FAQs About SPG52 & Gene Therapy

What is Spastic Paraplegia-52 (SPG52)?

- Spastic Paraplegia-52 (SPG52) is an ultra-rare genetic disorder caused by mutations in the AP4S1 gene, which disrupts how neurons transport proteins.
- This disruption affects brain development and movement, causing progressive disability.

How rare is it?

- Fewer than 60 children worldwide are known to have SPG52.
- Because it's so rare, there are no approved treatments and very little research funding. Families themselves must raise money to advance the science.

How does SPG52 affect a child's development?

- Children often miss developmental milestones like crawling, walking, or speaking.
- Most experience:
  - Severe developmental delays
  - Intellectual disabilities
  - Little or no speech
  - Seizures
  - Spasticity (muscle stiffness/tightness)
  - Eventual loss of walking and use of arms/hands
- Without treatment, daily life means therapies, hospital visits, and watching abilities decline.

Why is there hope?

- Researchers at the Universitat Autònoma de Barcelona (UAB) have spent 6 years developing a gene therapy for SPG52.
- They've already:
  - Built a mouse model that mimics the disease.
  - Created a gene therapy vector carrying a healthy copy of the AP4S1 gene.
  - Shown it works in mice and in neurons grown from patient stem cells.
- The science is real, and the therapy is nearly ready for children.

What is gene therapy?

- Gene therapy treats disease by fixing, replacing, or switching off the genes that cause it. Doctors deliver new genetic instructions into a person's cells. The cell reads those instructions and makes the right protein, or stops making a harmful one.
- SPG52 is caused by harmful changes in the AP4S1 gene. A gene-replacement approach would deliver a functional AP4S1 to restore the missing AP-4 protein function in key cells.
- Gene therapy targets the root cause, not just symptoms. One treatment can have long-lasting effects because cells keep using the new instructions, however it will not undo damage that has already happened - and that's why time is critical.

Have other gene therapies been successful?

- Yes, gene therapy has achieved success in treating certain genetic disease such as Sever Combined Immune Deficiency (SCID), Huntington's Disease, Sickle Cell Anemia, Wiskott-Aldrich Syndrome, among others.
- Gene therapy is a rapidly evolving field with the potential to treat a wide range of genetic diseases. As research progresses, it is expected that gene therapy will become even more successful and accessible to patients.
- More close to home, a parallel project, Melpida, developed by the Pirovolakis family for a similar disorder (SPG50), successfully reached clinical trials in just three years — entirely through grassroots fundraising. Early results from SickKids Hospital in Toronto show disease progression has stopped and motor skills improved in the first treated child. Melpida's success shows what's possible when communities unite.

LEO'S LIGHT
Cure SPG52

FAQs About Leo's Light

What is Leo's Light?

- A family led fundraising effort to support development and delivery of gene therapy, which is already underway at Universitat Autònoma de Barcelona (UAB), for Leo and other children with SPG52, so they have a real chance at a better future.
- A campaign to share Leo's story to raise awareness about SPG52 and early detection of rare diseases through genetic testing, that invites people to take action through giving, sharing, and advocacy.

What does the fundraising cover?

- Every dollar raised directly supports:
  - Toxicology and safety studies
  - Regulatory submission to Spain's Agency of Medicines and Medical Devices (AEMPS)
  - Manufacturing of clinical-grade viral vector
  - Launch of the first-ever human SPG52 trial

Why are families fundraising?

- No pharmaceutical company is investing in research because SPG52 is so rare, meaning there's no commercial market. That means the families of SPG52 patients themselves must raise the money to drive progress.
- A parallel project, Melpida, developed by the Pirovolakis family for a similar disorder (SPG50), successfully reached clinical trials in just three years — entirely through grassroots fundraising.

Where does the money go?

- It is managed transparently with nonprofit collaboration.
- Donations go directly into a "project" on GoFundMe Pro sponsored by the non-profit Rare Village. Once directed, Rare Village will release the funds only to the designated location, the UAB research team and clinical partners directly working on SPG52 gene therapy.

Are donations tax deductible?

- Yes. Thanks to the Rare Village Foundation and GoFundMe Pro, donations are tax deductible.
- A receipt will be sent to the email address provided when donating. The receipt will include the donation details, such as the date, amount, and any beneficiary information.

Who else is fundraising?

- There are many SPG52 families that are fundraising to support the same gene therapy research:
  - Irina - Romania - https://www.facebook.com/profile.php?id=61573956416205
  - Samuel - Spain - https://www.facebook.com/corropormarinaysamuel
  - Abril - Spain - https://www.laluchadeabril.net/
  - Helia - Spain - https://unrayodeluzparahelia.org/

What are other ways to help?

- Donate - every single dollar helps the gene therapy become available sooner and save Leo's skills.
- Share - use the email/text/social media templates and flyers at www.leoslight.org/help to help spread the word to friends, family, work, gym, and faith communities.
- Post on social media - share leoslight.org to your Instagram, Facebook, TikTok, X, LinkedIn, and Nextdoor.
- Fundraise for Leo - use birthdays and holidays as an opportunity to ask for donations in your name.
- Become a monthly donor - monthly gifts keep researchers on schedule and protect Leo's time window.
- Use your company match - As for a one-time match from HR.
- Make warm introductions - ex: company leader, clinic or therapy practice, local reporter, etc.
- Host a micro-event - such as a dinner party, trivia night, yoga class, porch concert, bake sale.
- Sponsor a match day - pledge a cap (ex: $2,500) and we will announce all gifts are doubled.
- Offer professional skills or in-kind - PR, video, design, volunteering, silent auction items, etc.

LEO'S LIGHT
Cure SPG52