



**Title:** Update to HLA Equivalency Tables (2020)

**Sponsoring Committee:** Histocompatibility

## What is current policy and why change it?

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Histocompatibility laboratories use commercially available kits to test transplant recipient and potential organ donor tissues for compatibility. This matching helps lower the risk that the recipient's body will reject the transplant. The values used in this testing are included in tables in OPTN policy, so these values can be programmed into the OPTN computer system. As the science changes, the values used in the test kits need to be updated. This proposal updates the tables and adds an additional table with a new element that can further improve efficiency of tissue matching.

## What's the proposal?

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- **Updates to existing reference tables** in OPTN Policy 4.10: *Reference Tables of HLA Antigen Values and Split Equivalences*
- **Add new reference tables** to be programmed into the OPTN computer systems, including the option for transplant hospital or histocompatibility labs to use an additional method that may make it easier to match candidate and donor tissue.
- Set up future updates to these tables to go through an expedited policy process which allows these routine updates to be made quickly

## What's the anticipated impact of this change?

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- **What it's expected to do**
  - Update the existing reference tables to match the updated test kits
  - Add an option to use a new element that can provide easier and more -efficient matching
  - Shorten the length of time required to routinely update the reference tables
- **What it won't do**
  - Change the Calculated Panel Reactive Antibodies (CPRA) calculation or frequency data used for the calculation.

## Themes to consider

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- Appropriateness of using expedited process for future updates
- Addition of optional new element that increases efficiency and makes it easier to match tissues

## Terms you need to know

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- **Calculated Panel Reactive Antibodies** – Calculation that shows the percentage chance a recipient will not match with a- donor’s tissue. The higher the percentage the more “sensitized” a recipient is.
- **Human leukocyte antigen (HLA) complex** – a group of genes that helps the immune system distinguish the body's own proteins from proteins made by foreign invaders such as viruses and bacteria.
- [Click here to search the OPTN glossary](#)

*Public Comment Proposal*

# Human Leukocyte Antigen (HLA) Equivalency Tables Update (2020)

*OPTN Histocompatibility Committee*

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# Human Leukocyte Antigen (HLA) Equivalency Tables Update (2020)

<i>Affected Policies:</i>	<i>4.9: HLA Antigen Values and Split Equivalences</i> <i>4.10: Reference Tables of HLA Antigen Values and Split Equivalences</i>
<i>Sponsoring Committee:</i>	<i>Histocompatibility</i>
<i>Public Comment Period:</i>	<i>January 22, 2020 – March 24, 2020</i>

## Executive Summary

OPTN Policy 4.9: *HLA Antigen Values and Split Equivalences* requires the OPTN Histocompatibility Committee (Committee) to review HLA equivalency tables listed in OPTN Policy 4.10: *Reference Tables of HLA Antigen Values and Split Equivalences* on an annual basis and recommend any changes needed on or before June 1<sup>st</sup> of each year. The OPTN Board of Directors (Board) approved the most recent annual table update in December 2017 with implementation following in December 2018. During their 2019 review, the Committee identified changes (additions and deletions) that needed to be made to ensure safety and accuracy in matching donors with transplant candidates.

To improve the expediency of identifying and making HLA changes, the Committee also proposes using a policy making pathway outlined in OPTN Bylaws for future updates.

## Purpose of the Proposal

HLA compatibility between an organ donor and potential transplant candidate can impact how the immune system recognizes the donor organ as “non-self”. Candidates may have pre-formed antibodies against non-self HLA antigens and transplant programs may wish to avoid donors who express the corresponding HLA antigen (i.e. an unacceptable HLA antigen (UA). Regardless of the organ type, a candidate will not appear on a match run list with a donor if they have unacceptable antigens reported on their waitlist record that match the donor’s HLA antigens.

OPTN histocompatibility policies contain tables listing HLA antigens and alleles to be used in the matching algorithms for kidney, pancreas, and kidney-pancreas allocation. Additional tables list UAs that can be used to screen potential incompatible donors. Each of table includes the reported HLA antigen or allele and any HLA antigen or allele deemed equivalent. The list of potential values in these tables may periodically change with updated HLA nomenclature and advances in HLA testing.

OPTN Policy 4.9: *HLA Antigen Values and Split Equivalences* requires the Committee to review HLA equivalency tables listed in OPTN Policy 4.10: *Reference Tables of HLA Antigen Values and Split Equivalences* on an annual basis and recommend any changes needed on or before June 1st of each year. The last comprehensive review conducted by the Committee was approved by the Board following public comment in 2017. These changes were implemented in December 2018. The Committee started its next required 2019 review and identified four areas of changes that needed to be made:

1. Amend HLA equivalency tables (Tables 4-2 through 4-15) to be more consistent with current nomenclature and account for changes in available testing reagents that may impact the tables.
2. Shorten Table 4-14 for usability while maintaining 99.9% of relevant DPB1 antigens.

3. Include an option for assigning unacceptable antigens for DPB1 using epitopes. An epitope is a portion of a molecule to which an antibody can bind. HLA antigens possess multiple epitopes and some epitopes may be common to multiple HLA antigens. Epitopes on HLA antigens may have reactivity to similar epitopes on multiple HLA antigens. By grouping DPB1 antigens based on common epitopes, as has been done with Bw4 and Bw6 for many years, the new Table and associated assignment of UA based on epitopes will permit more comprehensive assignment of DPB1 UA for users that choose to utilize this tool.
4. Introduce an Expedited Actions pathway (OPTN Bylaws, Article 11.8) to update future tables. Permit a timelier update of Tables by utilizing an Expedited Actions pathway to amend tables consistent with future nomenclature changes and additions and/or deletions in available testing reagents.

## Background

In 2019, a subcommittee comprised of histocompatibility experts was formed to conduct the table review. The subcommittee reviewed all existing tables and recommended deletions of values that are no longer appropriate as well as necessary additions identified by updates in HLA nomenclature and HLA testing reagents. Proposed changes were also made to align the tables with the Immuno Polymorphism Database-International ImMunoGeneTics (IPD-IMGT) HLA Database project. The IPD-IMGT/HLA database is a repository for sequences of the human major histocompatibility complex (MHC). The database includes official sequences named by the World Health Organization (WHO) Nomenclature Committee for Factors of the HLA System and currently utilizes the 2010 naming convention for HLA alleles.<sup>1</sup> This database is updated several times each year. HLA value changes in this proposal use version 3.37.0 released in July 2019<sup>2</sup>.

Updates are proposed for tables presenting matching antigen equivalences for HLA B and DR (DRB1) loci. Other changes are offered for UA and donor equivalences for HLA B, C, DR, and DQB1 tables. The subcommittee proposed more significant revisions to several DPB1 UA equivalency table and the addition of a table to facilitate epitope-based assignment of DPB1 UAs and list all DPB1 alleles for use in programming. The full committee agreed with these recommendations and voted to send the proposed changes out for public comment.

### DPB1 table modifications

The subcommittee recommended changes to table structures for DPB1 values including:

1. Shortening the current *Table 4-14: DPB1 HLA Unacceptable Antigen* equivalence table
2. Adding an additional table for all DPB1 values that are able to be reported as candidate or donor HLA
3. Creating a table for epitope-based UA assignment for DPB1 loci

Shortening the current table for DPB1 HLA UA equivalences is proposed as the current table has over 660 values spanning over fifteen pages, with the vast majority of listed equivalences only equivalent to the value itself. The table in its current format is difficult to use and would continue to increase in length as new DPB1 alleles are identified. The subcommittee evaluated frequencies of reported DPB1 donor antigens and recommended a truncated table that would include 99.9% of DPB1 values reported in donor typing. Policy language will be updated to reflect any DPB1 allele not represented in the UA equivalency table. 4-14 only has an equivalent to their own value.

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<sup>1</sup> <https://www.ebi.ac.uk/ipd/imgt/hla/>

<sup>2</sup> [https://www.ebi.ac.uk/ipd/imgt/hla/docs/version\\_r3370.html](https://www.ebi.ac.uk/ipd/imgt/hla/docs/version_r3370.html)

An additional table will be constructed to account for all DPB1 alleles that may be reported. The Committee chose to include valid potential reportable DPB1 values up through 1036:01. (as of IMGT-HLA release 3.37) The formatting of the tables is updated for ease of use.

## **Epitope-based unacceptable antigen assignment for DPB1 loci**

Epitope-based assignment of UA was previously proposed in the 2016 review of the HLA equivalency tables as an additional method to select UA based on common epitope reactivity. However, this was not pursued at the time due to timeline constraints, possible community pushback and lack of literature regarding epitopes assignment. With the greater recognition and acceptance for the use of epitopes in the histocompatibility field, the committee feels that this is an opportune time to include this method of assigning UA.

The initial introduction of epitope-based assignment of UA was focused on one loci (DPB1) at this time. The basis for assigning UA based on epitope reactivity already exists in current policy for assigning unacceptable HLA-B antigens based on association with the public Bw4 or Bw6 epitopes. The proposed model would allow members to select a particular DPB1 epitope as unacceptable and UNet<sup>SM</sup> would then eliminate all equivalent DPB1 antigens that possess the selected epitope based on donor DPB1 typing.

### **What is an Epitope?**

An epitope is an antigenic molecular region that can be immunologically recognized HLA antigens possess multiple epitopes, and some epitopes may be common to multiple HLA antigens. Epitopes on HLA antigens can be recognized by antibodies that may also react to similar epitopes on multiple other HLA antigens.

### **Why the use of Epitopes?**

Our current system of HLA matching is focused in part on pre-transplant screening for unacceptable HLA antibodies directed towards donor HLA antigens (donor-specific antibodies (DSA)<sup>3</sup>. Antibody specificity can be defined either by the reactive HLA antigen(s) or by the epitopes antibodies are directed against.

Assignment of DPB1 loci UA using epitopes is a more comprehensive way to select unacceptable DPB1 alleles. Currently available DPB1 antibody testing reagents are limited and far less complete than the DPB1 antigens that have been identified. Defining antibody reactivity against a DPB1 epitope allows for the extrapolation to other DPB1 antigens that possess the same epitope but may not be present in the current antibody testing reagents<sup>4</sup>. Additionally, it is less time consuming to assign UA based on common, well-defined epitopes instead of individually assigning all the alleles that react to the epitope.

Currently, many, if not most, HLA labs utilize HLA epitope analysis as a tool to resolve ambiguities, determine antibody reactivity (including assignment of unacceptable antigens), and assess compatibility. The DPB1 epitopes proposed here are well defined and represents an ideal starting point to introduce epitope-based UA assignment.

The committee created a table defining two separate DPB1 epitope groups: 1) at the conserved amino acid positions 55-57(55AAE, 55DED, 55DEE, 55EAE), and 2) at amino acid positions 84-87(84DEAV,

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<sup>3</sup> G Larkins, K Schillinger, K Gray, J Houp, J Reger, N Desai, "Ides desensitization therapy, Breaking down antibody barriers to transplantation", Volume 79, Supplement, October 2018, p.56.

<sup>4</sup> J Lunz, A Zeevi, I Batal, M Shullo, R Shapiro, N Aggarwal, P Randhawa, A Girnita," Antihuman Leukocyte Antigen-Specific Antibody Strength Determined by Complement-dependent or Solid Phase Assays Can Predict Positive Donor-Specific Crossmatches, Volume 134, Issue 10, October 2010, pp. 1534-1540.

84GGPM, and 84VGPM). With the addition of this table, users may voluntarily define unacceptable DPB1 antigens by reactive epitope or by selecting unacceptable DPB1 antigens individually (as is currently available).

Concerns were raised by some committee members that the transplant community may not use or want to use these specific epitopes. It is important to note that the use of the epitope table for assigning UA is voluntary. Additionally, the committee has developed some feedback questions to gather adequate public comment from the transplant community on their thoughts about this new concept as well as other parts of the proposal.

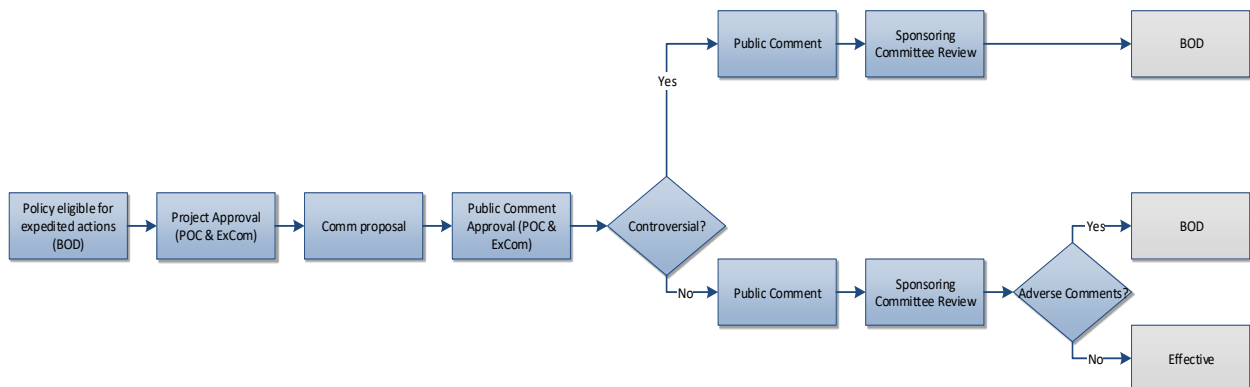
1. Do you think epitope-based unacceptable antigen assignment would be used in the transplant community? Would you use it?
2. What are your thoughts on the change to the DPB1 tables in terms of including only a subset of the values as UAs but then having a full list of values that are valid for donor typing?
3. Do you support the approach to reducing the length of time needed to perform administrative updates to the HLA reference tables in OPTN policy (see below)?

### Expedited Actions

Another section of this proposal is to change the process by which future updates to the HLA equivalency tables are developed and approved. In July 2015, the Board approved a change to the bylaws to approve non-controversial actions.<sup>5</sup> When developing this pathway, the Executive Committee specifically discussed its potential application to the HLA equivalency tables.

This pathway would still require public comment although the public comment period can be shorter than typical public comment. Figure 1, below, provides an overview of this pathway. If approved, the pathway would allow the proposal to be approved and implemented faster than traditional OPTN policy development process as long as no opposition or concerns are raised during the comment period. If concerns are raised, then the proposal will follow the regular OPTN policy development pathway. This current proposal itself will not follow the expedited pathway; instead, it identifies the HLA equivalency tables as eligible for the expedited pathway in the future. Identification of HLA equivalency tables as a policy item that can be amended potentially using the Expedited Action pathway must be approved by the Board before subsequent proposals could actually use this process.

**Figure 1: Expedited Pathway**



<sup>5</sup> Alcorn, James, “Changes to OPTN Bylaws and Policies from actions at June 2015 Board of Directors Meeting” (July 1, 2015), available at [https://www.transplantpro.org/wp-content/uploads/sites/3/Policy\\_Notice\\_07-2015.pdf?a3c8d8](https://www.transplantpro.org/wp-content/uploads/sites/3/Policy_Notice_07-2015.pdf?a3c8d8). See “OPTN Policy Development Process Explanatory Document” for a description of the expedited pathway, available at: <https://optn.transplant.hrsa.gov/media/3115/optn-policy-development-process-explanatory-document.pdf>.

The HLA equivalency tables have traditionally been non-controversial. In regional meetings, these proposals have typically been on consent agendas. Two of the last three equivalence table updates were on the non-discussion agendas for regional meetings. The 2013 update was not due to discussion of changes to OPTN *Bylaws: Appendix C* as part of that proposal. The table changes were unanimously supported by the regions in 2013 as well. Every public comment has been supportive. All three of the last three table update proposals were placed on the consent agenda at Board meetings due to their non-controversial nature. They were all passed by the Board as well. Table 1 below outlines the last three HLA reviews and shows that each has been on the consent agenda when passed by the Board. The most frequent stakeholders commenting on these proposals have been American Society for Histocompatibility and Immunogenetics (ASHI) and College of American Pathologists (CAP). The Committee will continue to do outreach to key stakeholders for their input and comments.

**Table 1: Summary of Previous HLA Table Review Proposals**

Proposal Title	Regional Meeting Agendas	Board Agenda
Review of HLA Tables (2016)	Non-discussion	12/2016 - Consent
Update to the Human Leukocyte Antigens (HLA) Equivalency Tables (2015)	Non-discussion	12/2015 - Consent
Changes to the HLA Equivalency Tables (2013)	Discussion agenda	11/2013 - Consent

## Implementation and Operational Considerations

### Overview

The target or most impacted population includes all kidney, kidney-pancreas and pancreas candidates, as well as sensitized candidates for all other organ types. The increased specificity with the addition of epitopes and other alleles will improve outcomes by providing members with more allele-specific equivalences. More specificity in these will promote more discrete HLA matching and reduce chances for unexpected positive crossmatches and subsequent HLA-related organ rejection.

### OPTN Actions

This proposal will require additional programming in UNet. IT will need to add new antigens and equivalences and remove some values as well in UNet. IT will also need to program epitope level reporting.

In order to educate the community on the changes to the tables, professional education and communication will be needed to make the transplant community aware of the new tables and their implications. This will include informing members of policy changes through policy notices. Members will be notified prior to implementation upon the completion of the necessary programming changes.

### Member Actions

Transplant hospitals, OPOs, and histocompatibility laboratories will need to be aware and provide staff education as appropriate on changes to HLA and UA reporting value options as these will change in UNet when this proposal is implemented. Epitope-based UA assignments might impact data entry, match run results, or other HLA-related data activities.



## **Transplant Hospitals**

Transplant hospitals may need to evaluate their agreements with histocompatibility laboratories to accommodate any needed transactional changes related to the proposal changes.

For transplant hospitals, that use other business associates or third party vendors to input HLA information into UNet, these associates or vendors will have to update their programs to reflect the changes in this proposal.

## **OPOs**

OPOs may need to evaluate their agreements with histocompatibility laboratories to accommodate any needed transactional changes related to the proposal changes.

For OPOs that use third party vendors to input HLA information into UNet, their vendors will have to update their programs to reflect the changes in this proposal.

## **Histocompatibility Laboratories**

Histocompatibility laboratories will need to be prepared to answer questions from transplant community members regarding value changes, including epitope-based UA reporting availability.

Lab informatics systems (LIS) will require updating to accommodate reporting of new values including DPB1 epitopes and update electronic data transfer programs for interfaces between LIS to UNet.

## **Potential Fiscal Impact of Proposal**

### **Members**

#### **Histocompatibility Laboratories**

Minimal costs for laboratory programming updates may be necessary. Updates to the tables will lead to overall laboratory efficiency, reducing human error and staff time in virtual crossmatch review. It will provide greater efficiency in organ allocation decision making.

### **OPTN**

Programming and testing will be required, consistent with past HLA table updates.

## **Post-implementation Monitoring**

### **Member Compliance**

The proposed language will not change the current routine monitoring of OPTN members. Any data entered in UNet may be reviewed by the OPTN, and members are required to provide documentation as requested.

### **Policy Evaluation**

The Committee will evaluate changes in CPRA values due to revisions of UA equivalences immediately after the implementation compared to values immediately prior to the implementation.

The Committee's hypothesis is that more accurate typing and the ability to better report these results in UNet along with the revised UA equivalency tables will result in improved allocation due to more efficient virtual crossmatching. The following questions, and any others subsequently requested by the Committee, will guide the evaluation of the proposal after implementation:

1. Are members utilizing the new DPB1 epitopes when selecting unacceptable antigens?
2. Are members reporting the new donor HLA and unacceptable antigen values added during the table revision?
3. Has the number of organ offers refused due to a positive cross match changed after implementation?
4. Was there a change in CPRA values amongst kidney, kidney-pancreas, and pancreas registrations on the waiting list?

The following metrics, and any others subsequently requested by the Committee, will be evaluated as data become available to compare performance before and after the implementation of this policy:

1. Deceased donor HLA typing frequencies
2. Changes in HLA and unacceptable antigen frequencies of kidney, kidney-pancreas and pancreas registrations on the waiting list
3. The number and percentage of offers refused due to a positive crossmatch
4. Usage of DPB1 epitope-based assignment of UA
5. Change in CPRA values for kidney, kidney-pancreas and pancreas registrations on the day of implementation:
  - Distribution of the difference in pre and post-implementation CPRA
  - The number of registrations for which the change in post-implementation CPRA values resulted in a change in the number of allocation points received
  - The distribution of the change in the number of allocation points received by registration as a result of the change in post-implementation CPRA values

The Committee expects to see utilization of antigens added to the equivalency tables as well as the new DPB1 epitopes. They also expect minor changes in CPRA values for some registrations due to inclusion of additional alleles.

These metrics will be evaluated at approximately one and two years post-implementation.

## Conclusion

The proposed changes are made as part of Committee's requirement to conduct an annual review of HLA equivalence tables in *OPTN Policy 4.10: Reference Tables of HLA Antigen Values and Split Equivalences*. These proposed changes improve OPTN member's ability to report and use HLA values, equivalences, and UAs by updating the existing tables with data from more recent HLA testing kits. Adding epitope-based UA reporting provides a more discrete level to guide matching efforts.

Future HLA policy table updates can also be completed in a timelier manner using the Expedited Actions pathway.

These proposed actions will benefit transplant recipients by providing more current and discrete HLA data options to achieve improved donor-recipient matching, greater efficiencies in virtual crossmatching review, and better post-transplant outcomes.

The following questions, and any others subsequently requested by the Committee, will guide the evaluation of the proposal after implementation:

1. Are members utilizing the new DPB1 epitopes when selecting unacceptable antigens?
2. Are members reporting the new donor HLA and unacceptable antigen values added during the table revision?
3. Has the number of organ offers refused due to a positive crossmatch changed after implementation?

4. Has the proposal affected the number of zero mismatch deceased donor kidney, kidney-pancreas and pancreas transplants?
5. Was there a change in CPRA values amongst kidney, kidney-pancreas, and pancreas registrations on the waiting list?
6. Do members have concerns about the proposed use of the expedited approval process for future HLA Table Updates?

## Policy Language

Proposed new language is underlined (example) and language that is proposed for removal is struck through (~~example~~). Heading numbers, table and figure captions, and cross-references affected by the numbering of these policies will be updated as necessary.

1  
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### 4.9 HLA Antigen Values and Split Equivalences

HLA matching of ~~A, B, DR~~-locus antigens is based on the antigens which are listed in Policy 4.10: *Reference Tables of HLA Antigen Values and Split Equivalences*. The Histocompatibility Committee must review and recommend any changes needed to the tables ~~on or before June 1 of each year~~ on an annual basis. Pursuant to OPTN Bylaw 11.8: *Expedited Actions*, changes needed to the tables in Policy 4.10 are eligible for future expedited updates. For matching purposes, split antigens not on this list will be indicated on the waiting list as the parent antigens and will match only with the corresponding parent antigens.

### 4.10 Reference Tables of HLA Antigen Values and Split Equivalences

Tables 4-2, 4-3, and 4-4 show candidate-donor antigen equivalencies and whether they are mismatches. For each candidate antigen, the donor antigens that are not mismatched are listed below. All other combinations are considered mismatches.

Examples of how “Matching Antigen Equivalences” works:

- If the candidate types as B70: only donors that type as B70 are considered matched. Donors typed as B71 or B72 are considered mismatched.
- If the candidate types as B71: only donors that type as B71, B15:10, or B15:18 are considered matched. Donors typed as B70 are considered mismatched.

**Table 4-3: HLA B Matching Antigen Equivalences**

Candidate B-Locus Antigen	Equivalent Donor Antigens
5	5
7	7, 07:02, 07:03, 07:14
07:02	07:02, 7
07:03	07:03, 7
07:14	07:14, 7
8	8, 08:01, 08:02, 08:03, 08:04
08:01	08:01, 8
08:02	08:02, 8
08:03	08:03, 8
08:04	08:04, 8
12	12
13	13, 13:01, 13:02
13:01	13:01, 13
13:02	13:02, 13
14	14
14:01	14:01, 64

Candidate B-Locus Antigen	Equivalent Donor Antigens
14:02	14:02, 65
15	15
15:01	15:01, 62
15:02	15:02, 75
15:03	15:03, 72
15:04	15:04, 62
15:06	15:06, 62
15:07	15:07, 62
15:10	15:10, 71
15:11	15:11, 75
15:12	15:12, 76
15:13	15:13, 77
15:16	15:16, 63
15:17	15:17, 63
15:18	15:18, 71
15:20	15:20, 62
15:21	15:21, 75
15:24	15:24, 62
15:27	15:27, 62
16	16
17	17
18	18
21	21
22	22
27	27, 27:03, 27:04, 27:05, 27:06, <del>27:08</del>
27:03	27:03, 27
27:04	27:04, 27
27:05	27:05, 27
27:06	27:06, 27
27:08	27:08
35	35, 35:01, 35:02, 35:03 35:08, 35:12
35:01	35:01, 35
35:02	35:02, 35
35:03	35:03, 35
35:08	35:08, 35
35:12	35:12, 35
37	37
38	38, 38:01, 38:02
38:01	38:01, 38
38:02	38:02, 38
39	39, 39:01, 39:02, 39:04, 39:05, 39:06, 39:13
39:01	39:01, 39
39:02	39:02, 39
39:04	39:04, 39
39:05	39:05, 39

Candidate B-Locus Antigen	Equivalent Donor Antigens
39:06	39:06, 39
39:13	39:13, 39
40	40
40:01	40:01, 60
40:02	40:02, 61
40:03	40:03, 61
40:04	40:04, 61
40:05	40:05, 50
40:06	40:06, 61
41	41, 41:01, 41:02
41:01	41:01, 41
41:02	41:02, 41
42	42, 42:01, 42:02
42:01	42:01, 42
42:02	42:02, 42
44	44, 44:02, 44:03
44:02	44:02, 44
44:03	44:03, 44
45	45, 50:02
46	46
47	47
48	48, 48:01, 48:02
48:01	48:01, 48
48:02	48:02, 48
49	49
50	50, 50:01, <del>50:02</del> , 40:05
50:01	50:01, 50
50:02	50:02, 45
51	51, 51:01, 51:02
51:01	51:01, 51
51:02	51:02, 51
52	52
53	53
54	54
55	55, 55:01, 55:02, 55:04
55:01	55:01, 55
55:02	55:02, 55
55:04	55:04, 55
56	56, 56:01, 56:03
56:01	56:01, 56
56:03	56:03, 56
57	57, 57:01, 57:03
57:01	57:01, 57
57:03	57:03, 57
58	58

Candidate B-Locus Antigen	Equivalent Donor Antigens
59	59
60	60, 40:01
61	61, 40:02, 40:03, 40:04, 40:06
62	62, 15:01, 15:04, 15:06, 15:07, 15:20, 15:27
63	63, 15:16, 15:17
64	64, 14:01
65	65, 14:02
67	67
70	70
71	71, 15:10, 15:18
72	72, 15:03
73	73
75	75, 15:02, 15:11, 15:21
76	76, 15:12
77	77, 15:13
78	78
81	81
82	82
<u>83:01</u>	<u>83:01</u>

18  
19

**Table 4-4: HLA DR Matching Antigen Equivalences**

Candidate DR-Locus Antigen	Equivalent Donor Antigens
1	1, 01:01, 01:02
01:01	01:01, 1
01:02	01:02, 1
01:03	01:03, <u>103</u>
2	2
3	3, 03:01, 03:02, 03:03
03:01	03:01, 17
03:02	03:02, 18
03:03	03:03, 18
4	4, 04:01, 04:02, 04:03, 04:04, 04:05, 04:06, 04:07, 04:10, 04:11
04:01	04:01, 4
04:02	04:02, 4
04:03	04:03, 4
04:04	04:04, 4
04:05	04:05, 4
04:06	04:06, 4
04:07	04:07, 4
04:10	04:10, 4
04:11	04:11, 4
5	5
6	6
7	7

Candidate DR-Locus Antigen	Equivalent Donor Antigens
8	8, 08:01, 08:02, 08:03, 08:07
08:01	08:01, 8
08:02	08:02, 8
08:03	08:03, 8
08:07	08:07, 8
9	9, 09:01, 09:02
09:01	09:01, 9
09:02	09:02, 9
10	10
11	11, 11:01,11:03, 11:04
11:01	11:01, 11
11:03	11:03, 11
11:04	11:04, 11
12	12, 12:01, 12:02
12:01	12:01, 12
12:02	12:02, 12
13	13, 13:01, 13:02, 13:03, 13:05
13:01	13:01, 13
13:02	13:02, 13
13:03	13:03, 13
13:05	13:05, 13
14	14, 14:01, 14:02, 14:03, 14:04, 14:05, 14:06, 14:54
14:01	14:01, 14, 14:54
14:02	14:02, 14
14:03	14:03, 14
14:04	14:04, 14
14:05	14:05, 14
14:06	14:06, 14
14:54	14:54, 14, 14:01
15	15, 15:01, 15:02, 15:03
15:01	15:01, 15
15:02	15:02, 15
15:03	15:03, 15
16	16, 16:01, 16:02
16:01	16:01, 16
16:02	16:02, 16
17	17, 03:01
18	18, 03:02, 03:03
<u>103</u>	<u>103, 01:03</u>

20  
21 Tables 4-5, 4-6, 4-7, 4-8, 4-9, 4-10, 4-11, 4-12, 4-13, and 4-14 show candidate-donor unacceptable  
22 antigen combinations. For each candidate antigen, the donor antigens that are unacceptable are listed  
23 below. Table 4-15 shows additional unacceptable antigen equivalences to be used in the Calculated  
24 Panel Reactive Antibody (CPRA) only.  
25



- Tables 4-5, 4-6, 4-7, 4-8, 4-9, 4-10, 4-11, 4-12, 4-13, and 4-14 show candidate-donor unacceptable antigen combinations. For each candidate antigen, the donor antigens that are unacceptable are listed below.
- Table 4-15 shows a candidate unacceptable epitopes for DPB1 and their corresponding donor HLA types.
- Table 4-16 shows the values that can be reported as valid DPB1 HLA typing.
- Table 4-17 shows additional unacceptable antigen equivalences to be used in the Calculated Panel Reactive Antibody (CPRA) only.

Examples of how “Unacceptable Antigen Equivalences” works:  
 If a candidate has B70 listed as an “unacceptable antigen”, donors typed as B70, B71, B72, 15:03, 15:10, or 15:18 are considered unacceptable.

**Table 4-6 HLA B Unacceptable Antigen Equivalences**

Candidate Unacceptable B-Locus Antigen	Donor Equivalent Antigens
5	5, 51, 51:01, 51:02, 52
7	7, 07:02, <u>07:03</u> , 07:14
07:02	07:02
<u>07:03</u>	<u>07:03</u>
07:14	07:14
8	8, 08:01, 08:02, 08:03, 08:04
08:01	08:01
08:02	08:02
08:03	08:03
08:04	08:04
12	12, 44, 44:02, 44:03, 45, <u>50:02</u>
13	13, 13:01, 13:02
13:01	13:01
13:02	13:02
14	14, 64, 65, 14:01, 14:02
14:01	14:01, 64
14:02	14:02, 65
15	15, 62, 63, 70, 71, 72, 75, 76, 77, 15:01, 15:02, 15:03, 15:04, 15:06, 15:07, 15:10, 15:11, 15:12, 15:13, 15:16, 15:17, 15:18, 15:20, 15:21, 15:24, 15:27
15:01	15:01
15:02	15:02
15:03	15:03
15:04	15:04
15:06	15:06
15:07	15:07
15:10	15:10
15:11	15:11
15:12	15:12
15:13	15:13

Candidate Unacceptable B-Locus Antigen	Donor Equivalent Antigens
15:16	15:16
15:17	15:17
15:18	15:18
15:20	15:20
15:21	15:21
15:24	15:24
15:27	15:27
16	16, 38, 38:01, 38:02, 39, 39:01, 39:02, 39:04, 39:05, 39:06, 39:13
17	17, 57, 57:01, 57:03, 58
18	18
21	21, 49, 50, 40:05, <u>50:01</u>
22	22, 54, 55, 55:01, 55:02, 55:04, 56, 56:01, 56:03
27	27, <u>27:03</u> , 27:04, 27:05, 27:06, <del>27:08</del>
<u>27:03</u>	<u>27:03</u>
27:04	27:04
27:05	27:05
27:06	27:06
27:08	27:08
35	35, 35:01, 35:02, 35:03, 35:08, 35:12
35:01	35:01
35:02	35:02
35:03	35:03
35:08	35:08
35:12	35:12
37	37
38	38, 38:01, 38:02
38:01	38:01
38:02	38:02
39	39, 39:01, 39:02, 39:04, 39:05, 39:06, 39:13
39:01	39:01
39:02	39:02
39:04	39:04
39:05	39:05
39:06	39:06
39:13	39:13
40	40, 60, 61, 40:01, 40:02, 40:03, 40:04, 40:06
40:01	40:01, 60
40:02	40:02
40:03	40:03
40:04	40:04
40:05	40:05, <u>50</u>
40:06	40:06
41	41, 41:01, 41:02
41:01	41:01

Candidate Unacceptable B-Locus Antigen	Donor Equivalent Antigens
41:02	41:02
42	42, 42:01, 42:02
42:01	42:01
42:02	42:02
44	44, 44:02, 44:03
44:02	44:02
44:03	44:03
45	45, 50:02
46	46
47	47
48	48, 48:01, 48:02
48:01	48:01
48:02	48:02
49	49
50	50, 40:05, 50:01, <del>50:02</del>
50:01	50:01
50:02	50:02, 45
51	51, 51:01, 51:02
51:01	51:01
51:02	51:02
52	52
53	53
54	54
55	55, 55:01, 55:02, 55:04
55:01	55:01
55:02	55:02
55:04	55:04
56	56, 56:01, 56:03
56:01	56:01
56:03	56:03
57	57, 57:01, 57:03
57:01	57:01
57:03	57:03
58	58
59	59
60	60, 40:01
61	61, 40:02, 40:03, 40:04, 40:06
62	62, 15:01, 15:04, 15:06, 15:07, 15:20, 15:27
63	63, 15:16, 15:17
64	64, 14:01
65	65, 14:02
67	67
70	70, 71, 72, 15:03, 15:10, 15:18
71	71, 15:10, 15:18

Candidate Unacceptable B-Locus Antigen	Donor Equivalent Antigen
72	72, 15:03
73	73
75	75, 15:02, 15:11, 15:21
76	76, 15:12
77	77, 15:13
78	78
81	81
82	82
<u>83:01</u>	<u>83:01</u>
Bw4	Bw4, 08:02, 08:03, 5, 13, 13:01, 13:02, 15:13, 15:16, 15:17, 15:24,17, 27, <u>27:03</u> , 27:04, 27:05, 27:06, 37, 38, 38:01, 38:02, 44, 44:02, 44:03, 47, 49, 51, 51:01, 51:02, 52, 53, 57, 57:01, 57:03, 58, 59, 63, 77
Bw6	Bw6, 7, 07:02, <u>07:03</u> , 07:14, 8, 08:01, 08:04, 14, 14:01, 14:02,15:01, 15:02, 15:03, 15:04, 15:06, 15:07, 15:10, 15:11,15:12, 15:18, 15:20, 15:21, 15:27, 18, 22, 27:08, 35, 35:01, 35:02, 35:03, 35:08, 35:12, 39, 39:01, 39:02, 39:04, 39:05, 39:06, 39:13, 40, 40:01, 40:02, 40:03, 40:04, 40:05, 40:06, 41, 41:01, 41:02, 42, 42:01, 42:02, 45, 48, 48:01 48:02, 50, 50:01, 50:02, 54, 55, 55:01, 55:02, 55:04, 56, 56:01, 56:03, 60, 61, 62, 64, 65, 67, 70, 71, 72, 75, 76, 78, 81, 82

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**Table 4-7: HLA C Unacceptable Antigen Equivalences**

Candidate Unacceptable C-Locus Antigen	Donor Equivalent Antigen
01	01, 01:02, 01:03
01:02	01:02
01:03	01:03
02	02, 02:02, 02:10
02:02	02:02
02:10	02:10
03	03, 03:02, 03:03, <u>03:05</u> , 03:04, 03:06, 09, 10
03:02	03:02
03:03	03:03
03:04	03:04
<u>03:05</u>	<u>03:05</u>
03:06	03:06
04	04, 04:01, 04:03, <u>04:04</u> , <u>04:07</u>
04:01	04:01
04:03	04:03
<u>04:04</u>	<u>04:04</u>
<u>04:07</u>	<u>04:07</u>
05	05, <u>05:01</u>
<u>05:01</u>	<u>05:01</u>

Candidate Unacceptable C-Locus Antigen	Donor Equivalent Antigen
06	06, <u>06:02</u>
<u>06:02</u>	<u>06:02</u>
07	07, 07:01, 07:02, 07:04, <u>07:06</u> , <u>07:18</u>
07:01	07:01
07:02	07:02
07:04	07:04
<u>07:06</u>	<u>07:06</u>
<u>07:18</u>	<u>07:18</u>
08	08, 08:01, 08:02, 08:03, 08:04
08:01	08:01
08:02	08:02
08:03	08:03
08:04	08:04
09	09, 03:03
10	10, 03:02, 03:04, <u>03:06</u>
12	12, 12:02, 12:03, <u>12:04</u>
12:02	12:02
12:03	12:03
<u>12:04</u>	<u>12:04</u>
14	14, 14:02, 14:03
14:02	14:02
14:03	14:03
15	15, 15:02, <u>15:04</u> , 15:05, <u>15:06</u> , <u>15:09</u>
15:02	15:02
<u>15:04</u>	<u>15:04</u>
15:05	15:05
<u>15:06</u>	<u>15:06</u>
<u>15:09</u>	<u>15:09</u>
16	16, 16:01, 16:02, <u>16:04</u>
16:01	16:01
16:02	16:02
<u>16:04</u>	<u>16:04</u>
17	17, 17:01, 17:03
17:01	17:01
17:03	17:03
18	18, 18:01, 18:02
18:01	18:01
18:02	18:02

**Table 4-8: HLA DR Unacceptable Antigen Equivalences**

Candidate Unacceptable DR Locus Antigen	Donor Equivalent Antigens
1	1, 01:01, 01:02, <del>01:03</del>
01:01	01:01
01:02	01:02
01:03	01:03, <u>103</u>
2	2, 15, 15:01, 15:02, 15:03, 16, 16:01, 16:02
3	3, 17, 18, 03:01, 03:02, 03:03
03:01	03:01, 17
03:02	03:02, 18
03:03	03:03, 18
4	4, 04:01, 04:02, 04:03, 04:04, 04:05, 04:06, 04:07, 04:10, 04:11
04:01	04:01
04:02	04:02
04:03	04:03
04:04	04:04
04:05	04:05
04:06	04:06
04:07	04:07
04:10	04:10
04:11	04:11
5	5, 11, 11:01, 11:04, 12, 12:01, 12:02
6	6, 13, 13:01, 13:02, 13:03, <u>13:05</u> , 14, 14:01, 14:02, 14:03, 14:04, 14:05, 14:06, 14:54
7	7
8	8, 08:01, 08:02, 08:03, 08:07
08:01	08:01
08:02	08:02
08:03	08:03
08:07	08:07
9	9, 09:01, 09:02
09:01	09:01
09:02	09:02
10	10
11	11, 11:01, 11:03, 11:04
11:01	11:01
11:03	11:03
11:04	11:04
12	12, 12:01, 12:02
12:01	12:01
12:02	12:02
13	13, 13:01, 13:02, 13:03, 13:05
13:01	13:01
13:02	13:02
13:03	13:03

Candidate Unacceptable DR Locus Antigen	Donor Equivalent Antigen
13:05	13:05
14	14, 14:01, 14:02, 14:03, 14:04, 14:05, 14:06, 14:54
14:01	14:01, 14:54
14:02	14:02
14:03	14:03
14:04	14:04
14:05	14:05
14:06	14:06
14:54	14:54, 14:01
15	15, 15:01, 15:02, 15:03
15:01	15:01
15:02	15:02
15:03	15:03
16	16, 16:01, 16:02
16:01	16:01
16:02	16:02
17	17, 03:01
18	18, 03:02, 03:03
<u>103</u>	<u>103, 01:03</u>

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**Table 4-13: HLA DQB1 Unacceptable Antigen Equivalences**

Candidate Unacceptable DQB1 Locus Antigen	Donor Equivalent Antigen
<u>1</u>	<u>1, 5, 6, 05:01, 05:02, 06:01, 06:02, 06:03, 06:04, 06:09</u>
2	2, 02:01, 02:02
02:01	02:01
02:02	02:02
3	3, 7, 8, 9, 03:01, 03:02, 03:03, 03:19
03:01	03:01, 7
03:02	03:02, 8
03:03	03:03, 9
03:19	03:19, 7
4	4, 04:01, 04:02
04:01	04:01
04:02	04:02
5	5, 05:01, 05:02, 05:03
05:01	05:01
05:02	05:02
05:03	05:03
6	6, 06:01, 06:02, 06:03, 06:04, 06:09
06:01	06:01
06:02	06:02
06:03	06:03
06:04	06:04

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47

Candidate Unacceptable DQB1 Locus Antigen	Donor Equivalent Antigens
06:09	06:09
7	7, 3, 03:01, 03:19
8	8, 3, 03:02
9	9, 3, 03:03

**Table 4-14: HLA DPB1 Unacceptable Antigen Equivalences**

Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
01:01	<u>01:01, 162:01, 417:01, 462:01, 616:01, 733:01, 807:01, 810:01, 853:01, 931:01, 953:01, 979:01, 998:01, 999:01, 1024:01</u>
02:01	<u>02:01, 141:01, 352:01, 414:01, 416:01, 461:01, 617:01, 640:01, 678:01, 723:01, 783:01, 799:01, 819:01, 845:01, 857:01, 861:01, 955:01, 967:01, 975:01, 1036:01</u>
02:02	<u>02:02, 547:01, 721:01, 766:01</u>
03:01	<u>03:01, 104:01, 124:01, 351:01, 669:01, 675:01, 676:01, 704:01, 706:01, 728:01, 829:01, 855:01, 938:01, 946:01, 948:01, 952:01, 1000:01, 1014:01, 1021:01</u>
04:01	<u>04:01, 126:01, 350:01, 415:01, 459:01, 464:01, 534:01, 615:01, 618:01, 670:01, 699:01, 702:01, 755:01, 757:01, 765:01, 767:01, 784:01, 804:01, 813:01, 820:01, 824:01, 826:01, 849:01, 850:01, 859:01, 880:01, 882:01, 926:01, 932:01, 939:01, 978:01, 988:01, 989:01, 992:01, 997:01, 1001:01, 1002:01, 1003:01, 1004:01, 1010:01, 1011:01, 1023:01, 1033:01</u>
04:02	<u>04:02, 105:01, 463:01, 571:01, 647:01, 665:01, 701:01, 725:01, 726:01, 730:01, 731:01, 734:01, 735:01, 763:01, 809:01, 818:01, 823:01, 858:01, 881:01, 927:01, 933:01, 954:01, 958:01, 981:01, 1005:01, 1013:01, 1020:01, 1025:01, 1031:01, 1035:01</u>
05:01	<u>05:01, 135:01, 668:01, 729:01, 744:01, 764:01, 790:01, 847:01, 848:01, 851:01, 860:01, 923:01, 951:01, 1015:01, 1018:01</u>
06:01	<u>06:01, 737:01, 906:01, 914:01, 1022:01</u>
08:01	08:01
09:01	<u>09:01, 797:01, 899:01</u>
10:01	<u>10:01, 650:01, 673:01, 902:01</u>
11:01	<u>11:01, 649:01, 654:01, 672:01, 707:01, 907:01, 937:01</u>
13:01	<u>13:01, 107:01, 133:01, 518:01, 519:01, 888:01, 924:01, 947:01, 996:01</u>
14:01	<u>14:01, 498:01, 572:01, 651:01, 671:01, 705:01, 834:01, 854:01, 949:01</u>
15:01	<u>15:01, 585:01, 896:01, 910:01</u>
16:01	<u>16:01, 652:01, 653:01, 864:01, 886:01, 940:01, 968:01</u>



Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
17:01	17:01, 131:01, 168:01, 460:01, <u>846:01, 956:01, 1032:01</u>
18:01	18:01, <u>897:01, 942:01</u>
19:01	19:01, 106:01, 533:01, 535:01, <u>785:01, 965:01</u>
20:01	20:01, <u>905:01</u>
21:01	21:01, <u>1019:01</u>
22:01	22:01, <u>1026:01</u>
23:01	23:01, 138:01
24:01	24:01
25:01	25:01
26:01	26:01
27:01	27:01
28:01	28:01, 296:01
29:01	29:01, <u>909:01</u>
30:01	30:01
31:01	31:01, <u>945:01</u>
<del>32:01</del>	<del>32:01</del>
<del>33:01</del>	<del>33:01</del>
34:01	34:01, <u>835:01, 913:01</u>
35:01	35:01
<del>36:01</del>	<del>36:01</del>
<del>37:01</del>	<del>37:01</del>
<del>38:01</del>	<del>38:01</del>
39:01	39:01, 584:01
40:01	40:01, <u>745:01</u>
41:01	41:01
44:01	44:01
45:01	45:01, <u>832:01</u>
46:01	46:01
47:01	47:01
48:01	48:01
49:01	49:01
50:01	50:01
51:01	51:01, <u>736:01</u>
52:01	52:01

Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
53:01	53:01
54:01	54:01
55:01	55:01
56:01	56:01
57:01	57:01, 648:01
58:01	58:01
59:01	59:01, <u>782:01</u>
60:01	60:01
62:01	62:01
63:01	63:01
65:01	65:01
66:01	66:01
67:01	67:01
68:01	68:01
69:01	69:01
70:01	70:01
71:01	71:01
72:01	72:01
73:01	73:01
74:01	74:01
75:01	75:01
76:01	76:01
77:01	77:01
78:01	78:01
79:01	79:01
80:01	80:01, <u>762:01</u>
81:01	81:01
82:01	82:01
83:01	83:01
84:01	84:01
85:01	85:01, <u>713:01, 901:01, 1034:01</u>
86:01	86:01
87:01	87:01
88:01	88:01

Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
89:01	89:01
90:01	90:01, <u>1012:01</u>
91:01	91:01
92:01	92:01
93:01	93:01
94:01	94:01
95:01	95:01
96:01	96:01
97:01	97:01
98:01	98:01
99:01	99:01
100:01	100:01
101:01	101:01
102:01	102:01
103:01	103:01
104:01	104:01
105:01	105:01
106:01	106:01
107:01	107:01
108:01	108:01
109:01	109:01
110:01	110:01
111:01	111:01
112:01	112:01
113:01	113:01
114:01	114:01
115:01	115:01
116:01	116:01
117:01	117:01
118:01	118:01
119:01	119:01
121:01	121:01
122:01	122:01
123:01	123:01

Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
124:01	124:01
125:01	125:01
126:01	126:01
127:01	127:01
128:01	128:01
129:01	129:01
130:01	130:01
131:01	131:01
132:01	132:01, <u>1027:01</u>
133:01	133:01
134:01	134:01
135:01	135:01
136:01	136:01
137:01	137:01, <u>791:01</u>
138:01	138:01
139:01	139:01
140:01	140:01
141:01	141:01
142:01	142:01
143:01	143:01
144:01	144:01
145:01	145:01
146:01	146:01
147:01	147:01
148:01	148:01
149:01	149:01
150:01	150:01
151:01	151:01
152:01	152:01, <u>944:01</u>
153:01	153:01
155:01	155:01
156:01	156:01
157:01	157:01
158:01	158:01

Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
160:01	160:01
162:01	162:01
163:01	163:01
164:01	164:01
165:01	165:01
166:01	166:01
167:01	167:01
168:01	168:01
169:01	169:01
170:01	170:01
171:01	171:01
172:01	172:01
173:01	173:01
174:01	174:01
175:01	175:01
176:01	176:01
177:01	177:01
178:01	178:01
179:01	179:01
180:01	180:01
181:01	181:01
182:01	182:01
183:01	183:01
184:01	184:01
185:01	185:01
186:01	186:01
187:01	187:01
188:01	188:01
189:01	189:01
190:01	190:01
191:01	191:01
192:01	192:01
193:01	193:01
194:01	194:01

Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
195:01	195:01
196:01	196:01
197:01	197:01
198:01	198:01
199:01	199:01
200:01	200:01
201:01	201:01
202:01	202:01
203:01	203:01
204:01	204:01
205:01	205:01
206:01	206:01
207:01	207:01
208:01	208:01
209:01	209:01
210:01	210:01
211:01	211:01
212:01	212:01
213:01	213:01
214:01	214:01
215:01	215:01
217:01	217:01
219:01	219:01
220:01	220:01
221:01	221:01
222:01	222:01
223:01	223:01
224:01	224:01
225:01	225:01
226:01	226:01
227:01	227:01
228:01	228:01
229:01	229:01
230:01	230:01

Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
231:01	231:01
232:01	232:01
233:01	233:01
234:01	234:01
235:01	235:01
236:01	236:01
237:01	237:01
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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Candidate Unacceptable DPB1 Locus Antigen	Donor Equivalent Antigen
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**Table 4-15: Epitope based Unacceptable Antigen Assignment for DPB1**

Candidate Unacceptable Epitope	Donor Equivalent Antigens								
	01:01	04:01	11:01	13:01	15:01	23:01	26:01	27:01	31:01
55AAE	<u>33:01</u>	<u>34:01</u>	<u>39:01</u>	<u>40:01</u>	<u>52:01</u>	<u>55:01</u>	<u>56:01</u>	<u>58:01</u>	<u>62:01</u>
	<u>63:01</u>	<u>65:01</u>	<u>66:01</u>	<u>67:01</u>	<u>71:01</u>	<u>72:01</u>	<u>74:01</u>	<u>85:01</u>	<u>87:01</u>
	<u>89:01</u>	<u>90:01</u>	<u>95:01</u>	<u>96:01</u>	<u>102:01</u>	<u>103:01</u>	<u>107:01</u>	<u>110:01</u>	<u>112:01</u>
	<u>117:01</u>	<u>118:01</u>	<u>121:01</u>	<u>125:01</u>	<u>126:01</u>	<u>127:01</u>	<u>128:01</u>	<u>133:01</u>	<u>134:01</u>
	<u>138:01</u>	<u>142:01</u>	<u>147:01</u>	<u>149:01</u>	<u>150:01</u>	<u>158:01</u>	<u>160:01</u>	<u>162:01</u>	<u>169:01</u>
	<u>173:01</u>	<u>174:01</u>	<u>175:01</u>	<u>176:01</u>	<u>177:01</u>	<u>178:01</u>	<u>179:01</u>	<u>180:01</u>	<u>181:01</u>
	<u>192:01</u>	<u>193:01</u>	<u>194:01</u>	<u>195:01</u>	<u>199:01</u>	<u>201:01</u>	<u>202:01</u>	<u>206:01</u>	<u>207:01</u>
	<u>209:01</u>	<u>212:01</u>	<u>213:01</u>	<u>220:01</u>	<u>224:01</u>	<u>225:01</u>	<u>227:01</u>	<u>228:01</u>	<u>230:01</u>
	<u>231:01</u>	<u>232:01</u>	<u>240:01</u>	<u>244:01</u>	<u>246:01</u>	<u>247:01</u>	<u>250:01</u>	<u>253:01</u>	<u>255:01</u>
	<u>262:01</u>	<u>264:01</u>	<u>267:01</u>	<u>268:01</u>	<u>272:01</u>	<u>275:01</u>	<u>276:01</u>	<u>278:01</u>	<u>279:01</u>
	<u>280:01</u>	<u>281:01</u>	<u>282:01</u>	<u>283:01</u>	<u>290:01</u>	<u>294:01</u>	<u>295:01</u>	<u>298:01</u>	<u>299:01</u>
	<u>303:01</u>	<u>304:01</u>	<u>305:01</u>	<u>306:01</u>	<u>314:01</u>	<u>318:01</u>	<u>319:01</u>	<u>320:01</u>	<u>322:01</u>
	<u>323:01</u>	<u>325:01</u>	<u>326:01</u>	<u>327:01</u>	<u>333:01</u>	<u>334:01</u>	<u>335:01</u>	<u>336:01</u>	<u>340:01</u>
	<u>341:01</u>	<u>345:01</u>	<u>346:01</u>	<u>348:01</u>	<u>350:01</u>	<u>353:01</u>	<u>354:01</u>	<u>356:01</u>	<u>360:01</u>
	<u>362:01</u>	<u>370:01</u>	<u>371:01</u>	<u>372:01</u>	<u>375:01</u>	<u>376:01</u>	<u>377:01</u>	<u>378:01</u>	<u>387:01</u>
	<u>388:01</u>	<u>389:01</u>	<u>392:01</u>	<u>393:01</u>	<u>396:01</u>	<u>397:01</u>	<u>398:01</u>	<u>399:01</u>	<u>411:01</u>
	<u>412:01</u>	<u>415:01</u>	<u>417:01</u>	<u>418:01</u>	<u>425:01</u>	<u>426:01</u>	<u>428:01</u>	<u>434:01</u>	<u>435:01</u>
	<u>436:01</u>	<u>437:01</u>	<u>438:01</u>	<u>440:01</u>	<u>449:01</u>	<u>451:01</u>	<u>453:01</u>	<u>454:01</u>	<u>456:01</u>
	<u>458:01</u>	<u>459:01</u>	<u>462:01</u>	<u>464:01</u>	<u>465:01</u>	<u>468:01</u>	<u>471:01</u>	<u>474:01</u>	<u>475:01</u>

<u>Candidate Unacceptable Epitope</u>									
				<u>Donor</u>	<u>Equivalent</u>	<u>Antigens</u>			
	<u>476:01</u>	<u>479:01</u>	<u>480:01</u>	<u>481:01</u>	<u>482:01</u>	<u>483:01</u>	<u>485:01</u>	<u>486:01</u>	<u>487:01</u>
	<u>490:01</u>	<u>493:01</u>	<u>497:01</u>	<u>500:01</u>	<u>503:01</u>	<u>512:01</u>	<u>516:01</u>	<u>517:01</u>	<u>518:01</u>
	<u>519:01</u>	<u>520:01</u>	<u>521:01</u>	<u>522:01</u>	<u>523:01</u>	<u>524:01</u>	<u>529:01</u>	<u>531:01</u>	<u>534:01</u>
	<u>538:01</u>	<u>542:01</u>	<u>543:01</u>	<u>544:01</u>	<u>553:01</u>	<u>554:01</u>	<u>556:01</u>	<u>559:01</u>	<u>561:01</u>
	<u>562:01</u>	<u>563:01</u>	<u>564:01</u>	<u>565:01</u>	<u>569:01</u>	<u>575:01</u>	<u>576:01</u>	<u>578:01</u>	<u>580:01</u>
	<u>583:01</u>	<u>584:01</u>	<u>585:01</u>	<u>591:01</u>	<u>592:01</u>	<u>593:01</u>	<u>597:01</u>	<u>599:01</u>	<u>600:01</u>
	<u>607:01</u>	<u>609:01</u>	<u>612:01</u>	<u>614:01</u>	<u>615:01</u>	<u>616:01</u>	<u>618:01</u>	<u>623:01</u>	<u>625:01</u>
	<u>626:01</u>	<u>631:01</u>	<u>632:01</u>	<u>634:01</u>	<u>635:01</u>	<u>636:01</u>	<u>643:01</u>	<u>644:01</u>	<u>649:01</u>
	<u>654:01</u>	<u>658:01</u>	<u>666:01</u>	<u>667:01</u>	<u>670:01</u>	<u>672:01</u>	<u>677:01</u>	<u>679:01</u>	<u>682:01</u>
	<u>683:01</u>	<u>686:01</u>	<u>687:01</u>	<u>694:01</u>	<u>695:01</u>	<u>699:01</u>	<u>702:01</u>	<u>703:01</u>	<u>707:01</u>
	<u>708:01</u>	<u>709:01</u>	<u>713:01</u>	<u>716:01</u>	<u>722:01</u>	<u>733:01</u>	<u>739:01</u>	<u>742:01</u>	<u>745:01</u>
	<u>747:01</u>	<u>749:01</u>	<u>750:01</u>	<u>753:01</u>	<u>755:01</u>	<u>757:01</u>	<u>758:01</u>	<u>761:01</u>	<u>765:01</u>
	<u>767:01</u>	<u>768:01</u>	<u>769:01</u>	<u>772:01</u>	<u>773:01</u>	<u>784:01</u>	<u>787:01</u>	<u>788:01</u>	<u>789:01</u>
	<u>795:01</u>	<u>803:01</u>	<u>804:01</u>	<u>806:01</u>	<u>807:01</u>	<u>808:01</u>	<u>810:01</u>	<u>811:01</u>	<u>812:01</u>
	<u>813:01</u>	<u>814:01</u>	<u>820:01</u>	<u>822:01</u>	<u>824:01</u>	<u>826:01</u>	<u>828:01</u>	<u>830:01</u>	<u>835:01</u>
	<u>837:01</u>	<u>840:01</u>	<u>842:01</u>	<u>849:01</u>	<u>850:01</u>	<u>852:01</u>	<u>853:01</u>	<u>856:01</u>	<u>859:01</u>
	<u>879:01</u>	<u>880:01</u>	<u>882:01</u>	<u>888:01</u>	<u>893:01</u>	<u>895:01</u>	<u>896:01</u>	<u>901:01</u>	<u>904:01</u>
	<u>907:01</u>	<u>908:01</u>	<u>910:01</u>	<u>912:01</u>	<u>913:01</u>	<u>915:01</u>	<u>916:01</u>	<u>921:01</u>	<u>922:01</u>
	<u>924:01</u>	<u>926:01</u>	<u>930:01</u>	<u>931:01</u>	<u>932:01</u>	<u>934:01</u>	<u>937:01</u>	<u>945:01</u>	<u>947:01</u>
	<u>953:01</u>	<u>957:01</u>	<u>966:01</u>	<u>969:01</u>	<u>972:01</u>	<u>976:01</u>	<u>978:01</u>	<u>979:01</u>	<u>988:01</u>
	<u>989:01</u>	<u>991:01</u>	<u>992:01</u>	<u>993:01</u>	<u>996:01</u>	<u>997:01</u>	<u>998:01</u>	<u>999:01</u>	<u>1001:01</u>
	<u>1002:01</u>	<u>1003:01</u>	<u>1004:01</u>	<u>1010:01</u>	<u>1011:01</u>	<u>1012:01</u>	<u>1016:01</u>	<u>1023:01</u>	<u>1024:01</u>
	<u>1033:01</u>	<u>1034:01</u>							
	<u>03:01</u>	<u>06:01</u>	<u>09:01</u>	<u>14:01</u>	<u>17:01</u>	<u>20:01</u>	<u>29:01</u>	<u>35:01</u>	<u>44:01</u>
	<u>46:01</u>	<u>50:01</u>	<u>57:01</u>	<u>69:01</u>	<u>70:01</u>	<u>76:01</u>	<u>78:01</u>	<u>80:01</u>	<u>86:01</u>
	<u>88:01</u>	<u>91:01</u>	<u>92:01</u>	<u>98:01</u>	<u>104:01</u>	<u>108:01</u>	<u>111:01</u>	<u>119:01</u>	<u>124:01</u>
	<u>130:01</u>	<u>131:01</u>	<u>132:01</u>	<u>152:01</u>	<u>156:01</u>	<u>157:01</u>	<u>164:01</u>	<u>166:01</u>	<u>168:01</u>
	<u>182:01</u>	<u>197:01</u>	<u>203:01</u>	<u>205:01</u>	<u>208:01</u>	<u>214:01</u>	<u>221:01</u>	<u>222:01</u>	<u>234:01</u>
	<u>235:01</u>	<u>241:01</u>	<u>242:01</u>	<u>243:01</u>	<u>245:01</u>	<u>248:01</u>	<u>249:01</u>	<u>251:01</u>	<u>259:01</u>
	<u>266:01</u>	<u>270:01</u>	<u>287:01</u>	<u>288:01</u>	<u>289:01</u>	<u>292:01</u>	<u>293:01</u>	<u>329:01</u>	<u>332:01</u>
<u>55DED</u>	<u>343:01</u>	<u>351:01</u>	<u>355:01</u>	<u>361:01</u>	<u>363:01</u>	<u>379:01</u>	<u>383:01</u>	<u>384:01</u>	<u>385:01</u>
	<u>386:01</u>	<u>391:01</u>	<u>394:01</u>	<u>404:01</u>	<u>405:01</u>	<u>407:01</u>	<u>409:01</u>	<u>413:01</u>	<u>439:01</u>
	<u>442:01</u>	<u>445:01</u>	<u>446:01</u>	<u>447:01</u>	<u>460:01</u>	<u>472:01</u>	<u>484:01</u>	<u>491:01</u>	<u>492:01</u>
	<u>498:01</u>	<u>504:01</u>	<u>505:01</u>	<u>506:01</u>	<u>508:01</u>	<u>509:01</u>	<u>530:01</u>	<u>536:01</u>	<u>540:01</u>
	<u>541:01</u>	<u>545:01</u>	<u>546:01</u>	<u>548:01</u>	<u>555:01</u>	<u>566:01</u>	<u>567:01</u>	<u>568:01</u>	<u>572:01</u>
	<u>581:01</u>	<u>601:01</u>	<u>610:01</u>	<u>613:01</u>	<u>620:01</u>	<u>621:01</u>	<u>629:01</u>	<u>630:01</u>	<u>645:01</u>
	<u>648:01</u>	<u>651:01</u>	<u>662:01</u>	<u>664:01</u>	<u>669:01</u>	<u>671:01</u>	<u>675:01</u>	<u>676:01</u>	<u>684:01</u>
	<u>688:01</u>	<u>689:01</u>	<u>698:01</u>	<u>704:01</u>	<u>705:01</u>	<u>706:01</u>	<u>714:01</u>	<u>719:01</u>	<u>727:01</u>
	<u>728:01</u>	<u>737:01</u>	<u>760:01</u>	<u>762:01</u>	<u>797:01</u>	<u>801:01</u>	<u>815:01</u>	<u>829:01</u>	<u>833:01</u>
	<u>834:01</u>	<u>839:01</u>	<u>846:01</u>	<u>854:01</u>	<u>855:01</u>	<u>883:01</u>	<u>899:01</u>	<u>905:01</u>	<u>906:01</u>
	<u>909:01</u>	<u>914:01</u>	<u>920:01</u>	<u>935:01</u>	<u>938:01</u>	<u>944:01</u>	<u>946:01</u>	<u>948:01</u>	<u>949:01</u>

Candidate Unacceptable Epitope									
				Donor	Equivalent	Antigens			
	<u>952:01</u>	<u>956:01</u>	<u>970:01</u>	<u>977:01</u>	<u>983:01</u>	<u>987:01</u>	<u>990:01</u>	<u>994:01</u>	<u>1000:01</u>
	<u>1009:01</u>	<u>1014:01</u>	<u>1017:01</u>	<u>1021:01</u>	<u>1022:01</u>	<u>1027:01</u>	<u>1030:01</u>	<u>1032:01</u>	
55DEE	<u>02:01</u>	<u>04:02</u>	<u>08:01</u>	<u>10:01</u>	<u>16:01</u>	<u>18:01</u>	<u>25:01</u>	<u>28:01</u>	<u>37:01</u>
	<u>41:01</u>	<u>45:01</u>	<u>48:01</u>	<u>49:01</u>	<u>51:01</u>	<u>53:01</u>	<u>59:01</u>	<u>60:01</u>	<u>68:01</u>
	<u>73:01</u>	<u>75:01</u>	<u>77:01</u>	<u>79:01</u>	<u>81:01</u>	<u>82:01</u>	<u>83:01</u>	<u>93:01</u>	<u>94:01</u>
	<u>105:01</u>	<u>109:01</u>	<u>113:01</u>	<u>115:01</u>	<u>116:01</u>	<u>122:01</u>	<u>123:01</u>	<u>129:01</u>	<u>136:01</u>
	<u>137:01</u>	<u>141:01</u>	<u>143:01</u>	<u>144:01</u>	<u>145:01</u>	<u>146:01</u>	<u>151:01</u>	<u>153:01</u>	<u>155:01</u>
	<u>163:01</u>	<u>165:01</u>	<u>167:01</u>	<u>172:01</u>	<u>183:01</u>	<u>184:01</u>	<u>185:01</u>	<u>186:01</u>	<u>187:01</u>
	<u>188:01</u>	<u>189:01</u>	<u>191:01</u>	<u>196:01</u>	<u>198:01</u>	<u>200:01</u>	<u>204:01</u>	<u>210:01</u>	<u>211:01</u>
	<u>217:01</u>	<u>219:01</u>	<u>229:01</u>	<u>236:01</u>	<u>237:01</u>	<u>238:01</u>	<u>239:01</u>	<u>252:01</u>	<u>256:01</u>
	<u>257:01</u>	<u>258:01</u>	<u>260:01</u>	<u>261:01</u>	<u>263:01</u>	<u>265:01</u>	<u>269:01</u>	<u>271:01</u>	<u>273:01</u>
	<u>274:01</u>	<u>277:01</u>	<u>285:01</u>	<u>286:01</u>	<u>296:01</u>	<u>297:01</u>	<u>307:01</u>	<u>308:01</u>	<u>309:01</u>
	<u>310:01</u>	<u>311:01</u>	<u>312:01</u>	<u>313:01</u>	<u>316:01</u>	<u>321:01</u>	<u>324:01</u>	<u>338:01</u>	<u>339:01</u>
	<u>342:01</u>	<u>344:01</u>	<u>347:01</u>	<u>349:01</u>	<u>352:01</u>	<u>359:01</u>	<u>364:01</u>	<u>365:01</u>	<u>366:01</u>
	<u>367:01</u>	<u>368:01</u>	<u>369:01</u>	<u>373:01</u>	<u>374:01</u>	<u>380:01</u>	<u>381:01</u>	<u>402:01</u>	<u>410:01</u>
	<u>414:01</u>	<u>416:01</u>	<u>419:01</u>	<u>420:01</u>	<u>421:01</u>	<u>422:01</u>	<u>423:01</u>	<u>424:01</u>	<u>429:01</u>
	<u>430:01</u>	<u>431:01</u>	<u>432:01</u>	<u>433:01</u>	<u>441:01</u>	<u>443:01</u>	<u>444:01</u>	<u>448:01</u>	<u>452:01</u>
	<u>457:01</u>	<u>461:01</u>	<u>463:01</u>	<u>466:01</u>	<u>467:01</u>	<u>469:01</u>	<u>470:01</u>	<u>477:01</u>	<u>488:01</u>
	<u>489:01</u>	<u>494:01</u>	<u>499:01</u>	<u>501:01</u>	<u>502:01</u>	<u>510:01</u>	<u>511:01</u>	<u>513:01</u>	<u>514:01</u>
	<u>515:01</u>	<u>525:01</u>	<u>526:01</u>	<u>528:01</u>	<u>532:01</u>	<u>537:01</u>	<u>539:01</u>	<u>549:01</u>	<u>552:01</u>
	<u>557:01</u>	<u>571:01</u>	<u>574:01</u>	<u>577:01</u>	<u>579:01</u>	<u>582:01</u>	<u>586:01</u>	<u>594:01</u>	<u>595:01</u>
	<u>596:01</u>	<u>602:01</u>	<u>603:01</u>	<u>604:01</u>	<u>606:01</u>	<u>608:01</u>	<u>617:01</u>	<u>622:01</u>	<u>624:01</u>
	<u>627:01</u>	<u>628:01</u>	<u>633:01</u>	<u>637:01</u>	<u>639:01</u>	<u>640:01</u>	<u>641:01</u>	<u>646:01</u>	<u>647:01</u>
	<u>650:01</u>	<u>652:01</u>	<u>653:01</u>	<u>655:01</u>	<u>656:01</u>	<u>659:01</u>	<u>660:01</u>	<u>663:01</u>	<u>665:01</u>
	<u>673:01</u>	<u>674:01</u>	<u>678:01</u>	<u>680:01</u>	<u>681:01</u>	<u>685:01</u>	<u>690:01</u>	<u>692:01</u>	<u>701:01</u>
	<u>711:01</u>	<u>723:01</u>	<u>725:01</u>	<u>726:01</u>	<u>730:01</u>	<u>731:01</u>	<u>734:01</u>	<u>735:01</u>	<u>736:01</u>
	<u>740:01</u>	<u>741:01</u>	<u>751:01</u>	<u>752:01</u>	<u>759:01</u>	<u>763:01</u>	<u>770:01</u>	<u>771:01</u>	<u>774:01</u>
	<u>775:01</u>	<u>776:01</u>	<u>780:01</u>	<u>781:01</u>	<u>782:01</u>	<u>783:01</u>	<u>791:01</u>	<u>799:01</u>	<u>805:01</u>
	<u>809:01</u>	<u>816:01</u>	<u>817:01</u>	<u>818:01</u>	<u>819:01</u>	<u>823:01</u>	<u>827:01</u>	<u>832:01</u>	<u>836:01</u>
	<u>841:01</u>	<u>843:01</u>	<u>845:01</u>	<u>857:01</u>	<u>858:01</u>	<u>861:01</u>	<u>863:01</u>	<u>864:01</u>	<u>881:01</u>
<u>884:01</u>	<u>885:01</u>	<u>886:01</u>	<u>887:01</u>	<u>889:01</u>	<u>890:01</u>	<u>891:01</u>	<u>892:01</u>	<u>897:01</u>	
<u>898:01</u>	<u>900:01</u>	<u>902:01</u>	<u>903:01</u>	<u>918:01</u>	<u>927:01</u>	<u>933:01</u>	<u>936:01</u>	<u>940:01</u>	
<u>942:01</u>	<u>943:01</u>	<u>954:01</u>	<u>955:01</u>	<u>958:01</u>	<u>963:01</u>	<u>964:01</u>	<u>967:01</u>	<u>968:01</u>	
<u>973:01</u>	<u>975:01</u>	<u>981:01</u>	<u>1005:01</u>	<u>1006:01</u>	<u>1007:01</u>	<u>1013:01</u>	<u>1020:01</u>	<u>1025:01</u>	
<u>1028:01</u>	<u>1031:01</u>	<u>1035:01</u>	<u>1036:01</u>						
55EAE	<u>02:02</u>	<u>05:01</u>	<u>19:01</u>	<u>21:01</u>	<u>22:01</u>	<u>24:01</u>	<u>30:01</u>	<u>36:01</u>	<u>38:01</u>
	<u>47:01</u>	<u>54:01</u>	<u>97:01</u>	<u>100:01</u>	<u>101:01</u>	<u>106:01</u>	<u>114:01</u>	<u>135:01</u>	<u>139:01</u>
	<u>140:01</u>	<u>170:01</u>	<u>171:01</u>	<u>223:01</u>	<u>226:01</u>	<u>233:01</u>	<u>284:01</u>	<u>291:01</u>	<u>300:01</u>
	<u>301:01</u>	<u>302:01</u>	<u>317:01</u>	<u>330:01</u>	<u>331:01</u>	<u>337:01</u>	<u>358:01</u>	<u>390:01</u>	<u>395:01</u>
	<u>400:01</u>	<u>406:01</u>	<u>408:01</u>	<u>473:01</u>	<u>478:01</u>	<u>495:01</u>	<u>496:01</u>	<u>527:01</u>	<u>533:01</u>
	<u>535:01</u>	<u>547:01</u>	<u>550:01</u>	<u>558:01</u>	<u>560:01</u>	<u>573:01</u>	<u>587:01</u>	<u>588:01</u>	<u>589:01</u>

Candidate Unacceptable Epitope									
				Donor	Equivalent	Antigens			
	<u>590:01</u>	<u>611:01</u>	<u>619:01</u>	<u>638:01</u>	<u>668:01</u>	<u>697:01</u>	<u>715:01</u>	<u>717:01</u>	<u>718:01</u>
	<u>720:01</u>	<u>721:01</u>	<u>729:01</u>	<u>744:01</u>	<u>746:01</u>	<u>764:01</u>	<u>766:01</u>	<u>778:01</u>	<u>779:01</u>
	<u>785:01</u>	<u>790:01</u>	<u>798:01</u>	<u>802:01</u>	<u>847:01</u>	<u>848:01</u>	<u>851:01</u>	<u>860:01</u>	<u>923:01</u>
	<u>928:01</u>	<u>929:01</u>	<u>951:01</u>	<u>961:01</u>	<u>962:01</u>	<u>965:01</u>	<u>971:01</u>	<u>980:01</u>	<u>982:01</u>
	<u>1008:01</u>	<u>1015:01</u>	<u>1018:01</u>	<u>1019:01</u>	<u>1026:01</u>				
84DEAV	<u>01:01</u>	<u>03:01</u>	<u>05:01</u>	<u>06:01</u>	<u>08:01</u>	<u>09:01</u>	<u>10:01</u>	<u>11:01</u>	<u>13:01</u>
	<u>14:01</u>	<u>16:01</u>	<u>17:01</u>	<u>19:01</u>	<u>20:01</u>	<u>21:01</u>	<u>22:01</u>	<u>25:01</u>	<u>26:01</u>
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	<u>45:01</u>	<u>50:01</u>	<u>52:01</u>	<u>54:01</u>	<u>55:01</u>	<u>56:01</u>	<u>57:01</u>	<u>58:01</u>	<u>63:01</u>
	<u>65:01</u>	<u>67:01</u>	<u>68:01</u>	<u>69:01</u>	<u>70:01</u>	<u>76:01</u>	<u>78:01</u>	<u>79:01</u>	<u>84:01</u>
	<u>85:01</u>	<u>87:01</u>	<u>88:01</u>	<u>89:01</u>	<u>90:01</u>	<u>91:01</u>	<u>92:01</u>	<u>93:01</u>	<u>97:01</u>
	<u>98:01</u>	<u>102:01</u>	<u>103:01</u>	<u>104:01</u>	<u>106:01</u>	<u>107:01</u>	<u>110:01</u>	<u>111:01</u>	<u>114:01</u>
	<u>118:01</u>	<u>122:01</u>	<u>124:01</u>	<u>125:01</u>	<u>127:01</u>	<u>130:01</u>	<u>131:01</u>	<u>132:01</u>	<u>133:01</u>
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	<u>207:01</u>	<u>208:01</u>	<u>209:01</u>	<u>220:01</u>	<u>221:01</u>	<u>222:01</u>	<u>223:01</u>	<u>226:01</u>	<u>234:01</u>
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	<u>251:01</u>	<u>259:01</u>	<u>264:01</u>	<u>265:01</u>	<u>266:01</u>	<u>267:01</u>	<u>268:01</u>	<u>269:01</u>	<u>270:01</u>
	<u>277:01</u>	<u>284:01</u>	<u>285:01</u>	<u>287:01</u>	<u>288:01</u>	<u>289:01</u>	<u>291:01</u>	<u>293:01</u>	<u>295:01</u>
	<u>300:01</u>	<u>301:01</u>	<u>304:01</u>	<u>305:01</u>	<u>312:01</u>	<u>313:01</u>	<u>314:01</u>	<u>315:01</u>	<u>316:01</u>
	<u>317:01</u>	<u>324:01</u>	<u>325:01</u>	<u>326:01</u>	<u>327:01</u>	<u>329:01</u>	<u>331:01</u>	<u>337:01</u>	<u>340:01</u>
	<u>343:01</u>	<u>346:01</u>	<u>348:01</u>	<u>349:01</u>	<u>351:01</u>	<u>353:01</u>	<u>358:01</u>	<u>361:01</u>	<u>362:01</u>
	<u>363:01</u>	<u>370:01</u>	<u>371:01</u>	<u>379:01</u>	<u>383:01</u>	<u>384:01</u>	<u>385:01</u>	<u>386:01</u>	<u>388:01</u>
	<u>389:01</u>	<u>390:01</u>	<u>391:01</u>	<u>393:01</u>	<u>394:01</u>	<u>395:01</u>	<u>398:01</u>	<u>400:01</u>	<u>404:01</u>
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	<u>422:01</u>	<u>437:01</u>	<u>438:01</u>	<u>439:01</u>	<u>442:01</u>	<u>445:01</u>	<u>446:01</u>	<u>447:01</u>	<u>448:01</u>
	<u>449:01</u>	<u>458:01</u>	<u>460:01</u>	<u>462:01</u>	<u>466:01</u>	<u>470:01</u>	<u>472:01</u>	<u>473:01</u>	<u>481:01</u>
	<u>483:01</u>	<u>490:01</u>	<u>491:01</u>	<u>492:01</u>	<u>495:01</u>	<u>498:01</u>	<u>503:01</u>	<u>504:01</u>	<u>505:01</u>
	<u>506:01</u>	<u>509:01</u>	<u>514:01</u>	<u>515:01</u>	<u>516:01</u>	<u>517:01</u>	<u>518:01</u>	<u>519:01</u>	<u>527:01</u>
	<u>530:01</u>	<u>532:01</u>	<u>533:01</u>	<u>535:01</u>	<u>536:01</u>	<u>538:01</u>	<u>541:01</u>	<u>542:01</u>	<u>543:01</u>
	<u>545:01</u>	<u>548:01</u>	<u>550:01</u>	<u>552:01</u>	<u>558:01</u>	<u>560:01</u>	<u>562:01</u>	<u>563:01</u>	<u>564:01</u>
	<u>565:01</u>	<u>566:01</u>	<u>567:01</u>	<u>568:01</u>	<u>572:01</u>	<u>573:01</u>	<u>587:01</u>	<u>588:01</u>	<u>597:01</u>
	<u>599:01</u>	<u>600:01</u>	<u>608:01</u>	<u>609:01</u>	<u>610:01</u>	<u>611:01</u>	<u>612:01</u>	<u>613:01</u>	<u>616:01</u>
	<u>619:01</u>	<u>621:01</u>	<u>623:01</u>	<u>629:01</u>	<u>630:01</u>	<u>631:01</u>	<u>632:01</u>	<u>633:01</u>	<u>634:01</u>
	<u>635:01</u>	<u>636:01</u>	<u>638:01</u>	<u>645:01</u>	<u>648:01</u>	<u>649:01</u>	<u>650:01</u>	<u>651:01</u>	<u>652:01</u>
	<u>653:01</u>	<u>654:01</u>	<u>662:01</u>	<u>664:01</u>	<u>667:01</u>	<u>668:01</u>	<u>669:01</u>	<u>671:01</u>	<u>672:01</u>
	<u>673:01</u>	<u>675:01</u>	<u>676:01</u>	<u>684:01</u>	<u>688:01</u>	<u>689:01</u>	<u>698:01</u>	<u>703:01</u>	<u>704:01</u>
<u>705:01</u>	<u>706:01</u>	<u>707:01</u>	<u>708:01</u>	<u>709:01</u>	<u>710:01</u>	<u>711:01</u>	<u>713:01</u>	<u>714:01</u>	
<u>715:01</u>	<u>716:01</u>	<u>717:01</u>	<u>718:01</u>	<u>720:01</u>	<u>727:01</u>	<u>728:01</u>	<u>729:01</u>	<u>733:01</u>	
<u>737:01</u>	<u>744:01</u>	<u>746:01</u>	<u>749:01</u>	<u>760:01</u>	<u>764:01</u>	<u>778:01</u>	<u>785:01</u>	<u>789:01</u>	

<u>Candidate Unacceptable Epitope</u>									
				<u>Donor</u>	<u>Equivalent</u>	<u>Antigens</u>			
	<u>790:01</u>	<u>791:01</u>	<u>797:01</u>	<u>798:01</u>	<u>801:01</u>	<u>802:01</u>	<u>807:01</u>	<u>810:01</u>	<u>815:01</u>
	<u>822:01</u>	<u>825:01</u>	<u>829:01</u>	<u>832:01</u>	<u>833:01</u>	<u>834:01</u>	<u>839:01</u>	<u>846:01</u>	<u>847:01</u>
	<u>848:01</u>	<u>851:01</u>	<u>853:01</u>	<u>854:01</u>	<u>855:01</u>	<u>856:01</u>	<u>860:01</u>	<u>864:01</u>	<u>879:01</u>
	<u>883:01</u>	<u>886:01</u>	<u>888:01</u>	<u>891:01</u>	<u>892:01</u>	<u>893:01</u>	<u>898:01</u>	<u>899:01</u>	<u>901:01</u>
	<u>902:01</u>	<u>904:01</u>	<u>905:01</u>	<u>906:01</u>	<u>907:01</u>	<u>908:01</u>	<u>909:01</u>	<u>912:01</u>	<u>914:01</u>
	<u>920:01</u>	<u>922:01</u>	<u>923:01</u>	<u>924:01</u>	<u>929:01</u>	<u>930:01</u>	<u>931:01</u>	<u>935:01</u>	<u>937:01</u>
	<u>938:01</u>	<u>940:01</u>	<u>944:01</u>	<u>945:01</u>	<u>946:01</u>	<u>947:01</u>	<u>948:01</u>	<u>949:01</u>	<u>951:01</u>
	<u>952:01</u>	<u>953:01</u>	<u>956:01</u>	<u>965:01</u>	<u>968:01</u>	<u>969:01</u>	<u>970:01</u>	<u>971:01</u>	<u>976:01</u>
	<u>977:01</u>	<u>979:01</u>	<u>980:01</u>	<u>982:01</u>	<u>983:01</u>	<u>990:01</u>	<u>991:01</u>	<u>994:01</u>	<u>996:01</u>
	<u>998:01</u>	<u>999:01</u>	<u>1000:01</u>	<u>1006:01</u>	<u>1007:01</u>	<u>1008:01</u>	<u>1009:01</u>	<u>1012:01</u>	<u>1014:01</u>
	<u>1015:01</u>	<u>1017:01</u>	<u>1018:01</u>	<u>1019:01</u>	<u>1021:01</u>	<u>1022:01</u>	<u>1024:01</u>	<u>1026:01</u>	<u>1027:01</u>
	<u>1030:01</u>	<u>1032:01</u>	<u>1034:01</u>						
	<u>02:01</u>	<u>02:02</u>	<u>04:01</u>	<u>04:02</u>	<u>23:01</u>	<u>24:01</u>	<u>32:01</u>	<u>33:01</u>	<u>39:01</u>
	<u>41:01</u>	<u>46:01</u>	<u>47:01</u>	<u>48:01</u>	<u>49:01</u>	<u>51:01</u>	<u>59:01</u>	<u>60:01</u>	<u>66:01</u>
	<u>71:01</u>	<u>72:01</u>	<u>73:01</u>	<u>75:01</u>	<u>77:01</u>	<u>80:01</u>	<u>81:01</u>	<u>82:01</u>	<u>83:01</u>
	<u>86:01</u>	<u>94:01</u>	<u>95:01</u>	<u>96:01</u>	<u>100:01</u>	<u>101:01</u>	<u>105:01</u>	<u>108:01</u>	<u>109:01</u>
	<u>112:01</u>	<u>113:01</u>	<u>115:01</u>	<u>116:01</u>	<u>117:01</u>	<u>121:01</u>	<u>123:01</u>	<u>126:01</u>	<u>128:01</u>
	<u>129:01</u>	<u>134:01</u>	<u>138:01</u>	<u>141:01</u>	<u>143:01</u>	<u>144:01</u>	<u>145:01</u>	<u>146:01</u>	<u>148:01</u>
	<u>149:01</u>	<u>151:01</u>	<u>153:01</u>	<u>155:01</u>	<u>158:01</u>	<u>163:01</u>	<u>164:01</u>	<u>169:01</u>	<u>172:01</u>
	<u>174:01</u>	<u>175:01</u>	<u>176:01</u>	<u>179:01</u>	<u>180:01</u>	<u>181:01</u>	<u>183:01</u>	<u>185:01</u>	<u>186:01</u>
	<u>187:01</u>	<u>188:01</u>	<u>189:01</u>	<u>190:01</u>	<u>191:01</u>	<u>192:01</u>	<u>193:01</u>	<u>194:01</u>	<u>195:01</u>
	<u>196:01</u>	<u>199:01</u>	<u>200:01</u>	<u>210:01</u>	<u>211:01</u>	<u>212:01</u>	<u>213:01</u>	<u>214:01</u>	<u>215:01</u>
	<u>217:01</u>	<u>219:01</u>	<u>224:01</u>	<u>225:01</u>	<u>227:01</u>	<u>228:01</u>	<u>229:01</u>	<u>231:01</u>	<u>232:01</u>
	<u>233:01</u>	<u>235:01</u>	<u>236:01</u>	<u>237:01</u>	<u>238:01</u>	<u>239:01</u>	<u>240:01</u>	<u>252:01</u>	<u>253:01</u>
	<u>254:01</u>	<u>255:01</u>	<u>256:01</u>	<u>257:01</u>	<u>258:01</u>	<u>260:01</u>	<u>261:01</u>	<u>262:01</u>	<u>263:01</u>
	<u>271:01</u>	<u>272:01</u>	<u>273:01</u>	<u>274:01</u>	<u>275:01</u>	<u>276:01</u>	<u>278:01</u>	<u>281:01</u>	<u>282:01</u>
	<u>283:01</u>	<u>286:01</u>	<u>294:01</u>	<u>297:01</u>	<u>298:01</u>	<u>302:01</u>	<u>303:01</u>	<u>306:01</u>	<u>307:01</u>
	<u>308:01</u>	<u>309:01</u>	<u>310:01</u>	<u>311:01</u>	<u>318:01</u>	<u>319:01</u>	<u>320:01</u>	<u>321:01</u>	<u>322:01</u>
	<u>323:01</u>	<u>332:01</u>	<u>334:01</u>	<u>335:01</u>	<u>336:01</u>	<u>338:01</u>	<u>339:01</u>	<u>341:01</u>	<u>342:01</u>
	<u>344:01</u>	<u>350:01</u>	<u>352:01</u>	<u>354:01</u>	<u>355:01</u>	<u>356:01</u>	<u>359:01</u>	<u>360:01</u>	<u>364:01</u>
	<u>365:01</u>	<u>366:01</u>	<u>367:01</u>	<u>368:01</u>	<u>369:01</u>	<u>372:01</u>	<u>373:01</u>	<u>374:01</u>	<u>375:01</u>
	<u>376:01</u>	<u>377:01</u>	<u>378:01</u>	<u>380:01</u>	<u>381:01</u>	<u>392:01</u>	<u>396:01</u>	<u>397:01</u>	<u>399:01</u>
	<u>402:01</u>	<u>406:01</u>	<u>414:01</u>	<u>415:01</u>	<u>416:01</u>	<u>418:01</u>	<u>419:01</u>	<u>420:01</u>	<u>421:01</u>
	<u>423:01</u>	<u>424:01</u>	<u>425:01</u>	<u>426:01</u>	<u>427:01</u>	<u>428:01</u>	<u>429:01</u>	<u>430:01</u>	<u>432:01</u>
	<u>433:01</u>	<u>434:01</u>	<u>435:01</u>	<u>440:01</u>	<u>441:01</u>	<u>443:01</u>	<u>444:01</u>	<u>451:01</u>	<u>452:01</u>
	<u>453:01</u>	<u>456:01</u>	<u>457:01</u>	<u>459:01</u>	<u>461:01</u>	<u>463:01</u>	<u>464:01</u>	<u>465:01</u>	<u>468:01</u>
	<u>469:01</u>	<u>474:01</u>	<u>475:01</u>	<u>476:01</u>	<u>477:01</u>	<u>478:01</u>	<u>479:01</u>	<u>480:01</u>	<u>485:01</u>
	<u>486:01</u>	<u>487:01</u>	<u>488:01</u>	<u>494:01</u>	<u>496:01</u>	<u>497:01</u>	<u>500:01</u>	<u>501:01</u>	<u>502:01</u>
	<u>508:01</u>	<u>510:01</u>	<u>511:01</u>	<u>520:01</u>	<u>521:01</u>	<u>522:01</u>	<u>523:01</u>	<u>524:01</u>	<u>525:01</u>
	<u>528:01</u>	<u>529:01</u>	<u>531:01</u>	<u>534:01</u>	<u>537:01</u>	<u>539:01</u>	<u>540:01</u>	<u>547:01</u>	<u>549:01</u>
	<u>553:01</u>	<u>554:01</u>	<u>555:01</u>	<u>556:01</u>	<u>557:01</u>	<u>559:01</u>	<u>561:01</u>	<u>569:01</u>	<u>571:01</u>

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Candidate Unacceptable Epitope	Donor Equivalent Antigens								
	Donor	Equivalent	Antigens						
	<u>574:01</u>	<u>575:01</u>	<u>576:01</u>	<u>577:01</u>	<u>578:01</u>	<u>579:01</u>	<u>581:01</u>	<u>582:01</u>	<u>583:01</u>
	<u>584:01</u>	<u>586:01</u>	<u>591:01</u>	<u>593:01</u>	<u>594:01</u>	<u>595:01</u>	<u>596:01</u>	<u>601:01</u>	<u>602:01</u>
	<u>603:01</u>	<u>604:01</u>	<u>605:01</u>	<u>606:01</u>	<u>607:01</u>	<u>614:01</u>	<u>615:01</u>	<u>617:01</u>	<u>618:01</u>
	<u>620:01</u>	<u>622:01</u>	<u>624:01</u>	<u>625:01</u>	<u>626:01</u>	<u>627:01</u>	<u>628:01</u>	<u>637:01</u>	<u>639:01</u>
	<u>640:01</u>	<u>641:01</u>	<u>642:01</u>	<u>643:01</u>	<u>646:01</u>	<u>647:01</u>	<u>655:01</u>	<u>656:01</u>	<u>658:01</u>
	<u>659:01</u>	<u>660:01</u>	<u>663:01</u>	<u>665:01</u>	<u>666:01</u>	<u>670:01</u>	<u>674:01</u>	<u>677:01</u>	<u>678:01</u>
	<u>679:01</u>	<u>680:01</u>	<u>681:01</u>	<u>682:01</u>	<u>683:01</u>	<u>685:01</u>	<u>686:01</u>	<u>687:01</u>	<u>690:01</u>
	<u>692:01</u>	<u>694:01</u>	<u>699:01</u>	<u>701:01</u>	<u>702:01</u>	<u>721:01</u>	<u>722:01</u>	<u>723:01</u>	<u>725:01</u>
	<u>726:01</u>	<u>730:01</u>	<u>731:01</u>	<u>734:01</u>	<u>735:01</u>	<u>736:01</u>	<u>739:01</u>	<u>741:01</u>	<u>742:01</u>
	<u>747:01</u>	<u>750:01</u>	<u>751:01</u>	<u>753:01</u>	<u>755:01</u>	<u>757:01</u>	<u>758:01</u>	<u>759:01</u>	<u>761:01</u>
	<u>762:01</u>	<u>763:01</u>	<u>765:01</u>	<u>766:01</u>	<u>767:01</u>	<u>769:01</u>	<u>770:01</u>	<u>771:01</u>	<u>772:01</u>
	<u>773:01</u>	<u>774:01</u>	<u>775:01</u>	<u>776:01</u>	<u>779:01</u>	<u>780:01</u>	<u>781:01</u>	<u>782:01</u>	<u>783:01</u>
	<u>784:01</u>	<u>787:01</u>	<u>788:01</u>	<u>795:01</u>	<u>796:01</u>	<u>799:01</u>	<u>803:01</u>	<u>804:01</u>	<u>805:01</u>
	<u>806:01</u>	<u>808:01</u>	<u>809:01</u>	<u>811:01</u>	<u>812:01</u>	<u>813:01</u>	<u>814:01</u>	<u>816:01</u>	<u>817:01</u>
	<u>818:01</u>	<u>819:01</u>	<u>820:01</u>	<u>823:01</u>	<u>824:01</u>	<u>826:01</u>	<u>827:01</u>	<u>828:01</u>	<u>830:01</u>
	<u>836:01</u>	<u>837:01</u>	<u>840:01</u>	<u>841:01</u>	<u>842:01</u>	<u>843:01</u>	<u>845:01</u>	<u>849:01</u>	<u>850:01</u>
	<u>852:01</u>	<u>857:01</u>	<u>858:01</u>	<u>859:01</u>	<u>861:01</u>	<u>863:01</u>	<u>880:01</u>	<u>881:01</u>	<u>882:01</u>
	<u>884:01</u>	<u>885:01</u>	<u>887:01</u>	<u>889:01</u>	<u>890:01</u>	<u>895:01</u>	<u>915:01</u>	<u>916:01</u>	<u>921:01</u>
	<u>926:01</u>	<u>927:01</u>	<u>928:01</u>	<u>932:01</u>	<u>933:01</u>	<u>934:01</u>	<u>936:01</u>	<u>943:01</u>	<u>954:01</u>
	<u>955:01</u>	<u>957:01</u>	<u>958:01</u>	<u>961:01</u>	<u>962:01</u>	<u>963:01</u>	<u>964:01</u>	<u>966:01</u>	<u>967:01</u>
	<u>972:01</u>	<u>973:01</u>	<u>975:01</u>	<u>978:01</u>	<u>981:01</u>	<u>987:01</u>	<u>988:01</u>	<u>989:01</u>	<u>992:01</u>
	<u>993:01</u>	<u>997:01</u>	<u>1001:01</u>	<u>1002:01</u>	<u>1003:01</u>	<u>1004:01</u>	<u>1005:01</u>	<u>1010:01</u>	<u>1011:01</u>
	<u>1013:01</u>	<u>1016:01</u>	<u>1020:01</u>	<u>1023:01</u>	<u>1025:01</u>	<u>1028:01</u>	<u>1031:01</u>	<u>1033:01</u>	<u>1035:01</u>
	<u>1036:01</u>								
84VGPM	<u>15:01</u>	<u>18:01</u>	<u>28:01</u>	<u>34:01</u>	<u>40:01</u>	<u>53:01</u>	<u>62:01</u>	<u>74:01</u>	<u>139:01</u>
	<u>198:01</u>	<u>290:01</u>	<u>292:01</u>	<u>296:01</u>	<u>299:01</u>	<u>333:01</u>	<u>345:01</u>	<u>347:01</u>	<u>387:01</u>
	<u>471:01</u>	<u>482:01</u>	<u>484:01</u>	<u>493:01</u>	<u>499:01</u>	<u>512:01</u>	<u>526:01</u>	<u>580:01</u>	<u>585:01</u>
	<u>644:01</u>	<u>695:01</u>	<u>745:01</u>	<u>752:01</u>	<u>768:01</u>	<u>835:01</u>	<u>896:01</u>	<u>897:01</u>	<u>900:01</u>
	<u>903:01</u>	<u>910:01</u>	<u>913:01</u>	<u>918:01</u>	<u>942:01</u>				

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**Table 4-16: The List of OPTN DPB1 HLA Allele Values**

<u>01:01</u>	<u>02:01</u>	<u>02:02</u>	<u>03:01</u>	<u>04:01</u>	<u>04:02</u>	<u>05:01</u>	<u>06:01</u>	<u>08:01</u>	<u>09:01</u>
<u>10:01</u>	<u>11:01</u>	<u>13:01</u>	<u>14:01</u>	<u>15:01</u>	<u>16:01</u>	<u>17:01</u>	<u>18:01</u>	<u>19:01</u>	<u>20:01</u>
<u>21:01</u>	<u>22:01</u>	<u>23:01</u>	<u>24:01</u>	<u>25:01</u>	<u>26:01</u>	<u>27:01</u>	<u>28:01</u>	<u>29:01</u>	<u>30:01</u>
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<u>833:01</u>	<u>834:01</u>	<u>835:01</u>	<u>836:01</u>	<u>837:01</u>	<u>839:01</u>	<u>840:01</u>	<u>841:01</u>	<u>842:01</u>	<u>843:01</u>
<u>845:01</u>	<u>846:01</u>	<u>847:01</u>	<u>848:01</u>	<u>849:01</u>	<u>850:01</u>	<u>851:01</u>	<u>852:01</u>	<u>853:01</u>	<u>854:01</u>
<u>855:01</u>	<u>856:01</u>	<u>857:01</u>	<u>858:01</u>	<u>859:01</u>	<u>860:01</u>	<u>861:01</u>	<u>863:01</u>	<u>864:01</u>	<u>879:01</u>
<u>880:01</u>	<u>881:01</u>	<u>882:01</u>	<u>883:01</u>	<u>884:01</u>	<u>885:01</u>	<u>886:01</u>	<u>887:01</u>	<u>888:01</u>	<u>889:01</u>
<u>890:01</u>	<u>891:01</u>	<u>892:01</u>	<u>893:01</u>	<u>895:01</u>	<u>896:01</u>	<u>897:01</u>	<u>898:01</u>	<u>899:01</u>	<u>900:01</u>
<u>901:01</u>	<u>902:01</u>	<u>903:01</u>	<u>904:01</u>	<u>905:01</u>	<u>906:01</u>	<u>907:01</u>	<u>908:01</u>	<u>909:01</u>	<u>910:01</u>
<u>912:01</u>	<u>913:01</u>	<u>914:01</u>	<u>915:01</u>	<u>916:01</u>	<u>918:01</u>	<u>920:01</u>	<u>921:01</u>	<u>922:01</u>	<u>923:01</u>
<u>924:01</u>	<u>926:01</u>	<u>927:01</u>	<u>928:01</u>	<u>929:01</u>	<u>930:01</u>	<u>931:01</u>	<u>932:01</u>	<u>933:01</u>	<u>934:01</u>

<u>935:01</u>	<u>936:01</u>	<u>937:01</u>	<u>938:01</u>	<u>940:01</u>	<u>942:01</u>	<u>943:01</u>	<u>944:01</u>	<u>945:01</u>	<u>946:01</u>
<u>947:01</u>	<u>948:01</u>	<u>949:01</u>	<u>951:01</u>	<u>952:01</u>	<u>953:01</u>	<u>954:01</u>	<u>955:01</u>	<u>956:01</u>	<u>957:01</u>
<u>958:01</u>	<u>961:01</u>	<u>962:01</u>	<u>963:01</u>	<u>964:01</u>	<u>965:01</u>	<u>966:01</u>	<u>967:01</u>	<u>968:01</u>	<u>969:01</u>
<u>970:01</u>	<u>971:01</u>	<u>972:01</u>	<u>973:01</u>	<u>975:01</u>	<u>976:01</u>	<u>977:01</u>	<u>978:01</u>	<u>979:01</u>	<u>980:01</u>
<u>981:01</u>	<u>982:01</u>	<u>983:01</u>	<u>987:01</u>	<u>988:01</u>	<u>989:01</u>	<u>990:01</u>	<u>991:01</u>	<u>992:01</u>	<u>993:01</u>
<u>994:01</u>	<u>996:01</u>	<u>997:01</u>	<u>998:01</u>	<u>999:01</u>	<u>1000:01</u>	<u>1001:01</u>	<u>1002:01</u>	<u>1003:01</u>	<u>1004:01</u>
<u>1005:01</u>	<u>1006:01</u>	<u>1007:01</u>	<u>1008:01</u>	<u>1009:01</u>	<u>1010:01</u>	<u>1011:01</u>	<u>1012:01</u>	<u>1013:01</u>	<u>1014:01</u>
<u>1015:01</u>	<u>1016:01</u>	<u>1017:01</u>	<u>1018:01</u>	<u>1019:01</u>	<u>1020:01</u>	<u>1021:01</u>	<u>1022:01</u>	<u>1023:01</u>	<u>1024:01</u>
<u>1025:01</u>	<u>1026:01</u>	<u>1027:01</u>	<u>1028:01</u>	<u>1030:01</u>	<u>1031:01</u>	<u>1032:01</u>	<u>1033:01</u>	<u>1034:01</u>	<u>1035:01</u>
<u>1036:01</u>	-	-	-	-	-	-	-	-	-

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**Table 4-157: Additional Unacceptable Antigen Equivalences to be used in the Calculated Panel Reactive Antibody (CPRA) Only**

Locus	Patient Unacceptable Antigen	Unacceptable DR antigen equivalences used for CPRA calculation
DR51	51	2, 15, 16
DR52	52	3, 5, 6, 11, 12, 13, 14, 17, 18
DR53	53	4, 7, 9

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