Effective Date: June 1, 2013
Performing Department: Molecular Pathology

Clinical Significance: Modern blood bank testing makes heavy use of serology, and for many blood bank tests serologic results remain the gold standard. However, as the genes that determine red blood cell (RBC) antigen expression were explored in the last few decades, it has become increasingly clear that RBC antigen typing by genomic DNA-based tests is both feasible and clinically useful. This test provides an extended RBC antigen phenotype which is useful for inventory management in the blood bank, as well as helpful in resolving selected complex serologic problems.

Method: BioArray™ HEA BeadChip™ is a high throughput molecular assay that detects 38 red blood cell antigens and phenotypic variants by identifying a wide array of single nucleotide polymorphisms (SNPs) responsible for antigen expression. The BioArray Elongation mediated Multiplexed Analysis of Polymorphisms (eMAP) technology identifies the presence or absence of these SNPs via a multiplex PCR reaction. Genomic DNA targets are amplified, captured and fluorescently labeled by elongation on allele specific probes immobilized on synthetic microparticles. The fluorescence of each bead is then analyzed to determine positive and negative reactions.

Use:  
   a. Identify multiple RBC antigens in donor or patient samples, including recently transfused patients.  
   b. Assist in confirming RBC antigens when a blood sample has features that preclude accurate serologic typing, such as strong autoantibodies or positive direct antiglobulin test.  
   c. Facilitate selection of extended RBC phenotype matched RBCs for appropriate patients.

Reference Range: RBC antigens are detected (present) or not detected (absent)

Specimen Requirements and Collection:
Specimen: Whole Blood sample
Minimum Specimen: 0.5mL 3mL preferred
Type of Container: lavender top (EDTA) tube
Storage: refrigerated 2-8°C
Transport: refrigerated 2-8°C

Causes for Rejection: clotted, frozen or severely hemolyzed sample
Stability: 21 days (3 weeks) refrigerated 2-8°C
Testing Schedule: Once per week

Order: RBC PHENO  0036174  RBC PHENOTYPE BY BIOARRAY
       RBC PHENOD  0036184  RBC TYPING - DONOR

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