

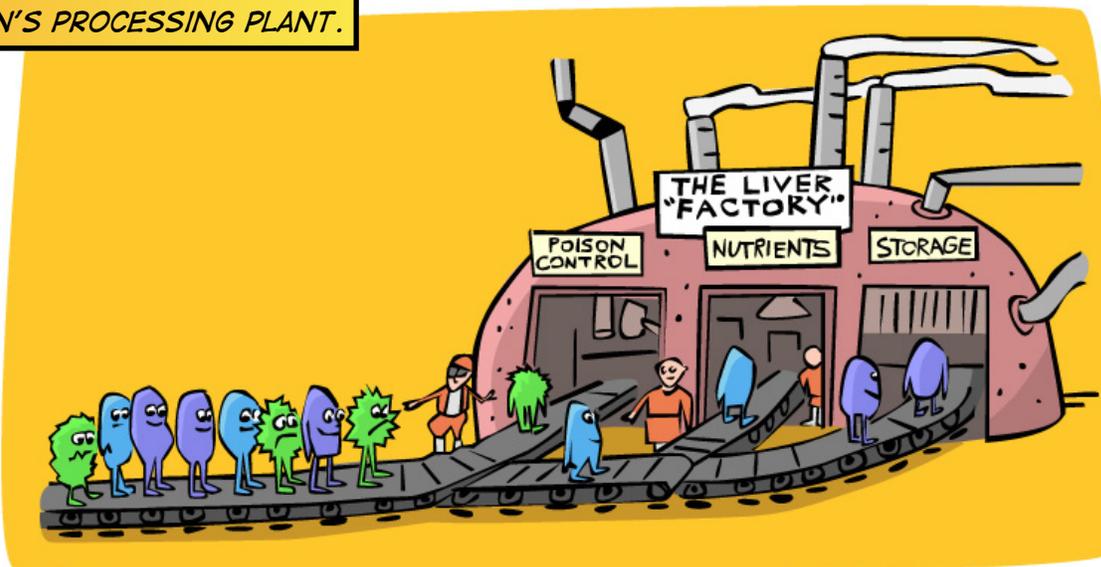
# ADVENTURES WITH SUPERCELL

ADVENTURES IN THE BODY WITH SUPER CELL

## THE LIVER

The way Human's body works is one of our Creator's awesome marvels—a temple we love to help you keep clean. Now that we've traveled through the intestinal tract, let's find out what happens in the liver. We'll need to revisit the small intestine.

### HUMAN'S PROCESSING PLANT.



It seems we should whisper in here—like you do in a sacred place. You can see why the food you eat has to be digested to such tiny particles, as the microvilli need to be able to catch nutrients and pass them along to the villi. On the other side of the gut wall, tiny blood vessels—an extensive network of capillaries are embedded to receive the nutrients from the villi. The capillaries flow into the portal vein, a mighty river carrying blood on the other side of the gut wall to Human's liver. Human highway systems are designed like your body's capillary and blood system. Single feeder lanes (capillaries) allow vehicles (nutrients to enter highways (blood vessels) and single feeder lanes (capillaries) allow nutrients to exit to their destination. Healthy eating habits keep this system flowing freely without traffic jams.

Let's exit with a capillary. Voila ... we're flowing in the portal vein! This river of blood is fed by thousands of capillaries, which are bringing nutrients from the small and large intestines

as well as some other organs. This vein leads directly to the liver. Why the liver? This blood can't be trusted to enter the main blood stream heading to the heart yet. Everything in this mighty stream must first go through the body's main filtering system. Human's liver is responsible to prepare everything before it is released to flow to the heart and enter the body's intricate system of nerves, glands, organs and tissues.

Your liver is a filtering system. The oil filter in a car is changed every few thousand miles or kilometers to keep the motor running well. If it isn't, the motor gums up, runs rougher and rougher and will eventually choke on the grime.

When Human fed these cells lots of sugary and fatty processed foods, harmful bacteria and viruses thrived! The liver cells didn't though. It's a tribute to the liver cells, that despite a sluggish liver, they keep functioning for an amazingly long time before it becomes gummed up to the point they can no longer do their job and the body starts to sputter with symptoms of disease.

Unfortunately, a large amount of liver tissue must be damaged or destroyed before the customary tests of liver function reveal abnormality.

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While we're swimming along, here are some facts: The liver is the heaviest and largest organ in your body, weighing in at 3 to 5 pounds or approximately 2 kilograms. Its dark red color reflects the blood it is processing. How much blood? Every minute, about 1½ quarts or liters of blood are filtered. The average adult has 4 to 5 quarts or liters of blood so your liver holds about 30% of your blood at any given time. Approximately every 3 minutes all the blood in your body has been filtered through your liver. It's a fluid looking organ because of the amount of blood it holds and also because it is at least 75% water. In fact, your liver is shaped by the organs surrounding it. The lower edge of your liver sits level with the bottom rib on your right side so it's well protected in front. Your kidney, colon and the beginning of the small intestine all hold it up in place. Your stomach and esophagus shape it on the left side.

You don't grow up to be a liver cell unless you're prepared for a lot of traffic and work. In fact, the cells in the liver work so hard that at times they're using 20% of all the energy the trillions of us cells produce in your body. Scientists are still learning what goes on in the body—so far they've found these cells produce at least 13,000 different chemicals using about 50,000 systems of enzymes to perform over 500 functions. Once the liver cells filter the blood, the nutrients are released into the blood and bile to keep Human functioning. In many adults these cells perform like Super Heroes because the liver has become so clogged only 30% of it is working. That's an amazing thing about the liver—only 30% of the cells may be able to function yet the body may not show serious symptoms. And the good news? The liver is the easiest tissue to regenerate. Once we cells get what we need, we can clean up

any mess, rebuild, and keep each new generation of cells healthy—to think, to move, to cry, to laugh and to love.

Let's have a look at this milieu we're swimming in. This vein is rich in glucose, amino acids, fatty acids, minerals and vitamins—the building materials the cells need to do their jobs. There are still toxins floating with us but there aren't enough to overwhelm the liver cells anymore. Human's cleanup efforts have definitely paid off.

Get ready to flow into the liver. To enter for inspection and processing we must squeeze through one of the thousands of capillaries that permeate the liver.

Made it. See that rich red stream of blood blending with us! That's another stream of blood ... coming in from the hepatic artery fresh from the lungs and heart. It supplies the liver cells with the oxygen they depend on to do their work. We came in on a vein leading eventually to the heart. Arteries come from the heart after they've picked up oxygen from the lungs so that's why that blood is so red.

Ooops, watch out for the bodyguards! About 30% of these cells are poised to capture debris from viruses, harmful bacteria, and other toxins flowing in here. Notice how they handily handcuff the culprits. That wasn't the case before Human cleaned up in here. Those destructive types kept these bodyguard cells battling without a rest and managed to overpower and get past them. As long as you keep your liver in good shape, those body guard cells are able to handcuff the toxic substances.

Liver cells are rich in enzymes. Enzymes and oxygen are the fuel they consume to work tirelessly. Each cell has two groups of enzymes specifically designed to tackle the many toxins you take in through the gut, by breathing or through the skin—toxins like foreign chemicals or additives from processed foods, heavy metals, radiation and DDT ... that's enough of a list for now.

The teamwork between the two groups of enzymes is awesome. The first group, Phase 1 or Team 1 prepares the toxins for the Phase 2 or Team 2 enzymes. These teams aren't competitive—they want to work in harmony. Here's how the game works in here: Each toxic substance is a ball. To prepare the ball, Team 1 must strip off the cover. This reveals the toxins truly dangerous intent. It's the job of Team 2 to quickly wrap the ball with a new cover. The new cover neutralizes it or renders the toxin harmless. Once the toxins are disarmed in this way, they are safely excreted in bile to be expelled with feces. Here's the problem: Once stripped of their cover by Team 1, if Team 2 can't keep up, these toxins are left exposed. They're more dangerous than when they entered the liver! And they have to be stored as we don't want to release them into the blood to flow to the heart!

The liver also has a storage function. The storage space isn't meant for toxins though—it's meant for glucose so if Human goes too long without food, the vital glucose is released to

keep blood sugar levels balanced—that means the pancreas doesn't get stressed. The space is also meant to store a little fat to be released when needed for energy. When Human was eating a lot of fat, these liver cells had to store it too. The result was a fatty liver. That interfered with other liver processes including the release of stored glucose for the pancreas.

How were gallbladder cells affected? A lot of bile is needed to process excess fat and that overwhelms gallbladder cells. About four cups of bile flows to the gallbladder daily. Your gallbladder looks like a pear and sits just below the liver. It concentrates bile up to four times the original strength for use in digesting fats. Remember the bile we got squirted with when we entered the small intestine? Recall how the bile emulsified the fats? Once the fats were broken into tiny globules there was a lot more surface for the fat digesting enzymes to work. Those enzymes were readily able to break the fats into fatty acids—molecules small enough to be absorbed through the intestinal wall. The bile used to carry some of the toxic overload from the liver so that interfered with gall bladder and then digestive function.

Bile is rich in alkaline salts, especially sodium. This alkalinity helps neutralize the highly acid mixture from the stomach. This natural alkalinity, however, gets acidified when toxins build up. Bile is also rich in cholesterol. Toxins and harmful bacteria increase the concentration of cholesterol. Excess cholesterol precipitates to form gallstones. When the stones obstruct the flow of bile, the gallbladder will ache or be downright painful.

Actually the liver eventually ran out of storage space with all the toxins and that meant they were spewed into the flow of blood heading to the heart. The arteries started to get clogged and symptoms of health problems showed up in many areas of the body including Human's heart.

Our Human was able to restore balance, giving Team 2 the ability to disarm the toxins prepared by Team 1. What was the solution? We were able to do that when a rich supply of oxygen and nutrients came flowing in without a lot of the toxic stuff formed by processed foods laden with refined sugar and fat. Fresh live food made an amazing difference!

### WAYS TO AID THE LIVER

1. Drink a glass of water with the juice of a fresh lemon upon arising—actually two glassfuls are best with the juice of 1/2 a lemon in each.
2. For glucose to heal the liver eat lots of fresh fruit and vegetables—juice them; put them in smoothies; eat them!  
Added tip: Fat in the diet slows the conversion of fructose (the sugar in fruit) to glucose ... remember when healing the liver: **LOW FAT, LOW ANIMAL PROTEIN** is important.
3. Move in some way to get exercise regularly, even very gentle exercise massages and stimulates the liver.

Among the liver cells awesome responsibilities are three broad categories:

1. As the blood flows through, they operate a **POISON CONTROL CENTER**. We've seen the teamwork needed for this onerous task. Poison control means the cells must identify and neutralize every toxin coming in through the mouth, lungs or skin. It also means every molecule the body has used—hormones for example—must be rendered inactive so they can safely be sent either to the bile for elimination through the bowels or to the bloodstream headed for the heart and eventual elimination through the kidneys.
2. As the blood flows through, some cells are **MASTER CHEMISTS** as they convert each and every nutrient into a form your body can use.
3. As the blood flows through, some act as **WAREHOUSE MANAGERS** to store nutrients and supply them on an as needed basis—offering instant delivery service when needed.

Liver cells provide finishing touches to the digestion of our meals. They prepare and serve us the three basic food groups—carbohydrates, proteins and fats. Each food group is used for a primary purpose but also has other uses. First, we need energy. Without energy you can't function. Natural carbohydrates (carbs) as in fruits and vegetables provide the glucose that keeps us alive. Sugar from fruit and vegetables comes with a wonderful package of nutrients to strengthen the team work. Glucose that is not immediately needed for energy is stored as glycogen. When other cells need it—such as the brain—liver cells respond immediately. The next conversion of glycogen to glucose may be just what you need for a brilliant idea, an uplifting thought or a smile!

Don't forget these teams are also handling pesticides, hormone-mimicking residues from plastic wrap ... over 70,000 man-made chemicals with more added daily. Now that Human refuses as many servings of foreign chemicals as possible, the liver cells are able to keep up as long as they get fresh live food daily. No matter where annoying symptoms may erupt, the likely cause can be traced back to Human's filtering, processing and storage plant—the liver. Human's health improved steadily as liver function was restored.

The liver cells work hard for Human. Now Human works to help the liver cells!

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