

DNAI Analysis #1

Dear Patient,

We hope this report finds you in good health. The purpose of this correspondence is to communicate the findings of the genetic analysis conducted by the DNAI research team using artificial intelligence (AI). Your participation in this study has been invaluable, contributing significantly to the progress of genetic research.

INTRODUCTION:

The DNAI research team, in collaboration with cutting-edge technology experts, has employed a state-of-the-art machine learning model to conduct a comprehensive analysis of your genetic information. The primary objective was to identify potential genetic anomalies and assess the risk of specific genetic diseases.

RESULTS:

Following an extensive examination, the outcomes of the genetic analysis are that you have been diagnosed with **lactose intolerance** which means as follows:

- **Genetic Markers:** The C/T-13910 SNP in the MCM6 gene is associated with lactase persistence, allowing continued lactase production into adulthood. The C/T-13910 SNP in the MCM6 gene, with the T allele, is linked to lactase non-persistence, resulting in reduced lactase production after childhood.
- **Risk Factors:** Genetic factors, such as the C/T-13910 SNP in the MCM6 gene, play a role in determining an individual's susceptibility to lactose intolerance. Lactose intolerance is more commonly observed in certain ethnic groups, including people of African, Asian, Native American, and Hispanic descent. Aging is a significant risk factor, as the production of lactase tends to decrease naturally after childhood, making adults more prone to lactose intolerance. Gastrointestinal disorders like celiac disease, Crohn's disease, and irritable bowel syndrome can elevate the risk of developing lactose intolerance. Infections or injuries to the digestive system may lead to a temporary reduction in lactase production, contributing to lactose intolerance. Certain medical treatments, such as chemotherapy or radiation therapy, can impact the digestive system and increase the risk of lactose intolerance. Some medications, especially those affecting the gastrointestinal system, may interfere with lactose digestion and absorption, contributing to intolerance. Premature infants may have lower levels of lactase, increasing their susceptibility to lactose intolerance. A diet low in dairy products during childhood may contribute to decreased lactase production, potentially leading to lactose intolerance later in life. Changes in the composition of gut microbiota can influence lactose digestion and contribute to the development of lactose intolerance.
- **Recommendations:** Gradually introduce small amounts of dairy into your diet to gauge tolerance levels, starting with lactose-free or low-lactose options. Take lactase supplements before consuming dairy products to aid in the digestion of lactose and minimize discomfort. Opt for lactose-free or reduced-lactose versions of milk and dairy products, widely available in most grocery stores. Experiment with different dairy sources, such as hard cheeses or yoghurt, to identify options that are better tolerated. Monitor portion sizes when consuming dairy, as smaller amounts may be better tolerated, allowing you to enjoy dairy without discomfort. Pair dairy with other foods as part of a meal rather than consuming it on an empty stomach to improve digestion. Ensure an adequate intake of calcium by exploring non-dairy sources like leafy green vegetables, fortified plant-based milk, and calcium supplements if necessary. Consult with a registered dietitian for personalized advice on managing lactose intolerance and planning a well-balanced diet that meets your nutritional needs. Read food labels carefully to identify hidden sources of lactose in processed and packaged foods, helping you avoid unintentional consumption. Maintain a food diary to track dairy consumption and associated symptoms, aiding in the identification of specific triggers and informing dietary adjustments. Stay hydrated, especially if diarrhea is a symptom of lactose intolerance, as adequate water intake can help manage symptoms and prevent dehydration. Consider incorporating probiotics into your diet, as some individuals find relief from lactose intolerance symptoms with their use. Consult with a healthcare professional before starting any supplementation.

Furthermore you also have been diagnosed with **autism** which means as follows:

- **Genetic Markers:** Deletions, mutations, or duplications in the SHANK3 gene are associated with certain cases of autism spectrum disorder (ASD), impacting synaptic function crucial for neural communication. Variations, deletions, or mutations in the CNTNAP2 gene have been identified in individuals with ASD, particularly affecting neural circuit formation related to language development and social communication. Variations or mutations in the MET gene, involved in brain development, have been linked to an increased risk of ASD, especially in cases with co-occurring gastrointestinal issues. Mutations or variations in NLGN and NRXN genes, which play roles in synapse formation, are associated with disruptions in neural connectivity and have been implicated in ASD. Variations or mutations in the FOXP2 gene, associated with language development, contribute to language difficulties observed in some individuals with ASD.
- **Risk Factors:** A family history of autism spectrum disorder (ASD) or other developmental disorders increases the likelihood of ASD in subsequent generations due to certain genetic factors. Older parental age, particularly in fathers, has been associated with a slightly higher risk of ASD in their offspring. Babies born prematurely or with low birth weight may have an elevated risk of developing ASD. Prenatal and perinatal complications, such as exposure to certain medications, maternal illness, or birth complications, are potential risk factors for ASD. Prenatal exposure to certain drugs, medications, or environmental toxins may contribute to an increased risk of ASD. Maternal health conditions like diabetes, obesity, and certain infections during pregnancy may be associated with a higher risk of ASD. Certain infections or illnesses during early childhood have been suggested to be linked to an increased risk of ASD, although the evidence is not conclusive. Boys are diagnosed with ASD

- **Recommendations:** Seek early intervention services such as speech therapy and occupational therapy to address developmental challenges in individuals with autism spectrum disorder (ASD). Collaborate with educators to create and implement an Individualized Education Plan (IEP) tailored to the unique needs and strengths of the individual with ASD. Provide a structured and predictable environment at home and in educational settings to enhance the comfort and security of individuals with ASD. Engage in social skills training programs to help individuals with ASD develop effective communication and interaction skills. Utilize visual aids, augmentative and alternative communication (AAC) devices, and other supports to facilitate communication for individuals with ASD. Implement sensory integration techniques to address sensory sensitivities or challenges commonly experienced by individuals with ASD. Consider behavioural therapy, such as Applied Behavior Analysis (ABA), to address challenging behaviours and reinforce positive ones. Attend training sessions and workshops to empower parents and caregivers with effective strategies for supporting individuals with ASD. Connect with local and online autism support groups and organizations to access information, share experiences, and find community support. Develop a transition plan that addresses the evolving needs of individuals with ASD as they move from childhood to adolescence and adulthood. Foster and encourage the unique interests and strengths of individuals with ASD, recognizing their potential for excellence in specific areas. Gradually introduce and promote independence in daily living skills, adapting tasks to the individual's abilities and preferences. Establish and maintain a consistent daily routine to provide individuals with ASD with a sense of predictability and security. Access therapeutic supports such as psychological counselling or psychotherapy to address mental health and emotional well-being. Advocate for inclusion and acceptance in schools, workplaces, and community settings to promote understanding and support for individuals with ASD.

It is crucial to interpret these results with caution. The information obtained is not deterministic but provides valuable insights into potential genetic predispositions. These findings should be discussed in consultation with a healthcare professional specializing in genetics to formulate an appropriate plan for further evaluation or monitoring.

Our team is available to discuss the results in detail, address any questions or concerns you may have, and provide guidance on the implications of the findings. We recommend scheduling a follow-up appointment with a healthcare professional to ensure a comprehensive understanding of the results and to explore any necessary next steps.

In the context of genetic analysis using artificial intelligence (AI), patterns refer to recurring trends or structures in genetic data. During the AI training phase, the model learns patterns associated with genetic disorders from a dataset. When analysing new genetic samples, the model looks for similar patterns it learned during training to predict or detect the likelihood of a genetic disorder in the individual. The accuracy of the model depends on the quality of training data and the effectiveness of the machine learning algorithms.

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CONCLUSION:

Sincerely,
The DNAI Team