EMORY UNIVERSITY | Emory Integrated Genomics Core

EIGC.017_Infinium HD Methylation (EPIC)

Standard Operating Procedure Staff Review Page:

I have read and understand the procedure listed above.

Employee name	Date SOP review complete

Standard Operating Procedure Approval Page:

Date Implemented: 07 July 2020

Updated:	Ashima Amin **Name**	07 July 2020 **Date**
Supersedes:	N/A **Name**	N/A **Date**

Annual Review and Approval

Michael Zwick, PhD
Laboratory Director

Changes Made:
070720: New Protocol

Changes to previous procedures:

Note: No laboratory personnel should perform this assay or use this Tecan robot without proper training by the laboratory supervisor or other designated person.

Test Principle: The Infinium HD Methylation assay generates a methylation profile down to single nucleotides for over 850,000 possible CpG sites for epigenome wide association studies. These sites cover various portions of the methylome including enhancer/promoter regions, non-CpG islands, and differentially methylated sites found in tumors.

The foundation of the assay is the conversion of cytosine to uracil in non-methylated CpG sites only. One or two probes are used to query each CpG site, and single base extension adds either a biotin labeled (C and G nucleotides) or dinitrophenyl labeled (A and T nucleotides) nucleotide to the probe. This extension allows for the detection of converted and non-converted cytosine through staining and imaging with an array reader.

The assay is available for 16, 32, or 96 samples using 8-sample beadchip arrays which can be processed in parallel. The workflow includes bisulfite conversion, whole genome amplification, hybridization, staining, and extension. The automated version of the staining/extension protocol is used, which allows the entirety of the staining and extension steps to be performed on the Tecan robot.

The array technology removes the bias associated with other capture methods, as well as features sample dependent and independent controls to assess sample quality and assay function.

Specimen Type: 250-500 ng of DNA

Safety: All employees are required to follow universal safety protocols when working with potentially infectious biohazardous materials. Safety procedures are outlined in the Emory University Bloodborne Pathogen Exposure Control Plan (see Employee Safety Notebook).

Procedure: The procedure can be found in EIGC.017 Appendixes as well as hand written tips and guidelines.