

# CF BEHIND THE SCENES WITH EUGENE

## IMPACT ON THE DIGESTIVE SYSTEM

Welcome back  
to another CF lesson with me—Eugene!

In other editions of *CF Behind the Scenes*, we learned about what causes cystic fibrosis (CF), what it means for your body, and how CF progresses in the lungs.

Now, let's talk about the impact of CF progression on your digestive system.



**Eugene  
THE GENE**

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Start here

When CF symptoms progress, they get worse over time.

Everyone with CF feels this progression in different ways.

First, we'll learn about progression in your digestive system. This includes your pancreas and liver.

Let's explore!

Progression in

1. Pancreas
2. Liver

First, let's meet the pancreas. The pancreas is an important part of your digestive system. It does 2 big jobs.



Pancreas

Pancreas

1. The pancreas makes enzymes that break down the fat and protein in food.

CF can make it tougher for your pancreas to do these jobs.

2. It also makes hormones, such as insulin, which help regulate blood sugar levels.



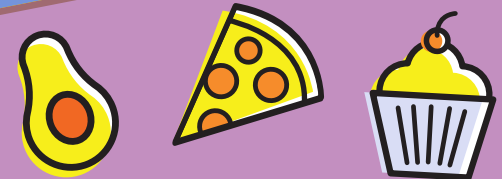
Your pancreas has small tubes called "ducts" that help enzymes get where they need to go.

In people with CF, thick fluids can block these ducts. When ducts are blocked, it's harder for enzymes to reach your small intestine, where they help digest the food you eat.

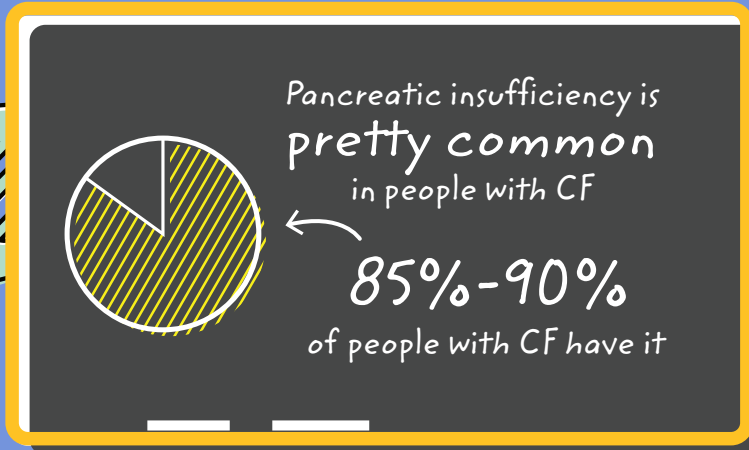
Enzymes

Ducts

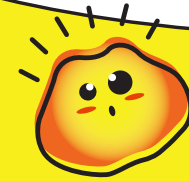
Thick fluids



When your small intestine isn't getting enough of these digestive enzymes, it's called pancreatic insufficiency.



If you're part of the small group of CFers who remain pancreatic sufficient, there's still a risk of inflammation in your pancreas. This is called pancreatitis.

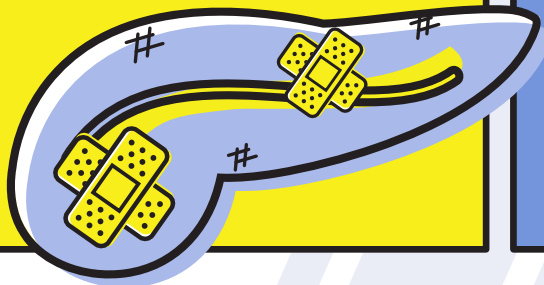


Inflammation



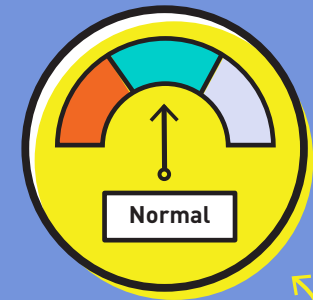
Inflammation is a reaction from the body's immune system.

Over time, all those thick digestive fluids can cause scarring in your pancreas and damage to the cells that produce insulin.



### What's insulin?

Let's review! Insulin is a hormone that helps regulate your blood sugar.



Blood sugar indicator



Sometimes, the pancreas doesn't make enough insulin, or your body has trouble using the insulin it does make.



This is a form of diabetes called CFRD, or cystic fibrosis-related diabetes, and is a serious condition that can make your CF symptoms worse.

CFRD symptoms can look a lot like CF - so it's important to get tested for CFRD starting at age 10.



## Pancreas Summary

- Thick fluids can block the ducts in your pancreas, which can cause a shortage of digestive enzymes (pancreatic insufficiency)
- People with CF may also experience inflammation (pancreatitis)
- Thick fluids can also cause scarring in the pancreas, which affects insulin production
- Some people with CF develop cystic fibrosis-related diabetes (CFRD)

Let's go over what we've learned so far.

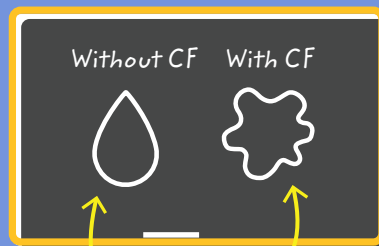


Let's continue our tour and travel down to the liver.



Liver

People with CF have thicker bile.



## What's bile?

Bile is a fluid that your liver makes. It helps digest fat from the food you eat.

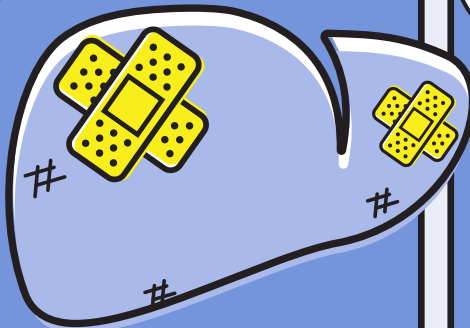


Liver

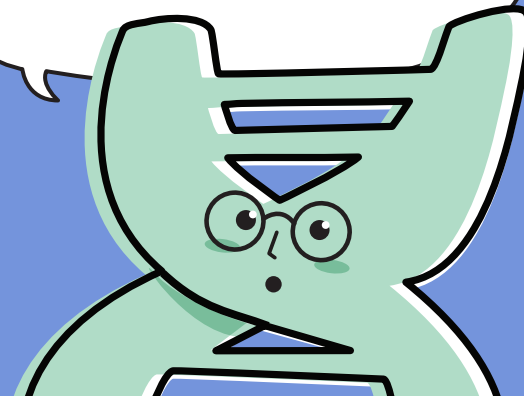


Because bile is thicker in people with CF, the ducts that drain bile can become blocked—just like the ducts of your pancreas.

This can cause irritation and—you guessed it—inflammation in your liver.



Liver disease is one of the most common and serious health risks associated with CF because thick bile can cause scarring and damage of the liver.



Your care team will test your liver function at regular checkups to check for CF progression.

For about 10%-20% of people with CF, this damage progresses enough to cause cirrhosis, a buildup of fat in the liver, hepatitis, or other complications.

Cirrhosis can be caused by scarring and damage that builds up from thick bile.



Let's review what we've learned about the liver.

### Liver Summary

- People with CF have thicker bile. This often leads to irritation and inflammation of the liver
- Liver disease is common in patients with CF
- Scarring and damage from thick bile can lead to cirrhosis of the liver



Wow!

That's a lot. If you want to learn more about CF and the digestive system, talk to your caregiver and healthcare team.

