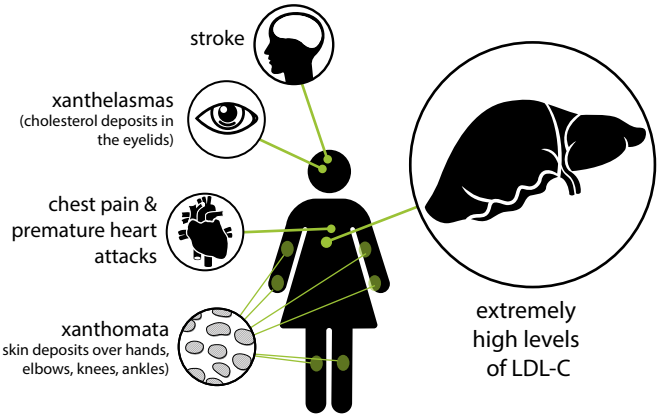
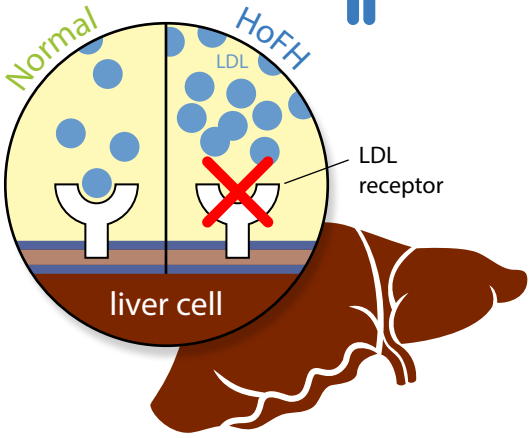
HoFH and the potential for gene therapy

Homozygous Familial Hypercholesterolemia (HoFH) is a rare genetic disease that causes a buildup of bad cholesterol (LDL-C) in the blood.

caused by inherited mutations from both parents



Genetic mutations lower the activity of the LDL-receptor (LDLR), which prevents the liver from capturing and breaking down LDL molecules, causing them to accumulate in the blood.

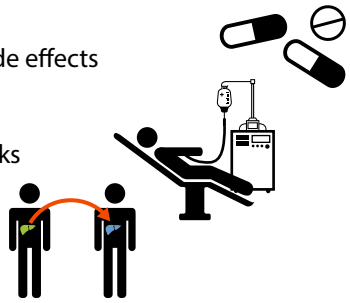


Current treatments have limitations

Medications:
Limited efficacy and/or major side effects

Lipoprotein apheresis:
Must be repeated every 1-2 weeks

Liver transplant:
Limited availability, high risk



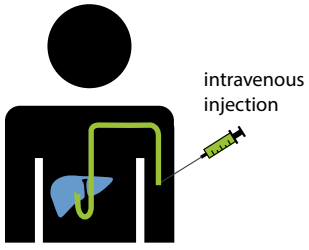
MIGHT GENE THERAPY HELP HoFH PATIENTS?

This promising new experimental therapy strives to overcome the patient's genetic mutation by delivering a healthy copy of the LDLR gene to the liver.

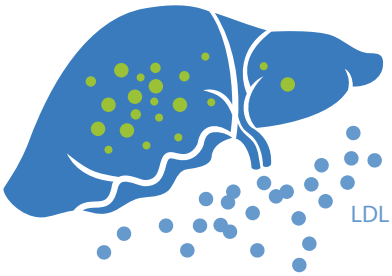
1. a normal healthy copy of the LDLR gene is produced

2. gene is inserted into a harmless Adeno-Associated Virus (AAV) to create a viral vector

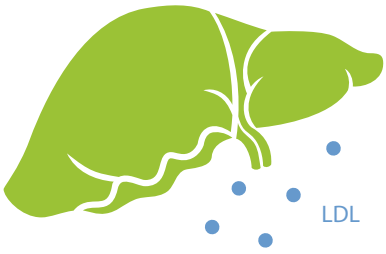
3. AAV vector is delivered to the patient's vein, sending it to the liver



4. liver cells (hepatocytes) take up vector and begin to express functional LDLR



5. functional LDLR can help remove excess LDL from the blood, lowering levels of bad cholesterol (LDL-C)



One-time treatment

gene therapy has the potential to last for many years

Safety first

gene therapy has proven relatively safe and effective in animal models of HoFH

What's next?

- the same vector has shown promise in patients with hemophilia
- early clinical trials will begin to test the safety of this promising new therapy in patients with HoFH