The International Rare Donor Panel (IRDP) has been in existence for almost 50 years and is now a worldwide collaboration involving 27 countries, with approximately 8000 rare donors listed. The Red Cell Reference Department of the International Blood Group Reference Laboratory (IBGRL) has compiled and maintained the panel since it began. The purpose of the panel is to locate and facilitate the exchange of rare blood between countries, when blood cannot be sourced nationally for a specified patient.

History

The pioneering work for the organization and compilation of the IRDP was carried out in the early to mid 1960s. The act of exchanging rare blood between countries was in place prior to that, however, as evidenced in The Lister Institute annual report of 1957, which in part describes highlights of the activities of the IBGRL and states:

[Dr. Parkin’s] previous discovery of a family in England and Ireland with the exceedingly rare “Bombay” blood group (apparent red-cell group O, with anti-O in serum) made it possible for the laboratory to arrange for the transfusion of a baby in Holland with blood from one of the only two potential donors in Europe.1

In 1964 the then-director of the IBGRL, Dr Arthur E. Mourant, presented a proposal for the organization of an international panel of blood donors of rare types at the General Assembly of the International Society of Blood Transfusion (ISBT) in Stockholm.2 Following this, in 1965, the IRDP was established as an ISBT initiative in collaboration with the World Health Organization. The purpose of the panel was to locate and facilitate exchange of rare blood units between countries for patients in need. The organization and maintenance of the panel were allocated to the IBGRL, and the inaugural meeting of the newly formed ISBT Advisory Committee for the IRDP took place on February 9, 1966, at the IBGRL in London.3 It was decided at this meeting that the panel should consist of two categories: the first category included group O donors whose red blood cells (RBCs) lacked antigens to a range of antibodies commonly encountered, therefore making them useful for transfusion to patients with multiple antibodies; the second category included donors whose RBCs lacked a high-prevalence antigen.3 The first panel was published in 1968 and consisted of almost 300 donors from 10 countries.4 The panel was typed and copies were distributed by mail, accompanied by an introductory letter (Fig. 1).

Since then, the panel has organically adapted with advances in technology and the discovery of more and more blood groups. In 1981, the panel was compiled on a computer for

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**Fig. 1 Accompanying letter to the first edition of the International Rare Donor Panel.**
the first time, although the technology only had the capability to enter and print information in capital letters, which was not ideal when dealing with RBC antigens. To deal with the issue, the word "little" was used to denote when a lowercase letter was indicated (Fig. 2). Around this time, the decision was made to remove the first of the original two categories of donors from the IRDP, since donors lacking common antigens could generally be provided locally. The panel was printed on large reams of paper (Fig. 2) and continued to be sent out by mail. When the 1985 panel was compiled and distributed in this way, it consisted of approximately 1500 donors from 22 countries and was sent to 110 blood centers around the world.

In 1991, the panel was compiled on an in-house computer at IBGRL (Fig. 3), which made adding and deleting donors a more continuous process. It was at this time that modem access was made available, which meant 24-hour password-protected access to the panel was now possible for those blood centers with modem capability. Then, in 1999, the panel was made accessible via the Internet. Information technology development and the beginning of the Internet age changed the usability of the IRDP significantly, although it was probably not exactly what Dr. Mourant had envisaged in 1964 when he wrote,

> The scheme would be organized by an International Central Office and Laboratory, which would collate, edit, and publish a list of donors of rare types. . . . This proposal does not exclude ultimate transfer of lists to mechanical or electronic selector systems, but I am sure that we must begin with printed or stencilled lists.²

Table 1. Rare donor listings of the International Rare Donor Panel, 2015

<table>
<thead>
<tr>
<th>Number of donors</th>
<th>&gt;500</th>
<th>250–500</th>
<th>100–249</th>
<th>50–99</th>
<th>25–49</th>
<th>10–24</th>
<th>5–9</th>
<th>0–4</th>
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<tr>
<td>Fy(a–b–)</td>
<td>S−s−U−</td>
<td>Js(a+b−)</td>
<td>Kc</td>
<td>Ge−</td>
<td>RH:−51 (MAR−)</td>
<td>SC:−1</td>
<td>Cr(a−)</td>
<td></td>
</tr>
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<td>Jr(a−)</td>
<td>Co(a+b+)</td>
<td>Jk(a−b−)</td>
<td>Q(Bombay)</td>
<td>LW(a−b+)</td>
<td>CDE/CDE (R,R,)</td>
<td>Ok(a−)</td>
<td>K11−</td>
<td></td>
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<tr>
<td>D(b−)</td>
<td>Yt(a−)</td>
<td>I−</td>
<td>p</td>
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<td>Gy(a−)</td>
<td>JMH−</td>
<td>En(a−)</td>
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<tr>
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<td>Vel−</td>
<td>D−</td>
<td>S−s−U+sS−U+s+var</td>
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<td>Hy−</td>
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Fig. 2 Front page of the 1985 printed International Rare Donor Panel.

Fig. 3 Compiling the International Rare Donor Panel on a computer at the International Blood Group Reference Laboratory in the early 1990s.
In 2007, a new IRDP database was developed by the National Health Service (NHS) Blood and Transplant Center for IBGRL and included functionality to search on multiple criteria, including ABO group and other antigen-negative requirements in addition to the rare phenotype. This database has been updated periodically and remains in use today (Fig. 4).

Figures 5–8 provide additional information from the early days of the IRDP.

The IRDP Today

Currently, the IRDP has approximately 8000 donors listed from 27 countries. The IRDP is only intended for use when blood cannot be sourced nationally; therefore, the rarities listed represent those that are the hardest to find in most populations. Some categories are still rarer than others, as shown in Table 1. In addition to individually listed donors, the IRDP includes the frozen inventories of blood banks from around the world. A number of these contributing institutions choose only to list the number of frozen units according to ABO and rarity; therefore, the number of actual donors will be greater in the respective categories.

The IBGRL, now located in Bristol at the NHS Blood and Transplant Filton center, continues to compile and maintain the IRDP. The role of the IBGRL is to receive rare donor lists, provided by the contributing countries, and update the IRDP database according to the additions and/or deletions provided on the lists. Some contributors send samples to IBGRL for confirmatory testing of newly identified donors, although this is not a requirement for inclusion of a donor to the panel. Donors are assigned a unique number by their contributing country and are listed by this number on the IRDP; therefore,
no personal donor data are held in the database. Most IRDP contributors maintain a national donor registry, but in countries where a national registry is not established, there may be a number of individual contributing institutions from the same country. All contributors are required to provide IBGRL with any amendments to their designated contact personnel details. This step is very important to ensure the appropriate person/department can always be contacted to inquire about rare donor availability. The IBGRL makes all this information available via the Internet, and authorized users can access the panel at https://rare.blood.co.uk/RareDonor/Login/Default.aspx. Access requests can be made by medical professionals, who may be required to source rare blood for clinical use only. All access requests should be made to the IBGRL by e-mailing rare.donor@nhsbt.nhs.uk. The staff of the IBGRL Red Cell Reference Department is also available to carry out searches when required, and search requests can be sent to the same e-mail address.

When a search of the IRDP has been carried out and possible rare donors identified, the requestor is provided with the contact details for the relevant contributing institutions. It is then the responsibility of the requestor to contact the contributors to inquire about donor availability and to discuss the logistics associated with obtaining blood from another country, including mandatory testing practice, shipment, customs requirements, and price. The IBGRL works closely with the ISBT Rare Donor Working Party to ensure that the IRDP functions as optimally as possible. An “International Shipment of Rare Blood Response Form” was devised by the Working Party to capture useful information regarding the outcome of any rare blood shipments that have occurred as a result of searching the IRDP. This information helps us to understand rare blood demand and to ensure that the IRDP process runs without problems; it also helps to capture any logistical issues that may need addressing by the Working Party.

The Future of the IRDP

It is important that the IRDP evolves with the changing demands for blood of rare types. These changes not only coincide with discovery of new blood groups, but also with scientific and information technology developments. DNA-based testing to find rare donors is already being used in some countries,6–8 and it is likely that the potential to scale up rare donor screening will be realized as high-throughput genotyping platforms become more economical. This scenario will bring new challenges for the IRDP. The IRDP database

**Fig. 7** International Blood Group Reference Laboratory visitors book at 1966 International Rare Donor Panel advisory meeting.

**Fig. 8** First page of the International Rare Donor Panel advisory minutes.
WHO International Rare Donor Panel

is currently undergoing an upgrade that will provide new functionality to enable remote upload of donor lists and updates to contributor contact details. This functionality will make the panel maintenance more efficient, and it is hoped that more regular updates will be possible.

Summary

Over the past 50 years, the IRDP has evolved and developed to meet international rare blood needs. Although the definition of a rare donor has changed since the early days of the panel, the purpose of the IRDP has always remained the same: to locate and facilitate exchange of rare blood for patients in need. It is important to remember that rare blood is required rarely, but when it is needed, the worldwide collaboration of the IRDP ensures that every effort can be made to find blood for patients with even the rarest of blood types. Although it is difficult to predict what the next 50 years might bring, no matter what format the IRDP takes, the purpose of the panel is unlikely to change.

Acknowledgments

The author would like to thank all those who contribute to the IRDP for the wonderful worldwide collaboration. Most of all, we must thank the rare donors of the IRDP; their selfless generosity to save the lives of others, regardless of where they may be in the world, is remarkable.

References

3. ISBT Advisory Committee for the International Panel of Donors of Rare Types. Minutes of a meeting held at the Blood Group Reference Laboratory. [Minutes of meeting held 9 February.] London, 1966 (Unpublished).

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