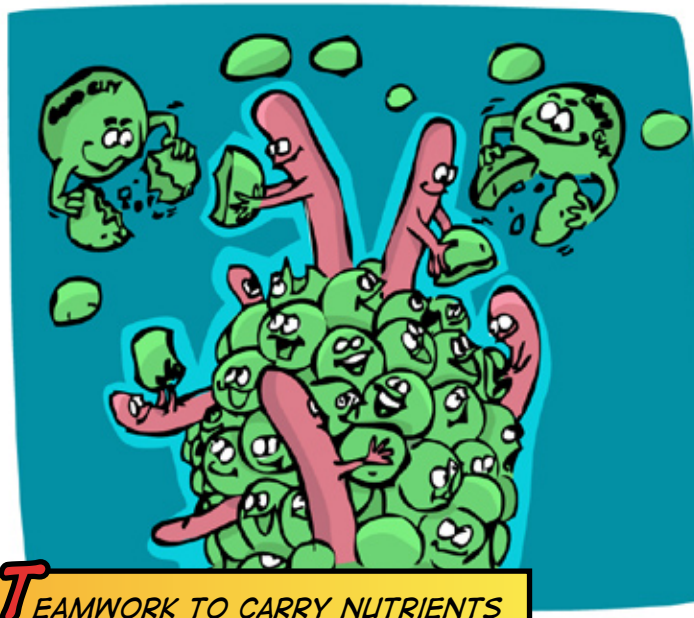




MOVING ALONG THE SMALL INTESTINES

This silky mix is moving on. Get ready to see one of the Wonders of the World as we maneuver the switchbacks of the small intestine.

We'll be zig-zagging through here for about four hours. The peristaltic muscle action will keep us moving along. This tube is about 20 feet or 6 meters long and as you can see, it's about 2 centimeters or one inch in diameter. Look closely. The walls aren't smooth. See the rows of tiny, waving fingers. Each finger is like a tentacle waiting to accept and absorb everything that goes down this tube. Each finger is called a villi. Each finger is covered by millions of tiny hair-like microvilli. These hair-like microvilli trap the nutrients to help get them to the cells that absorb them. This field of fingers give us an amazing increase in surface area to better capture nutrients. In fact, if the surface of your small intestine were laid out smooth, it would be enough to carpet the floor of an average-sized room—about 200 square feet.



The action in this part of your digestive tract or tube determines whether you slowly starve us to create disease or feed us to create health. The cells lining this tube have a crucial responsibility—to absorb 90% of the nutrients we need to keep you and us healthy. With this responsibility these cells work hard. They live a short but very satisfying life. Each cell replaces itself every three to five days.

The hair-like microvilli make it look like we're on a field of waving grass. These tiny hairs start the process of absorbing nutrients from your food. Seeing them, makes one realize why food must be broken down into extremely small particles. Watch closely and you'll see

the micro-villi have an army of helpers—a vast population of microscopic organisms. There are more of these micro-organisms lining the digestive tract than there are us cells—trillions of them. Small as they are, these minute bacteria make up about four pounds or close to 2 kilograms of Human's weight. Now that Human sends good food down here, we've got mostly beneficial microorganisms in this tube—they're welcome house guests as they help us. These 'good guys' protect us from the harmful microbes. And they play a key role in getting nutrients to us.

Your beneficial microbe or bacteria population started at birth. The first feedings of mother's milk from a healthy mother are rich in friendly bacteria. These micro-organisms immediately coat the digestive tract to provide protection from disease-causing microbes or pathogens. Human was fortunate as a baby to get a protective lining from mother's milk. There are two other ways that Humans naturally ingest beneficial microorganisms. One source is fresh flowing or unpolluted water, which is rare today. Another source is fertile soil, rich in humus and microorganisms. Some of the microorganisms ride piggy-back on vegetables. Human ingests some of these on the vegetables from a local organic garden. They're invisible as they are so tiny. Most produce, however, comes from deficient soils so rather than bringing you healthy microbes, unwelcome parasites get a piggy-back ride. For a time, Human swallowed capsules of beneficial microbes to replenish our supply. If we can maintain a balance of at least 80% friendly bacteria to 20% of the unfriendly or potentially harmful bacteria throughout the gut, we'll be able to keep Human well.

This army of beneficial micro-organisms help us cells absorb the nutrients to feed you and provide a defense to keep foreign and harmful substances out. Human almost wiped out the coating of these friendly critters. With all the mental stress, foreign chemicals in water and air, and the sugar and flour Human was eating, rowdy party goers, the harmful bacteria, gradually replaced our welcome house guests. As the stomach acid got weaker and weaker, harmful bacteria and parasites were able to sneak down here. The unwelcome guests thrived and left their wastes. The mucous producing cells in here worked overtime trying to trap the critters and send them sliding on through to the large intestine. It was a losing battle. We just couldn't handle all that mucous. As well as the mucous overload, we were swamped with protein molecules that were too large for us to

To keep seeds and nuts from sprouting prematurely, nature gave them enzyme inhibitors. These inhibitors interfere with digestion so if you want to get the essential fatty acids (EFAs) and other nutrients from seeds and nuts, it is necessary to disarm the inhibitors. To do so, soak seeds and nuts in salt-water overnight and then dry them at low heat to keep those precious enzymes alive! To dry use a dehydrator or the oven at no more than 150°.

handle. With weak stomach acid, the protein wasn't being digested well enough for us to use. The garbage built-up and smothered these precious microvilli. Word spread to the harmful bacteria in the large intestine and they crawled up here too! We'll wait and look at that issue when we get down there. With a major housecleaning this tube is back in good shape.

EATING CHOICES

1. Choose fresh foods rich in enzymes—raw or lightly cooked.
2. Eat protein foods in small amounts and chew, chew, chew to break down the larger molecules.
3. Find sources for meats from animals that are raised humanely and allowed to graze naturally.
4. Consume both saturated and unsaturated minimally processed and organic fats and oils.

Let's look at some of the work our welcome guests do. They're producing digestive enzymes. Some of the enzymes break amino acid chains into shorter segments, some of the enzymes disassemble fats so the cells can absorb them, and some of the enzymes prepare any remnants of carbohydrates into sugars. These tiny house guests work like a well-trained chorus as Human has given them the raw ingredients to flourish. Human gives them small amounts of organic animal protein, good fats, and plenty of vegetables or nature's carbohydrates. They no longer have to battle with hormones and pesticides in the meat, they're no longer overwhelmed by rancid and chemically-altered fats, and

they're no longer flooded with sugar. These micro-organisms are also able to manufacture the vitamins we need as well as protect the important mucous lining of this wondrous tube.

If you had seen the shape of this lining at its worst, you'd understand why Human battled arthritis, allergies and other chronic conditions. Not only did patches of mucous harden and flatten some of the microvilli but as the cells weakened, foreign chemicals and vicious micro-organisms penetrated the gut lining. These cells tried desperately to block the bad guys but they snuck through and entered the bloodstream.

Once through the wall of this tube, nutrients and toxins enter the portal vein. This is the main vein carrying blood from the intestines to the liver. The liver is the executive chamber where key decisions are made. It assigns every nutrient a duty and it wrestles with every toxin to try to make it suitable for use by the body. When the toxins finally overwhelmed the liver it couldn't function well. Candida and other toxic micro-organisms were allowed to spread even to the brain. We'll visit the all-important liver later.

When Human's leaky gut allowed larger food particles, unwelcome bacteria and parasites to constantly sneak through to the blood, the immune system was constantly in fight mode. Human understands now why there are so many Humans with learning problems, inflammation in their joints and extreme fatigue.

We had a real mess to clean up! The housecleaning began when Human took an intestinal cleanser to start scraping off the hardened mucous. Then the friendly micro-organisms had to be replenished. Human swallowed capsules containing billions of beneficial micro-organisms or probiotics. It can take many months to gradually colonize the lining of this tube again. It felt so good when the friendly bacteria restored the moist mucous lining, the leaks in the gut healed, and the microvilli came back to life.

We're moving along. Here's another switchback. As we make the turn, let's watch one step in the digestive process. The body's most primitive electrical system is based on the transfer of ions. The flow of electrons depends on like charged ions repelling as well as opposite charged ions attracting one another—like the ends of two magnets. This results in a chemical reaction. Look, there's a calcium ion—one of the crucial minerals. In order to be absorbed into the cell, the calcium ion must attract the help of a vitamin D ion. The charge on the cell wall must also attract and draw in the calcium with the vitamin D. Once drawn into and through the cell, the vitamin D releases the calcium into one of the tiny blood capillaries leading to the portal vein. Once transported to the liver ... it is assigned for use in the body. Recycling is an important part of this process. There's the vitamin D back to grab another calcium ion! The electrical process continues. Wondrous when you realize this is one simple reaction among millions being repeated every second to keep us cells and you alive.

One caution as we move along. Please don't take synthetic vitamin D. Synthetic vitamins don't have the same electron spin. They lack the electrical vitality we need to use them efficiently. Human discovered that a lot of food supplements on the market are synthetic or of poor quality. After doing some homework, Human learned to only buy food supplements that are concentrated foods—they have electrical vitality.

Electromagnetic communication allows instant contact among all the body's cells. That makes

TIPS TO INCREASE ABSORPTION OF NUTRIENTS

1. Give all vegetables and fruits an ozone or a H₂O₂ bath to cleanse of pesticides and parasites.
2. To help cleanse encrusted material from the wall of the small intestine use a herbal colon cleanse. Colonics are also an option.
3. Take a good mineral supplement to help the body to alkalize itself.
4. Take a probiotic supplement containing strains of lactobacillus, bifidophilus and possibly soil-based organisms.
5. Use organic oils.
6. The small intestine is most active from 1:00 to 3:00 p.m. This allows protein eaten earlier in the day to be fully digested before sleep.

the body one functioning unit—not a collection of parts as you may have been led to believe. This instant communication is the reason the cells in this tube respond immediately if you're feeling distressed. If the stress becomes chronic, the signals change the natural pH that supports us to a more acidic level. That's why chronic stress is a big factor in the build up of toxins that eventually create leaks in the gut—leaks that larger particles can sneak through.

As we round this next switchback, I'll emphasize that eating fresh vegetables is the best thing you can do for us. That's how you give us most of the vitamins, minerals and enzymes we need. Next in importance is small amounts of protein. See how those tiny amino acid chains are slipping easily into the cells lining this tube. There's a tiny fatty-acid chain to escort them—teamwork is so important in here. Every nutrient relies on some other nutrient to help make it easy to slip into those cells and be passed through to you.

How important is protein? Once that amino acid chain reaches the liver, it might become an antibody to work for your immune system, or a hormone for one of your glands, or tissue that cushions us cells, or it might assist in giving you energy, or to help repair one of us cells, or to replace one of us cells, or become an enzyme that is needed to assist any process in the body, or a neurotransmitter in your brain, or... I think you get the picture—we cells rely on you giving us small amounts of usable protein.

The third most important food to get to us is high quality fat. Now that the bile salts and lipase enzymes have broken the fats into tiny chains, you can see they're also being absorbed as we slide along. We thrive on some fats while others make us want to throw-up or shrivel up. We need some saturated fat to burn for energy. I know, I know, Human thought margarine and all polyunsaturated oils were good for the body and saturated fats were taboo, too! Human fell for that cholesterol scare as well. We'll talk more about that later. Saturated fats are the ones that are solid at room temperature—like butter, coconut oil, and animal fats.

We also need some unsaturated essential fatty acids (EFA's). We need Omega-6 and Omega-3 EFAs. There is an over-abundance of harmful Omega-6 EFAs in processed foods, leaving the body starving for Omega-3 and good quality Omega-6 EFAs. We need healthy Omega-6 fats to partner with the vital Omega-3 fats. When we visit the heart, we'll talk more about the importance of the essential fatty acids.

When you buy oils rich in EFA's, please! please! buy from a reputable company that extracts them properly. Any unsaturated oil will quickly go rancid if not extracted by an expeller process at very low heat and then kept in dark bottles. Rancid oils mean extra free radicals. Free radicals are molecules with extra electrons that are savage in their hunt to pair up with other electrons. They serve us well to clean up toxins but in excess they rip electrons from any tissue they can find. We don't like their bite! Excess free radicals create wrinkles in skin, damage artery walls, and contribute to disease. We shudder when we have to deal with the

rancid oils from processed foods. Yuck, I get an icky feeling just thinking about the sticky stuff. These fats and oils are no longer foods...during the extraction process they've been subjected to high heat, solvents and bleach that strip away the vital nutrients.

Let's get back to good news. Surprise! Here's a rap for you, performed by the friendly microbes...

WE LOVE IT WHEN ... WE GET ORGANIC
 GUESS WHO PACKS UP IN A PANIC,
 WE LOVE IT WHEN ... VEGETABLES BRUSH THROUGH
 SWEEPING ALONG THE RESIDUE,
 WE LOVE IT WHEN ... SUN AND GREENS WE SEE
 CALCIUM THEN DANCES WITH VITAMIN D,
 WE LOVE IT WHEN ... MINERAL IONS ARE APLENTY
 KEEPS US ALKALINE AND COMPLETELY HEALTHY,
 WE LOVE IT WHEN ... ENZYMES WORK ALL THROUGH THE DAY
 NUTRIENTS SCATTER THE BEASTIES AWAY,
 LET'S FILL IN THOSE VALLEYS AND SCHISMS
 WITH LOTS OF FRIENDLY MICRO-ORGANISMS,
 WE LOVE IT WHEN ... AN ARMY OF BIFIDOPHILLUS
 IS ESCORTED BY TROOPS OF ACTIVE ACIDOPHILLUS,
 WE LOVE IT WHEN ... YOU EAT YOUR PROTEIN EARLY IN THE DAY
 LEAVES US READY BY EVENING TO REST, RELAX AND PLAY.

We're rounding the last curve of the small intestines and approaching the ileocecal valve—the entrance to the large intestine. Notice how slippery it's getting. That's from the bile in this mix. Bile is being drawn out to help keep the hordes of bacteria we'll find in the colon or large intestine from climbing up the small intestine. This valve was often stuck either closed or open before Human cleaned things up in here. When it was stuck open the unfriendly and raucous bacteria had no problem climbing up here. See how the ileocecal valve is opening smoothly—we've given it an electrical signal—like using a remote control to open a garage door. We're sliding into the large intestine.

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