Genetics Uncoded:
FACTS ABOUT CLASSIC CITRULLINEMIA

What Your Test Results Mean
Genetic testing indicates that you are a carrier of classic citrullinemia, also called type I citrullinemia. Carriers typically show no signs or symptoms of the disease, however, carriers are at an increased risk of having a child born with classic citrullinemia. Risk for current or future pregnancies is dependent on your partner’s carrier status. In addition to consulting with a genetic counselor for a more detailed risk assessment, carrier testing of your partner is highly recommended.

Classic Citrullinemia Explained
Classic citrullinemia is an inherited metabolic disorder caused by excess nitrogen build up in the body. Symptoms include lethargy (lack of energy), vomiting, seizures, and poor feeding shortly after birth. Mutations in the ASS1 gene reduces or eliminate the enzyme argininosuccinate synthase 1, which is a critical enzyme in the urea cycle. Without proper activity from this enzyme, the body cannot process nitrogen properly. The excess nitrogen typically takes the form of ammonia and accumulates in the bloodstream. Ammonia is highly toxic to the body. A less common and milder form of the disease will cause clinical symptoms to present later in life and typically take the form of headaches, ataxia (issues with balance and muscle coordination), partial loss of vision, and lethargy. There is no cure for this disease, but patients can manage the disease by closely monitoring their diet as well taking drugs that can decrease blood ammonia level.

How the Genetics Work
The clinical features of classic citrullinemia are caused by mutations in the ASS1 gene. All individuals have two copies of the ASS1 gene. Carriers of classic citrullinemia have a mutation in one copy of the ASS1 gene while individuals with the disorder have mutations in both copies of ASS1, one inherited from each parent. Risk for two carriers to have a child with the disorder is 25%.

Recommended Next Steps
Carrier testing of your partner is recommended in addition to consultation with a genetic counselor for more detailed risk assessment.

Questions?
Contact us at (855) 776-9436 to set up an appointment to discuss your results in more detail with a NxGen MDx genetic counselor.