High Resolution HLA Typing Test

Specimen Type	
EDTA, Peripheral blood	
🗓️🕐 Specimen Collection Date & Time	🗓️🕐 Date & Time of Accessioning

Case Number:

Patient Name:

Age/Sex:

Patient Location:

Hospital Name:

Physician Name:

Date & Time of Reporting:

TEST INFORMATION

*hema*CORE High Resolution HLA Typing is a **Next Generation Sequencing (NGS)** based **high resolution identification of Human Leukocyte Antigen (HLA) alleles**. Typing is done for the following loci: **HLA-A, HLA-B, HLA-C, HLA-DRB1, HLA-DQB1 and HLA-DPB1**. The aim of the test is to determine the HLA match between the donor and the recipient.

CLINICAL HISTORY

Aplastic anemia ?FA.

RESULTS

	Name	Typing Status	Matching Ratio with Patient	Mismatched Locus
Patient		Complete	-	-
Donor-1		Complete	6/12	A(1), B(1), C(1), DRB1(1), DQB1(1) and DPB1(1)
Donor-2		Complete	5/12	A(1), B(1), C(1), DRB1(1), DQB1(1) and DPB1(2)
Donor-3		Complete	6/12	A(1), B(1), C(1), DRB1(1), DQB1(1) and DPB1(1)

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All Lab results are subject to clinical interpretation by qualified medical professional and this report is not subject to use for any medico-legal purpose.

Case Numbe :   Patient Name: Ordering Physician Name

Donor 1 Case No	Name/Age	Relationship/ Gender	Specimen Type/Collection date
			EDTA, Peripheral blood,

Locus	PATIENT HIGH RESOLUTION HLA TYPING RESULTS	Donor-1 HIGH RESOLUTION HLA TYPING RESULTS
HLA-A	02:05:01:01, 03:01:01G	02:22:01:01, 03:01:01G
HLA-B	14:02:01G, 15:03:01G	14:02:01G, 44:03:01G
HLA-C	04:01:01G, 08:02:01G	07:01:01G, 08:02:01G
HLA-DRB1	13:02:01G, 15:03:01G	13:02:01G, 13:02:01G
HLA-DQB1	06:02:01G, 06:09:01G	06:09:01G, 06:09:01G
HLA-DPB1	15:01:01G, 04:02:01G	02:01:02G, 04:02:01G

MATCHING RESULT SUMMARY OF PATIENT AND DONOR-1	
Matching Ratio With Patient	Mismatched Locus
6/12	A(1), B(1), C(1), DRB1(1), DQB1(1) and DPB1(1)

Donor 2 Case No	Name/Age	Relationship/ Gender	Specimen Type/Collection date
			EDTA, Peripheral blood,

Locus	PATIENT HIGH RESOLUTION HLA TYPING RESULTS	Donor-2 HIGH RESOLUTION HLA TYPING RESULTS
HLA-A	02:05:01:01, 03:01:01G	02:05:01:01, 30:01:01:01
HLA-B	14:02:01G, 15:03:01G	15:03:01G, 27:03
HLA-C	04:01:01G, 08:02:01G	02:02:02G, 04:01:01G
HLA-DRB1	13:02:01G, 15:03:01G	13:03:01G, 15:03:01G
HLA-DQB1	06:02:01G, 06:09:01G	03:01:01G, 06:02:01G
HLA-DPB1	15:01:01G, 04:02:01G	02:01:02G, 03:01:01G

MATCHING RESULT SUMMARY OF PATIENT AND DONOR-2	
Matching Ratio With Patient	Mismatched Locus
5/12	A(1), B(1), C(1), DRB1(1), DQB1(1) and DPB1(2)

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Case Numbe | Patient Name: | Ordering Physician Name **NA**

Donor 3 Case No	Name/Age	Relationship/ Gender	Specimen Type/Collection date
			EDTA, Peripheral blood,

Locus	PATIENT HIGH RESOLUTION HLA TYPING RESULTS	Donor-3 HIGH RESOLUTION HLA TYPING RESULTS
HLA-A	02:05:01:01, 03:01:01G	03:01:01G, 03:01:01G
HLA-B	14:02:01G, 15:03:01G	07:02:01G, 14:02:01G
HLA-C	04:01:01G, 08:02:01G	07:02:01G, 08:02:01G
HLA-DRB1	13:02:01G, 15:03:01G	13:01:01G, 13:02:01G
HLA-DQB1	06:02:01G, 06:09:01G	06:03:01G, 06:09:01G
HLA-DPB1	15:01:01G, 04:02:01G	14:01:01G, 04:02:01G

MATCHING RESULT SUMMARY OF PATIENT AND DONOR-3	
Matching Ratio With Patient	Mismatched Locus
6/12	A(1), B(1), C(1), DRB1(1), DQB1(1) and DPB1(1)

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Case Numbe | Patient Name: ` | Ordering Physician Name **NA**

			Sample: Patient	
Locus	**G Code**	**NMDP Allele Code**	**Exon Sequenced**	**Included Alleles**
HLA-A	**03:01:01G**		Full Gene	03:01:01:05, 03:01:01:25, 03:01:01:47
HLA-B	**14:02:01G**		Full Gene	14:02:01:01, 14:02:01:02, 14:02:01:03, 14:02:01:04, 14:02:01:05, 14:02:01:06
HLA-B	**15:03:01G**		Full Gene	15:220:01:01, 15:220:01:02, 15:220:01:03, 15:220:01:04
HLA-C	**04:01:01G**		Full Gene	04:01:01:01, 04:01:01:10, 04:01:01:11, 04:01:01:14, 04:01:01:75, 04:01:01:76, 04:01:01:79, 04:01:01:90, 04:01:01:92, 04:01:01:145
HLA-C	**08:02:01G**		Full Gene	08:02:01:01, 08:02:01:05
HLA-DRB1	**13:02:01G**		Exon 2-4	13:02:01:01, 13:02:01:02, 13:02:01:03, 13:02:01:04, 13:02:01:05, 13:02:01:06, 13:02:01:10, 13:02:01:14
HLA-DRB1	**15:03:01G**	15:CZJHC	Exon 2-4	15:03:01:01, 15:03:01:02, 15:03:01:03, 15:03:01:04, 15:178, 15:185
HLA-DQB1	**06:02:01G**	06:DZTVE	Exon 2-4	06:02:01:01, 06:02:01:03, 06:02:01:05, 06:02:01:08, 06:02:01:13, 06:02:01:14, 06:02:01:15, 06:02:01:17, 06:02:36, 06:02:41, 06:02:42, 06:02:48, 06:02:49, 06:293, 06:295, 06:333, 06:370, 06:380, 06:416Q, 06:422N, 06:437
HLA-DQB1	**06:09:01G**	06:EJJJA	Exon 2-4	06:09:01:01, 06:09:01:02, 06:281, 06:282

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Case Numbe	Patient Name:	Ordering Physician Name

Sample: Patient				
Locus	**G Code**	**NMDP Allele Code**	**Exon Sequenced**	**Included Alleles**
HLA-DPB1	**15:01:01G**		Exon 2-4	15:01:01:01, 15:01:01:02, 15:01:01:03, 15:01:01:04, 15:01:01:05, 15:01:01:06
HLA-DPB1	**04:02:01G**	105:CZBAF	Full Gene except Intron-1	105:01:01:01, 105:01:01:02, 105:01:01:03, 105:01:01:04, 105:01:01:05, 105:01:01:06, 105:01:01:07, 105:01:01:08, 105:01:01:09, 105:01:01:10, 105:01:01:11, 105:01:01:12, 665:01, 1072:01

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Case Numbe	Patient Name:	Ordering Physician Name **NA**

APPENDIX

Sample: Donor-1				
Locus	**G Code**	**NMDP Allele Code**	**Exon Sequenced**	**Included Alleles**
HLA-A	**03:01:01G**		Full Gene	03:01:01:05, 03:01:01:25, 03:01:01:47
HLA-B	**14:02:01G**		Full Gene	14:02:01:01, 14:02:01:02, 14:02:01:03, 14:02:01:04, 14:02:01:05, 14:02:01:06
HLA-B	**44:03:01G**		Full Gene	44:03:01:01, 44:03:01:04, 44:03:01:10, 44:03:01:12, 44:03:01:16, 44:03:01:17, 44:03:01:19, 44:03:01:34
HLA-C	**07:01:01G**		Full Gene	07:01:01:01, 07:01:01:15, 07:01:01:16, 07:01:01:69, 07:01:01:83
HLA-C	**08:02:01G**		Full Gene	08:02:01:01, 08:02:01:04, 08:02:01:05
HLA-DRB1	**13:02:01G**		Exon 2-4	13:02:01:01, 13:02:01:03, 13:02:01:04, 13:02:01:06, 13:02:01:10
HLA-DQB1	**06:09:01G**	06:EJJJA	Exon 2-4	06:09:01:01, 06:09:01:02, 06:281, 06:282
HLA-DPB1	**02:01:02G**	02:EBTJE	Exon 2-4	02:01:02:03, 02:01:02:28, 02:01:02:47, 1315:01
HLA-DPB1	**04:02:01G**	105:CZBAF	Full Gene except Intron-1	105:01:01:01, 105:01:01:02, 105:01:01:03, 105:01:01:04, 105:01:01:05, 105:01:01:06, 105:01:01:07, 105:01:01:08, 105:01:01:09, 105:01:01:10, 105:01:01:11, 105:01:01:12, 665:01, 1072:01

Case Numbe	Patient Name:	Ordering Physician Name **NA**

APPENDIX

Sample: Donor-2

Locus	G Code	NMDP Allele Code	Exon Sequenced	Included Alleles
HLA-A			Full Gene	No ambiguity has been seen
HLA-B	**15:03:01G**		Full Gene	15:220:01:01, 15:220:01:02, 15:220:01:03, 15:220:01:04
HLA-C	**02:02:02G**		Full Gene	02:02:02:01, 02:02:02:38, 02:02:02:43
HLA-C	**04:01:01G**		Full Gene	04:01:01:01, 04:01:01:10, 04:01:01:11, 04:01:01:14, 04:01:01:75, 04:01:01:76, 04:01:01:79, 04:01:01:90, 04:01:01:92, 04:01:01:145
HLA-DRB1	**13:03:01G**		Exon 2-4	13:03:01:01, 13:03:01:02, 13:03:01:03, 13:03:10, 13:03:10
HLA-DRB1	**15:03:01G**	15:CZJHC	Exon 2-4	15:03:01:01, 15:03:01:02, 15:03:01:03, 15:03:01:04, 15:178, 15:185
HLA-DQB1	**03:01:01G**	03:EBXDH	Exon 2-4	03:01:01:02, 03:01:01:03, 03:01:01:09, 03:01:01:16, 03:01:01:18, 03:01:01:25, 03:01:01:27, 03:01:01:28, 03:01:01:29, 03:01:01:30, 03:01:01:31, 03:297, 03:419, 03:431, 03:486
HLA-DQB1	**06:02:01G**	06:DZTVE	Exon 2-4	06:02:01:01, 06:02:01:03, 06:02:01:05, 06:02:01:08, 06:02:01:13, 06:02:01:14, 06:02:01:15, 06:02:01:16, 06:02:01:20, 06:02:01:21, 06:02:36, 06:02:41, 06:02:42, 06:02:48, 06:02:49, 06:293, 06:416Q
HLA-DPB1	**02:01:02G**	02:EBTJE	Exon 2-4	02:01:02:03, 02:01:02:28, 02:01:02:47, 1315:01
HLA-DPB1	**15:01:01G**		Exon 2-4	15:01:01:01, 15:01:01:02, 15:01:01:05, 15:01:01:06

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Case Numbe	Patient Name:	Ordering Physician Name

Sample: Donor-3				
Locus	**G Code**	**NMDP Allele Code**	**Exon Sequenced**	**Included Alleles**
HLA-A	**03:01:01G**		Full Gene	03:01:01:05, 03:01:01:25, 03:01:01:47
HLA-B	**07:02:01G**		Full Gene	07:02:01:01, 07:02:01:13, 07:02:01:14, 07:02:01:16, 07:02:01:85, 07:02:01:86
HLA-B	**14:02:01G**		Full Gene	14:02:01:01, 14:02:01:02, 14:02:01:03, 14:02:01:04, 14:02:01:05, 14:02:01:06
HLA-C	**07:02:01G**		Full Gene	07:02:01:03, 07:02:01:09, 07:02:01:89, 07:02:01:183
HLA-C	**08:02:01G**		Full Gene	08:02:01:01, 08:02:01:05
HLA-DRB1	**13:01:01G**	13:EBXDJ	Exon 2-4	13:01:01:01, 13:01:01:02, 13:01:01:03, 13:01:01:04, 13:01:01:06, 13:01:01:07, 13:01:01:08, 13:01:01:09, 13:01:01:10, 13:01:01:11, 13:01:01:12, 13:01:01:13, 13:01:01:14, 13:01:01:15, 13:01:01:16, 13:01:34, 13:313, 13:327
HLA-DRB1	**13:02:01G**		Exon 2-4	13:02:01:01, 13:02:01:03, 13:02:01:04, 13:02:01:06, 13:02:01:10
HLA-DQB1	**06:03:01G**	06:ECSZR	Exon 2-4	06:03:01:01, 06:03:01:02, 06:03:01:03, 06:03:01:04, 06:03:01:05, 06:03:01:06, 06:03:01:07, 06:03:01:08, 06:03:35, 06:03:40, 06:03:46, 06:328, 06:329, 06:334, 06:336
HLA-DQB1	**06:09:01G**	06:EJJJA	Exon 2-4	06:09:01:01, 06:09:01:02, 06:281, 06:282
HLA-DPB1	**14:01:01G**		Exon 2-4	14:01:01:01, 14:01:01:02, 14:01:01:04, 14:01:01:07, 14:01:01:08, 14:01:01:09
HLA-DPB1	**04:02:01G**	105:CZBAF	Full Gene except Intron-1	105:01:01:01, 105:01:01:03, 105:01:01:06, 105:01:01:09, 105:01:01:11, 105:01:01:13, 665:01, 1072:01

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COMMENTS

- The Human Major Histocompatibility Complex, known as the "Human Leukocyte Antigen (HLA)", is the most gene-dense, polymorphic and disease-associated region of the human genome, especially class I and class II genes that are with a highly clustered and patchwork pattern of sequence motifs.

- NGS based high resolution HLA typing/matching is clinically relevant for hematopoietic stem cell transplantation, in order to differentiate serologically indistinguishable but functionally distinct HLA allelic products.

- The compatibility status of each patient/donor pair depends on the level of resolution of HLA typing and better the match; lower the risk of post-transplant complications.

- G Code refers to HLA alleles that have identical nucleotide sequences across the exons encoding the peptide binding domains (exon 2 and 3 for HLA class I and exon 2 only for HLA class II alleles) but different sequences across the introns that leads to ambiguous alleles. The included alleles for the relevant sample have been mentioned in the appendix. In case of no ambiguity, the same will be reflected in the appendix as "No ambiguity has been observed."

- NMDP code is reported if the ambiguity is on the 2nd field resolution.

METHODOLOGY AND DATA ANALYSIS

The methodology involves PCR based HLA locus-specific amplification. Libraries were prepared with NGSgo-LibrX and NGSgo-IndX and are sequenced on an Ion S5 platform. Data analysis was performed using NGSengine® software (GenDx) to determine the HLA genotype.

SOFTWARE AND ALLELE DATABASE VERSION

NGSengine(R) software : 2.28.1.27684; IMGT 3.49

DISCLAIMER

NOTE- **This test is processed and validated at the partner lab of Redcliffe Labs.
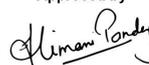
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CONDITIONS OF REPORTING

1. It is Presumed that specimen belongs to patient named or identified, such verification being carried out at the point of generation of said specimen

2. A test might not be performed due to following reason:

- Specimen Quantity not sufficient (Inadequate collection/spillage during transit)
- Specimen Quality not acceptable (Hemolysis/clotted/lipemic.)
- Incorrect sample type
- Test cancelled either on request of patient or doctor

In any of the above case a fresh specimen will be required for testing and reporting

3. The results of the tests may vary from lab to lab ; time to time for the same patient

4. The reported results are dependent on individual assay methods, equipment, method sensitivity, specificity and quality of the specimen received

5. Partial representation of report is not allowed

6. The reported tests are for the notification of the referring doctor, only to assist him/her in the diagnosis and management of the patient

7. If Sample collection date is not stated on test requisition form, the current date will be printed by default as the date of collection.

8. Report with status "Preliminary" means one or more test are yet to be reported

9. This report is not valid for Medico Legal Purpose

10. Applicable Jurisdiction will be of "Delhi" for any dispute/claim concerning the test(s) & results of the test (s)

Terms and Conditions of Reporting

1. The presented findings in the Reports are intended solely for informational and interpretational purposes by the referring physician or other qualified medical professionals possessing a comprehensive understanding of reporting units, reference ranges, and technological limitations. The laboratory shall not be held liable for any interpretation or misinterpretation of the results, nor for any consequential or incidental damages arising from such interpretation.

2. It is to be presumed that the tests performed pertain to the specimen/sample attributed to the Customer's name or identification. It is presumed that the verification particulars have been cleared out by the customer or his/her representation at the point of generation of said specimen / sample. It is hereby clarified that the reports furnished are restricted solely to the given specimen only.

3. It is to be noted that variations in results may occur between different laboratories and over time, even for the same parameter for the same Customer. The assays are performed and conducted in accordance with standard procedures, and the reported outcomes are contingent on the specific individual assay methods and equipment(s) used, as well as the quality of the received specimen.

4. This report shall not be deemed valid or admissible for any medico-legal purposes.

5. The Customers assume full responsibility for apprising the Company of any factors that may impact the test finding. These factors, among others, includes dietary intake, alcohol, or medication / drug(s) consumption, or fasting. This list of factors is only representative and not exhaustive.