



# 2024 INTERVIEW SUMMARY SHEET

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## Genetics Research: Hope for a Future of Personalized Migraine Care

### KEY TAKEAWAYS

- In 1996, researchers discovered the link between a single gene and a rare form of migraine with aura called familial hemiplegic migraine. In 2003 and 2005, two additional genes were found to cause this form of migraine.
- Most common forms of migraine are polygenic, which means that there are likely hundreds if not thousands of genes that contribute to the risk for migraine.
- An individual can suffer from both monogenic and polygenic forms of migraine.
- Genome-wide association studies (GWAS) measure the variations in the DNA at millions of locations in the genome. GWAS has helped to identify around 170 single nucleotide polymorphisms (SNPs) — a type of genetic variation — that are associated with migraine risk.
- The research on the genetic risk for migraine requires large numbers of migraine cases that can be compared to a large number of controls (nonmigraine cases). In the study that found the 170 SNPs associated with migraine, 100,000 migraine cases were compared to over 700,000 controls.
- Despite similarities in the genetic makeup of people with specific types of migraine, they can suffer a variety of symptoms.
- Not all of the genetic risk factors for migraine involve brain neurons; some involve the vascular system, as well. That is why migraine is considered to be a neurovascular disease.
- Epigenetics is how genes can be influenced by nongenetic factors, such as hormonal fluctuations or stress.
- Recent CGRP drugs that were developed actually target two of the genes that were identified as risk factors for developing migraine.

### TREATMENTS CITED

Omega-3 fatty acids

### QUOTES

*"It doesn't necessarily mean that an individual that suffers from migraine has all of those genetic risk factors. It just means that they've got enough of them to push them over the threshold where they then start experiencing the symptoms of migraine today."*

*"Because a clinician will tell you that a migraine sufferer, when they first come into their clinic, will suffer certain symptoms. And then, over the course of their treatments and just over the course of five years, 10 years, the migraine that they suffer in 10 years' time can be quite different to the symptoms that they experienced 10 years beforehand. And so, it's a very dynamic disorder; it's very complex. And when we say complex in the disease area, what we mean by that is that there's genetic factors and there's nongenetic factors."*

*"The real take-home message is that migraine research is probably the most underfunded area of research in the world in terms of the impact that it has on society and the amount of funding that it gets. And it doesn't matter which country you look at; that is a consistent finding."*

*"I guess what I'd like to try and say is don't give up hope. The more findings that we can have, the more media that we can have on it will just improve each other's understanding of their own migraine headaches."*

### PRACTICAL STEPS

- Connect with others who have migraine to learn about the types of migraine that exist, as well as the variety of treatments that are available.
- Lobby for increased funding of migraine research.