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Haiti

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Blood group genotyping

Blood Group Terminology: history and purpose

ABO and malaria



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Judith Chapman

Editorial

Welcome to the first issue of Transfusion Today in 2010. We hope that you like the new look and format of our ISBT quarterly bulletin. Please note that the former Regional Supplement has been incorporated into the main body of Transfusion Today.

The focus of this edition is Blood Groups with the contributors being members of the Working Party on Red Cell Immunogenetics and Blood Group Terminology. Developments are occurring within blood group terminology, in blood grouping practice and in our knowledge of the relationship between blood groups and diseases such as malaria. This is one of the reasons why we thought a focus on blood groups was a good topic to start our new look Transfusion Today. We thank Geoff Daniels, the Working Party chairperson for putting the section together, choosing the topics and writers and making sure all the articles were received on time.

There is an important article on developments that are currently taking place within ISBT related to our image, read more under 'Into the modern era.' You can also read more about the programme for our XXXIst International Congress in Berlin and the first of a series of four articles on congresses remembered by our historian.

If you have any comments on Transfusion Today we would like to hear from you. We would also like feedback about the subjects and articles that you would like us to cover.

Blood Group Terminology: history and purpose

‘What’s in a name? That which we call a rose, by any other name would smell as sweet.’ Of course, Juliet was correct. A name is only a label, but absolutely imperative for effective communication, and in blood transfusion effective communication is vital.

Blood group science has been dogged by terminology problems since Landsteiner’s discovery at the beginning of the twentieth century. The original blood groups were numbered I, II, III, and IV by two groups in the early twentieth century, with II and III having different meanings in the two classifications. To avoid confusion and potential lethal errors, the Health Committee of the League of Nations (a precursor of the United Nations) recommended the A, B, AB and O terminology (although use of the letter O or of zero is still contentious). And the problems continued. The Rh antigen has been called rhesus, D, or Rho, depending on the preferred genetical theory, and the original K antigen, antithetical to K, is still often called Cellano.

In 1980 the ISBT established a working party to devise and maintain a numerical terminology for blood groups, so that each blood group would have a unique designation. The Working Party on Terminology of Red Cell Surface Antigens was initiated by Dr BPL (Paddy) Moore on the recommendation of the ISBT Working Party on Automation and Data Processing. The inaugural meeting occurred in Montreal at the 16th Congress

of the ISBT and was chaired by Dr. F.H. (Hal) Allen of the New York Blood Center. Subsequent chairs have been Marion Lewis, John Moulds, and currently Geoff Daniels. The mandate was to establish a uniform nomenclature that is ‘both eye and machine readable, and in keeping with the genetic basis of blood groups’. As the ISBT terminology was not simply to be a list of numbers, but was to have a genetic framework, provided a genetic classification of blood groups in addition to a set of unique names.

Where sufficient evidence exists, every blood group antigen is assigned to a blood group system (there are currently 30 systems), each of which is a discrete genetic entity. Now that the genes are better defined than they were in the 1980s, we know that every system represents either a single gene or a cluster of two or three closely-linked homologous genes. Each system has a number (001 to 030), plus a symbol (e.g., ABO, RHAG), and each blood group antigen has a three-digit number within its system. Consequently D, for example, the first antigen of the Rh system, has the number 004001 or symbol RH1 (as redundant sinistral zeros can be removed).

Geoff Daniels
Chair, ISBT Working Party on Cell Immunogenetics and Blood Group Terminology



The completely numerical terminology is seldom used and the alphabetical-numerical terminology (e.g., RH3, KEL14, JK2) is preferred.

The Working Party recognised that many people working in blood transfusion did not wish to use the numerical terminology for every-day communication, or even in publications. This is especially pertinent to the ABO system: it would, for example, be inappropriate and dangerous to use ABO:1,-2,3 for group A. In order to reduce the number of common names used, the Working Party produced a list of approved traditional or popular names, such as D or RhD, but not rhesus or Rho, K not Kell or K1, and k not Cellano. The Working Party currently recognises 308 blood group antigens, 270 of which belong to one of the 30 blood group systems. Several other ‘new’ antigens have already been allotted provisional numbers, to be ratified at the next meeting of the Working Party in Berlin in June.

In 2004 Ellen van der Schoot, Martin Olsson, and I organised the first ISBT Workshop on Molecular Blood Group Genotyping. We have organised two more full workshops since and another is planned for this Spring. Last year the ISBT International Scientific Advisory Committee agreed that responsibility of these workshops should come under the blood group terminology working party, which was renamed the Red Cell Immunogenetics and Blood Group Terminology Working Party. The Working Party currently consists of 23 ISBT members from 12 countries representing five continents.

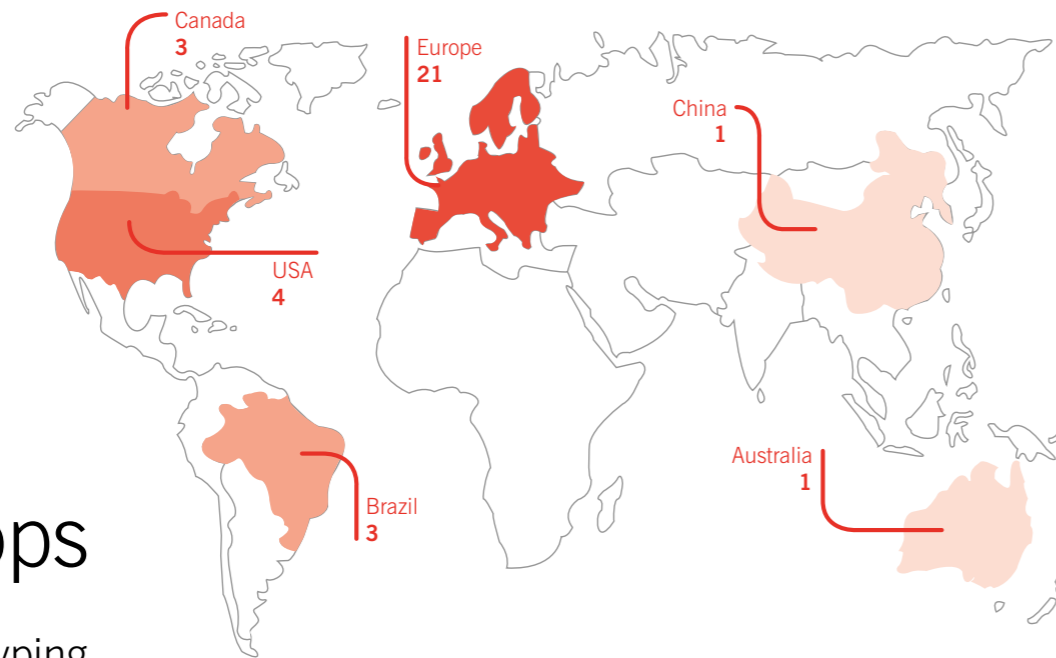
Nominations of new working party members are welcome, but one condition is that they must have an international reputation as an expert in some aspect of immunohaematology. The Working Party meets biennially, at the ISBT international congress, and any interim business is done by e-mail.

The Working Party has published two reviews in *Vox Sanguinis*, 1-3 describing the blood group terminology, plus numerous biennial reports of decisions taken at Working Party meetings, the latest being for the 2008 meeting in Macao. A list of all the antigens, their terminology, and the genetic classification can also be found on the internet at <http://ibgri.blood.co.uk> or from a link on the ISBT website.

References

1. Lewis M and members of the ISBT Working Party on Terminology for Red Cell Surface Antigens. *BLOOD GROUP TERMINOLOGY* 1990. *Vox Sang* 1990;58:152-169.
2. Daniels GL and members of the ISBT Working Party on Terminology for Red Cell Surface Antigens. *BLOOD GROUP TERMINOLOGY* 1995. *Vox Sang* 1995;69:265-279.
3. Daniels GL and members of the ISBT Working Party on Terminology for Red Cell Surface Antigens. *BLOOD GROUP TERMINOLOGY* 2004. *Vox Sang* 2004;87:304-316.
4. Daniels GL and members of the ISBT Working Party on Terminology for Red Cell Surface Antigens. *MACAO REPORT*. *Vox Sang* 2009;96:153-156.

ISBT Workshops on Blood Group Molecular Genotyping



Molecular blood group genotyping, as with any clinical diagnostic testing, must be properly regulated. One form of regulation is through external quality assurance (EQA). In fact many laboratories require participation in an EQA exercise for their national regulatory organisations. Since 2004 the ISBT has organised four workshops on molecular blood group genotyping. Three of them had feedback meetings at the ISBT international congresses in Edinburgh, Cape Town, and Macao. A smaller interim workshop took place in 2005. In addition to providing EQA, the main reasons for holding the workshop were to improve communication between laboratories performing molecular blood group genotyping, to identify the methods being used, and to ascertain the accuracy and reliability of those methods and the laboratories using them. Reports from the three full workshops were published in Vox Sanguinis 1-3.

In the most recent workshop, in 2008, six samples were distributed: four of them were DNA samples and were tested by all of the 34 laboratories that took part. The figure shows the distribution of the laboratories participating. Sample 1 had given abnormal D results in serological testing, and so was mainly for Rh testing. Samples 2 and 3 were from multi-transfused patients and participants were asked to perform all red cell blood group tests that were available to them. Sample 4 was DNA from a blood sample that was supposedly referred because of abnormal serological results on donor testing. In fact it was an artificial mixture of DNA samples designed to simulate a chimera. A wide variety of technologies were employed for testing these DNA samples, ranging from PCR with allele-specific primers, with the products visualised by gel electrophoresis, to microarray technology. It is difficult to show any simplified analysis of the results, but for samples 1 to 3 24 of 33 laboratories obtained completely correct results. As in previous workshops, the errors were a mixture of test failure, inappropriate tests being used, and misreporting accurate results. Overall, the results suggest an improvement of accuracy in 2008 over the previous two workshops. In sample 4, 95% of the DNA came from a group O, D-negative, K-negative individual, and 5% from an A, D-positive, K-positive individual. Of the 32 labs that tested this sample, 17 detected no abnormality and 15 detected abnormal reactions, 7 of which suggested that they represented a chimera or mixture. The ability to detect the minority DNA population was partly dependent on method.

The other two samples were plasma from D-negative pregnant women for fetal RhD typing: one with a D-positive and the other with a D-negative fetus. These were sent to the 16 laboratories that requested them. All laboratories used real-time quantitative PCR for typing fetal DNA, with about 90% accuracy.

The overall conclusion for both the 2006 and 2008 workshops was that with greater care and attention to detail, very high standards could be set for molecular blood group genotyping.

A number of recommendations have come out of these workshops; mostly the first workshop. Firstly that appropriate controls should include a no-template (water) control, at least as a batch control, at least one negative and one positive control, and a positive control for input DNA involving consensus PCR in the same tube, that is, as a multiplex. When multiplex PCR is not possible, genotyping PCR should be performed at least in duplicate. There were also recommendations for the actual testing. When testing for D, it is also important to test for the inactive RHD gene; when testing for C and c it is important to test for more than nucleotide 48 of RHCE, and this usually means testing for the intron 2 polymorphism; when Duffy typing it is necessary to test for the GATA mutation responsible for the erythroid silent allele; and when testing for RHD zygosity methods determining gene dosage are far more reliable than those involving detection of a hybrid Rh box. These recommendations are now generally adhered to and this has reduced the number of false results. There will be another workshop this spring, with a feedback meeting in Berlin in June.

References

- Daniels G, van der Schoot CE, Olsson ML. REPORT OF THE FIRST INTERNATIONAL WORKSHOP ON MOLECULAR BLOOD GROUP GENOTYPING. Vox Sang 2005;88:136-142.
- Daniels G, van der Schoot E, Olsson ML. REPORT OF THE SECOND INTERNATIONAL WORKSHOP ON MOLECULAR BLOOD GROUP GENOTYPING. Vox Sang 2007;93:83-88.
- Daniels G, van der Schoot CE, Gassner C, Olsson ML. REPORT OF THE THIRD INTERNATIONAL WORKSHOP ON MOLECULAR BLOOD GROUP GENOTYPING. Vox Sang 2009;96:337-343.

In Focus ISBT Working Party on Red Cell Immunogenetics and Blood Group Terminology



Marion Reid and Geoff Daniels

Members of the sub-committee of the ISBT Working Party on Red Cell Immunohaematology and Blood Group Terminology responsible for devising a terminology for blood group alleles

A new terminology for blood group alleles, for use in transfusion medicine practice

As DNA testing becomes more widely used for the prediction of blood group antigens and phenotypes, there is a clear need for a universal, consistent, and easily recognised terminology for allele names. To establish a set of recommended rules and to define names for alleles, an ad hoc group of the ISBT Working Party on Red Cell Immunogenetics and Blood Group Terminology was formed. This group is now developing an official ISBT terminology for blood group alleles for use in transfusion medicine practice. The purpose is to provide guidelines for the denotation of an allele encoding a blood group antigen and phenotype and to foster their use in transfusion medicine practice. By using the ISBT blood group system symbol and antigen number, the allele names should be familiar to ISBT members. These allele names can be used even if only one nucleotide change has been analyzed, as commonly occurs in clinical practice; it doesn't require sequencing of the whole gene. Recommendations for updates of this terminology will be similar to those for blood group antigens, which are under the auspice of this working party 1. The process will be posted on the website.

A complete list of the rules is available on the website and will be published in Vox Sanguinis, after details have been agreed by the full Working Party. Naming the alleles is still in progress. A list of recommended names for alleles of many blood group systems were completed at the end of 2009 and are posted on the website (<http://ibgrl.blood.co.uk>). We encourage you to access this site, review it critically, and send your comments and suggestions as indicated on the website to Geoff Daniels (geoff.daniels@nhsbt.nhs.uk), before June 2010. Comments will be reviewed by the Committee during the ISBT meeting in Berlin. As an example the table for the Scianna (SC) blood group system is shown below.

Reference allele SC*01 (AY049028) encodes SC1, SC3, SC5, SC6, SC7

Phenotype	Allele name	Nucleotide change	Exon	Amino acid change
SC:1 or Sc1+	SC*01			
SC:2 or Sc2+	SC*02	169G>A	3	Gly57Arg
SC:4 or Rd+	SC*04	178C>G	3	Pro60Ala
SC:-5 or STAR-	SC*-05	139G>A	3	Glu47Lys
SC:-6 or SCER-	SC*-06	242G>A	3	Arg81Gln
SC:-7 or SCAN-	SC*-07	103G>A	2	Gly35 Ser
Null phenotypes				
SC:-3 or SC:-1-2-3	SC*01N.01	307del2 or 307-309del	3	113fs
SC:-3 or SC:-1-2-3	SC*01N.02	994C>T	11	Arg332Stop

Selected basic rules for allele names are as follows:

- Nucleotide numbers begin with number 1 as A of initiation AUG.
- Amino acid numbers begin with number 1 as the initiation methionine, regardless of whether it, or a leader/signal sequence, is cleaved in the mature protein. This necessitates a change of numbers for some systems, namely, MNS, LW, and Cromer. The committee believes that consistency in numbering outweighs the initial pain caused by the changes.
- The allele name consists of the ISBT symbol followed by an asterisk, both italicized, followed by:
 - For polymorphic, high prevalence, or single low prevalence antigens, the ISBT assigned antigen number or name is used, e.g., FY*01 or FY*A
 - For an absence of a high prevalence antigen when no antithetical antigen is known, a minus sign is used, e.g., CROM*-05
 - For multiple low prevalence antigens, the phenotype name is used, e.g., GYP*GPMur
 - For a null phenotype, the background allele (if known) name is used followed by 'N' (for 'null'), a period, and a number in chronological order, e.g., JK*01N.01 for the first Jknnull allele on a JK*A (JK*01) background, JK*01N.02 for the second Jknnull allele on a JK*A background, JK*02N.01 for the first Jknnull allele on a JK*B (JK*02) background, etc. If the background allele is not known, the allele can be written as JK*N.01, etc.

Reference

- Daniels GL and members of the ISBT Working Party on Terminology for Red Cell Surface Antigens. BLOOD GROUP TERMINOLOGY 2004. Vox Sang 2004;87:304-316.

Recombinant blood group proteins



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Since red blood cells (RBCs) carry large numbers of antigens, antibody identification in RBC-based assays relies on the lack of reaction of an antibody with panel cells negative for the corresponding antigen. This indirect method of antibody identification is always challenged when a person's serum contains multiple antibodies, autoantibodies, or antibodies directed against high-prevalence antigens. The availability of recombinant blood group proteins (rBGPs) makes it possible to develop new antibody detection assays based on the use of a defined antigen for each reaction. Unlike current procedures, this 'one well, one antigen' approach directly indicates antibody specificities when the antibodies react with their antigens. This novel approach allows detection and identification of blood group antibodies in a single step without the need for time-consuming additional examinations.^{1,2} By using a panel of single blood group antigens, multiple antibodies simultaneously present in a serum could be identified as easily as a single antibody. The antibody identification process would be greatly simplified and accelerated, resulting in a faster and safer blood supply for immunised patients. Correct antigen presentation and protein availability are crucial parameters to consider when developing recombinant protein-based antibody detection systems. Both parameters are mainly determined by the expression technique used and can vary for different target protein specificities. Eukaryotic protein expression systems (e.g. in cell lines) allow for posttranslational modifications, such as glycosylation and disulphide bonding, resulting in properly folded proteins. Prokaryotic systems which use bacteria for protein expression, on the other hand, do not. Consequently, prokaryotically expressed proteins may not exhibit their native structure. However, prokaryotic organisms produce higher protein yields, making the prokaryotic expression strategy economically attractive.³

Soluble rBGPs may have wide applications in blood group serology.⁴ They can be used in soluble protein reagents or solid-phase assays such as ELISA, colour-coded microsphere and protein microarray chip-based techniques. Since haemagglutination is the standard method used for blood group serology, immediate implementation of inhibition assays using soluble rBGPs may be possible, even in routine laboratories. It was demonstrated that recombinant Lutheran, JMH, and Scianna proteins remain stable for months and can be used to neutralize the reactivity of the corresponding antibodies.^{5,7} Additionally, soluble rBGPs can be attached to various surfaces for use in other common antibody identification systems (e.g., solid phase assays). ELISA results suggest that recombinant protein-based solid phase assays have the potential to increase the sensitivity of RBC antibody detection.^{3,5} This would decrease the risk of delayed haemolytic transfusion reactions – one of the main causes of transfusion-related adverse events. We recently developed a novel recombinant protein-based antibody test using red high-density polystyrene beads coated with rBGPs and ID-Micro Typing System equipment.^{5,6} This method produced clear and stable results comparable to those obtained using conventional RBC-based gel agglutination techniques.

As the rBGP-coupled beads also work well in flow cytometry, fluorescence bead-based techniques could enter the field of antibody diagnostics in immunohaematology.

To be suitable for routine diagnostic use, any new RBC antibody detection and identification assay must detect all relevant antibodies with a sensitivity equal to or greater than that of conventional RBC-based assays. However, recombinant expression of all relevant blood group antigens remains a huge challenge and has not been efficient for some blood group proteins such as Rh. Nevertheless, rBGPs may already be of great value for identification of alloantibodies against high-prevalence RBC antigens, which is still a major challenge for immunohaematological laboratories. Since the majority of antibodies directed against high-prevalence RBC antigens are clinically insignificant, a method for selective removal of antibodies to distinct high-prevalence antigens would be of great value. It could detect and identify admixed clinically significant antibodies and provide serum suitable for cross-matching. We recently demonstrated the application of a cocktail of soluble rBGPs to facilitate the inhibition of several high-prevalence antibodies from different blood groups with a single serological reagent.⁷ Mixtures of two or more rBGPs could be customized to inhibit several clinically insignificant antibodies against high-prevalence antigens simultaneously. Such reagents would permit the development of new antibody screening strategies to improve the blood supply for patients with rare RBC antibody specificities.

References

1. Reid ME. APPLICATIONS OF DNA-BASED ASSAYS IN BLOOD GROUP ANTIGEN AND ANTIBODY IDENTIFICATION. *Transfusion* 2003;43:1748-1757.
2. Yazdanbakhsh K. APPLICATIONS OF BLOOD GROUP ANTIGEN EXPRESSION SYSTEMS FOR ANTIBODY DETECTION AND IDENTIFICATION. *Transfusion* 2007;47:85S-88S.
3. Seltam A, Grüger D, Blasczyk R. PROKARYOTIC VERSUS EUKARYOTIC RECOMBINANT LUTHERAN BLOOD GROUP PROTEIN FOR ANTIBODY IDENTIFICATION. *Transfusion*. 2007;47:1630-1636.
4. Ridgwell K, Dixey J, Scott ML. PRODUCTION OF SOLUBLE RECOMBINANT PROTEINS WITH KELL, DUFFY AND LUTHERAN BLOOD GROUP ANTIGEN ACTIVITY, AND THEIR USE IN SCREENING HUMAN SERA FOR KELL, DUFFY AND LUTHERAN ANTIBODIES. *Transfus Med* 2007;17:384-394.
5. Seltam A, Agaylan A, Grueger D, Meyer O, Blasczyk R, Salama A. RAPID DETECTION OF JMH ANTIBODIES WITH RECOMBINANT SEMA7A (CD108) PROTEIN AND THE PARTICLE GEL IMMUNOASSAY. *Transfusion* 2008;48:1151-1155.
6. Seltam A, Agaylan A, Grueger D, Meyer O, Blasczyk R, Salama A. RAPID DETECTION OF ANTI-LUB WITH RECOMBINANT LUB PROTEIN AND THE PARTICLE GEL IMMUNOASSAY. *Transfusion* 2008;48:731-734.
7. Seltam A, Grueger D, Blasczyk R, Flegel WA. EASY IDENTIFICATION OF ANTIBODIES TO HIGH-PREVALENCE SCIANNA ANTIGENS AND DETECTION OF ADMIXED ALLOANTIBODIES USING SOLUBLE RECOMBINANT SCIANNA PROTEIN. *Transfusion* 2009;49:2090-2096.

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Blood group genotyping

Blood group genotyping has become a well accepted alternative for traditionally used serological methods to type for blood group antigens present on the surface of red blood cells (RBC).



Barbera Veldhuisen, C. Ellen van der Schoot, Masja de Haas - Sanquin Research, Amsterdam and Landsteiner Laboratory, Academic Medical Centre, University of Amsterdam, The Netherlands

In many laboratories genotyping is currently used to either solve problematic serological typing or to type fetal blood group antigens in cases of alloimmunisation. Genotyping is based on detection of mutations within the DNA of genes encoding blood group antigens. Most of these mutations are single nucleotide polymorphisms (SNPs) but also deletions, duplications, and intergenic recombination occur. The International Society of Blood Transfusion (ISBT) recognises 30 blood group systems of genes have been cloned and sequenced. These genes encode nearly 300 antigens with different levels of immunogenicity.¹⁻⁴ Only some of them have been described in association with transfusion reactions or haemolytic disease of the fetus and newborn.

In general, it is thought that genotyping for red blood cell antigens will advance blood donor typing. The direct availability of RBCs typed for clinically relevant blood group antigens has immediate and future benefits for patient care. Furthermore, extended matching, beyond ABO and RhD, will reduce the incidence of red cell antibody formation, and consequently will reduce the number of (delayed) haemolytic transfusion reactions and the number of cases demanding complex serological investigations.

The advantage of genotyping over serological typing is that many antigens can be determined in just one test and that the typing is independent of recent blood transfusions or presence of autoantibodies.

In addition genotyping can be more reliable in detecting weakly expressed antigens (e.g. weak D, DEL, or Fyx). Large-scale genotyping is also very helpful in identifying rare blood groups for which limited amounts of antisera are available.

A complication of genotyping is the presence of so called 'null mutations' within blood group genes. Null mutations, for example, the GATA1 binding site mutation in the Fy allele of the FY gene or mutations in the RHDY allele of the RHD gene, prevent expression of an antigen. Unexpected presence of such mutations, or failure to detect them, can lead to an incorrect prediction of the phenotype. For donor typing these mistypings will not result in clinical problems, however for patient typing these mutations should not be missed.

Several genotyping methods are available for determining SNPs within the blood group genes at a low throughput level. These include sequence specific primer-PCR (PCR-SSP), real-time based allele-specific extension or hybridization assays, pyrosequencing and melting curve analysis.⁵ Although these assays are well suited for diagnostic purposes of patient care, they cannot be used for high-throughput genotyping of numerous donors for a large panel of blood group systems. Several systems for high-throughput genotyping are developed of which two, the Bloodchip from Progenika and the Beadchip from BioArray Solutions (Immucor), are commercially available. Both methods use

multiplex PCRs to generate products containing the SNPs of interest. For the Beadchip these products are hybridised to beads labelled with specific oligonucleotides with variable 3'-ends. After binding of the products, the oligonucleotides are extended and only in case of a match with the 3'-end a fluorescent signal will be measured determining the SNP sequence. For the Bloodchip, PCR products are fluorescently labelled and hybridised to glass slides containing probes specific for the SNPs of interest. Comparison of the signal of both alleles determines the SNP status. Bloodchip analyses 116 SNPs (73 for RHD), typing for antigens of 9 blood group systems including ABO, while Beadchip analyses 18 SNPs for 24 antigens of 11 blood group systems. Separate chips are available for RHD, RHCE and human platelet antigens. In 2009, Hema-Quebec published the genotyping of 10,555 donors using the GenomeLab SNPstream method of Beckman to facilitate the availability of matched blood for transfusion.⁶ Up to 12 SNPs per assay can be analysed. Other systems used for high-throughput blood group genotyping are the Luminex xMAP (6 blood group systems), the MALDI-TOF mass spectrometry (up to 40 SNPs) and the OpenArray of Biotrove.

It is to be expected that SNP genotyping will become part of the diagnostic work-up of patients to identify their disease susceptibility, progression of disease, treatment response or risk of adverse reactions to

certain drugs. Donor blood group genotyping will be extremely useful to obtain donor blood with rare blood phenotypes and to obtain a fully typed donor database for better matching between donor and recipient. It may well be that cost-efficient high-throughput genotyping platforms meeting the high quality standards in blood centers are the first to be implemented, making transfusion medicine the first discipline to personalise blood transfusion therapy.

References

1. Reid ME, Lomas-Francis C. THE BLOOD GROUP ANTIGENS FACTSBOOK, 2ND EDN. New York: Academic Press, 2004.
2. Daniels G. THE MOLECULAR GENETICS OF BLOOD GROUP POLYMORPHISM. Hum Genet 2009;126:729-742.
3. Reid ME. TRANSFUSION IN THE AGE OF MOLECULAR DIAGNOSTICS. Hematology: American Society of Hematology Education Program Book 2009: 171-177.
4. Daniels G, Reid ME. BLOOD GROUPS: THE PAST 50 YEARS. Transfusion 2010;50:281-289.
5. Veldhuisen B, van der Schoot C.E, de Haas M. BLOOD GROUP GENOTYPING: FROM PATIENT TO HIGH-THROUGHPUT DONOR SCREENING. Vox Sang 2009; 97:198-206.
6. Perreault J, Lavoie J, Painchaud P, et al. SET-UP AND ROUTINE USE OF A DATABASE OF 10,555 GENOTYPED BLOOD DONORS TO FACILITATE THE SCREENING OF COMPATIBLE BLOOD COMPONENTS FOR ALLOIMMUNIZED PATIENTS. Vox Sang 2009;87:61-68.



ABO and malaria

The ABO blood group system is so primordial and so without essential function as to seem 'vestigial,' and yet it is the most commanding presence in our daily transfusion practice. Despite a century of study, the basis for the observed distribution of ABO phenotypes over earthly space and human time has been largely enigmatic. Evolutionary genetics may reveal that the O allele is a mutation from the wild-type A glycosyltransferase gene, but the same science cannot readily explain the ascendancy of this recessive mutant, despite the codominant expression of A or B genes. We appreciate that while most densely present on red cells, the ABO sugars also exist as 'histocompatibility' antigens on other cellular or soluble structures. Finally, there is enough conservation in these carbohydrates across the animal kingdom that our own internal microbiome reliably evokes the reciprocal immunity of plasma antibodies directed against the 'reverse type'. Clearly there are many faces to ABO, and thus as many ways by which to imagine pivotal confrontations with forces of evolutionary pressure.

Plasmodium falciparum malaria has provoked more changes to the human genome than virtually any other pathogen, with mutations converging upon the hijacked erythrocyte. For all the ways to adapt to this most lethal kind of malaria, the least important appears to be bypassing invasion. The group O red cell, devoid of A or B, has not proven itself to be resistant to invasion. Furthermore, although *P. falciparum* bears some resemblance to the A antigen, the variable titres of anti-A in group O or B individuals cannot subdue the parasite. Infectivities are indeed similar across the ABO types.

If ABO is relevant in malaria, but not at the level of invasion, then the matter of disease severity or mortality should be more telling. Although not yet directly observed, the association between ABO and malaria mortality is supported by two important areas of observation. Firstly, ABO distributions are most different (and consistently so) according to malaria endemicity, suggesting a differential survival advantage for the preponderant O phenotype. Secondly, within endemic populations, group O individuals disproportionately represent those with uncomplicated malaria across large, albeit retrospective, clinical trials. These clues prompted the first prospective study powered to detect the impact of ABO on malaria mortality (see Cytoadherence in Paediatric Malaria [CPM] Study,* NCT 00707200 on www.clinicaltrials.gov). This two year study closed in October 2009 after enrolling over 2000 children with uncomplicated versus severe malaria, and the effect size for ABO is being analyzed now according to the outcome of death and the deadliest manifestations of the infection, including cerebral malaria. What might explain the severity-mitigating advantage of group O, or the intrinsic disadvantage of group A? Unique to *P. falciparum* is its limitless red cell infectivity, and its capacity to render the malaria-infected red blood cell (iRBC) adhesive enough to arrest in the circulation. This latter cytoadhesivity is conferred by sticky knobs (known as

'Plasmodium falciparum erythrocyte membrane protein-1' (PfEMP-1), which are docked in the red cell exterior from the parasite within. PfEMP-1 latches onto the endothelial cells of the post-capillary venules ('sequestration'), as well as onto other uninfected red blood cells and platelets ('rosetting'). In so evading flow towards the spleen, the iRBC doubly harms the host with a resistance to clearance at the price of perfusion insufficiency. The youngest or most malaria-naïve hosts suffer the highest case fatality rates, revealing just how critical this innate splenic control of parasitaemia is, prior to the development of adaptive immunity.

Most intriguingly, PfEMP-1 attaches to a number of targets and possesses a lectin-like domain which achieves the largest and tightest rosettes with group A red cells.

Clarifying the effect of ABO phenotype on malaria severity through prospective clinical studies may have direct implications for the care of millions of afflicted individuals worldwide, as the clinical advantage fortuitously coincides with the universal compatibility of group O blood. It is possible that preferential transfusion (or exchange) with group O rather than type-specific blood may improve outcomes for those patients at highest-risk for cyto-adhesive complications. To date there is no drug that works beyond poisoning the parasite itself, thus leaving the already-acquired red cell cytoadhesivity untouched. In the future perhaps competitive free A,B antigens or designer PfEMP-1 inhibitors may be administered to alternatively distract iRBC from their cellular targets of binding. An ancient disease may now explain ABO evolution, and its time-tested mutant may be coming to the rescue of victims of this scourge of malaria faster through transfusion medicine.

* The CPM Study has been supported by grants from the International Society of Blood Transfusion (ISBT) Foundation and the National Blood Foundation (NBF).

References of background interest:

- Roubinet F, Despiau S, Calafell F, et al. EVOLUTION OF THE O ALLELES OF THE HUMAN ABO BLOOD GROUP GENE. *Transfusion* 2004;44:707-15.
- Cserti CM, Dzik WH. THE ABO BLOOD GROUP SYSTEM AND PLASMODIUM FALCIPARUM MALARIA. *Blood* 2007;110:2250-8.
- Carlson J, Wahlgren M. PLASMODIUM FALCIPARUM ERYTHROCYTE ROSETTING IS MEDIATED BY PROMISCUOUS LECTIN-LIKE INTERACTIONS. *J Exp Med* 1992;176:1311-7.
- Rowe JA, Handel IG, Thera MA, et al. BLOOD GROUP O PROTECTS AGAINST SEVERE PLASMODIUM FALCIPARUM MALARIA THROUGH THE MECHANISM OF REDUCED ROSETTING. *Proc Natl Acad Sci USA* 2007;104:17471-6.
- Fry AE, Griffiths MH, Auburn S, et al. COMMON VARIATION IN THE ABO GLYCOSYLTRANSFERASE IS ASSOCIATED WITH SUSCEPTIBILITY TO SEVERE PLASMODIUM FALCIPARUM MALARIA. *Hum Mol Genet* 2008;17:567-76.



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From the President



Erhard Seifried
ISBT President

Dear colleagues,

Welcome to a new issue of Transfusion Today! I hope, you all had a very good start into 2010! As you know, ISBT celebrates its 75th anniversary this year. It is vital to attract young scientist and physicians from all over the world to join our interesting field! In this respect, the presentation of our society is a cornerstone. ISBT is currently updating its brand identity. Our ISBT CEO Judith Chapman will give you up to date information on this topic in her article in this issue and the following one.

Here, we are busy organising the XXXIst international congress of the ISBT in joint cooperation with the 43rd congress of the German society for transfusion medicine and immunohematology (DGTI). In this issue, you will find a short article dealing with the current planning for the international ISBT congress, which will take place at the international congress center (ICC) in Berlin, Germany, from June 26th to July 1st this year.

Let me highlight some of the novel topics for Berlin 2010 for you: Parallel scientific sessions will be presented in five scientific streams, which will be ongoing throughout the whole congress. I specifically want to recommend to you the educational stream called 'ISBT Academy'.

Posters will be presented in a novel way by poster parties and 12 poster prizes will be awarded to the best poster presentations. ISBT working parties have agreed not only to meet during the congress, but also offer presentations and workshops as well as scientific contributions to the programme.

As ISBT president, I highly appreciate their contributions to our society. I will come back to the important tasks of ISBT working parties later. European Community funded projects have also planned to organise meetings during the congress. Our partners from industry will offer a record number of satellite symposia and the social programme looks great. Berlin itself is worthwhile to be seen and explored as well! I am sure, that most of you have already planned to come to Berlin in summer this year:

The record number of more than 1,200 scientific abstracts submitted makes the organising committees happy with all the tasks still on our desks. My congress co-president Reinhold Eckstein and myself are really looking forward to meeting all of you in June in Berlin! For further detailed information, please refer to the article in this issue and the congress homepage: www.isbt-web.org/berlin/

The focus session of this issue of Transfusion Today concentrates on blood groups. The ISBT Working Party on Red Cell Immunogenetics and Blood Group Terminology has contributed significantly to this issue. My sincere thanks to all members, who work actively for this and other important topics in transfusion medicine! I wish you absorbing reading and hope to see you in Berlin in June! Please stay active in our scientific field for the benefit of patients, who rely on our work!

With my best wishes,
Erhard Seifried
ISBT President

Sixth Congress of the ISBT

Boston USA, 1956

My first ISBT Congress was the Sixth, held in Boston, September 3-5, 1956. It followed immediately upon a Congress of the International Society of Hematology. That relationship was frequent at the time when both organizations had significant overlap of interest. Observations on the effects of Rh and introduction of new techniques in immunology had elevated transfusion to a clinical science, in place of its earlier status as a surgical specialty. That synergy ended in later years when interests began to differ and Hematology continued to decide on the where and when.

Additionally, that 1956 ISBT Congress was held in conjunction with the Ninth Annual Meeting of the American Association of Blood Banks. The ISBT was bringing the famous of Europe for the first time to an American audience in a city with great interest in promoting what we now call Transfusion Medicine. Unlike later joint meetings with the AABB, 1972 (Washington), 1990 (Los Angeles), the ISBT was not swallowed up by rigid meeting control from AABB headquarters, then in Chicago. (Today that control is exercised by the ISBT from Amsterdam for its own Congresses).

ISBT President Isidore Ravdin, a surgeon from Philadelphia was Congress President, along with Vice President Louis Diamond of Boston. Congress Secretary was Margaret Sloan of the National Research Council in Washington. Vice President William d'A Maycock of the Lister Institute, Great Britain, represented Europe.

There were approximately 800 scientific registrants from 41 countries. Registration was fifteen dollars for members and twenty for non-members. Rooms at the headquarters Hotel Somerset were \$12 with 'sunlight and plumbing in every room'. Dormitories were available at \$3. Sessions were held in the hotel. Simultaneous translations were made into French and Spanish and the combined program and abstract book was printed in both English and Interlingua, at the time being promoted by William Dameshek, Hematology President, as the international scientific language.

At the banquet for some 600 guests, translation of the speeches was not simultaneous and therefore seemingly endless. A panoramic photograph was taken by a man on a platform under a black cloth, rotating his huge camera slowly around the room. Fortunately the photo was taken before many of the attendees drifted away during the translations of the address of the principal speaker who described the glories of 'ancient' Boston.



Congress dinner, ISBT Congress in 1956 in Boston, USA

On September 1 and 2 sessions were held jointly with the Congress of Hematology, featuring a half-day on Hemolytic Disease of the Newborn. On 3, 4 and 5 September, the program blended well into that of the AABB. Time was offered for Administrative sessions that were ordinarily not part of ISBT programs.

The size and organization of the Congress presented remarkable differences from our Congresses today. Organization was much on the personal level. There was no central office and people worked out of their own offices and homes. Mail to and from Europe went by boat. A proposed airplane charter did not fill because too many participants preferred to travel the ocean. Maycock and Sloan worked for months to offer 'travel grants' to attract potential speakers, whose names had been suggested informally. Details were endless: a grant was requested for a bank president's daughter; a complimentary room had to be found for a baroness, etc.

As a neophyte, those problems passed over my head, but as representative of the US National Institutes of Health, I was introduced into a Society inhabited by the world famous who made our practice what it is today. I was reporting on work on frozen blood, done with my mentor, Hugh Chaplin. Hugh had entered the field under the tutelage of Pat Mollison and I was privileged to make our presentation immediately after that of Mollison. My prized souvenir is the banquet photograph that measures 9 x 18 inches and shows clearly some hundreds of our scientific predecessors.

At that Congress, I met Tibi Greenwalt for the first time. He became a life-long personal friend and colleague and later gave a piece of advice that I can pass along. 'Always take the opportunity to attend an international meeting'. That has brought my wife and me to wonderful parts of the world and reaped wonderful friendships.

[Intelligent]



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1935

Into the Modern Era

When the first congress of the ISBT took place in 1935 the blood groups A,B,O,AB and M and N had been discovered, a compatibility test consisted of a simple tile test and blood was collected into glass bottles using rubber tubing. In the second decade of the 21st century, there are 308 recognised blood group antigens and genetic testing versus serological testing is a possibility. Transfusion Science has advanced.

So it is with ISBT, over the last 75 years the society has advanced and changed; congresses take place every year, 14 working parties cover most of the different aspects of transfusion medicine from the donor to the patient, the Central Office has moved from Paris to Amsterdam and the Society statutes are now under Dutch law.

The society has changed but ISBT has had the same visual identity for many years. In business it is recognised that a company should review and re-assess its 'brand' at regular intervals either because of its age, or loss of meaning, or the desire to signal a change to the outside world. With 75 years of ISBT congresses being celebrated in 2010 the Board decided it was time for ISBT to take a look at itself and its 'brand' identity. How does the society come across to its members and the wider transfusion community? It is time to signal the changes that have occurred in the society and our continued commitment to develop and grow in the future.

Tomorrow, a company based in Amsterdam was commissioned to 'Develop a new brand identity for ISBT to guide the society into the modern era'. Tomorrow was chosen because their approach to the task was comprehensive – to gain an insight into the society, to use the insights to develop the brand and finally to develop a sketchbook to outline the new brand identity. Tomorrow shared their insights and ideas with the Board at its meeting in November and there was unanimous

agreement to move forward and to adopt a new 'brand identity'. This is the first of two articles describing the story of moving into the modern era.

Insights

Tomorrow gained its insights into ISBT through asking many questions, reading the history, reading recent and less recent copies of Transfusion Today, accessing all areas of the website and reading about our congresses. Their research led to a number of words that they felt described ISBT:

- International
- Society
- Doctors and scientists
- Sharing knowledge and research
- Organizing conferences
- Senior crowd
- Aristocratic
- Not too dynamic

They recognised however that the picture that ISBT wanted to portray was of a society that is:

- More modern and dynamic
- Composed of juniors and seniors
- Transparent
- More inclusive
- Creating added value

ISBT should be the organization you must belong to and has the seminars you must visit!

ISBT wants to be known as the society that is sharing and educating knowledge about transfusion medicine through research, conferences, seminars and workshops. It wants to be seen as a modern society with an up to date identity throughout the organisation with a good mix of senior and junior members.



Pictures of the Board meeting in Nagoya

An international transparent transfusion medicine society:

- With a strong focus at regional levels.
- That everybody can join and where everybody can use our resources.
- That attracts active people and develops special rates for students and those working in transfusion medicine in developing countries.
- Offering new (online) services
- Stimulating members to aid developing countries
- Developing a special on-line forum
- Holding on-line workshops
- Developing an on-line marketplace

Once Tomorrow had a clear insight into the ISBT and were sure of how it wished to portray itself the process of defining the ISBT brand began.

The ISBT Brand

Tomorrow considered the brand values of ISBT to be:

- Dynamic
- Professional
- Educational
- Facilitating
- Knowledge
- International

With the brand essence of 'facilitating knowledge about transfusion to serve the interests of donors and patients.'

This work was the starting point for the development of the new logo and brand identity. Find out what happened next in Transfusion Today published in June.



Paul Strengers

Only a couple of months separate us from the International Congress in Berlin. One might think that all attention of ISBT is directed to that event, only. ISBT has however more tasks in its remit and one of these is to keep pace with the continuous demands and renewal of blood transfusion medicine.

In January, I participated in two important meetings where emphasis was laid on the maximal usage of blood in order to help more patients, who, for their treatment, are dependant on blood or plasma products. The Platform of Plasma Protein Users (PLUS), a collaboration of international patient's organisations who are depending on plasma derived medicinal products, organised a meeting in Dublin with the objective to prepare a statement on 'Principles to apply to the collection and manufacture of blood components and plasma products'.

The principles encompass donors and patients, sector relationships, and global utilization of donated blood and plasma. For the first time, the different views on these issues were discussed with representatives of patient organisations, donor organisations, blood transfusion organisations, manufacturers and authorities. The chain from donor to recipient was enforced and more understanding for and insight into this complicated process was reached. The other major event was the Executive Board meeting of the World Health Organisation (WHO) where the resolution of the WHO on 'Availability, safety and quality of blood products' was prepared for the next WHO General Assembly in May 2010. Again, the need for more plasma for the manufacturing of plasma products needed for patients was discussed but now in particular in order to get support from and endorsement by the Ministries of Health, of the Member States of WHO. ISBT supports this initiative strongly. ISBT was the only organisation in the field that was able to express its support.

I realised at both meetings again how important ISBT as a Non Governmental Organisation (NGO) is in the world of public health care and that ISBT should put all its efforts in the whole chain from donor to recipient. It is not easy, it is hard sometimes, but it is great challenge. There is a lot to do.

Paul Strengers

Welcome to our new members

Africa

- **MALAWI:** O. Olive

Americas

- **EL SALVADOR:** Claudia Villatoro de Sorto, Claudia Hidalgo Ceron
- **MEXICO:** José Luis Alcaraz Lopez, Amalia Bravo Lindoro, Elizabeth Guzman Vazquez, Ana D'Artote,
- **BOLIVIA:** Wendy Cabrera Aguilar, Gloria Rodriguez Suarez
- **NICARAGUA:** Yorlene Del Socorro Cano
- **BRAZIL:** Antonio Fabron Junior,
- **CANADA:** Marc Germain, Kellar Klein
- **CHILE:** Claudia Herrera,
- **UNITED STATES OF AMERICA:** Jed Gorlin, Winston Ho, Monica La Sarre, Shannon Long, Elizabeth Read, Frank Strobl, Mayank Trivedi, Michelle Yacob, Karina Yazdanbakhsh

Eastern Mediterranean

- **IRAN** Nabiollah Izadi, Afshin Mohammadi, Paridar Mostafa, Amir Olyiaie Rezaie, Zohreh Sharifi, Maryam Kheirandish, Mosatafa Jamali, Seyed

Hassan Bozorgi, Hassan Abolghasemi, Mostafa Aghahosseini, Habib Habibzadeh, Ali Asghar Haghparast,

- **SAUDI ARABIA:** Farjah Algahtani, Mohamed Al-Qahatani, Ahmed Alsuhibany,
- **EGYPT:** Heidi Goubran
- **QATAR:** Sadika Ismail Mahmoudi

Europe

- **GERMANY:** Norbert Ahrens, Peter Horn
- **FINLAND :** Inna Sareneva, Katri Haimila, Akif Ali
- **UNITED KINGDOM:** Shubha Allard, Nicola Anderson, Sue Barnes,
- **DENMARK:** Janna Borgstrup, Keld Mikkelsen Homburg
- **SWITZERLAND:** Geraldine Lorimier, Gerold Zerlauth,
- **RUSSIA:** Alexander Lozhkin, Alexander Onufrievich, Aligeydar Ragimov, Alexander Chechetkin, Olga Crishina, Tatiana Fedorova, Elena Ogorodnikova, Michail Lazarenko, Olga Maiorova, Evgeny Maltsev, Oleg Vozilkin,
- **NETHERLANDS:** Ed Slot

South East Asia

- **INDIA:** Debasish Gupta, Chandrashekhar Muthuswamy, Hitish Narang, Sanjeev Sawhney, Kuldeep Singh
- **INDONESIA:** Titien Budhiaty, Ratna Rosita Hendarji, Uke Muktimanah, Yanni Nuraini,
- **SRI LANKA** R. Sivashankar, Asha de Alwis
- **THAILAND** Napatsiri Somjai

Western Pacific

- **CHINA:** Chuanxi Wang, Ying Chen, Shi-jie Mu, Yongmei Lin, Yongshui Fu, Xin Ye, Jian Zhang, Shuming Zhao, Laurence Gauthier, Xing-Bin Hu
- **AUSTRALIA:** Rebecca Cortiula, Andrew Mead
- **MALAYSIA:** Indra Jeyajothi Ratnam
- **REPUBLIC OF KOREA:** Eun-Suk Kang
- **JAPAN:** Akiko Katai, Kaoru Yoshinari
- **SINGAPORE:** Hwee Huang Tan
- **TAIWAN:** Kuang-Chao Tsai

Elections to the ISBT Board of Directors 2010

The ISBT encourages you all to use your vote. For more information please visit the website: www.isbt-web.org/members_only.

In Memoriam

Dr Harold Merymann

ISBT is sad to learn of the death of Dr Harold Merymann. Dr. Merymann was an ISBT member from 1991 – 2005. His specialty was cryobiology. In 1971 he successfully devised a method of freezing concentrated red blood cells for up to 10 years and then thawing them for patients' use. His "Merymann method," as it was called, was considered advantageous for patients with rare blood types, which were often in short supply.



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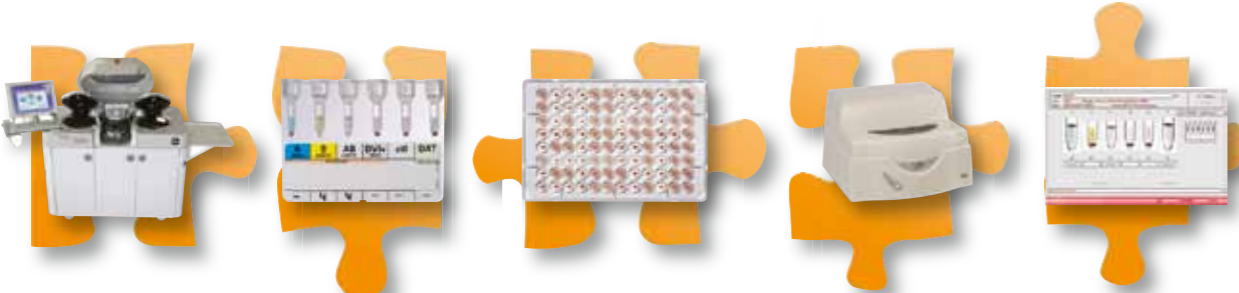
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Haiti earthquake 2010

The role of the international community in ensuring a safe and available blood supply in the midst of catastrophe.

ON JANUARY 12, at seven minutes to three in the afternoon, a chain of devastating earthquakes ambushed the poorest country in the Western hemisphere. In that culminating moment the lives of thousands of Haitians were shattered as their cities and homes came crashing to the ground before their eyes. Trapped under the wreckage of crumbling buildings, people were pulled from the rubble, exhausted and dehydrated, many with crushed limbs that could not be saved. Rescued from underneath a collapsed six story apartment building after being buried alive for seven days, Kiki Joachin was one of the lucky ones. He smiled at his rescuers as they carefully extracted him and his sister, later recalling, 'I smiled because I was free. I smiled because I was alive.' He is only seven years old. As many as 800,000 survivors like Kiki are in urgent need of basic amenities and medical care. They have no safe homes, so they sleep exposed in the streets. There is no effective means of communication, so many survivors and those with relatives in Haiti can only pray that their families are still alive. This tragedy stripped the country of its infrastructure and the people of their hope, as 194,000 injured are suffering from physical and psychological pain. Kiki, like the countless others wounded by the tons of falling cement and debris, depend on the medical care and support provided by relief organizations on the ground. The Pan American Health Organization (PAHO) reports that over 50 government and non-governmental organizations (NGO) are pouring support and supplies into Haiti, hampered somewhat by the initial closure of the Port-au-Prince seaport and the logistics of road transport from the Dominican Republic.

As medical relief arrived, it was clear that the hospital infrastructure had been hard hit, necessitating the use of field hospitals and the USNS Comfort, a floating hospital capable of treating ~1000 hospitalized patients. Doctors without Borders/ Médecins Sans Frontières (MSF), an international organization providing emergency aid to those who have been affected, reports that 400 patients had undergone surgery in the first week after the disaster, many of them for amputations, some performed outdoors. Many of the victims sustained crush injuries, lacerations, broken bones and other forms of trauma, necessitating access to clean blood for transfusions.

PAHO's Dr. Jose' Cruz, MD and Jon Kim Andrus, MD said in a press briefing that Haiti's National Blood Centre building was damaged in the earthquake, and that some of its equipment may need to be replaced. Health officials on the mainland are managing the blood supply carefully, because they have few working refrigerators. In addition, electricity is intermittent, and while generators are available, health officials are afraid of running out of fuel for them and losing power, which would render the blood unusable. Blood has begun to be supplied from foreign countries. A medical storage warehouse run by PAHO received 200 units of blood and 600 units of plasma from Bolivia's Ministry of Health, as well as 100 units from the Dominican Republic. The US Navy's ship USNS Comfort arrived in Haiti on Wednesday, Jan 20. It has 1,000 beds and four operating rooms, and it was carrying units of frozen red blood cells to be used onboard for surgeries and supportive care. Donations of blood and blood

products from the US Navy are being coordinated by the Armed Services Blood Program (ASBP) which continues to supply blood to the Navy's ships, including the Comfort, and to send blood to the military hospital in Guantanamo, where some victims of the earthquake have been sent for treatment.

Response by United States Blood Centers

Within hours of the earthquake, the American Red Cross Blood Services was alerted through the International Federation of Red Cross and Red Crescent Societies (IFRC) of the need to mobilize for a massive international relief program. Some of the first requests were for blood products as injured patients with massive crush injuries, many requiring amputation, were evacuated from the area. The American Red Cross Blood Services delivered 20 O+, 10 O- and 3 platelets products to the Naval Hospital in Guantanamo Bay, Cuba plus 100 RBC units (50 O+ and 50 O-) to the UN Mission in Haiti rapidly through standing contracts, with a further 5 platelets sent to Guantanamo Bay two days later.

By Jan 19th, the PAHO made contact with the Haitian Ministry of Health and created a formal pathway to supply blood to Port-au-Prince hospitals and field units. In response, the American Red Cross Blood Services shipped 249 Group O RBC products to PAHO who delivered these to Dr Mahli CHO, Blood Transfusion Safety Advisor at the PAHO Office in Port-au-Prince via a commercial carrier, Quick International Couriers, who donated their services for free. PAHO identified a continued need for blood and this was quickly conveyed by the American Red Cross Blood Services contact, Mr. Bill FitzGerald

to the AABB International Taskforce on Domestic Disasters and Acts of Terrorism ('the AABB Taskforce'). Universally, taskforce members representing the Americas Blood Centers, Blood Centers of the Americas and the American Red Cross Blood Services vied to contribute to this need. On January 28th a further 350 units group O RBC units were delivered with the promise of weekly similar shipments through the AABB taskforce while the need endures.

A number of independent blood centers have initiated programs to assist the victims of the earthquakes in other ways. For example, Community Blood Services (CBS) in New Jersey is collecting medical supplies which it will donate to Project Medishare for Haiti, Inc., a non-profit organization founded in 1994 who will then forward them to Haiti. Southeastern Community Blood Center (SCBC) in Florida is making monetary donations linked to each blood donation received, to Doctors without Borders/ Médecins Sans Frontières (MSF), who are focusing on providing medical services on the ground. Florida's Blood Centers is also donating similar funds to the Red Cross Haiti relief Fund, as well as bottled water and other supplies (as reported in ABC Newsletter Jan 22, 2010).

Blood Banking in Haiti:

Haiti, the poorest country in the Western hemisphere has a fragile history in blood banking. In 1993, 6.2% of the population was HIV infected, although this was reduced to 3.1% in 2003 through a concerted effort of government and non-government organizations (NGO).

Richard J. Benjamin
Emma B. Benjamin





Blood transfusion was noted to be a major means to HIV transmission early in the epidemic, leading to the closure of for-profit blood banks in 1985 and the designation of the Haitian Red Cross as the sole institution responsible for blood safety. NGO's such as GHESKIO (www.gheskio.com) have played an important role in training laboratory and quality control training for the Red Cross, which remains poorly funded and in need of resources supplies and expertise.

A major issue in Haiti has been the safety and security of personnel and donors, and the difficulty of collecting blood in this environment. More recently the U.S. Presidents Emergency Plan for AIDS Relief (PEPFAR) program has assisted the Haitian Red Cross in planning and executing safe mobile blood drives in the secure parts of the city in order to reduce its reliance on paid or family replacement donors. Despite these obstacles, the improved safety of the blood supply is viewed as an important contribution to the declining HIV rates in the general Haitian population. The earthquake in Haiti has highlighted the need for continued efforts to rebuild and strengthen the blood supply after the immediate requirements of this current disaster are met.

The Haiti Red Cross, as the designated agency responsible for blood safety will need the international community to step up to the plate to ensure better training, infrastructure, supplies and equipment, as well as assistance in moving away from a replacement and family donor – based blood supply. This is an opportunity for ISBT members from around the world to contribute through coordinated programs, best orchestrated through existing institutions such as PAHO, WHO and the PEPFAR programs, as well as the Global Advisory Panel (GAP) of the International Federation of Red Cross and Red Crescent Societies (IFRC), an international group of Red Cross Societies dedicated to assisting sister organizations in improving the governance and structure of their blood programs and promoting the use of voluntary non-remunerated donors.

ISBT has few members from the Caribbean basin. The onus is on us to actively recruit members or exempt members to represent the ideals of the organization in promoting a safe and available blood supply in the Region.

Blood Collection Campaigns in Afghanistan during Ashura (Holy Month of Muharram)

Muharram is a very important religious event in the Islamic calendar. SHIA Muslims in particular attach great significance to this time and recognize it in a very special way. 10th of Muharram in Afghanistan was celebrated as an event of great significance, and for the further reinforcement of the work of the Afghanistan National Blood Safety and Transfusion Service [ANBSTS] and towards the WHO worldwide goal of achieving 100% voluntary non-remunerated donation of safe blood for all.

SHIA scholars and leaders were again invited by the Blood banking Services in Afghanistan (ANBSTS) to assist in the voluntary contribution of blood by their members as part of their religious and social obligations. Last year during the same day (10th of Muharram), the SHIA community in Afghanistan donated nearly 500 units of blood all over the country.



This year ANBSTS again approached SHIA leaders and requested them to donate their blood. A meeting was held between HE Vice President, HE Deputy Minister Health, Director ANBSTS and senior SHIA religious elders. It was agreed between all that the campaign would be officially inaugurated by the Vice President in Imam Hussain Regional Blood Bank and extended to blood donation campaigns at all Mosques (Takya Kana).

The opening ceremony and public seminar on Voluntary Blood Donation was opened by Dr. Masoud. National Director ANBSTS who

welcomed participants and described the value of giving of blood especially during the month of Muharram.

Dr. Kakar, Deputy Minister of Health also spoke and reinforced the benefits of donating blood during this Holy month. He also specifically focused on and mentioned that citizens should never pay money for obtaining blood and that the giving of blood was an honourable and civil duty of all citizens. HE Vice President of Afghanistan Ustad Khalili, a SHIA leader himself, then spoke and requested all peoples of Afghanistan to donate their blood to the ANBSTS branches instead of flagellating themselves during this month of Muharram. HE then symbolically donated his blood conveying his message to all and asking them to keep up this habit and donate their blood to patients who really need blood.

His brother Mr. Nabi Khalili, a leading businessman in Afghanistan, also donated blood and then spontaneously announced that he would donate 100,000 USD towards the opening of a blood bank branch in Shahrak Nabee, a deprived district in Kabul. This gesture was highly appreciated by MoPH Senior personnel present.

This event received wide publicity across the country though all forms of media including all local television networks. A major mobile blood donation drive was also held on this day in throughout Kabul city and over 50 units of blood were donated.

All ANBSTS blood banks in related provinces reported that a total of 600 units of blood were also collected on this day. Overall more than 2000 units of blood have been collected all over the country during Moharam 7 days.

The Director of ANBSTS requested SHIA leaders to keep up this habit and hold regular campaigns in order to assist and develop the ANBSTS/WHO global goal of 100 % Voluntary Blood Donation for the needs of the people in Afghanistan. This community activity is a significant achievement in the progression towards 100% voluntary blood availability for the blood bank services in Afghanistan.

The blood donation campaign continues and has been recorded as another superb achievement of the recently formed ANBSTS.

ISBT- ATMC7

Report and annexes

After ATMC2 in Tunisia, the 2009 course returned once more to the shores of the Mediterranean. ATMC7 was held in Algeria between the 6th and the 9th of December at the beautiful historic spot of Sidi Fredj 20 km. from the capital Algiers. This was the bay where the first French landing took place in 1830 to colonise Algeria for 132 years. The battles for the Algeria's independence and the achievement of independence in 1962 reminded the participants of the struggle that we are currently going through to establish the autonomy of our services and achieve safe and adequate blood supplies for our communities in North Africa and the Middle East.

The theme this year was 'Governance, Regulation and Haemovigilance' it was a revisit of the 1st theme in the cycle of courses that started on the Red Sea at Ain El Sokhna in Egypt in 2005 (see the newly updated web site at: www.atmc-online.org). The two main lectures of the first day covered the elements of governance, regulation, and the legislative framework with emphasis on the role of professionals and the concept of self-regulation. A number of activity reports were presented before the extended workshop where a set of recommendations were drafted representing the views of the participants regarding the need for changes and review of the elements of good governance and self-regulation in national blood transfusion services.

The second day was dedicated to haemovigilance. Speakers from France described in detail the organisation of the French haemovigilance system. The system used in the UK with both its mandatory and voluntary components was analysed and compared with the French approach. An expose of the ATMC voluntary and confidential pan Arab Haemovigilance Network (AHN), and the recently developed software for regional reporting and analysis of hazards of transfusion followed this. The software was presented during the workshop that followed. A set of recommendations were drafted to promote region wide awareness and the culture of voluntary reporting of the side effects of transfusion to encourage the creation of national surveillance

systems for the complications of transfusion. The three topics that were covered during the third day were viral inactivation of blood products, new developments in hepatitis B, and the practical approaches to the concept of validation in transfusion practice. Several important issues were debated in the workshop that followed including the new systems for viral inactivation, the selection of reagents and the methods for screening of blood for hepatitis B and the foundations for an effective system for validation and quality control.

The two standing regional working groups on Donors and quality took place on the pre-course day. A set of recommendations were prepared and will be followed up and monitored on regular basis during the coming courses. The rest of the recommendations prepared during these workshops will be communicated to the Ministers of Health of the league of Arab Nations via the Arab Society of Transfusion Medicine. 96 participants attended the course from Algeria and a smaller number from Tunisia, Qatar, Kuwait, Libya, Sudan, and the kingdom of Saudi Arabia.

Several factors conspired to reduce the number of country participation, but this has been compensated for by the degree of enthusiasm and interactive participation over the three and a half days. The provision of simultaneous translation during all the lectures and the workshops facilitated language communication. The poster session was unfortunately affected by the reduced participation, however the two posters presented were of very high quality. The effort, organisation, and financial support of the Algerian Blood Agency contributed considerably to the success of the course as it clearly expressed in the evaluation report.

The course ended with a number of interventions given by the WHO Blood Safety Adviser; Dr JB Tapko, The General Director of the Algerian Blood Agency; Professor K Kezzal and the ISBT-ATMC coordinator; Professor Boukef who invited all those present to ATMC8 in Yemen in 2010.



ATMC 7, Algiers 6-9 December 2009 Recommendations

A - Policy, regulation and governance

A system must be put in place to regulate blood transfusion services in our countries according to national and/or international standards. Where it does not exist, a centralized national regulatory authority must be established. Blood transfusion services must be autonomous. System for good governance must be facilitated where it does not exist.

B - Blood donation

1. Increase awareness about the importance of the voluntary repeat blood donation
2. A national strategy must be developed to increase the number of voluntary non remunerated blood donors by encouraging the creation of special programs for recruitment and retention of blood donors
3. Where they exist, paid donation systems must be phased out
4. Family donation still exists in the majority of our countries. A national communication strategy must be elaborated to retain the family donors and convert them into regular community-oriented donors
5. Blood transfusion services must establish strong communication links with community groups and NGOs (blood donors association student association etc..)
6. Blood transfusion services should insure adequate blood supply for the country
7. Specific action must be developed toward young people to sensitize and mobilize them to become regular committed blood donors
8. It is essential to appoint donor recruiters in transfusion services and to support their training

C - Quality

1. Increase awareness of the importance to introduce a quality management system in our blood transfusion services
2. Encourage the establishment of a comprehensive documentation system covering all the blood transfusion chain, to ensure traceability
3. Reinforce regular training in the field of quality for all the blood transfusion staff
4. Implementation a quality management system which covers the entire spectrum of the blood transfusion process must be the main objective of blood transfusion services in the Arab countries
5. Norms and standards for blood services must be established for the blood components supported with regular quality control and monitoring and systems
6. Consumables and reagents must be purchased based on specifications that are regularly controlled and validated

D - Haemovigilance

1. Increase awareness through;
 - a) Introducing the Arab Haemovigilance Network
 - b) Encouraging training and education in haemovigilance to all hospital staff in the transfusion chain
2. Encourage hospitals to report to local, national haemovigilance system and to the Arab Haemovigilance network
3. Set an action plan to facilitate the establishment of haemovigilance and reporting systems in transfusion facilities in all Arab countries

Western Pacific Activities

We bring some reports of activities held in the Region in November and December last year. Activities such as these have been very important in the move to strengthen transfusion medicine and blood safety in our Region.

The 4th National Transfusion Medicine Conference
Kuala Lumpur, Malaysia 20-22 November 2009
Yasmin Ayob, Malaysia

Since 2001 the Malaysian Blood Transfusion Society together with the National Blood Centre has been organizing The National Transfusion medicine Conference every two years. This is an event that enables all those involved in this specialty to meet and share experiences on various topics of interest, from donor management to clinical transfusion as well as cell therapy and organ transplantation.

As usual, both local and international speakers were invited to bring in the latest news, views and facts.

This year, the line-up of international speakers included Harvey Kline, John Hess, John Barbara, Patrick Coghlan, Joyce Pool, Diana Teo and Imelda Bramilow. There was a total of 375 participants including colleagues from Singapore, Brunei, Indonesia, Thailand and the Middle East. The poster competition which is also a constant feature has shown improvement in quality, substance as well as originality. It is without doubt that this regular event has spurred interest in Transfusion Medicine in Malaysia.



Annual Youth Donor Training Camp
- Singapore 11-14 December 2009
Shirley Ng, Singapore

A total of 80 youth donor club members, including 23 from Vietnam, Thailand, Myanmar and Hong Kong, participated in the annual youth donor training camp held in Singapore. This platform provided the youth donors the opportunity to learn and share experiences on voluntary blood donation and to showcase the different initiatives taken in their countries. The highlight of the camp was a youth forum where the topic of 'why blood donation should be voluntary and non-remunerated' was hotly debated.



7th Regional Workshop on Voluntary Blood Donor Recruitment - Jakarta, Indonesia 1-4 December 2009
Cecilia Tan, Singapore

A total of 12 countries: Singapore, Lao, Myanmar, Indonesia, Philippines, Vietnam, Thailand, Mongolia, DPRK, South Korea, China and Australia participated in this workshop organised by the SE Asia Regional Health Unit of the IFRC.

The workshop focused on increasing the capacity of National Societies that are engaged in voluntary, non-remunerated blood donor (VNRBD) recruitment activities to achieve 100% VNRBD status.

XXXIst International Congress of the ISBT in joint cooperation with the 43rd congress of the German Society for Transfusion Medicine and Immuno-hematology (DGTI)



The XXXIst international Congress of the ISBT will be held in Berlin, the capital of Germany, from June 26 to July 1, 2010 in joint session with the German transfusion society DGTI.

Plans for the scientific programme as well as preparations for social events and meetings are well advanced and we are looking forward to hosting a great number of colleagues from all over the world here in Germany early this summer. Don't miss this event!

Scientific Programme

The scientific committees are happy to announce that a large number of internationally prominent clinicians and scientists has already been lined up to give lectures during the congress. International and national authorities, European commission-funded projects, and ISBT working parties will all be organising symposia, scientific meetings and training courses at the congress. In addition, more than 1,200 scientific abstracts have been received, a record number in ISBT history! All abstracts are currently going through peer review and the highest-rated abstracts will be accepted for oral or poster presentations.

Plenary sessions will feature 'Pro & Con' debates on controversial scientific topics in transfusion medicine. Moreover, state-of-the-art lectures on cellular and gene therapy as well as clinical hemotherapy will also be presented during the plenary sessions. Parallel scientific sessions will follow a novel stream structure. Five parallel streams of lectures by invited speakers and oral presentations will focus on the areas of: Training & Education (called the 'ISBT Academy'); 'Blood Safety'; Translational research and its implementation (called 'From Lab to Patient'); 'Quality Management'; and novel developments in the field of cellular therapy.

Poster presenters will also find novel structures during ISBT / DGTI 2010 in Berlin. Two poster walks on Monday and Tuesday evening will be guided by chairs who will encourage and moderate scientific discussion between presenters and the audience. Posters will be grouped by abstract topics with scientific 'market places' located in the middle of the displayed posters where presenters can meet with colleagues for scientific and social networking.

[read more on the next page](#)



Erhard Seifried

The poster walks will be followed by poster parties, where food and drinks will be served along with light music. Further networking is strictly encouraged! A poster award committee comprising physicians and scientists from all over the world will select the best posters and 12 prizes of 750 Euro each will be awarded to the lucky winners by the two congress co-presidents during the gala dinner/congress banquet on Wednesday evening. Submit an excellent poster and you could be one of them!

Our industry partners will organise a record number of satellite symposia, more than at any other ISBT congress before.

Social Programme

Since the reunification of Germany, Berlin has regained its position as one of Europe's leading centres of business, politics, culture and medical research. This international congress will not only offer a great number of opportunities to meet with colleagues and work on your scientific and social network; it will also offer great social events, where some flashes of German and central European culture and architecture will be shown.

The opening ceremony and welcome reception on Sunday evening will give you some insight into German music, while the congress banquet on Wednesday will showcase Berlin's culture throughout the centuries. On Wednesday morning, you are invited to join the DGTI / ISBT morning fun run through the heart of Berlin. Coffee, lunch and tea breaks as well as poster parties will offer additional opportunities to meet and greet colleagues. Excursion programmes and tours for accompanying persons will give you a taste of Berlin and a holiday here before or after the congress is an excellent idea!

The local and international scientific committees, the congress organisers, the local organising committee and both congress co-presidents are looking forward to seeing you in Berlin in June this year!

For the organisers and all committees

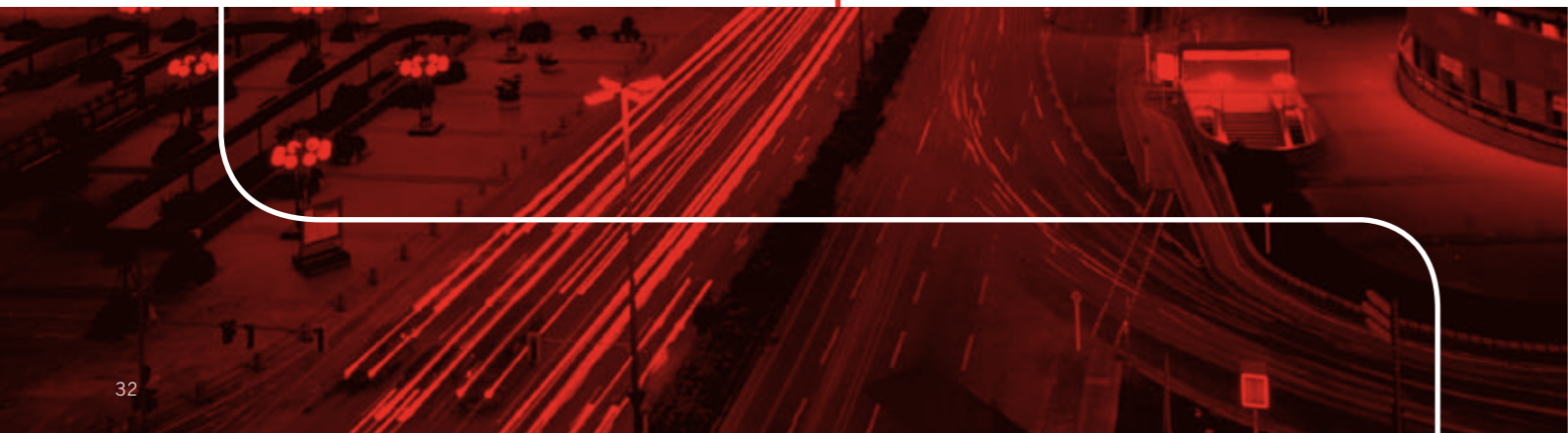
Erhard Seifried
ISBT president
Congress president

For more information about the scientific programme, list of speakers, registration, hotels, general information, or the social programme, please visit the congress website: www.isbt-web.org/berlin



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2010

April 8 - 9

11th Annual NATA Symposium
Barcelona, Spain
www.nataonline.com
nata.secretary@mededgs.com

May 23 - 26

16th Annual ISCT Meeting
Philadelphia, USA
www.celltherapy2010.com
isct@celltherapysociety.org

May 26 - 27

IPFA/PEI 17th Workshop
Zagreb, Croatia
www.ipfa.nl
ipfa@sanquin.nl

May 27 - 28

6th Symposium on Immunohaematology and Transfusion Security
Guimaraes, Portugal
www.skyros-congressos.com
6simposio@skyros-congressos.com

June 3 - 6

VI Congreso Colombiano de Medicina Transfusional
Bogotá, D.C., Colombia
www.acobasmet.org
marcelagarcia@telmex.net.co

June 9 - 12

XXXIX Convegno Nazionale degli Studi di Medicina Trasfusionale
Milan, Italy
www.transfusionmedicine.org
convegni@simtiservizi.com

June 10 - 13

15th Congress of the European Hematology Association
Barcelona, Spain
www.ehaweb.org
eha@eurocongress.com

June 16 - 19

ISSCR 8th Annual Meeting
San Francisco, USA
www.isscr.org/meetings
isscr@isscr.org

June 26 - July 1

XXXIst International Congress of the ISBT
Berlin, Germany
www.bbts.org.uk
isbt.berlin@eurocongress.com

September 9 - 11

28th Annual Scientific Meeting BBTS
Bournemouth, UK
bbts@bbts.org.uk

October 9 - 12

AABB Annual Meeting
Baltimore, United States of America
www.aabb.org
meeting@aabb.org

October 21 - 24

XI European Symposium on Platelet and Granulocyte Immunobiology
Beaune, France
sfts.asso.fr/sympo-platelet
insc-sympo-platelet@europa-organisation.com

2011

June 18 - 22

XXIst Regional Congress of the ISBT, Europe
Lisbon, Portugal
www.isbt-web.org/congresses
isbt.lisbon@eurocongress.com

November 25 - 29

XXIInd Regional Congress of the ISBT, Asia
Taipei, Taiwan
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