then locked for further changes. I had the opportunity to analyse some sequencing data and also discuss the results-reporting procedure, comments included in the reports reflecting matching status, DPB1 permissive mismatches, mismatch directionality, and other information helpful for donor selection. I was also given detailed explanations regarding all steps of the typing process and provided with relevant literature.

During my training, I also had the opportunity to observe HLA Typing and antibody screening procedures, using the Luminex platform (One Lambda). I was given explanations regarding the principles of LAB Scan Analyzer data acquisition, how cut-off values should be established, and Data analysis using HLA Fusion software. The introduction of Next Generation Sequencing technologies for clinical HLA typing have significantly increased the number of newly discovered HLA alleles. I had a chance to see a novel allele sequence submission procedure.

I spent one day at the Search Unit, where I had an opportunity to discuss donor-search strategies, selection criteria, and other related issues with experienced search coordinators. The institute has a regional bone marrow donor registry with 70,000 registered donors, and serves 25 German transplant centres. One-third of all transplant patients in Germany go through the Ulm Search Unit. The volume of incoming and outgoing requests, their processing in a timely and accurate manner, and the number of daily workups of donors were highly impressive.

I would like to express my profound gratitude to the EFI Education Committee for considering my candidacy for an EFI bursary and for sponsoring my visit to the Transplant Immunology Department in Ulm. I would like to extend my sincerest thanks and appreciation to Dr. Joannis Mytilineos for his guidance, Dr. Daniel Furst and Dr. Chrysanthi Tsamadou for their interesting discussions and support, and Christina Neuchel and the HLA Laboratory team for their assistance. I truly enjoyed my training and stay in Ulm — a wonderful city famed for having the tallest church in the world as well as its breath-taking Old Town, on the left bank of the Danube.

Armine Hyusyan
Laboratory Supervisor,
Armenian Bone Marrow
Donor Registry HLA Typing Laboratory
Yerevan, Armenia

Application of HLA Epitope-Based Matching in the Clinical Transplant Setting

Part II: Pre-Transplant Serum Analysis for Epitope-Specific Antibodies

Rene J. Duquesnoy and Marilyn Marrari
University of Pittsburgh Medical Center

Introduction

Part I addressed the interactions of HLA epitopes with monospecific antibodies. The HLA Epitope Registry (http://www.epregistry.ufpi.br) has a record of antibody-verified epitopes for each locus, but the list is still incomplete. Very recently, the website has included a downloadable PDF file "Epi-Pedia of HLA" which describes the antibody-verifications in detail and which will be updated on a regular basis. With the help of participating HLA laboratories that might have interesting serum antibody reactivity patterns, we will continue our investigations to identify new epitopes. The educational section of the www.HLAMatchmaker.net website has now a downloadable Excel document "Five Maps of HLA Epitopia" which describe the sequence locations of antibody-verified eplets and polymorphic residues as potential candidates defining additional epitopes. These maps can be used in navigating the continents of HLA Epitopia while searching for newly antibody-defined epitopes [1].

HLA Antibodies in Sera from Sensitized Patients

Allosensitized patients have HLA antibodies that can be induced by a transplant, transfused blood or during pregnancy. Most sera from sensitized patients have mixtures of antibodies and although the reactivity patterns are generally limited to a few specificities, there are additional features that can make epitope-based interpretations quite challenging. They include unexpected ("natural" antibody or unexplained) reactivities of certain alleles in SAB panels, differences between competing antibody characteristics, including Ig subtypes, and the presence of non-specific blocking factors including the prozone effect. Many sera from highly sensitized patients have antibodies reacting with high-frequency (i.e. >80%) epitopes which make detections of antibodies against lower frequency epitopes more difficult, unless these antibodies are separated through absorption-elution studies with selected alleles.

Technique-dependencies of serum reactivity may also affect the interpretation of epitope specificities, especially for highly sensitized patients who have several antibody populations in different concentrations and affinities that affect their reactivity with HLA panels. Again, absorption-elution studies with selected alleles might dissect these serum reactivity patterns so that an epitope analysis can be more readily done.

In the clinical setting, the primary purpose of the serum HLA antibody analysis of transplant candidates is to identify potential donors whose mismatched HLA antigens are acceptable. The traditional approach has been to identify serum-reactive antigens to be considered as unacceptable mismatches. Since HLA antibodies react specifically with epitopes, it is now apparent that mismatch acceptability must be determined at the epitope level. Accordingly, any antigen that carries an epitope recognized by patient's antibodies can be considered an unacceptable mismatch.

Programs for Epitope Specificity Determinations of HLA antibodies

The HLAMatchmaker website has three downloadable antibody analysis programs in Excel format: HLA-ABC, HLA-DRDQDP and MICA. The latest 02 versions focus on antibody-verified epitopes recorded so far in the HLA Epitope Registry. All of them correspond to eplets and there are two patterns. First, a specific antibody reacts with all alleles carrying a given eplet. In these cases, an eplet describes the epitope specifically recognized by antibody. Second, an epitope is defined by the combination of an eplet and another polymorphic residue configuration (eplet) uniquely shared by a group of antibody-reactive alleles. Such epitopes are referred to as eplet pairs. The antibody analysis programs also include "other" theoretical eplets which

Table 1. Examples of residue differences between alleles corresponding to antigen groups.

A*02:01	9F	43Q	95V	149A	152V	156L
A*02:02	9F	43R	95L	149A	152V	156W
A*02:03	9F	43Q	95V	149T	152E	156W
A*02:05	9Y	43R	95L	149A	152V	156W
A*02:06	9Y	43Q	95V	149A	152V	156L
A*24:02	166D	167G				
A*24:03	166E	167W				
A*30:01	70Q	76V	77D	152W		
A*30:02	70H	76E	77N	152R		
A*33:01	171H	186R				
A*33:03	171Y	186K				
A*66:01	90D	163R				
A*66:02	90A	163E				
B*07:02	69A	70Q	71A			
B*07:03	69T	70N	71T			
B*27:03	59H	77D	80T	82L	83R	
B*27:05	59Y	77D	80T	82L	83R	
B*27:08	59Y	77S	80N	82R	83G	
C*03:02	91G	95L	116S			
C*03:03	91R	95I	116Y			
C*03:04	91G	95I	116Y			
C*07:01	66N	95L	99Y	116S	156L	177E
C*07:02	66K	95L	99S	116S	156L	177E
C*07:04	66K	95F	99Y	116F	156D	177K

DRB1*01:01	67L	70Q	71R	85V	86G					
DRB1*01:02	67L	70Q	71R	85A	86V					
DRB1*01:03	67I	70D	71E	85V	86G					
DRB1*03:01	26Y	28D	47F	86V						
DRB1*03:02	26F	28E	47Y	86G						
DRB1*04:01	57D	67L	70Q	71K	74A	86G				
DRB1*04:02	57D	67I	70D	71E	74A	86V				
DRB1*04:03	57D	67L	70Q	71R	74E	86V				
DRB1*04:04	57D	67L	70Q	71R	74A	86V				
DRB1*04:05	57S	67L	70Q	71R	74A	86G				
DRB4*01:01	135S									
DRB4*01:03	135G									
DRB5*01:01	6R	30D	37D	38L	67F	70D	71R	85V	86G	135S
DRB5*02:02	6C	30G	37N	38V	67I	70Q	71A	85A	86V	135G
DQB1*0201	135D									
DQB1*0202	135G									
DQB1*0301	13A	26Y	45E	57D	167H	185T				
DQB1*0302	13G	26L	45G	57A	167R	185I				
DQB1*0303	13G	26L	45G	57D	167R	185I				
DQA1*01:01	2D	25Y	34E	41R	129Q	130S	199A			
DQA1*01:02	2D	25Y	34Q	41R	129Q	130S	199A			
DQA1*01:03	2D	25F	34Q	41K	129H	130A	199A			
DQA1*01:04	2G	25Y	34E	41R	129Q	130S	199T			

might become experimentally verified if informative antibodies are identified. The HLAMatchmaker website has a downloadable instruction manual for the epitope analysis of HLA antibodies tested in assays with single alleles.

The antibody analysis programs have two sheets on which the following data need to be entered: First, the HLA information of up to 120 alleles in the panel. Second, the MFI values with the panel; this can be done manually but the easiest way is to copy the numbers from the csv files of the Luminex software programs. Third, the four-digit allele HLA type of the patient; this provides information which eplets on the panel alleles are mismatched. Fourth, the HLA alleles of the immunizer (for instance, a previous transplant or in case of a pregnancy, the paternal allele(s) of a child) will identify the mismatched epitopes the patient has been exposed to. HLAMatchmaker shows also so-called third-party epitopes on reactive alleles. Such epitopes may reflect reactivity with antibodies induced during another sensitization event, and it is possible to rule them out from the analysis of this patient's immunizer-specific serum reactivity (e.g., determining the acceptability of a child as a potential living donor). For many sera, the laboratory has no HLA information about immunizers; in such cases all epitopes on reactive alleles are designated as third-party and all antibody reactivity should be considered as relevant. Information about the HLA sensitization history will facilitate interpretations of epitope specificities.

HLAMatchmaker has several protected sheets with formulas and calculations including a mean MFI for self-alleles that can be used as a guide for establishing a cut-off value for positive reactions. Any MFI value can be entered as a cut-off and HLAMatchmaker automatically deletes the epitopes on alleles with MFI values below the selected cut-off. For sera with wide MFI ranges, we recommend comparing different cut-off values to see how they affect the presence of epitopes on reactive alleles.

On the "Sort Ep" sheet, you can organize the remaining immunizer-specific and third-party epitopes on reactive alleles. On the right side of the sheet is shown for each allele in the panel the polymorphic residues in the amino acid residue sequence; this information might be helpful in identifying new

Table 2A. Example of a HLA Class I epitope specificity analysis

Antibody Producer		A*02:01,A*23:01	B*15:18, B*51:01	C*07:04, C*15:02
Immunizing Haplotype		A*02:01	B*40:02	C*02:02
Allele		MFI	Ep1	Ep2
B*40:02	Immunizer	9647	41T	163EW+66I
B*47:01		5358	41T	163EW+66I
B*40:01		10547	41T	163EW+66I
B*40:06		10787	41T	163EW+66I
B*13:02		8552	41T	163EW+66I
B*13:01		5221	41T	163EW+66I
B*41:01		7579	41T	
B*44:03		6717	41T	
B*44:02		6513	41T	
B*45:01		10001	41T	
B*49:01		8509	41T	
B*50:01		8242	41T	
B*07:02		11608		163EW+66I
B*27:05		7995		163EW+66I
B*27:08		9459		163EW+66I
B*48:01		5159		163EW+66I
B*73:01		8410		163EW+66I
B*81:01		7533		163EW+66I
A*66:02		7976		163EW+66N
A*66:01		84		
C*02:02	Immunizer	430		163EW+66K
C*17:01		67		163EW+66K
Self Alleles		86±39		
72 remaining alleles		168±181		
Positive Control		8285		
Negative Control		0		

epitopes. This would apply if the positive reactions of certain alleles cannot be explained with the current repertoire of epitopes.

Each HLAMatchmaker program has a "Comparisons" sheet that addresses certain situations whereby Luminex panel alleles within the same 2-digit antigen group have opposite reactivities that might be explained by residue differences. Table 1 has some examples for selected class I and class II antigens. Residue differences might reflect an epitope either as a part of mismatched eplet or as a self-configuration that serves as a critical contact site with antibody.

For instance, certain antibodies react with A*02:01, A*02:03 and A*02:06 which share 43Q on the molecular surface and 95V hidden below whereas the non-reactive A*02:02 and A*02:05 have 43R and 95L. This means that residue 43Q and/or 95V are important for the epitope recognized by these antibodies. As another example, an antibody reacts only with A*02:03 which has 149T and 152E but not with the other A*02 alleles which have 149A and 152V. The HLAMatchmaker antibody analysis programs have complete sets of residue comparisons.

Three examples of HLAMatchmaker-determined epitope specificities of serum antibodies

The first case is a post-pregnancy serum whereby a B*40:02 mismatch had induced antibodies specific for two epitopes: the 41T eplet and 163EW paired with a residue configuration in sequence position 66 (Table 2A). B*13:01, B*13:02, B*40:01, B*40:06 and B*47:01 also have both epitopes. Six alleles, B*41:01, B*44:02, B*44:03, B*45:01, B*49:01 and B*50:01, have just 41T and they can be considered informative for reactivity with this epitope. Six HLA-B alleles, B*07:02, B*27:05, B*27:08, B*48:01, B*73:01, and B*81:01, are informative for the 163EW-defined epitope. On the other hand, the 163EW-carrying C*02:02 and C*17:01 were essentially non-reactive; both alleles have residue 66K rather than 66I shared by the 163EW-carrying HLA-B alleles. This suggests that 66I, which

Table 2B. Determination of mismatch acceptability for selected non-Luminex alleles

Non-Luminex allele	Epitope 1	Epitope 2	Acceptable mismatch?
B*44:04	41T	163TS	No
B*44:05	41T	163LS	No
B*44:06	41A	163LS	Yes
B*44:07	41A	163LS	Yes
B*44:08	41A	163LS	Yes
B*49:02	41T	163LW	No
B*49:03	41A	163LW	Yes
B*49:04	41T	163LW	No
A*66:03	41A	163EW+66N	No
A*66:04	41A	163RW	Yes
A*66:05	41A	163RW	Yes
B*40:05	41T	163LW	No

is about 8 Ångstroms from 163EW, is an important component of this epitope called 163EW+66I. It should be noted that 66I is self on the HLA type of the antibody producer.

Although this serum had no HLA-A induced antibodies, the data showed that A*66:02 but not A*66:01 was reactive. These alleles have a distinct residue difference, namely 163E versus 163R. This means that A*66:02 has 163EW and A*66:01 has 163RW. The antibody-reactive A*66:02 has 66N rather than 66I present on the reactive 163EW-carrying HLA-B alleles. This suggest that 163EW+66N is serologically cross-reactive with 163EW+66I. On the other hand, the 66K substitution seen on C*02:02 and C*17:01 has a dramatic effect on the epitope recognized by the antibodies in this patient.

Consistent with the overall goal of determining mismatch acceptability for sensitized patients, we can consider for this patient that all 41T and/or 163EW+66I/N carrying alleles on the Luminex panel are unacceptable mismatches. But what is the mismatch acceptability of other alleles? HLA-Matchmaker has a special sheet "Acc Mm" that shows which alleles, including those not tested in the panel, have epitopes reacting with patient's antibodies. Any allele that lacks such epitopes can be considered as an acceptable mismatch. For instance, the panel has the reactive 41T-carrying B*44:02 and B*44:03 and non-Luminex alleles such as B*44:04 and B*44:05 can be considered as unacceptable mismatches because they also have 41T (Table 2B). On the other hand, B*44:06, B*44:07 and B*44:08 appear to be acceptable mismatches because they have 41A instead of 41T. Similarly, B*49:02 and B*49:04 have 41T but B*49:03 has 41A. On the basis of the 163EW+66I/N epitope, A*66:03 would be unacceptable but A*66:04 and A*66:05 can be considered as acceptable mismatches. All three reactive B40 alleles in the panel are unacceptable. B*40:05, which was not included in this Luminex panel, has 163LW instead of 163EW but this allele still is an unacceptable mismatch because it has 41T.

The second case deals with a reactivity pattern of a post-pregnancy serum with antibodies that reacted well with DRB alleles expressing three epitopes (Table 3). The immunizing DRB1*15:01 had induced antibodies to $142M_3$ present on the DRB1*15 and DRB1*16 alleles. The immunizing DRB5*01:01 had induced two well-reacting antibodies. One was specific for 108T which is also present on the reactive DRB5*02:02. The other antibody reacted with an epitope defined by 70D. It should be noted that this serum reacted with the 70D-carrying DRB1*01:03 but not with DRB1*01:01 (self) and DRB1*01:02 which carry 70Q. Similarly, the 70D-carrying DRB1*04:02 was reactive but the other DR4 alleles on the panel, DRB1*04:01, DRB1*04:03, DRB1*04:04 and DRB1*04:05, carry 70Q and were non-reactive. These findings illustrate how reactivity differences between DR1 and DR4 alleles (see Table 1) can be explained with distinct residues that define epitopes. All eight remaining 70D-carrying alleles were reactive. This serum had also very

Table 3. Example of a HLA-DRB epitope specificity analysis

Antibody Producer: DRB1*01:01,*03:01; DRB3*01:01,-						
Immunizing Haplotype: DRB1*15:01, DRB5*01:01						
DRB Allele		MFI	Epitope 1	Epitope 2	Epitope 3	Epitope 4
DRB1*15:01	Immunizer	8962	$142M_3$			
DRB1*15:02		9726	$142M_3$			
DRB1*15:03		10559	$142M_3$			
DRB1*16:01		12963	$142M_3$		70D	
DRB1*16:02		13492	$142M_3$		70D	
DRB5*01:01	Immunizer	13021		108T	70D	28H
DRB5*02:02		12887		108T		28H
DRB1*01:03		7608			70D	
DRB1*04:02		8257			70D	
DRB1*07:01		6110			70D	
DRB1*08:01		9254			70D	
DRB1*11:01		9710			70D	
DRB1*11:04		9923			70D	
DRB1*12:01		12545			70D	
DRB1*12:02		10308			70D	
DRB1*13:01		11480			70D	
DRB1*13:03		10080			70D	
DRB1*09:01		294				28H
DRB1*09:02		455				28H
Self alleles		9±14				
Negative Alleles (N=11)		43±52				
Positive Control		6390				

weak reactivity towards 28H as indicated by the informative DRB1*09:01 and DRB1*09:02.

These findings suggest that in this case the 70D, 108T and 142M$_3$ epitopes are the basis of determining mismatch acceptability for DRB. When applied to alleles not tested for antibody reactivity, HLAMatchmaker will show that alleles such as DRB1*08:02, DRB1*11:02, DRB1*12:03, DRB1*13:02 are unacceptable mismatches because they have 70D whereas the 70D-negative DRB1*01:06, DRB1*04:06, DRB1*11:13 and DRB1*13:09 would be acceptable. Mismatch acceptability cannot be readily done for epitopes in DRB sequence locations 90 and higher because no residue information is available for many alleles.

The third case describes the reactivity pattern of a post-pregnancy serum with DQ-reactive antibodies (Table 4). This serum had no DQA-reactive antibodies; this is not surprising because the patient typed as DQA1*01:01 and the immunizing DQ dimer had the structurally similar DQA1*01:02. The reactive DQ heterodimers shared the 77T-defined epitope with the immunizing DQB1*06:02; the MFI values were high for the DQB1*03 and DQB1*06 alleles (9822±3002) but much lower for the DQB1*04 alleles (1475±734). The highly reactive DQB alleles had nearby residues 74E and 75L whereas the low-reactive DQB alleles shared 74S and 75V. This suggests that this epitope corresponds to 77T+74E+75L and that the combination 77T+74S+75V has a low degree of serological cross-reactivity.
HLAMatchmaker has also information which DQ alleles not included in the panel have mismatched epitopes reacting with patient's antibodies. On the basis of the 77T epitope, all DQB1*02 and DQB1*05 alleles (except DQB1*02:05) would be acceptable mismatches. Almost all DQB1*03, DQB1*04 and DQB1*06 alleles have 77T and would be considered as unacceptable mismatches. The 77R-carrying DQB1*06:06 is the only exception. It should be noted that DQB1*03:06 has the 77T+74S+75V combination associated with a lower MFI value.

These three examples illustrate that an epitope specificity analysis can be helpful in the interpretation of serum reactivity and the determination of mismatch acceptability for a sensitized patient. Many publications demonstrate how complex serum reactivity patterns can be explained with epitope specificity analysis [2-8] and EpiPedia has more examples.

Conclusion

The epitope analysis of serum antibody reactivity of sensitized patients is a useful tool for the identification of potential donors with acceptable mismatches. This approach is useful not only for organ transplantation but also for platelet transfusions of allosensitized thrombocytopenic patients. Eurotransplant has incorporated HLAMatchmaker in the Acceptable Mismatch program to identify donors for highly sensitized patients [9, 10].
Epitope specificity analyses might also be useful in desensitization protocols to remove donor-specific antibodies [11]. Such protocols are not always uniformly successful but for some patients they may remove some epitope-specific antibodies thereby opening new windows of opportunity regarding the identification of selected allelic mismatches.
The final part III of this series will address the issue how epitope-based matching can be applied to control HLA allosensitization.

References

1. Duquesnoy, R., et al., *Antibody-defined epitopes on HLA-DQ alleles reacting with antibodies induced during pregnancy and the design of a DQ eplet map.* Hum Immunol, 2016. In press.
2. Lomago, J., et al., *How Did a Patient Who Types for HLA-B*4403 Develop Antibodies that React with HLA-B*4402?* Human Immunology, 2010. 71: p. 176-178.
3. Marrari, M. and R. Duquesnoy, *Why can sensitization by a HLA-DR2 mismatch lead to antibodies that react also with HLA-DR1?* Hum Immunol, 2009. 70: p. 403-409.
4. Tambur, A.R., et al., *Epitope analysis of HLA-DQ antigens: what does*

Table 4. Example of a HLA-DQB epitope specificity analysis

Patient Type	DQB1*02:01	DQB1*05:01	DQA1*01:01	DQA1*05:01
Immunizer	DQB1*06:02	DQA1*01:02		
Allele	Allele	MFI	Epitope	Nearby residues
DQB1*03:01	DQA1*05:03	8222	77T	74E+75L
DQB1*03:01	DQA1*06:01	7268	77T	74E+75L
DQB1*03:01	DQA1*05:05	6823	77T	74E+75L
DQB1*03:01	DQA1*02:01	4784	77T	74E+75L
DQB1*03:01	DQA1*03:01	4729	77T	74E+75L
DQB1*03:02	DQA1*03:02	12583	77T	74E+75L
DQB1*03:02	DQA1*02:01	8646	77T	74E+75L
DQB1*03:02	DQA1*03:01	8607	77T	74E+75L
DQB1*03:02	DQA1*01:01	7361	77T	74E+75L
DQB1*03:03	DQA1*03:02	12701	77T	74E+75L
DQB1*03:03	DQA1*02:01	12469	77T	74E+75L
DQB1*03:03	DQA1*03:01	7520	77T	74E+75L
DQB1*06:01	DQA1*01:03	12822	77T	74E+75L
DQB1*06:02	DQA1*01:01	12793	77T	74E+75L
DQB1*06:02	DQA1*01:02	10285	77T	74E+75L
DQB1*06:03	DQA1*01:03	12662	77T	74E+75L
DQB1*06:04	DQA1*01:02	13382	77T	74E+75L
DQB1*06:09	DQA1*01:02	13146	77T	74E+75L
DQB1*04:01	DQA1*03:03	2570	77T	74S+75V
DQB1*04:01	DQA1*02:01	1160	77T	74S+75V
DQB1*04:02	DQA1*02:01	1159	77T	74S+75V
DQB1*04:02	DQA1*04:01	1009	77T	74S+75V
DQB1*02:01	DQA1*04:01	27		
DQB1*02:01	DQA1*05:01	25		
DQB1*02:01	DQA1*02:01	22		
DQB1*02:01	DQA1*03:01	1		
DQB1*02:02	DQA1*02:01	28		
DQB1*05:01	DQA1*01:01	26		
DQB1*05:02	DQA1*01:02	43		

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the antibody see? Transplantation, 2014. 98(2): p. 157-66.
5. Lutz, C.T., et al., *Alloantibody to a Bw4 Epitope in a Bw4+ B*27:05 Patient.* Transplantation, 2014. xx: p. xx.
6. Resse, M., et al., *Antibody-reactive class I epitopes defined by pairs of mismatched eplets and self-eplets* Tissue Antigens, 2015. 86: p. 368-372.
7. Hahn, A., et al., *HLA-A2 reactive antibodies in a patient who types as HLA-A2: The importance of high 3 resolution typing and epitope-based antibody analysis.* Transplant Immunology, 2015. 32: p. 141-143.
8. Daniëls, L., et al., *Epitope analysis of DQB antibody reactivity in sera from a transplant candidate sensitized during pregnancy.* Transplant Immunology, 2016. In press.
9. Claas, F.H.J., et al., *Differential immunogenicity of HLA mismatches in clinical transplantation.* Transplant Immunol., 2005. 14: p. 187-191.
10. Doxiadis, I.I.N., R.J. Duquesnoy, and F.H.J. Claas, *Extending options for highly sensitized patients to receive a suitable kidney graft.* Curr. Opin. Immunol., 2005. 17: p. 536-540.
11. Duquesnoy, R.J., *HLA epitopes and tolerance induction protocols, (Letter to the Editor).* Amer J Transplant, 2014. 14: p. 2667.

Note: this manuscript has been published in the ASHI Quarterly.

New EFI Office in Leiden

At 19th September Sonja and Ingrid from the EFI Office in Leiden, the Netherlands, moved to another office space.

The EFI Office used to be located in the Bloodbank Building of the Leiden University Medical Centre. However, Sonja and Ingrid now moved to an office space in the beautiful monumental building “Poortgebouw” of the Leiden University Medical Centre.

The address of the EFI Office is:
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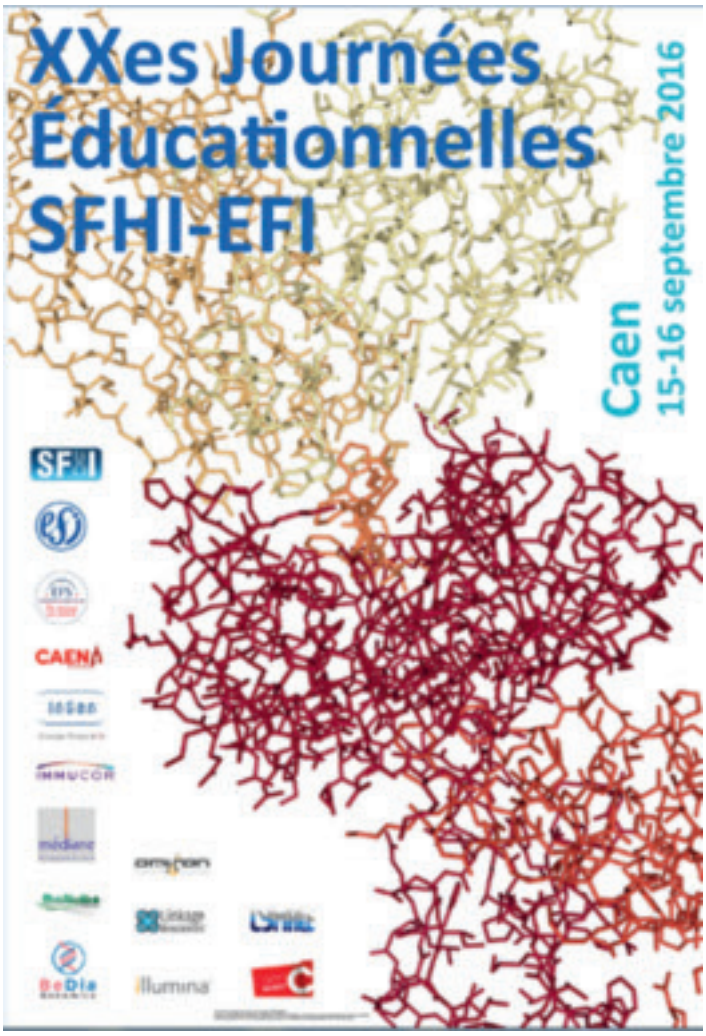
20TH FRANCOPHONE EDUCATIONAL SFHI-EFI MEETING, CAEN, FRANCE

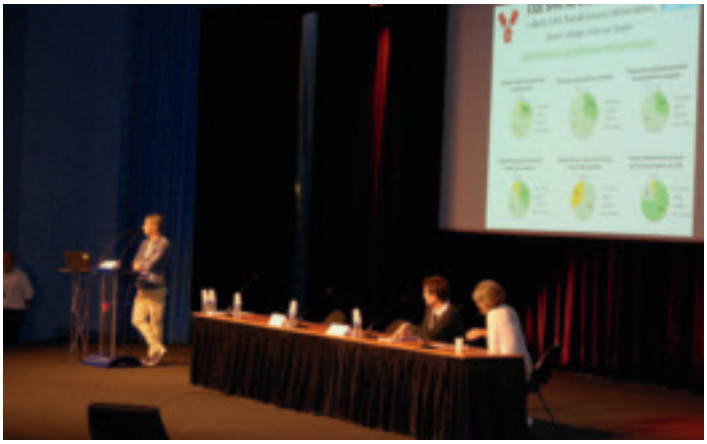
By N.Congy and V. Dubois, educational committee of the SFHI, France.



The 20th educational SFHI-EFI Meeting took place this year in Caen, under the aegis of the *Société Francophone d'Histocompatibilité et d'Immunogénétique (SFHI)*, on September, the 15th - 16th. The meeting was organized at the Congress centre of Caen, and has welcomed about 200 persons from all the main francophone HLA laboratories.

On Thursday, B. Le Mauff and M. Filloux chaired the first session dedicated to organ transplantation. During this session, the immunological basis on Immunoglobulins was recalled by J.L. Taupin and N. Congy. A presentation was then given by J. Visentin about the interest to identify functional abilities of anti-HLA antibodies, especially the ability to bind complement components. Then, the importance of anti-HLA-DQ antibody identification was detailed by O. Toutirais. The second part of the session was chaired by A. Belin and J. Villard. The presentations focused on the recommendations of the anti-HLA Antibody SFHI working group, presented by I. Jollet and A. Cesbron. Then, N. Bouvier closed this session with a clinical presentation dealing with the monitoring of pregnancy in transplanted women.

In the afternoon, two educational workshops took place: the first one was chaired by A. Boufida and A. Walencik. During this workshop, experiences of NGS-based genotyping implementation in HLA laboratories were presented and debated, with very interesting testimonies about first experiences of implementations in HLA labs (V. Elsermans, V. Moallic-Allain, B. Bardy). The second workshop was chaired by A. Kennel and O. Toutirais. During this workshop, the interest of epitope analysis of anti-HLA antibody was introduced and reviewed by G. Maggipinto, and experiences of different labs were presented (A. Parissiadis, JL. Celton, S. Ducreux). Finally, JL. Taupin presented a PHRC national project, dealing with a retrospective epitope analysis of non-immunized patients awaiting transplantation.



On Friday, a third session chaired by A. Batho and V. Elsermans was dedicated to hematopoietic stem cell transplantation, and was opened by V. Dubois, with a talk concerning mechanisms of direct and indirect presentation of HLA mismatches in HSC allografts. P.Loiseau followed with recommendations about anti-HLA antibody monitoring in HSC transplantations. Then, E. Marry (the French Registry director) focussed on the main criteria used to select HSC donors. I. Jollet and O. Reman chaired the last sessions, with P. Chevallier exposing modalities of haploidentical HSC allografts, and their main clinical indications and results. Finally, D. Bories presented the pre-emptive treatments of HSC allograft relapses, and the interest of the chimaerism study in this context. The congress was concluded by a quality assurance session, where a review of EFI standard criteria about chimaerism and NGS methods presented by V. Dubois, and A. Cesbron. Finally, F. Hau closed the two days by comparing EFI and ISO accreditation.

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