# A Family Nutrition and Health Program

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If you have a health-related question or a health challenge, please seek the guidance of the health professional of your choice. Growing Healthy Homes LLC is not able to answer health questions.

" I call heaven and earth to record this day against you, that I have set before you life and death, blessing and cursing: therefore choose life, that both thou and thy seed may live:" Deuteronomy 30:19

# Introduction

The study of nutrition is more than just a look into food and its nutrients. It is an in-depth look at how we eat, what we eat, how the body works and how these foods affect the body. This program is not a rehash of biology or science, but a discovery of how the body systems are affected by the foods – good or bad – we eat. Research, recipes and projects will make **Nutrition 101: Choose Life!** fun for the whole family and establish lifelong habits and desires to eat wholesome foods that support great health. This corroborates III John 2: "Beloved, I wish above all things that thou mayest prosper and be in health, even as thy soul prospereth."

The 12 main body systems will be covered in six units.

- Unit 1 The Brain and Nervous System
- Unit 2 The Digestive System
- Unit 3 The Respiratory, Olfactory, Auditory and Visual Systems
- Unit 4 The Muscular and Skeletal Systems
- Unit 5 The Cardiovascular and Immune Systems
- Unit 6 The Endocrine System & Emotions

If the principles in **Nutrition 101: Choose Life!** are already a part of your family's lifestyle, use it to enhance your food preparation and meal time experiences. This teaches the whys of eating the way you do. Rather than, "Mom said I can't have that," they can say "I choose not to eat that because I know what it does to my body."

#### This program was written for you.

"Train up a child in the way he should go: and when he is old, he will not depart from it." Proverbs 22:6



There are many textbooks written on the subjects of science and biology, explaining the various body systems and organs, how they work, where they are located and the jobs they perform. Still more books cover health issues and various theories about longevity.

Every student, whether public, private or home educated, is required to read and study these subjects. If this is so, then why is disease increasing at an alarming rate in this country? Why are children stricken with cancers today more than in years past? Why has diabetes risen to near epidemic levels? Why is heart disease, even with advancements in modern medicine, still the number one killer in America and now prevalent in our teenagers? Why, with a myriad of pharmaceutical drugs and state-of-the art diagnostic tools, are we sicker now than ever before? (See Health Statistics in the United States in Appendix A.)

The American Diabetes Association, the American Heart Association and the National Institutes of Cancer all state the most important thing we can do to prevent and even "cure" these diseases is ... CHANGE THE WAY WE EAT!

If we are listening to these experts, why are we not making progress?

This is precisely why **Nutrition 101: Choose Life!** was created. We, the authors, have a mandate to assist families, especially those with children, to understand the real relationship food has on our "fearfully and wonderfully made" bodies, as referenced in Psalm 139:14.

The Bible gives us clear direction about taking instruction and gaining wisdom. "My people are destroyed for a lack of knowledge," states Hosea 4:6. So we encourage families to heed the advice of Proverbs 4:13, "Take firm hold of instruction, do not let go; Keep her, for she is your life."

Would you like to feed your family more nutritiously, but have no idea where to start? Have you tried telling your family the importance of eating right, only to slip back into the fast food maze? Do you think the cost of eating nutritiously is out of your budget? Would you like some biblically sound help from real families and expert counsel about real food and real world eating?

That is the purpose of **Nutrition 101: Choose Life!** Written by a team of four mothers, this program is designed for positive, effective, long-term, healthy lifestyle changes.

#### Is This Even Possible?

Absolutely! Romans 8:28-39 is well known for encouraging believers that they are more than conquerors, but the preceding statement in verses 26 and 27 are less quoted and equally contextual for this program. "In the same way, the Spirit helps us in our weakness. We do not know what we ought to pray for, but the Spirit himself intercedes for us with groans that words cannot express. And He who searches our hearts knows the mind of the Spirit, because the Spirit intercedes for the saints in accordance with God's will."

Perhaps you have prayed for the answers you will find in this study without even knowing it. When we pray for wisdom and discernment and healing, God loves us and wants to grant our request. When He grants it, he does so knowing that we are fully equipped to receive it.

As you equip your family by implementing the information in this program, you most likely will encounter adversity and be tempted in moments of weakness. The following sections are intended to encourage you in those times and prepare you with ideas for your own proactive action plan.

# About the Authors



Debra Raybern, N.D., M.H., C.N.C., I.C.A. (Naturopathic Doctor, Master Herbalist, Certified Nutritional Counselor, Internationally Certified Aromatherapist) is a veteran home school mom and shares from nearly two decades of personal and professional experience in helping families just like yours to regain and maintain optimum health. Assisting thousands of people overcome minor and life threatening illness, Debra knows the importance of proper, body system specific nutrition and supplementation.

"I know that **Nutrition 101: Choose Life!** will change your life, as the information shared has already been proven to change the way people look at food and has given them the health to enjoy life and serve their community, church and God. Since I cannot personally counsel everyone, this program is a way for me to enter your home and help you be successful in keeping your family feeling their best and "be-ing in health."



Sera Johnson, B.Mu. is a home school mother of four, private music teacher and the president of operations for Growing Healthy Homes LLC. As the former self-labeled "Fast Food Queen," she and her husband realized their family's health was in great jeopardy and sought the Lord for wisdom about what to do. After being introduced to Debra Raybern and learning about better health through eating God's food, Sera's family is now healthier than ever and looking forward to living out full, healthy, abundant lives for the Glory of God. Her heart is to share with mothers what she has learned and that it is never too late to teach your family how to eat *and* love God's food.



Laura Hopkins, B.S. is a professional communicator with a decade of experience in the public and private sectors, including a Fortune 8 global energy company. As president of communications for Growing Healthy Homes LLC, she is responsible for content and Internet management, preparing material so families may easily consume the concept of true wholeness as God prescribes. She strives to model for her own family that, as children of God, it is crucial to maintain a hunger for His provision and make daily choices that impact abundant living.



Karen Hopkins, B.S. is a former Home Economics teacher and published author who developed diabetes at the age of 45 due to S.A.D (Standard American Diet). Traditional nutrition courses did not prepare her for the onslaught of processed, fast food eating habits and the busy lifestyle of a growing family. Forced to face the reality of a short lifespan due to excessively high blood sugar levels, Karen reversed the prognosis in six short months without medication through the use of specific natural supplements, diet and exercise. She founded Growing Healthy Homes LLC in 2007 to educate and train families about God's desire for His children to prosper in health even as their souls prosper (III John 2).

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# **Getting Started**

**Nutrition 101: Choose Life!** is a unit study in that it encompasses all ages from toddlers to adults, covers a wide variety of subjects like science, anatomy, biology, nutrition and health and can be implemented in a daily or weekly schedule. Use grocery shopping, meal preparation and meal time as opportunities to incorporate the program to allow children to learn as they live. This should be an organic process that makes healthy choices second-nature.

This program can be utilized daily by all families whether as a curriculum or during meal planning and food preparation. Other ways to use the program include in homeschool co-ops, private schools, church groups, family home groups and extracurricular clubs, like the Girls Scouts and Boy Scouts. Multiple licenses and permission to print more than one copy of the program can be obtained from the publisher by e-mailing editor@ growinghealthyhomes.com.

Some of the material throughout the study may be too in depth for some children. In such cases, parents should read through the material in each chapter, highlight the important parts with the children and enforce these simple facts through the activities.

Chapters are structured to be completed in a week. However, feel free to extend it an extra week for the longer, more in-depth chapters. It is fine to focus on a particular chapter if your family enjoys that topic or wants to do extra activities. All six units were designed to be completed in a year. Because there are so many activities, the entire program can repeated and modified each year to reinforce or refresh what already has been learned.

Each unit contains:

**Chapters** - Each one includes information about body systems or how food affects them.



**Piscussion Questions** - Try to answer these questions with the whole family. See how answers vary from children to adults.

**Activities** - Pick and choose... or do them all. Extend the time spent in the chapter to finish activities or save them for next year as reinforcement. The activities are structured to allow children to progress as they mature.

Additional Resources - These are optional and can be a great way to dive deeper into learning, especially if a family member takes a particular interest in something.

"Power" Recipes and Additional Recipes - Use the "Power" Recipe to enhance the topics covered in the chapter and incorporate the additional recipes throughout the course of the unit.

Activity Guide - Located before the Appendix, this is an answer key for all activities.

**Appendix** - This contains charts, tables and articles that elaborate on the text and give direction for some of the discussion and activities.

Here is an example of how to implement a chapter in a week:

Monday - Read over the chapter and discussion questions and choose activities.

Tuesday - Review chapter highlights and shop for or collect ingredients for the "Power" Recipe.

Wednesday - Prepare the "Power" Recipe for snack or meal time.

Thursday - Choose activities from the "Power" Recipe.

Friday - Share highlights from the week during family meal time.

As your family progresses through **Nutrition 101: Choose Life!**, we want each person to be encouraged to take responsibility for his or her health. With a plethora of recipes, activities and resources for independent study, every member of the family can get involved and understand how food affects the human body. Now is the best time to start making necessary changes to the family diet that will have long-term, positive and habit-forming benefits.

#### What About Picky Eaters?

Co-author Sera Johnson is the self proclaimed former "Fast Food Queen." She dealt with the struggles of introducing completely new foods and a new healthy lifestyle to her family. Over the past several years, it was not easy, but her family is eating healthier than ever and has made huge strides toward better health. People ask her all the time, "How did you do it? My child is so picky! They will NEVER eat healthy food!" Here are Sera's suggestions in her own words.

"I had the princess of picky eaters! My oldest daughter, Julia, only ate three kinds of food at home – boxed mac and cheese, frozen personal size pizzas and ramen noodles – all of which I introduced to her and allowed her to become addicted to. Yes, addicted. The only other food she would eat were chicken nuggets from only two particular fast food restaurants and none others. If I ever attempted to offer her a vegetable at dinner and ask her to take one bite, we were in for several hours of agony for the whole family. The Lord opened my eyes and showed me that several of my children were already headed down a path to destruction in their health. I learned that my responsibility to my family included their health and helping them establish long-term healthy eating habits. I knew I had to make drastic changes! Here are some of the initial things I did to help us get on the right track:

- 1. **Get rid of the junk!** I immediately got rid of all the processed food and junk food in my house. I knew that it would be better if those choices were completely taken out of the picture.
- 2. Make a list. Then, I sat down with each of my children, and we wrote down all the vegetables, fruits, grains and healthy proteins that they liked. At first the list was very short, especially for Julia, but it was a start. We focused on what she did like broccoli, apples, grapes and oranges.
- 3. **Eat the healthy foods you do like.** For the next several days and even weeks, we ate lots of broccoli, apples, grapes and oranges. Julia did get very upset that her normal choices were no longer available, but I knew that she would at least eat the things she did like and would probably eat just about anything if she got hungry enough. I knew she wouldn't starve.
- 4. **Make positive confessions.** At mealtime, I had Julia pray aloud with me, "Lord, thank you for this good food You made and thank you for helping me to love Your food." At first, she didn't believe her own words, but the more we prayed and the more she spoke those positive words out of her own mouth, the more it helped her in trying new foods and opening up her heart to what God had provided for her to eat for her health.

- 5. **Try at least one new thing at each meal.** Statistics say that if a child doesn't like a new food at first, trying it again at least ten more times in a row will help him develop a taste for it. The more new foods Julia tried, the more she realized she did, in fact, like. She didn't like everything and still doesn't, but she started developing a confidence in at least trying new foods. After a while, she took pride in her ever-growing list of good food. Children will pick up on your language and facial expressions, so parents should be leaders in trying foods on their not-so-favorite list. This curriculum will guide you in healthy ways to make some foods more palatable.
- 6. **Find healthy alternatives to those old favorites.** Although Julia didn't like them as much at first, I found and created healthier, homemade versions of those old foods she once loved. The chicken nugget recipe featured in Unit 4 helped take the place of the fast food version and is now a beloved family favorite, even for Julia. We now make homemade pizza with freshly made crust and sauce, which the children help make and tout as being the best ever made.

"The next steps were to work on me. Although I do like just about everything, except for turnips and liver, my challenge was changing my mindset that I was just too busy to cook. When I did find the time, I didn't know what to cook. That is where I asked the Lord to help me change my thinking, help me to prioritize my life to find time to plan some meals and to basically teach me about what my family needed to eat for their health. I felt like I was at ground zero and had so much to learn and so much to unlearn, but the Lord led me to some great resources that included my mother, Karen Hopkins, and Debra Raybern. I truly wish I had **Nutrition 101: Choose Life!** back then! It would have made things easier and a lot more fun! However, we have come a long way and are still a work in progress. My family is healthier than ever, and I give God all the glory for it. I hope you can learn from my experiences and be encouraged that change can happen!"

#### Let's Get Started ...

By the time your family completes this program and implements new food choices and strategies, you may be surprised by the improvements you may begin to experience. Some families may choose to keep a journal or photo essay of their journey. We pray God's blessings on your family as you learn to love His food and respect your bodies as He has created them to function. May this Scripture encourage you, "Who satisfies thy mouth with good things, so that thy youth is renewed like the eagle's." Psalm 103:5



# Chapter 1 The Brain

"Let this mind be in you which was also in Christ Jesus." Philippians 2:5

Our brain is so amazing and complex that experts don't even fully understand how it works. However, they agree that good nutrition is key to healthy brain development. This process begins as a baby develops in his mother's womb and is dependent upon her diet. Fats (Omega-3, Omega-6, and Omega-9), protein, complex carbohydrates, vitamins, minerals and water are crucial for proper brain development. If nutrients

**Fun Fact** In 1998, a team of American and Swedish scientists demonstrated for the first time that new brain cells are generated in the hippocampus (memory and learning area) of adult humans ages 55 to 70. (November 1998, Nature Medicine). are scarce for the developing baby, then his brain will receive them at the expense of the other organs. Some part of the baby's brain development will be curtailed, some structures will go unbuilt, and some functions will not be performed if proper nutrition is not available.

The nutrient requirements of the brain are constant and continue all the way through adulthood, meaning nutrition is vital for a healthy brain no matter a person's age. To fully understand the needs of this fascinating organ and how nutrition affects it, we must first know more about the structure and function of the brain.



**Fun Fact** At only 31 days post conception, the brain of a developing baby is already forming. The very first of over 100 billion neurons is being formed.

# What is the Brain?

Weighing about three pounds in the average adult, the brain is part of the nervous system. It has been likened to a computer with its many functions. However, no computer – not even a super computer – has ever come close to matching the human brain's capabilities. The brain is the site of thinking and the control center for the rest of the body. The brain coordinates our ability to move, walk, jump, run, touch, smell, hear, speak and see. It allows us to understand and to perform functions such as adding and subtracting, thinking ahead, reasoning and even daydreaming. The brain receives input -- what we hear, see, touch, smell and taste – analyzes the input and then responds. The brain also adjusts to emotions and mood.

#### Word Power Cognitive

Pronunciation: \käg-nə-tiv\ Function: adjective Date: 1586 1 : of, relating to, being, or involving conscious intellectual activity (as thinking, reasoning, or remembering) <cognitive impairment> 2 : based on or capable of being reduced to empirical factual knowledge — **cog·ni·tive·ly** adverb The brain is estimated to have about 10 trillion cells! One hundred billion of these cells are called neurons. The neurons act as on and off switches, similar in function to light switches and produce chemicals that trigger other neurons. Different neurons require and use different types of chemicals. These chemicals are called neurotransmitters or messengers and are given names like epinephrine, norepinephrine or dopamine.

The brain needs a constant stream of nourishment and oxygen. About 20 percent of our oxygen-rich blood continuously flows from the heart to the brain. A loss of blood flow to the brain for more than 10 seconds can lead to a loss of consciousness. Abnormally low blood levels or high levels of a toxic substance can cause the brain to malfunction within seconds, but thankfully

# Brain Power





Did you know that avocados are fruit and NOT vegetables? Avocados are a source of good, Brain Power fat!

#### Guacamole

4 - 5 ripe avocados
2 Tbs. fresh cilantro finely chopped
2 Tbs. onion finely chopped
½ cup tomato finely chopped
Juice of one small lemon
1 clove garlic or ½ tsp. minced garlic
Salt and pepper to taste



Peel and scoop out the flesh of the avocado into a bowl and mash with a fork. Add remaining ingredients and stir. Serve with fresh veggies and/or baked whole grain pita chips. Makes eight servings.

#### Activities

Elementary

- 1. At the grocery store, learn how to pick out fresh, ripe and ready-to-eat produce for the recipe (refer to Appendix D).
- 2. Help make the guacamole by measuring and adding the ingredients while learning or reviewing fractions.
- 3. Experiment to find out how to make avocados ripen faster with some unripened avocados, an apple and a small paper bag. Compare the process with a regular avocado sitting by itself next to the bag. Is there a difference? Give your findings in an oral or written report.
- 4. Grow an avocado plant.

#### Secondary

Choose any from above plus

- 1. Why and how does activity #3 above work? Give your findings in an oral or written report.
- 2. Use a banana rather than an avocado in the experiment and see if it changes your results and why. Give your findings in an oral or written report.
- 3. Calculate how many grams of fat are in one serving of the guacamole above.
- 4. Find out what kind of fat is an avocado.

# Nutrition and the Brain

Because our brains are more than 60 percent fat, fats are the most important nutrient for optimal brain power. Fats are often considered bad for us – causing weight gain or high cholesterol – as the wrong kinds of fats can do. However, the right kinds of fats are highly important to maintaining healthy brains and bodies.

# What are fats?

**Fats** are compounds made up of oxygen, hydrogen and carbon and belong to a group of substances called lipids. **Lipids** have three basic forms, which are all found in some combination in most foods.

- 1. Triglycerides includes fats and account for about 95 percent of the weight of fats in foods. Fatty acids are components of triglycerides and are the simplest forms of fat.
- 2. Phospholipids, which act as emulsifiers that break up fats.
- 3. Sterols, the most well known of which is cholesterol.

Fats are a common name for triglycerides and can be split into two groups:

- 1. Saturated fats
- 2. **Unsaturated fats** includes monounsaturated and polyunsaturated fats, which can be further split into fatty acids.
  - a. Omega-3 fatty acids
  - b. Omega-6 fatty acids

# Is fat different from oil?

Generally, **fats** are solid at room temperature, while **Oils** are liquid at room temperature. However, some oils like coconut oil have a very low melting point at 76° F, so in a cool room, it appears as a solid.

# What does unsaturated and saturated mean?

The terms unsaturated and saturated have to do with the chemistry of fats. Basically, it comes down to hydrogen atoms.

**Unsaturated fats** are not saturated with hydrogen atoms. They have one or more double bonds in the fatty acid chain. Where there are double bonds, hydrogen atoms are eliminated. Monounsaturated fats have one bond, and polyunsaturated fats have two or more bonds. As polyunsaturated fats include Omega-3 and Omega-6 fatty acids, they are essential to the diet. Sources of monounsaturated fats are olive, canola and peanut oils and avocados. Sources of polyunsaturated fats are safflower, sesame, soy, corn and sunflower seed oils, and nuts and seeds.

#### Word Power

#### Metabolism

Pronunciation: \mp-ta-bp-li-zpm\ Function: noun, Date: 1878

1 a: the sum of the processes in the buildup and destruction of protoplasm; specifically : the chemical changes in living cells by which energy is provided for vital processes and activities and new material is assimilated b: the sum of the processes by which a particular substance is handled in the living body c: the sum of the metabolic activities taking place in a particular environment <the metabolism of a lake>



# Mouth

bitter Sour Not Sour Taste Buds Salty/Sweet

Once you have taken your first bite of food, the salvia in the **MOUTH** starts to work. Saliva is made in the **Salivary glands** and is made up of water, mucus, antibacterial compounds and various enzymes. As the first part of digestion, the enzymes break down some of the fat and starch in the food and make the food mushy, so it is easier to swallow. The saliva also protects the teeth, tongue and sensitive tissues in the mouth.

The **tongue** is a muscle that helps to grip food and move it around to the teeth while you chew. It is covered with a layer of tiny bumps called papillae that contain your taste buds. Taste buds can detect sweet, sour, bitter and salty flavors.

The **teeth** help break down the food into smaller particles by tearing and grinding, so the saliva and enzymes can do their job.

Once the food is broken down into a mushy ball called a **bolus**, you are ready to swallow and send it down to the esophagus.

#### Fun Fact

How many times should you chew your food before swallowing? The answer is in the next chapter.

# Esophagus

The **esophagus** is a long, stretchy, muscular tube about nine to 10 inches long that takes the food from the back of the throat to the stomach. No enzymes are produced in the esophagus, but it does move food slowly into the stomach rather than food just dropping from the mouth and throat into the stomach. This process of the smooth muscles contracting and pushing the food down rather than allowing the food to go back up to the mouth is called **peristalsis**.

Sometimes when we eat too fast and get a twinge in the center of the chest, it is simply food backing up. Food takes two to three seconds to go down the esophagus; so slow down and give those organs enough time to do their jobs.

The esophagus is at the back of the throat right next to the windpipe, also called the trachea, which sends air to the lungs. When a ball of mushy food goes down the back of the throat, a small flap called the **epiglottis** closes so the food will go down the esophagus and not get caught in the windpipe. Have you ever tried to talk and eat at the same time only to suddenly start choking and coughing? The epiglottis didn't have enough time to close, and that food got sent down the wrong way. So swallow before you speak. Besides, no one wants to see your bolus!



#### Unit 2 Chapter 2 Discussion Questions

- 1. I Corinthians 6:19 tells us that our bodies are the temple of the Holy Spirit. What does this mean?
- 2. Do you care for your body as the temple of the Holy Spirit?
- 3. What improvements can we make to take care of the bodies God has blessed us with?
- 4. Besides the food we eat, what other ways can we take care of our bodies?

### Activities - plus the Green Apple Bean Salad "Power" Recipe and activities.

Elementary

- 1. This experiment will help you see how many times you need to chew a piece of food. Take a plastic baggie with a zipped closure and place a "bite" of cauliflower in the bag. With a meat cleaver or flat pounding device, pound gently on the cauliflower with the same pressure that you chew and count how many times you need to do this to turn it into a paste. This will equal the number of times you need to chew the cauliflower in your mouth. Would you need to chew a piece of chicken the same number of times?
- 2. At the beginning of the next family meal, tell everyone about the experiment in activity #1 and how many times to chew each bite and why it is important to do this.
- 3. Find out the definition of a cruciferous vegetable. Make a list of ten of these vegetables and put it on the refrigerator. Each time you eat one of the vegetables on the list, cross it off the list until you have tried each one.
- 4. Using the Acid Forming Chart in Appendix H, find all of the foods you have eaten in the past three days. Is this your typical diet? Is it more acidic or alkaline?
- 5. Prepare the Lemon/Lime pickles as outlined in the Additional Recipes section at the end of Unit 2, sample it and make note of the taste, texture, etc. Let them ferment for two weeks, and in the activity section of Chapter 4 of this unit, we will revisit them.
- 6. Using the Minerals chart in Appendix G, find the foods are high in calcium. If you eat a lot of dairy products, substitute one calcium-rich vegetable for one dairy product in your diet.
- 7. Conduct an experiment to taste test the quality of a) distilled, b) reverse osmosis c) spring water and d) tap or well water. Use separate containers for each and disposable paper cups for sampling and label these accordingly (A for distilled, B for reverse osmosis, etc.). Make a chart that records your findings. Label each column with each type of water, and use the rows to identify qualities of the water, such as flavor, color, smell, visible objects in the water, grit, etc. Each quality should be given a score of one to three, with one being bad, two being neutral and three being good. Have family members participate. Total the scores each type of water receives and determine a winner. Prepare a written or oral report with your findings and share it with your family as you drink the water that scored the highest in your experiment.

#### Secondary

Choose any from above plus

- 1. Study the preparation of foods and mealtime in the Bible. Expand your study to learn how foods were prepared in Biblical times and foods that were used. Prepare a Biblically correct meal for your family to enjoy.
- 2. Hydrochloric acid (HCI) can dissolve concrete, but does not damage the stomach. Why is this? Prepare a written or oral report on your findings.
- 3. Conduct an experiment to test how a plant reacts to a) distilled, b) reverse osmosis c) spring water and d) tap or well water. Get four small plants of the same variety in their own identical containers that support them appropriately. Label each type of water and each plant (A for distilled, B for reverse osmosis, etc.). Using a measuring device to give each the plant the same amount of water according to their daily need and make sure they receive necessary and equal amounts of sunlight.

Create a chart that allows you to record your observations each day. After four weeks, summarize your findings in a written or oral report.

- 4. Using the same premise from the previous activity, prepare two plants. Select the type of water that tested the best in the last experiment. Measure identical amounts of the water to give each plant, but microwave one in a glass container for 15 seconds before giving it to the plant. Create a chart that allows you to record your observations each day. At the end of two weeks, summarize your findings in a written or oral report.
- 5. Acquire pH test strips and create a chart with all of the members of your family. Encourage each person to test his or her acid/alkaline level (remember to test several times in a 24-hour period and take an average) and record findings on the chart. Modify your diets according to the test results. After implementing these changes for several days, retest the participants. Repeat. Some family members may need to try a more regimented diet or incorporate supplements to get results. Always consult a trusted health practitioner.



#### **Additional Resources**

#### Books:

- 1. "Healthy Digestion," part of the Storey Medical Herb Guides www.storeybooks.com or local bookstores.
- 2. "Good Digestion," part of the Alive Natural Health Guides sold in bookstores or through Nutri-Books to retailers for sale in their stores.
- 3. "101 Foods That Could Save Your Life," David Grotto, R.D., L.C.N., by Bantum Publishing 2007.
- 4. "Water For Health, For Healing, For Life: You're Not Sick, You're Thirsty!" by F. Batmanghelidj, Published by Warner Books, 2003.

### Bronchi

The **bronchi** are two air tubes that branch off the trachea and carry air directly into the lungs. One bronchus goes into the right lung and the other into the left lung. Each bronchus divides into smaller tubes called **bronchioles**.

At the end of the bronchioles are the **alveoli**. The alveoli are tiny, stretchy air sacs where gas exchange occurs with the blood. These sacs blow up like tiny balloons during inhalation. In a process called **diffusion**, oxygen from the air passes through the walls of the alveoli to the blood through blood vessels, also known as **capillaries**, lining the alveolar walls while carbon dioxide is exchanged. The alveoli contain white blood cells (macrophages) that ingest and destroy the airborne bacteria, fungi, viruses and other microorganisms that are inhaled. The process of filtering out contaminants can be thwarted by the inhalation of substances such as gases, fumes, chemicals or mineral dust. These pollutants increase immune response, which increases inflammation to the lungs, the heart and arteries. Anything inhaled enters the bloodstream within seconds. For these reasons we need to pay more attention to the air in our homes, vehicles, offices and environment. Inhaled irritants also include perfumes, fragrances in soaps, detergents, air fresheners and household cleaning agents.

# Lungs

As the largest organ inside the body, the our **UNGS** contain about 300 to 400 million alveoli and elastic tissues that allow the lungs to inflate and deflate without loosing their shape or collapsing. The lungs, along with all the elastic tissues, are encased by a thin lining called **pleura**.

The lungs and respiratory system allow oxygen in the air to be taken into the body during inhalation, while enabling the body to get rid of carbon dioxide during exhalation. **Carbon dioxide** is the waste gas produced when carbon is combined with oxygen as part of the energy-making processes of the body.

The **hemoglobin** in red blood cells in the capillaries is responsible for picking up the oxygen and carrying this oxygen to the cells that need it. They then pick up carbon dioxide, which is transported back through the bronchi and trachea for exhalation.

Virtually all the body's blood travels through the lungs every minute.

The lungs add and remove many chemical messengers from the blood as it flows through the **pulmonary capillary bed**, a network of blood vessels that supply an organ. The oxygen-rich blood flows back to the heart, which pumps it through the arteries to oxygen-hungry

# Bronchi Bronchioles Pleura Piaphragm

Your lungs contain almost 1,500 miles of airways!

**Fun Fact** 

# Fun Fact

The network of alveoli, bronchioles and bronchi is known as the bronchial tree.

# Problems with Simple Carbohydrates

Simple carbohydrates provide quick energy, but they also raise blood sugar levels quickly. When too many simple carbohydrates are consumed at one time, blood sugar levels are raised too high and too fast. What follows is a dramatic drop in the blood sugar. This roller coaster in the blood sugar causes a jolt of energy followed by feelings of shakiness, being tired and run down. When blood sugar levels are raised abruptly and lowered frequently, it can lead to blood sugar dysregulation conditions, such as hypoglycemia and diabetes.



Not all simple carbohydrates are created equal. While fruit is a simple carbohydrate, it does contain many important nutrients, like vitamins and some fiber. Simple carbohydrates like table sugar and high fructose corn syrup are void of any nutrients and are easily overeaten, causing the rapid fluctuation in blood

#### Fun Fact

Blood sugar levels, or glucose levels, refer to the amount of glucose in the blood that is being transported from the intestines and liver to the body's cells for energy. While blood sugar levels normally fluctuate throughout the day around meals, the normal blood glucose level is about 90 mg/100ml.

sugar levels. These simple carbohydrates may contribute to weight gain, interfere with weight loss and promote diabetes and heart disease.

Simple carbohydrates, such as fruit and honey, should be eaten in moderation, while table sugar and high fructose corn syrup should be avoided all together. See Appendix P to find out about healthier sweet alternatives to table sugar and high fructose corn syrup.

#### **Bad Simple Carbohydrates**

table sugar, high fructose corn syrup, processed honey, candy, sugared sodas and other highly processed foods with added fructose and sucrose

#### **Better Simple Carbohydrates**

(eat in moderation and/or along with complex carbohydrates) fruit, unprocessed raw honey, molasses, raw cow or goat milk

# **Complex Carbohydrates**

**Complex carbohydrates**, or **polysaccharides**, do the body a world of good. They are comprised of starch and fiber in foods such as vegetables, legumes (dried beans) and whole grains. **Starch** is the photosynthesized

glucose produced and stored in plants as their source of energy. Foods high in starch are rice, wheat, corn, potatoes, lentils and peas. **Fiber** is the indigestible part of a plant that surrounds the starch and aids in digestion and elimination by slowing down the digestion process for the absorption of nutrients and water, moving food along the digestive tract and easing elimination. Due to the high fiber content, complex carbohydrates digest much slower, therefore entering the bloodstream slowly. This helps the body avoid the blood sugar rush experienced with most simple carbohydrates. Complex carbohydrates contain plenty of minerals, vitamins and fiber, which also may satisfy hunger for longer periods of time.



# Appendix B: Nutrition 101: Choose Life! Food Pyramid

# History of Nutritional Guidelines in the U.S.

Even before vitamins and minerals were discovered, the U.S. Department of Agriculture (USDA) published dietary recommendations to the nation in 1894. For over 100 years, these recommendations have been modified because of the changes that have occurred in the way food is grown and processed and consumed during times of war and peace, as well as the improvement of technology and science that analyzes the components of food – vitamins, minerals, amino acids, fiber, fats, etc.

USDA nutritionist Caroline Hunt, was the first to categorize foods into groups in 1916. By 1941, the USDA established Recommended Dietary Allowances (RDA) for Americans to follow. Two years later, it announced the Basic Seven, a special modification of the nutritional guidelines to account for the shortage of food supplies during World War II. It was later simplified as the Basic Four and used for the next 20 years. In the 1970s, the USDA added a fifth category: fats, sweets and alcoholic beverages.

Since the 1980's the USDA has distributed its Pattern for Daily Food Choices, but it wasn't until 1988, that there was a graphic to represent the food groups. The Food Guide Pyramid was issued in 1992. Then, the Nutrition Labeling and Education Act, enacted in 1994, required all foods to contain nutritional labels. Although the USDA Food Guide Pyramid is undoubtedly one of the best known, there are hundreds of versions that have been produced over the years that are based on a variety of theories.

Many Americans are perplexed by this issue. The USDA conducted a survey in 1996 and found that over 40 percent of people agreed with this statement: "There are so many recommendations about healthy ways to eat, it's hard to know what to believe."

The **Nutrition 101: Choose Life! Food Pyramid** is based on the nutritional guidelines presented in this curriculum. Many people have followed these guidelines and have had great success at improving their health.

Historical attribution: Davis, Carole A., and Etta Saltos. "The Dietary Guidelines for Americans - Past, Preent, Future," Family Economics and Nutrition Review, Vol. 9, No. 2, Spring 1996.ent, Future," Family Economics and Nutrition Review, Vol. 9, No. 2, Spring 1996.



# Nutrition 101: Choose Life! Food Pyramid



\* Numbers indicate recommended servings per day.

### How much is a serving?

#### Vegetables

½ cup cooked or raw1 cup leafy¾ cup juice

#### Fruit

medium apple
 grapefruit
 small banana
 cup dried fruit
 cup juice
 cup berries

#### Legumes

<sup>1</sup>/<sub>4</sub> cup cooked

#### Nuts, Seeds

1/3 cup2 tablespoon nut butter

#### Fats

2 Tbs.

#### Grains

½ cup cooked cereal
1 slice whole grain bread
1 cup cooked whole grain pasta
½ bun
1 roll
½ English muffin
3 to 4 small crackers
1 ounce ready to eat cereal
½ cup rice

#### Lean Meat, Poultry, Eggs

2 to 3 ounces cooked 1 egg

#### Fish

6 ounces raw 4 ounces cooked

#### Dairy, Cheese, Yogurt

1 cup milk or yogurt 1 ½ ounces cheese

# Appendix D: How to Select Fresh Produce



It is best to have a diet full of fresh, raw fruits and vegetables. Based on your location, interest and commitment, there are many ways to achieve this balance in your diet.

Many people choose to grow their own produce. This requires a lot of time and planning. Consult your local library, local agricultural cooperative or Master Gardner's association for tips about ph soil testing and crops appropriate for your area. Check the course schedule at the local community college or a continuing education program for a class that will offer more hands-on instruction or go to

www.kidsgardening.com. Those who do not have the land, means or ability to manage a garden, must find a trusted source from which to purchase produce.

# Organic and Non-GMO

**Choose organic when at all possible.** Please note that the USDA organic seal includes three subcategories: 100% organic, 95% Organic and Made with Organic Ingredients. Organic is defined as food and fiber that is grown without relying on toxic, synthetic chemical pesticides. This does not mean that the seed has not been altered or genetically modified, also known as GMO. **Choose non-GMO foods whenever possible.** 

As USDA organic certification is expensive, some local farmers grow their produce and raise their animals without any pesticides, herbicides, growth hormones or antibiotics, yet do not go through the expensive process of having their food officially certified as "organic". The best way to know whether or not local farmers follow organic practices is to talk with the farmers and visit their farms to see how their food is grown and raised.

A locavore or localvore is someone who exclusively – or at least primarily – eats foods from his or her local foodshed or a determined radius from his or her home. Commonly, the distance is either 100 or 250 miles, depending on location. By eating locally, most locavores hope to create a greater connection between themselves and their food sources, resist industrialized and processed foods, and support their local economy. For more information about buying locally from local growers, visit www.localharvest.org and www.pickyourown.org.

Vegetable	In Season	Appearance/texture	Storage
Asparagus	March through June, peak in April and May; available year round in some areas.	Look for straight, firm, bright- green stalks. Avoid very thick or very thin stalks because they may be stringy.	Use wet paper towels to wrap the bases of fresh spears and keep them tightly sealed in a container up to four days.
Beans, green	April through Sep- tember; available year round in some areas.	Select bright-colored and crisp beans that are free of bruises, scarring, brown streaks or spots. Bulging or leathery beans are old.	Keep covered in a container in the refrigerator up to five days.
Beets	Available year round, peak from June to October.	Choose firm beets small to me- dium size that are attached to red stems and have fresh green tops. Loose beets without their tops are typically older than those that are attached to their green tops. Large beets can be tough and less sweet.	Trim the tops, leaving one to two inches of stem. Do not cut the root. Store up to a week in the refrigerator without wash- ing or covering.

# Appendix F: Vitamin Chart

Vitamin Nutrient	Food	Stability in	Metabolism	Use in Body	Effect of
Vitamin A	apricots, aspara- gus, broccoli, butternut squash, cantaloupe, car- rot, chlorella, cod, collards, dandelion, dock, paprika, parsley, pimento, pump- kin, red hot pep- pers, spirulina, sweet potatoes.	Insoluble in water. Soluble in fats. Stable to low heat. Destroyed by during, oxida- tion, very high temperatures	Bile necessary for absorption.	Promote growth and reproduc- tion. Stored in liver, eyes, skin, lungs, gallblad- der and kidneys.	Slow growth, poor bone and tooth development. Night blind- ness. Reduce ability to re- sist infection, keratosis, xerophthal- mia.
B <sub>1</sub> Thiamine	Rice bran, wheat germ, sunflower seeds, pinon nut, peanut, kidney beans, peas, whole grains, molasses, chick- peas, spirulina, asparagus, cori- ander.	Highly soluble in water. Stable in dry form and acid solution. Destroyed by heat in neutral or alkaline solution, sulfites	Limited storage in body. Part of enzyme system. Depleted by sugar and smok- ing.	Builds energy and appetite. Aids digestion. Proper function of heart, liver	Lack of appe- tite, nervous instability, depression, fatigue, constipation, Beriberi, polyneuritis, cardiac fail- ure, edema
B <sub>2</sub> Riboflavin	alfalfa, almond, asparagus, bar- ley, mushroom, peppermint, red hot pepper, safflower seed, wheat germ, wild rice.	Slightly soluble in water. Resis- tant to heat in acid solution. Sensitive to alkali. Decom- posed by light.	Limited storage in body. Part of enzyme system. Transfers hydro- gen from one metabolite to another.	Raises resis- tance to disease, delays degen- eration, im- proves skin and eye conditions. Liver, kidneys and heart.	Cracks at lip corners. Inflamma- tion of lips and tongue. Burning, itching eyes, Photophobia, blurred vision
B <sub>3</sub> Niacin	beets, peanuts, rice bran, wheat germ.	Slightly soluble in water; stable to heat, oxida- tion, light, acid, and alkali.	Active part of enzyme system- transfers hydro- gen	Builds mental health. Aids nervous system. Helps maintain appetite. Adre- nal glands.	Pellagra, canker sores, gastrointes- tinal, skin problems, neurological changes.

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