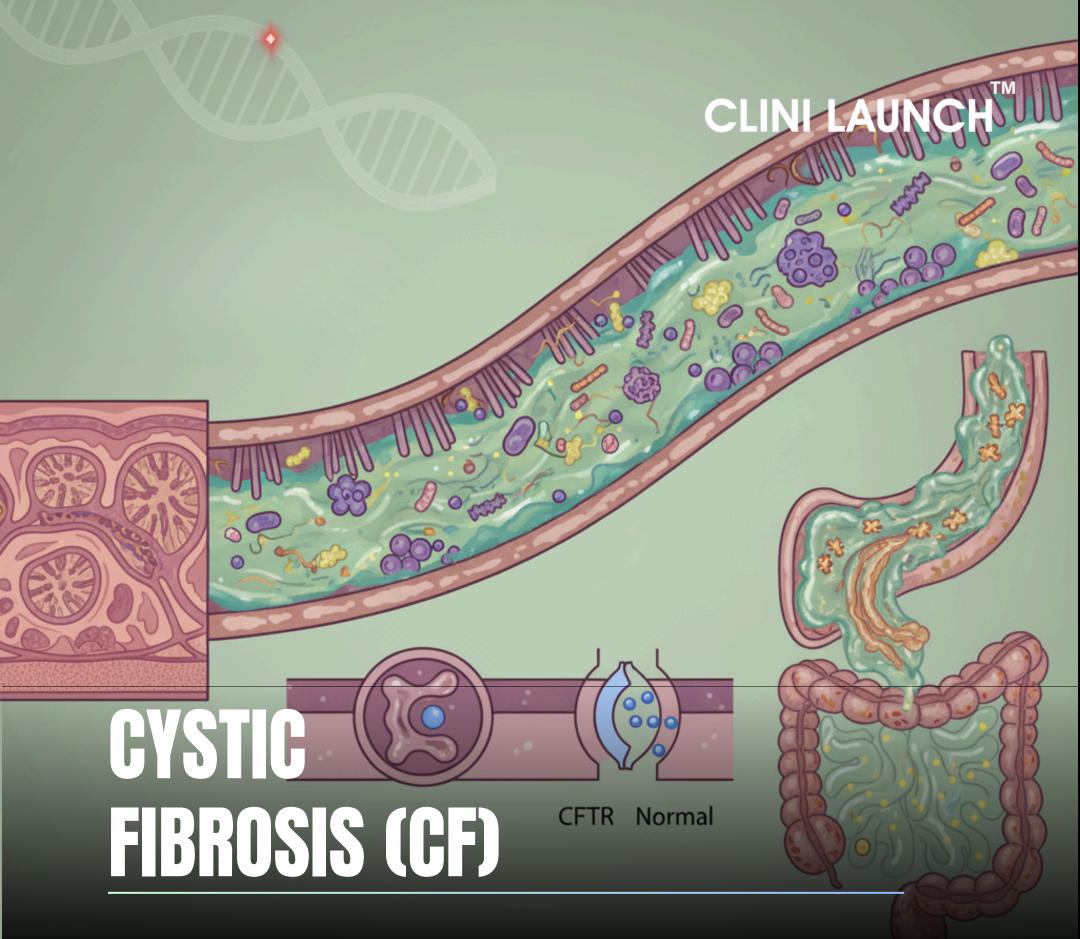


Rare diseases are often at the center of **breakthrough therapies!** 



A genetic disorder caused by mutations in the CFTR gene. It leads to thick mucus in the lungs and digestive tract, causing chronic infections and poor nutrient absorption.

**Progress:** Breakthrough drugs like CFTR modulators (e.g., Trikafta) have dramatically improved life expectancy and quality of life.



A progressive muscle-wasting disease, usually diagnosed in boys before age 5.

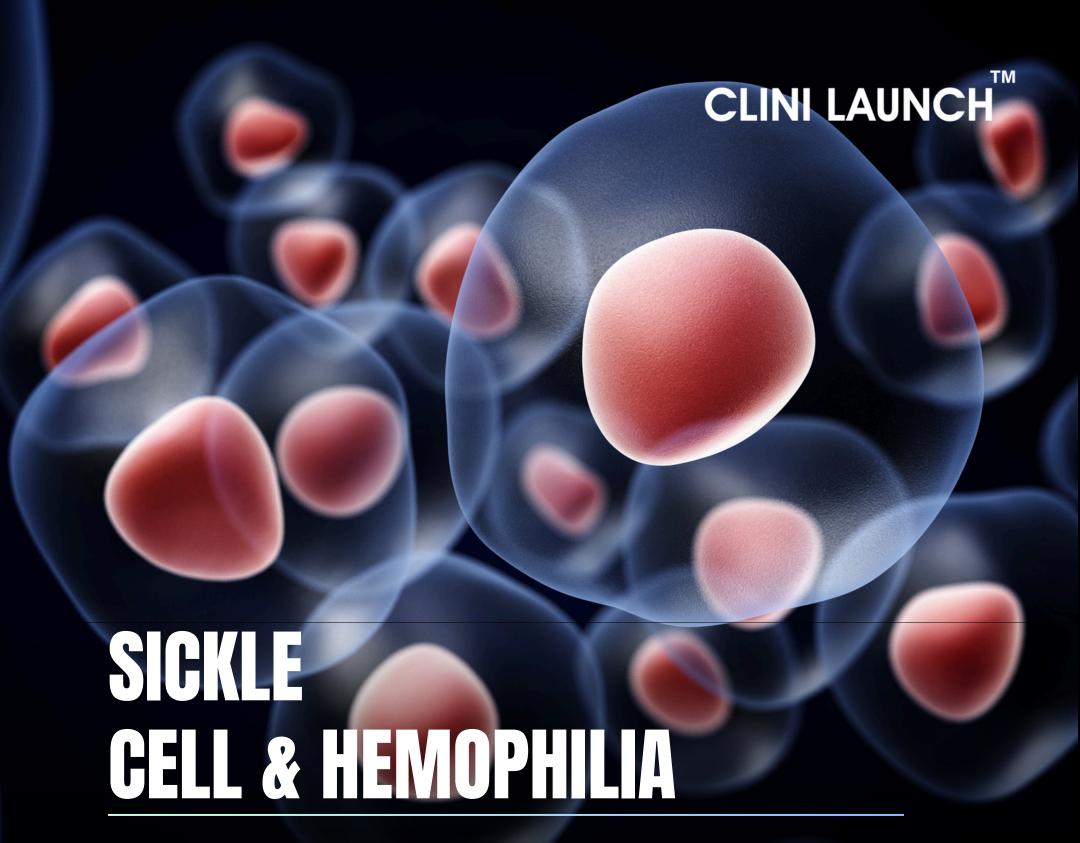
It results from mutations in the dystrophin gene, leading to loss of mobility and shortened lifespan.

**Progress:** FDA approvals of exon-skipping drugs and ongoing gene therapy trials are showing promising mobility improvements.



- ALS (Lou Gehrig's Disease) A rare disorder where motor neurons die, causing muscle weakness, paralysis, and breathing difficulties.
- **Huntington's Disease** A hereditary brain disorder causing uncontrolled movements, cognitive decline, and psychiatric issues.

**Progress:** Recent drug approvals like tofersen (ALS) and genesilencing therapies (Huntington's) are giving cautious optimism.



- Sickle Cell Disease (SCD) A blood disorder where red blood cells take a sickle shape, blocking blood flow and causing severe pain.
- **Hemophilia** An inherited disorder where blood doesn't clot normally, leading to dangerous bleeding.

**Progress:** CRISPR-based gene editing (SCD) and long-acting clotting factors (Hemophilia) are changing treatment standards.



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