Memorandum – MolePath #40

To: UNC Healthcare System Attending Physicians, Housestaff, Nursing Coordinators, Department Heads and Supervisors

From: Karen E. Weck MD
Director, Molecular Genetics Laboratory

Herbert C. Whinna MD, PhD
Medical Director, McLendon Clinical Laboratories

Date: March 4, 2024

Subject: *APOE* genotyping at UNC Medical Center

Effective March 4, 2024, the UNC Molecular Genetics Laboratory will offer *APOE* genotyping for detection of the *APOE* e2, e3, and e4 alleles.

Clinical Indications for Testing: Patients with Alzheimer disease who carry the *APOE* e4 allele have a greater risk of developing amyloid related imaging abnormalities (ARIA) when undergoing therapy with monoclonal antibodies against aggregated beta amyloid such as Leqembi® (lecanemab-irmb). *APOE* e4 homozygotes are at greater risk of ARIA than heterozygotes. Alzheimer patients who plan to undergo Leqembi® therapy are recommended by the FDA to be genotyped for *APOE* e4 status to inform the risk of developing ARIA. In addition, the *APOE* e4 allele is associated with increased risk for the common form of Alzheimer disease, which typically has onset after age 65. The *APOE* e2 allele is associated with defective binding to the LDL receptor and increased plasma apoE, triglycerides, and total cholesterol, and *APOE* e2 homozygotes are at increased risk of developing type III hyperlipidemia.

Specimen Requirements: The preferred sample is 3 mL of blood in an ACD (yellow top) or EDTA (lavender-top), which may be refrigerated up to 48 hours.

Test Name in Epic:
Apolipoprotein E (APOE) Genotyping Assay

Test Order (EAP) number in Epic:
LAB11564

Laboratory Testing: *APOE* genotyping for the e2, e3 and e4 alleles is determined by laboratory developed TaqMan allelic discrimination assays to detect the *APOE* single nucleotide polymorphisms rs429358 (NM_000041.4: c.388T>C, p.Cys130Arg) and rs7412 (NM_000041.4: c.526C>T, p.Arg176Cys). This assay does not detect other sequence variants within the *APOE* gene.

Questions can be directed to the UNC Molecular Genetics Laboratory at **(984) 974-1825** or Dr. Karen Weck at Karen.Weck@unchealth.unc.edu **Additional information** is available on the UNC Molecular Genetics Laboratory website: https://www.uncmedicalcenter.org/mclendon-clinical-laboratories/directory/molecular-pathology-and-genetics/