Chelsea's Hope
Lafora Children Research Fund

Lafora Disease Therapeutic Overview Video Captions - English

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So, what we're going to be doing today is talking about the therapies that are in development to treat our patients within the Lafora community. And this will be a regular presentation that we'd like to update every six months

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or so, just to keep our entire community up to date and current with the most recent information on where our therapies are at. So, to begin, most of us here on this call are already familiar with Lafora disease, but to give everyone some background, and some terms that you'll be hearing a lot throughout the presentation, I wanted to give you this brief overview from the science perspective of what is Lafora disease.

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So Lafora is a fatal genetic disorder, and it is characterized by progressive myoclonus epilepsy, rapid neurological deterioration, and childhood dementia.

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progressive myoclonus epilepsy, rapid neurological deterioration, and childhood dementia. And children with Lafora will have mutations in one of two genes. So they will either have a mutation in the gene EPM2A or NHLRC1, which is also called EPM2B. Now, together, these two genes will code for proteins, and proteins

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are the mechanisms in our body that help perform all the different functions that keep our body going in a healthy manner. So, when these two proteins that are made by these two genes

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the first protein is called laforin and the second protein is called malin, and they work together to make sure that our bodies correctly store sugar. And our bodies store sugar which we need for energy, in what's called glycogen. And so you'll hear that word come up again and again. So whenever we're talking about glycogen, it's this storage center inside our bodies for sugar, and laforin and malin help to make sure

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that this sugar storage molecule allows patients to store sugar, energy for when they need it, and then access it later when they need it. If laforin or malin are not working correctly, then the sugar can get stored in the glycogen, but it can't come out correctly when it needs to, and what happens is you get what we call are Lafora bodies, which you can see here on the right is a stain from a mouse tissue in the brain, and you can see these dark purple aggregates here, are

these lafora bodies, that begin to accumulate in patients with Lafora disease. So when it comes to treating Lafora disease, there are two different strategies that people have been working on

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for treatment. So the first strategy is, can we develop something to actually degrade, to break apart these Lafora bodies to allow our patients to start accessing sugar

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again and to break down the glycogen. The second strategy, and we'll talk about specific examples in a few minutes, is can we reduce how

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quickly this glycogen is accumulating. And so what our scientists have learned is that we can slow down how fast our bodies store sugar into glycogen that our bodies have other mechanisms for breaking down glycogen

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and if we can slow down that process enough, what you see here below is a graphic where, for healthy people, we store glycogen and we can break it down when we need it. For patients with Lafora disease or related diseases like adult polyglucosan body disease, we create this glycogen and it's kind of like a clogged drain. We keep storing more and more glycogen, and since they can't break it down, it backs up.

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Now this second strategy of slowing glycogen accumulation, if we can slow how quickly glycogen is being made, then our body has other ways to deal with the glycogen, and we can reduce that aggregation of lafora bodies. And those Lafora bodies are what's driving the disease, which is why all the research is focused so much on what can we do to

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slow how quickly glycogen is being made, then our body has other ways to deal with the glycogen, and we can reduce that aggregation of Lafora bodies.

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And those Lafora bodies are what's driving the disease, which is why all the research is focused so much on what we can do to

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either break apart Lafora bodies that exist or prevent them from forming in the first place. So when you are doing some research, as I'm sure all of you have, on the different therapies that are being developed for Lafora disease, you can see that we've been doing a lot of work, our cientists have been doing a lot of research and trying a number of different therapies, working to develop them for our Lafora patients.