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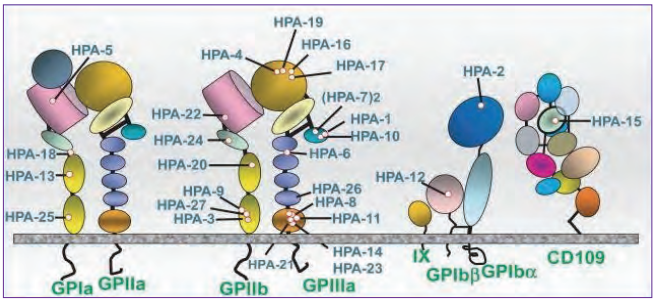
HPA Technical Brief

Human platelet antigens (HPA) are polymorphisms in platelet membrane glycoproteins that can stimulate production of alloantibodies once exposed to foreign platelets with different HPA. These antibodies can cause neonatal alloimmune thrombocytopenia, posttransfusion purpura, and platelet transfusion refractoriness. Novel molecular immunohematology techniques have been developed to identify these polymorphisms and aid in the diagnosis and management of these disease states.



Peterson J, McFarland J, et al. Neonatal alloimmune thrombocytopenia: pathogenesis, diagnosis and management. Br J Haematol. 2013 April ; 161(1): 3–14. doi:10.1111/bjh.12235.

Background

Alloantibodies against Human Platelet Antigens (HPA) are involved in Neonatal Alloimmune Thrombocytopenia (NAIT), post-transfusion purpura (PTP) and platelet transfusion refractoriness. HPA may also have a role as histocompatibility antigens in transplantation. NAIT is a rare syndrome caused by maternal antibody directed against a fetal platelet antigen inherited from the father. Approximately 1 in 1000 to 2000 pregnancies is affected. Twenty four platelet specific alloantigens have been defined by immune sera, of which 12 are grouped in six biallelic systems (HPA-1, -2, -3, -4, -5, -15). The molecular basis of 22 of the 24 serologically defined antigens has been resolved and can be identified by a single nucleotide polymorphism (SNP) in the relevant membrane glycoprotein.

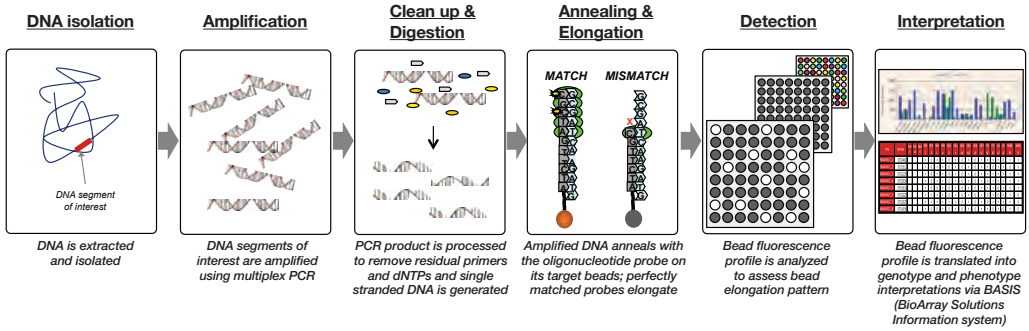
Method:

The HPA BeadChip detects 22 platelet antigens in a single test. Extended platelet antigen typing information can aid in the diagnosis and management of neonatal alloimmune thrombocytopenia, post-transfusion purpura and platelet refractoriness.

HPA Assay Antigen Coverage

HPA-1a/HPA-1b	GPIIIa
HPA-2a/HPA-2b	GPIb
HPA-3a/HPA-3b	GPIIb
HPA-4a/HPA-4b	GPIIIa
HPA-5a/HPA-5b	GPIa
HPA-6a/HPA-6b	GPIIIa
HPA-7a/HPA-7b	GPIIIa
HPA-8a/HPA-8b	GPIIIa
HPA-9a/HPA-9b	GPIIb
HPA-11a/HPA-11b	GPIIIa
HPA-15a/HPA-15b	CD109

eMAP™ protocol



HPA Validation Summary:

Validation of the HPA BeadChip assay included an evaluation of accuracy, precision, sensitivity,specificity and interfering substances. Accuracy of the HPA assay demonstrated 98.9% concordance between the Immucor DX Laboratory and a reference laboratory. The HPA BeadChip assay demonstrated 100% sensitivity and 100% specificity when compared with established reference DNA methods. Interference testing of 4 common endogenous interfering substances (bilirubin, hemoglobin, total protein and triglyceride) demonstrated no impact on the performance of the HPA BeadChip assay.

Accuracy*	98.9%
Sensitivity	100%
Specificity	100%
Interfering Substances	No Impact

*Genotype Accuracy

CPT Code	Description
81403	Molecular pathology procedure

CLIA-certified laboratory service for IVD molecular typing of platelet antigens

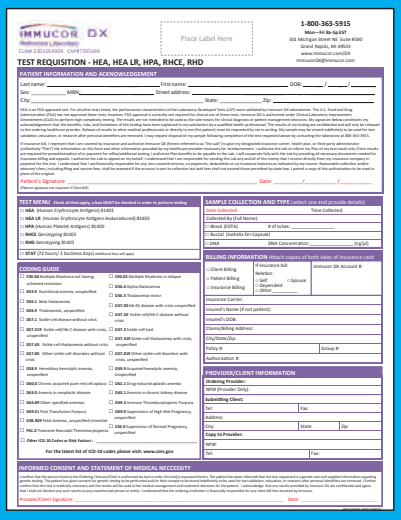
Complementing Your Organization's Capability

- Laboratories without onsite molecular immunohematology capabilities can now effectively reflex testing to the Immucor DX Reference Laboratory.
- Leverage the capabilities of molecular diagnostics without the capital outlay and maintenance of an onsite molecular laboratory.

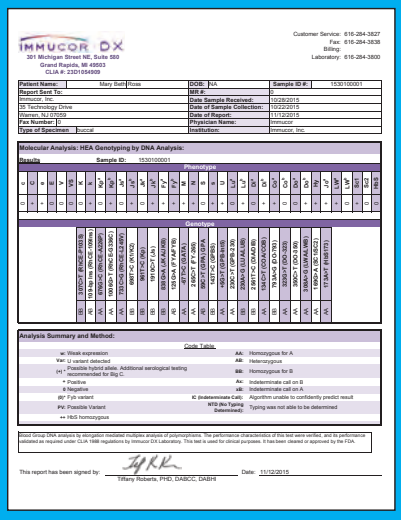
The process is quick and simple:

Collect whole blood or DNA sample

Package in Immucor DX lab pak



Submit test requisition form and sample for testing



Receive results in <1 week

ImmucorDX has achieved both CLIA certification and CAP accreditation!

CLIA Number: 23D1054909
CAP Number: 7195469

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