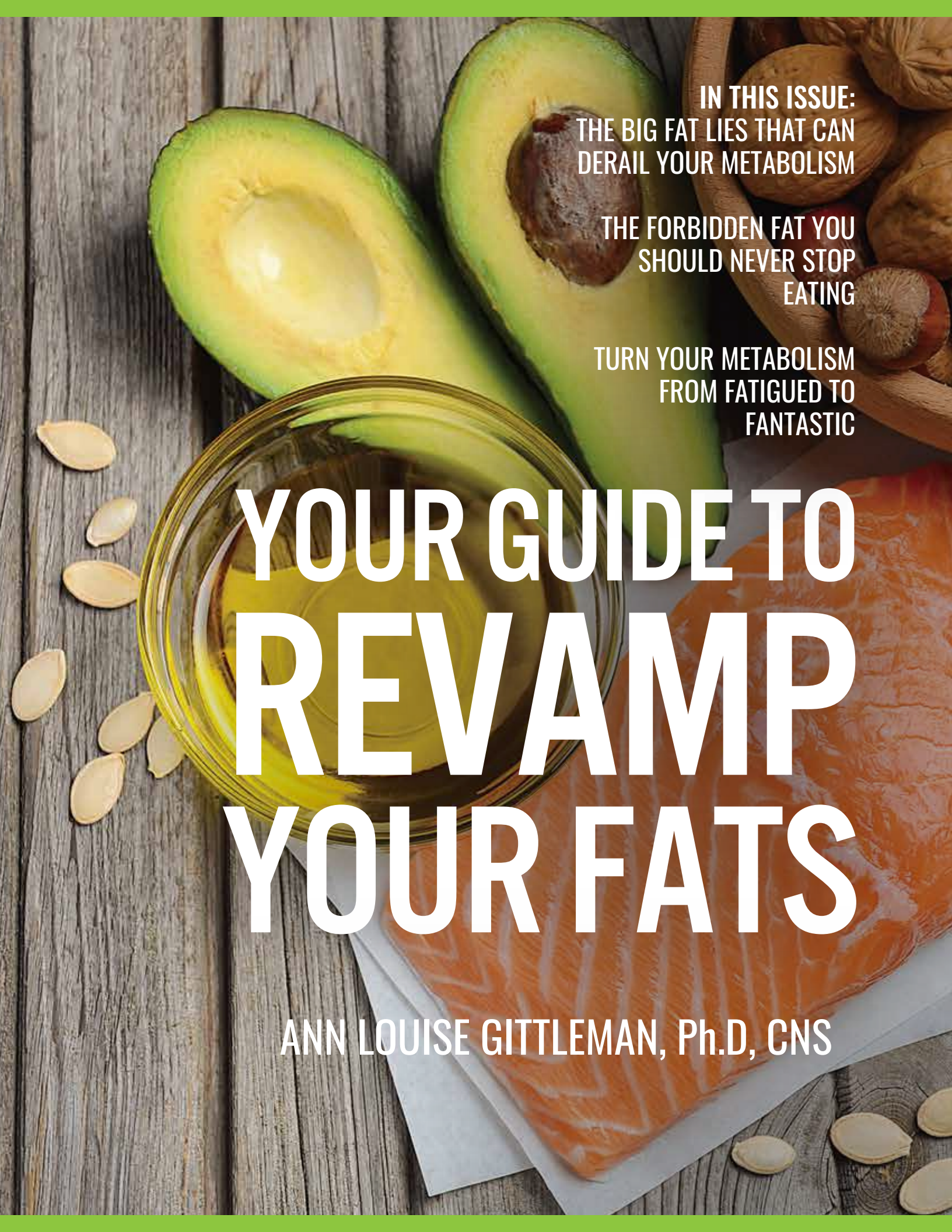

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Meet Ann Louise Gittleman

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ABOUT THE AUTHOR

As one of the world's foremost experts in functional and integrative medicine, Ann Louise holds an M.S. in Nutrition Education from Columbia University, has the title of Certified Nutrition Specialist (C.N.S.) from the American College of Nutrition and a Ph.D. in Holistic Nutrition. She has also served as the Chief Nutritionist of Pediatric Clinic at Bellevue Hospital and is the former Director of Nutrition at the Pritikin Longevity Center in Santa Monica, CA. She has won numerous awards, including The American Medical Writers Association Award for Excellence.

Continually breaking new ground in integrative and functional medicine, Ann Louise is a top nutritionist who was years before current trends like Paleo and Keto. She is internationally recognized as a pioneer in dietary, environmental, and women's health issues. She is an award-winning New York Times bestselling author of over 35 books on health and nutrition including diet, detox, women's health, men's health, perimenopause, menopause, beauty and the environment.

IN THIS GUIDEBOOK, YOU'LL LEARN:

THE BIG FAT LIES THAT CAN DERAIL YOUR METABOLISM

A RADICAL SHIFT IN THINKING ABOUT OMEGA-6 AND OMEGA-3 FATS

THE "FORBIDDEN FAT" YOU SHOULD NEVER STOP EATING

THE TYPE OF BODY FAT YOU ACTUALLY WANT MORE OF TO HELP YOU LOSE UNWANTED POUNDS

FATS TO USE AND FATS TO LOSE TO TURN YOUR METABOLISM FROM FATIGUED TO FANTASTIC

INTRODUCTION

Prepare to have your mind blown—this guidebookwill free you from fifty years of nutritional fat fallacies that have derailed your metabolism. The first Radical Rule is to revamp the fats in your diet. Eating enough of the right kinds of fat is vitally important to shift your metabolism into fat-burning mode, nourish your cell membranes, and supercharge your energy.

When it comes to how dietary fat influences body fat, there are volumes of half-truths and misunderstandings that have been damaging people's health and waistline for decades. Good health requires more than good intentions. You need the right information, and so much of what you've been told is simply not true. Let's start with one of the most persistent myths of them all: eating fat makes you fat.

It's shocking to me how many people still believe this myth. Despite mountains of evidence to the contrary, it continues to circulate—even by so-called nutritional experts. The latest research is clear: it's not fat that makes us fat; rather, it's refined sugar and toxicity—but that's only the tip of the iceberg. If you still believe that eating fat will make you fat, then read on, because by the time you reach the end of this guide, I promise you'll be doing your happy dance.

Think about the most popular dietary recommendation from the last fifty years: low fat, high carbohydrate. This is exactly the opposite of what we should have been eating to optimize our metabolism and health, so it's not surprising that obesity, diabetes, heart disease, and many other illnesses are now raging out of control.

Fears about fat originated way back in the 1950s with a deeply flawed report by researcher Ancel Keys. In his Seven Countries Study, Keys cherry-picked data to support his theory that fat consumption—especially saturated fat—resulted in cardiovascular disease. The media ran with it, and by 1961, even the American Heart Association had issued antifat guidelines. What the media got rolling, the

food industry delivered with an avalanche of low-fat processed food products claiming to “save us” from those terrible foods that supposedly clogged up our parents’ arteries and shortened their life. Sadly, low-fat, high-carb diets have led millions to an early grave, and to this day, many health experts still cling to these misinformed and rehashed health-damaging recommendations, good intentions notwithstanding.

The truth is, your body cannot make its cells without dietary fat. Your body requires fat for hormone production, cell messaging, and keeping inflammation at bay. Fats are crucial to the function of your heart, brain, and nervous system. Most important, fats are what make up your cell membranes—only now are we beginning to understand the enormity of this fact.

I have been on the front lines of the “fat wars” for decades now. When it comes to cutting-edge science about fats and metabolism, there are a few key players I need to mention for their stellar contributions. Patricia Kane, director of the Neurolipid Research Foundation, is a pioneer in cell membrane science and the importance of essential fatty acids for healthy cell membranes, which she calls “membrane medicine.” Another noteworthy individual is Professor Brian Peskin, one of the world’s leading authorities on essential fatty acids and their role in the body’s metabolic pathways. Peskin coined the term *parent essential oils* (PEOs), which you will be learning about shortly. Another scientist of note is Aaron Cypress, MD, PhD, MMSc, of the National Institutes of Health. Dr. Cypress published groundbreaking new information about the thermogenic properties of brown fat. There are others as well whose great work provides the foundation for the concepts presented in *Radical Metabolism*.

Before we dive into the importance of fats for cell membranes, we need to understand some basic information about your body’s fuel preferences.

YOUR BODY WAS BUILT TO RUN ON FAT—NOT SUGAR!

One key goal for turning a sluggish metabolism into a radical one is to shift your body from sugar-burning mode into fat-burning mode. You can't do this if you're skimping on dietary fats. While supplying your body with those metabolism-boosting fats, you must also reduce your sugar consumption, as well as carbohydrates that your body converts into sugar.

The human body is amazing in its ability to run on different types of fuel—specifically, sugar and fat. Fat is the optimal fuel for humans—*our body was not meant to use glucose (sugar) as a primary fuel source*.

Today, the typical diet is so high in sugar and carbs, people's metabolic engines are stuck in glucose-burning mode because of its constant supply. This was not the case with our hunter-gatherer ancestors whose diet was very low in sugar, so their body had to rely on fat stores for fuel. Like an unused muscle, our fat-burning engines have weakened and in some cases completely shut down.

A sugar-fueled metabolism creates a number of problems. It causes your blood glucose and insulin levels to spike and leads to more sugar and carb cravings, overeating, and increased storage of body fat—especially belly fat, also known as visceral fat. Fat around your visceral organs—such as your liver, pancreas, and intestines—produces more inflammation and insulin resistance than does the fat under your skin (subcutaneous fat). Burning glucose instead of fat generates more free radicals in your body, leading to increased oxidative damage and inflammation. Cancer cells also thrive on sugar.

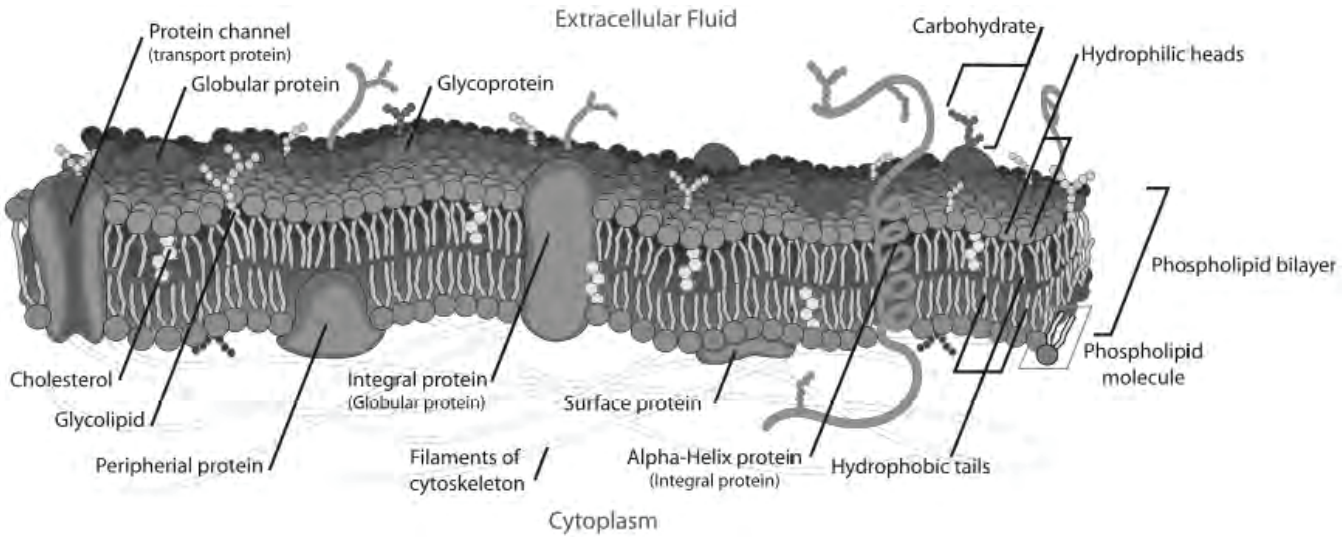
Studies now tell us that artificial calorie-dense forms of another sugar, fructose (such as the high-fructose corn syrup that's loaded into soda and processed foods) are particularly damaging to your metabolism and overall health. High fructose consumption increases your risk for metabolic syndrome, obesity, type 2 diabetes, cardiovascular disease, and nonalcoholic fatty liver disease (NAFLD).[1] Incredibly, about 30 percent of the general population and 70 percent of obese individuals have NAFLD.[2] Why? Your liver immediately converts fructose into fat! Worse, it leaves behind a trail of toxic metabolites (uric acid, for one)—much like those generated from the metabolism of alcohol.

The good news is, by shifting your diet you can shift your body's metabolic engine from sugar-burning to fat-burning mode. You need some dietary sugar, but once your fat-burning engines are reignited, that requirement is minimal. A fat-burning metabolism is more efficient it stabilizes your blood sugar and insulin levels, reduces cravings, melts off body fat, starves cancer cells, and quells inflammation.

Increasing fats and decreasing sugars is a principle common to other diets, such as Paleo and ketogenic, but there's a problem. *Many individuals have difficulty digesting and metabolizing fats*. If you don't address this issue, then simply eating more healthy fats and less sugar is not going to result in the metabolic shift and weight loss you're looking for—and you may even get sick. You must go a step further and optimize your body's ability to actually use those fats. This is what this program does—it goes beyond Paleo and keto and what you end up with is a lean machine…*a radical metabolism*!

MEMBRANE MEDICINE

Healing your metabolism starts at the level of the cell. And the intelligence of a cell lies in its membrane, even more than its nucleus. The nucleus houses DNA, but that's about all. It has all the data but initiates none of the activity—functioning more like a library. On the other hand, the cell membrane uses the DNA for reference and then tells it what to do, directing all cellular activities. Biologist and epigenetics scientist Bruce Lipton, PhD, cleverly dubbed these amazing cellular structures "mem-Brains."



Those little mem-Brains are embedded with thousands of hormone receptors. Hormones direct cellular function, but it's the cell's receptors that are responsible for "hearing" those hormone messages. Most of today's rampant endocrine problems are the result of damaged hormone receptors—therefore, the answer lies in repairing these receptors. But instead, what is typically done is throw more hormones at the system, which does nothing to fix the problem and actually makes receptors tune out even more. This is called hormone resistance.

> The major diseases of our time can be prevented by focusing on the removal of epigenetic toxins and stabilizing cell membranes...
>
> **- Dr. Patricia Kane**

One type of hormone resistance involving the metabolism is insulin resistance, which if not addressed may lead to type 2 diabetes. Insulin, made in the pancreas, is the hormone that controls blood glucose levels and storage. Type 2 diabetics have plenty of insulin, but their insulin receptors have gone deaf. *The way to reverse hormone resistance is to mend the cell membranes—fixing the problem at its source*[3].

Proper dietary fats make membranes more fluid and efficient. Toxins also tend attach to cell membranes, and fortunately the same membrane-stabilizing diet helps remove them. Hormone receptors are attached and stabilized by little structures called lipid rafts, which become damaged by inflammation. Lipid rafts are made of saturated fat and cholesterol—*so these two fats can literally heal your hormones*!

Speaking of cholesterol, the latest studies have confirmed there is no connection between the consumption of saturated fats and increased risk for heart disease, or between cholesterol and heart disease. You can finally stop worrying about eating cholesterol-rich foods and saturated fats (as long as they're of the nutritious variety, such as eggs and grass-fed meats) because those dietary elements are immensely important to your cell membranes, hormone function, and metabolism.[4]

A key to all these hormone problems—be they insulin, thyroid, or menopause related—is to rebalance and revamp the fats in your diet. That is what makes the Radical Metabolism plan different and why so many other programs fail. If your cells are not getting what they need, they will not function properly. Fix the cell and you fix the problem.

THE CONNECTION BETWEEN INFLAMMATION AND WEIGHT-LOSS RESISTANCE

If you want to have a skinny metabolism, reducing chronic inflammation is absolutely critical, and the Radical Metabolism diet does just that! Inflammation can lead to weight gain as well as numerous illnesses. One of the underlying causes of inflamation is an imbalance in your essential fatty acid intake.

It's important to realize that inflammation itself is not a bad thing—it's only bad when it rages out of control. Inflammation is your body's way of protecting you—without it, you would never heal from a cut, fight off a cold, or mend a broken leg. When you are injured or threatened with an infection, your immune system sounds the alarm and sends out substances called inflammatory mediators, such as histamine, prostaglandins, and cytokines, to increase blood flow and get specific immune cells to the site of the injury. This is necessary for your body to heal. Acute inflammation can create temporary redness, pain, swelling, and/or fever, but normally this goes away in a day or two. On the other hand, when your body stays perpetually inflamed over time, you can become quite ill.

Chronic inflammation means your immune system is staying activated, and this creates a cascade of unwanted effects in your body, including elevated insulin, among other things. Inflammation makes chemical signals go awry. Your body is under stress so it begins building up its fat reserves. Not only are fat cells little energy warehouses, but they also send out signals that keep the immune system in overdrive. Higher inflammation means more fat cells, and more fat cells lead to higher inflammation—it's a vicious cycle! Spare tires stack up around your middle. Studies show that as your weight increases, so does inflammation.[5]

One of your body's requirements for preventing chronic inflammation, and the weight gain that often accompanies it, is a balanced omega-6 and omega-3 fat intake.

Note: Before we get into how these magical omegas do their thing, I want you to be aware of a resource I've provided for you in Appendix 1. It is a glossary of "lipid lingo" to help you in case you come across any unfamiliar terms. There are many types and classifications of fats, and the terminology can be a bit overwhelming.

OMEGA-6 FATS: THE "FORBIDDEN" FAT YOU SHOULD NEVER STOP EATING

Lately, a good deal of debate has surrounded omega-3 and omega-6 fatty acids in terms of their biological roles and how much we should be eating. Omega-3s and omega-6s are essential fatty acids (EFAs), meaning they are just that—essential. Our body cannot make them, so we must get them from the foods we eat. Omega-3s and omega-6s are both integral parts of the structure and function of cell membranes.[6]

When the scientific community began recognizing inflammation as a major driver of chronic disease, they began to search for the cause. Blood levels revealed most of our diets are extremely top-heavy in omega-6 fatty acids, and light on omega-3s—so the omega-6s, as a category, were blamed for inflammation, especially arachidonic acid (AA). Omega-6 fats were labeled "pro-inflammatory" and omega-3s as "anti-inflammatory," and the misguided mantra to simply reduce your dietary omega-6s and increase your omega-3s, (e.g., supplement with fish oil), spread like wildfire.[7]

The problem is, this is oversimplified. Not all omega-6 fats are equal. It's true that people are overloaded in omega-6, but the type of omega-6 they're overloaded with is the toxic kind, mainly oils destroyed by overprocessing. We're talking about those found in French fries, packaged cookies (made with shortening), and junk food loaded with sugar and hydrogenated vegetable oils—all of which are indeed pro-inflammatory. The increased consumption of hydrogenated vegetable oils represents the single largest increase in any type of food over the last century. One estimate is that Americans now consume 100,000 times more vegetable oils than they did in the year 1900.[8]

Unfortunately, like a bad game of Telephone, the toxicity of junk omega-6 oils became generalized to all omega-6s. The truth is that there are also high-quality functional omega-6 fats, and we don't get enough of these, nor do we consume enough omega-3s. We are actually deficient in both.

The pervasive recommendation to avoid omega-6 fats is actually counterproductive to your health, metabolism, and weight-loss efforts. Reducing the "good" omega-6s in your diet will only further expand an already- expanding waistline because, as it turns out, functional omega-6s are some of the most powerful fats for activating your fat-burning engines. They have positive benefits for the checks and balances of your body's inflammation system. These omega-6s are extremely restorative to cell membranes, and strong cell membranes are key to achieving proper body weight and a radical metabolism. We'll talk more about them in the upcoming section "Parent Essential Oils".

THE RIGHT RATIO

Thanks to an overabundance of refined vegetable oils, processed foods, grains and grain-fed meats, the standard American diet (SAD) has dramatically thrown our natural essential fatty acid ratio out of balance. For optimal metabolism, it's important to consume omega 6 and omega 3 fatty acids in the right balance: there seems to be a golden ratio of about 4:1.

Historically, traditional diets have provided omega-6–to–omega-3 ratios in the range of 1:1 to 5:1, but the standard American diet has us around 20:1. If you have twenty times as many omega-6s as omega-3s, then they are coming from junk oils—meaning they're damaged and provide no nutritional benefit. Adding to the problem is that all those junk omega-6s shut down the omega-3s through a mechanism called competitive inhibition. The omega-3s cannot compete with all those omega-6s, and so the junk omega-6s become incorporated into your cell membranes, weakening them and generating all sorts of problems. Remember—garbage in, garbage out.

It may be a challenge to wrap your head around, but again, it's important to understand that you can be omega-6 dominant and have an omega-6 deficiency, at the same time—*your deficiency is in the healthy, functional omega-6s*.

Surprisingly, *most of our cells prefer the omega-6s over the omega-3s—especially our mitochondria, which use omega-6s almost exclusively*. One of the reasons for this is the tendency for the omega-3s fatty acids to oxidize. Oxidized fatty acids are as toxic to your cells as rancid fish oil is objectionable your nose, causing inflammation and accelerated aging.

Health abnormalities appear more quickly when people are omega-6 deficient versus omega-3 deficient (apart from abnormalities of the heart, brain, retina, and platelets). And when animals are deprived of both omega-3 and omega-6 fatty acids, abnormalities can be corrected with the omega-6s alone, whereas efforts to correct with only omega- 3s make many conditions worse. Omega-3s represent about 14 percent of the total lipids in your brain and nervous system (in the form of EPA and DHA), but the omega-6s make up about 10 percent (in the form of arachidonic acid). It follows that both must be replenished on a regular basis.

YES, YOU CAN TAKE TOO MUCH FISH OIL!

You have undoubtedly heard about the benefits of fish oil. Maybe you even take it every day. These benefits exist courtesy of its high omega-3 content. In a study published in American Journal of Clinical Nutrition, those who consumed fish oil and walked for forty-five minutes three times per week lost up to 5 pounds more than did the control group, including significant loss of body fat.[9]

The problem is, due to the modern fish oil fervor, many health-conscious individuals have swung the pendulum too far in the opposite direction. They've begun taking huge amounts of fish oil or krill oil without balancing it out with functional omega-6s. When omega-3s and omega-6s are in balance all systems are go, but when one overwhelms the other, you get problems.

The omega-3s compete with the omega-6s for incorporation into cell membranes. Studies show that in the omega-3 dominant state (which can occur when supplementing with fish oil alone), omega-3 fatty acids can replace an important fat in the mitochondrial membrane called cardiolipin. Remember, your mitochondria prefer lots and lots of mega-6s! Decreased cardiolipin can cause sudden drops in cellular energy. Mitochondrial illnesses are rampant today, involving nearly every organ system. Because your cells' mitochondria are responsible for producing more than 90 percent of your energy, they are a factor in everything from Alzheimer's to diabetes, degenerative disorders, autoimmunity, certain cancers, and more.[10]

So, don't go overboard! Fish oil supplements can be a healthy part of your diet, provided they are balanced out with plant-based omega-3s and omega-6s.To support your metabolism rather than snuff it out, make sure your fish oil is fresh, clean, and unoxidized. Aim for that perfect 4:1 ratio of omega-6s to omega-3s and you'll reap the benefits of both!

POWERFUL FATS THAT FIRE UP YOUR METABOLISM

Now that you understand the reason for a balanced intake of omega-6 and omega-3s, let's start looking at which fats to eat versus which to banish from your dinner plate. We want only the friendly fats that will fire up our fat-burning engines and put us on the fast-track to weight loss, right? Although we'll be incorporating foods high in omega-3s and omega-6s, the "slimming sixes" is a primary focus of the Radical Metabolism plan. First, we will introduce the concept of parent essential oils, and then we'll delve into the all-star players in the omega-6 big league: linoleic acid (LA), alpha-linolenic acid (ALA), gamma-linolenic acid (GLA), and conjugated linoleic acid (CLA).

PARENT ESSENTIAL OILS

When we talk about functional omega-6s and omega-3s, what we're really talking about is pure, nonheated, unprocessed, organic, nongenetically modified oils with all of their natural nutritional benefits intact. As noted earlier, Dr. Brian Peskin coined a term for these oils: parent essential oils (PEOs). There are only two types of PEOs, one omega-6 and one omega-3, respectively: linoleic acid and Alpha-linoleic acid.[11] Your body can manufacture several other fatty acids from these two "parent" oils, which is why it's so important to get enough of them in your diet. Professor Peskin argues—and I agree—that damaged (nonfunctional) essential fatty acids are not desirable, are much less *"essential,"* and have no place in our diet.

PEOs are the brick and mortar of your cells, tissues, and organs, as well as manna for your mitochondria. PEOs also form the foundation of our sex hormones and are known to have a "calming effect" on the endocrine system. Men seem to have a greater PEO requirement than do women. Every cell is 25 to 33 percent PEOs. In general, nuts and seeds and their cold-pressed oils are the primary PEO sources.

LINOLEIC ACID: THE GRAND PUFA FOR METABOLISM

You can think of linoleic acid (LA) as the "PEO CEO"! An omega-6 superstar, linoleic acid is the most powerful parent oil, performing many crucial biological functions. LA is also the most important polyunsaturated fatty acid (PUFA) and is most abundant in seeds, seed oils, and nuts (sunflower seeds, hemp seeds, sesame seeds, high-linoleic sunflower oil and high-linoleic safflower oil, pine nuts, walnuts, and others). Eating these foods is a must for creating a radical metabolism.

Linoleic acid is a key player in the following biochemical processes, which are all involved in your metabolism:

- Maintenance of cell membrane structure
- Enhancing permeability of membranes, including membranes in the skin, digestive tract, and blood-brain barrier
- Cholesterol transport and synthesis
- Synthesis of eicosanoids (highly important signaling molecules involved in many cellular activities)

A significant portion of the LA you consume is used immediately to maintain and repair inner and outer cell membranes. In fact, a 2009 advisory by the American Heart Association found LA to be cardioprotective![12] Evidence is mounting that LA, despite being an omega-6 fat, actually has powerful anti-inflammatory properties, and is "heart healthy." This is significant because, for so long, the omega-6s have been misunderstood, accused of being pro-inflammatory and therefore increasing your heart attack risk. According to the New England Journal of Medicine, diets high in polyunsaturated fat are more effective at stabilizing cholesterol and lowering heart disease risk than are low-fat or high-carb diets.[13] Remember, the benefits we are talking about are from fully functional, unadulterated omega-6 oils, not junk oils (such as from corn oil, canola oil, cottonseed oil, margarine, shortening, etc.) Junk oils will only raise your cardiac risk.[14]

In addition, linoleic acid is an oxygen magnet. For cells to stay healthy, they need high enough oxygen levels for cellular respiration and growth. If cells become oxygen deprived, they malfunction and die. The relationship between linoleic acid and cellular oxygen was underscored by a study in the journal Pediatrics involving cystic fibrosis patients.[15] Many of their symptoms were found to result from decreased oxygenation related to LA deficiency.

Where to Get It: Hemp seeds and hempseed oil, sunflower seeds and oil, sesame seeds and oil, pine nuts and oil, walnuts, pecans, Brazil nuts, grass-pastured dairy

ALPHA-LINOLENIC ACID: THE ENERGY-BOOSTING OMEGA-3 PARENT ESSENTIAL OIL

Alpha-linolenic acid (ALA) is the omega-3 PEO. Our body is designed to break down ALA into EPA and DHA, although some people may struggle with this conversion. EPA and DHA are the two omega-3s for which fish oils are known. Alpha-linolenic acid comes mostly from plants, with the highest levels being found in flaxseed, chia seed, and pumpkin seed oils.

As much as 85 percent of the ALA you consume is used immediately for energy, and the remainder is used to build cell membranes, especially those in your heart, brain, and retinas. Alpha-linolenic acid has demonstrated benefits for your cardiovascular and respiratory systems and is helpful for autoimmune conditions, such as lupus and rheumatoid arthritis. This valuable omega-3 is the starting point for hormone synthesis and is involved in gene expression. There is also evidence ALA may inhibit the proliferation of estrogen-positive breast cancer cells.[16]

Where to Get It: Flaxseeds and flaxseed oil, chia seeds and chia seed oil, pumpkin seeds and pumpkin seed oil, clary sage oil, sacha inchi, walnuts and walnut oil, Brazil nuts, cashews, hazelnuts, leafy green vegetables, butternut squash, Brussels sprouts, kale, watercress, and algal oil.

GLA: THE FAT BURNER OF THE OMEGA-6 KINGDOM

One special omega-6 with profound metabolic implications is gamma-linolenic acid (GLA). This special polyunsaturated fatty acid is unparalleled in promoting fat burning by activating your brown fat. What is brown fat? It's is a type of mitochondria-rich adipose tissue often dormant in overweight people. Let me explain.

There are essentially two kinds of fat cells in your body: brown fat and white fat. White fat is the insulating fat layer under your skin that stores excess calories as fat. Brown fat is the special fat-burning tissue that burns excess calories for heat rather than energy. In other words, brown fat is metabolically active.

Babies are born with a large amount of brown fat, which helps maintain their body temperature. Animals depend on brown fat keep them warm during hibernation. Brown fat is located deeper in your body that white fat, surrounding

your heart, kidneys, adrenal glands, neck, spine and major blood vessels. The brown color is caused by the presence of concentrated fat-burning cellular units called mitochondria.

Although brown fat composes 10 percent or less of your total body fat, it burns one fourth of all the calories burned by your other fat tissues combined. When activated, brown fat consumes a large quantity of glucose from your bloodstream, helping keep your blood sugar levels nice and low. Another difference between white and brown fat is, white fat produces pro-inflammatory factors but brown fat generates anti-inflammatory ones. Inflammation often leads to weight gain and further metabolic slowdown.[17]

As we age, we tend to lose brown fat. The more white fat we accumulate, the less metabolically active our brown fat becomes. Thin individuals simply have more "activated" brown fat than do overweight individuals. The good news is, can reactivate your brown fat if you know the right tricks!

GLA is a brown fat reactivator, giving your mitochondria a boost and causing your body to burn, rather than store, more energy. GLA stimulates a metabolic process commonly referred to as the sodium pump, which helps use up nearly half your body's calories. GLA also induces feelings of fullness by raising serotonin levels. This mighty omega-6 has been found to reduce inflammation, lower blood pressure, quiet PMS, and possibly slow the spread of certain drug-resistant cancers. A steady supply of GLA helps skin retain its moisture to stay supple and smooth.

GLA is a rarely acknowledged rock star when it comes to losing weight, but nearly everyone is deficient —even the most health-conscious individuals. Many factors interfere with the body's ability to convert LA into GLA, such as overeating, excess consumption of sugar and refined grains, insulin resistance, thyroid or pituitary problems, vegan diets, protein and vitamin deficiencies, stress, and other factors. Our ability to make this biological conversion also decreases with age.

Where to Get It: Fortunately, you can get GLA from seed oils, such as black currant seed oil (17 percent), evening primrose oil (10 percent), hemp seeds, and açai berries. I recommend black currant as a supplement because it has the best nutritional balance. If you're stuck in your weight-loss efforts, adding hemp seeds and hemp oil to your diet—and possibly a GLA supplement—may be just the ticket to get things moving again!

CONJUGATED LINOLEIC ACID (CLA)

Conjugated Linoleic acid (CLA) is a critical omega-6 fatty acid that is especially good at shuttling fat away from your belly. CLA is a derivative of linoleic acid found to inhibit an enzyme called lipoprotein lipase, which is involved in the storage of fat in fat cells. Hundreds of CLA studies have been done and not all agree about CLA's benefits. However, there is a substantial body of evidence that CLA may do the following:

- Reduce belly fat, independent of food intake
- Activate brown fat
- Activate thermogenesis
- Increase mitochondrial density in white fat
- Preserve lean body mass
- Reduce appetite
- Suppress leptin (the satiety hormone)
- Help prevent osteoporosis
- Reduce inflammation
- Inhibit growth of cancer cells (breast, colorectal, lung, skin, stomach)

Some studies have shown remarkable success with CLA! A group of overweight men lost mostly belly fat and reduced their waistline by 1 inch without making any diet or lifestyle changes.[18] In a similar study, women taking CLA lost mostly belly and thigh fat and reduced their waistline by 1.2 inches. That said, it's always best to get as much of your CLA from whole foods as you can, as opposed to relying exclusively on supplements.

Where to Get It: CLA is found mostly in animal products, highest from grass-pastured. White button mushrooms and pomegranate seed oil are good vegan sources. It's difficult to get therapeutic levels of CLA from foods alone (see Table 2.1), so if you do opt for a supplement, I suggest dosing at 3 to 4 grams per day. One study found 3.2 grams effective for fat loss.

CLA CONTENT IN FOODS

FOOD	CLA (MG)
Safflower oil	3 mg per tablespoon
Sunflower oil	2 mg per tablespoon
Beef (conventionally raised)	71 mg per 4 ounces
Beef (raised on grass pastures)	433 mg per 4 ounces
Cow's milk (conventionally raised cows)	44 mg per cup
Cow's milk (raised on grass pastures)	160–240 mg per cup
Cheese (raised on grass pastures; Swiss & Colby highest)	180–270 mg per ounce
Butter	54 mg per tablespoon
Egg yolk (one large)	3 mg

SUPERCHARGE YOUR METABOLISM: IN WITH GOOD FATS—AND OUT WITH THE BAD

Now that you understand the value of parent oils and how they can stoke your metabolic fires, let's look at the foods you can eat to obtain them, as well as foods to avoid. The following are the most important Do's and Don'ts you need to know. Overall, think: fresh whole foods, unprocessed, and as close to the earth as

possible.

DO EAT: NUTS

If you're nuts about nuts, then I have great news for you! Nuts (and seeds) are a core part of the Radical Metabolism plan. Nuts have been praised for their nutritional value, but you've been fooled about which nutrients make them so good for us. Their nutritional prowess comes from those mighty *omega-6s*! Even walnuts, long touted as "heart healthy" for their omega-3 content, have *five times as many omega-6s as omega-3s*. It's the omega-6s that actually account for most of their cardiovascular benefits.[19]

Organic almonds, Brazil nuts, pistachios, hazelnuts, pine nuts, and the like are fabulous sources of omega-6 PEOs, but just don't go overboard on them. Make sure they are balanced out with some good omega-3s, because competitive inhibition goes both ways. (Note: Choose almonds that come from Spain because the American variety are irradiated.) Siberian pine nut oil is rich in pinoleic acid (similar to linoleic) and is an excellent remedy for all inflammatory gastrointestinal conditions.

Macadamia nuts are a special case because they have a unique monounsaturated fatty acid called omega-7. Many people have never even heard of this omega! One specific omega-7, palmitoleic acid, is a dynamo when it comes to battling the bulge. This omega-7 has been shown to reduce insulin resistance, lower blood sugar, suppress fat storage, reduce LDL, raise HDL, and be a powerful suppressor of inflammation.[20] It even helps build collagen![21] So, where do you find this metabolic miracle? Macadamia nuts and oil, sea buckthorn, and deep sea

DO EAT: SEEDS AND COLD-PRESSED SEED OILS

We've already covered how important seeds and seed oils are for providing those glorious parent oils that strengthen cell membranes, optimize hormones, and power up your new body-slimming system. Hempseed oil is a metabolic rock star with its 3:1 omega ratio—you can't get much better than that! Hempseeds are 60 percent linoleic acid. Other great omega-6-rich seeds are chia, sunflower, safflower sesame, flax, pumpkin, and apricot seeds. In addition to being rich in omega-6, apricot kernels are a source of vitamin B17 (amygdalin or laetrile), a potential cancer-fighter. Be careful not to overdo the apricot kernels due to their potentially toxic cyanide content.

One of the newer kids on the block is black cumin seed (and its oil), also called black coriander or simply black seed. Black seed comes from the Nigella sativa plant, native to Asia, and has powerful healing qualities, including regenerating pancreatic cells in those with diabetes and killing MRSA, a dangerous antibiotic-resistant strain of Staphylococcus aureus bacteria. Sacha inchi from Peru, otherwise known as Incan peanuts, are simply loaded with omega-3 and omega-6 fats and protein. Sacha inchi are marketed under the trade name SaviSeeds.

HEMP, HEMP, HOORAY!

Hemp seeds are one of nature's greatest gifts, perfect little bundles of benefits for your entire body. You can reap the hemp's benefits by consuming the oil, seeds (typically these are "hemp hearts" which have had their hulls removed), or by blending them into hemp milk. Hemp seeds are about one third healthful fats and one quarter protein, as well as a magnificent source of natural GLA (gamma-linolenic acid). It's hard to find a food with a better essential fat profile—hemp boasts a 3:1 omega-6–to–omega-3 ratio.

Hemp seeds are also not shy when it comes to protein—equal to beef or lamb but in a more digestible, bioavailable form. They are also a complete protein, providing all of the essential amino acids. Just 30 grams of hemp seeds (2 to 3 tablespoons) contain [11] grams of protein. The fiber in hemp seeds is contained mostly in the hull, so hemp hearts contain relatively little fiber. However, what they lack in fiber they make up for in nutrients: calcium, magnesium, iron, manganese, phosphorous, potassium, zinc, and vitamins A, B1, B2, B3, B6, D, and E. Hemp also has strong anti-inflammatory benefits, most likely related to its abundant GLA.

Overall, these little dynamos can sustain energy, encourage weight loss, reduce food cravings, lower blood pressure, improve blood sugar and lipid profiles, and tamp down inflammation. Hemp hearts have a delightfully delicate nutty flavor and taste good as a topping on salads, veggies, and many other dishes. Consume hemp seeds or hemp oil raw to preserve the delicate fats, and store them in an airtight container in the refrigerator or freezer.

Hemp belongs to the genus Cannabis sativa, cultivated for thousands of years for everything from nutrient-rich seeds and oils to industrial fiber, paper, textiles, building materials, and even fuel. Until recently, the nutritional benefits of hemp were all but ignored due to hemp's being a cousin to marijuana. The truth is, hemp seeds are incapable of producing a "high" because their THC content is so minuscule.

DO EAT: COCONUT OIL AND MCTS

Coconut oil is not an essential fatty acid like your omega-6s and omega-3s. Still, coconut and coconut oil have oodles of brain- and metabolism-boosting benefits, as well as supporting your immune system. About 80 percent of coconut meat is fat, and of that 92 percent is saturated fat. (For those who remember when coconut oil was a "bad guy," keep in mind that the natural, unrefined varieties available in nutrition stores today are vastly different from the ultrarefined, deodorized, and bleached coconut oil added to junk food in the 1980s—which was a cardiovascular nightmare. When we talk about the benefits of coconut oil, we are definitely not talking about those.

Populations for whom coconut is a dietary staple have much lower rates of cardiovascular and brain disease than do Westerners. Coconuts and coconut oil may offer protection against brain disorders, such as epilepsy and Alzheimer's disease. In a 2015 study, Alzheimer's patients given a daily dose of extra-virgin coconut oil showed significantly improved cognition.[22]

Coconut oil is about two thirds medium-chain fatty acids (MCFAs), also known as medium-chain triglycerides (MCTs). MCTs are far less common than long-chain triglycerides. LCTs (12 to 18 carbons long) are the predominant form of fat in the standard American diet. MCTs (6 to 10 carbons long) are metabolized by the body more like carbohydrates, but they provide energy without any of the insulin-related problems of carbohydrates. They go straight to your liver, where they are turned into ketones and used immediately for energy. MCTs suppress appetite, stabilize blood sugar, raise HDL, and improve overall lipid profile, while encouraging the shedding of excess body fat, especially visceral fat. MCTs also have appetite-suppressing effects. [23] Ketogenic diets are known to be beneficial for cancer.

Coconut contains a wealth of antioxidants and can be regarded as an antiaging food. It boosts thyroid function, improves digestion and absorption of fat-soluble vitamins, and promotes conversion of cholesterol into pregnenolone, a precursor to many important hormones. Fifty percent of the fat in coconuts is lauric acid, a type rarely found in nature. Your body converts lauric acid into monolaurin, which is a gift to your immune system for its antiviral, antibacterial, antifungal, and antiparasitic properties.

DO EAT: OLIVE OIL

Olive oil is not the heart-health panacea that the food industry would have you believe, but in moderation, a high-quality one can be part of a healthy diet. Olive oil is high in oleic acid and is classified as a monounsaturated fatty acid (MUFA). It's in the same category as coconut oil—they are both nonbioactive oils that don't provide much in the way of omega-3s or omega-6s, but they do have other virtues. Olive oil's biggest health asset is its high polyphenol content, which probably accounts for most of its benefits. Polyphenols are micronutrients possessing an abundance of antioxidant properties that do everything from fighting cancer and heart disease to putting the brakes on aging. Olive oil has been shown to help prevent accumulation of visceral fat, even if overall body weight remains unchanged.[24]

Be careful, however—most commercial olive oil products today are so oxidized that precious few nutrients remain. Fake olive oils are also a widespread problem. As much as 80 percent of so-called Italian olive oil is fake, cut with inferior oils, coloring agents, and worse. The industry is riddled with fraud, so you must be extremely careful about your sources.[25] One product I adore is Olive Your Heart by Carlson, which is a blend of extra-virgin olive oil and premium Norwegian, wild-caught, sustainably sourced fish oil.

DO EAT: GRASS PASTURED ANIMAL PRODUCTS, DAIRY, AND WILD COLD-WATER FISH

Animal products (meat, poultry, eggs, dairy) from animals raised on pasture—eating a biologically appropriate diet of grasses—have been shown to be far more nutritious than conventionally raised meats, where the animals are raised in confined quarters and fed processed food diets consisting of grains and growth-promoting drugs. Three decades of research show superior fatty acid and antioxidant profiles, including higher levels of CLA, minerals, vitamins (including A, B1 and B2, and E), and glutathione.[26] Raising livestock that is free to roam on pasture is also more humane and earth-friendly. Conventional animal products contain more bacterial contamination (Salmonella, Enterococcus, Staphylococcus, and E. coli) due to overcrowding and other industrial practices. Make sure your dairy is full-fat, because the fat is where you get those amazing omegas!

Eat fish that are wild-caught from cold waters, and steer clear of farmed fish. Salmon is one of nature's richest sources of omega-3 fatty acids, but make sure you are eating the right kind. Due primarily to their diet, farm-raised salmon have higher concentrations of thirteen pollutants (including polychlorinated biphenyls, or PCBs) than wild salmon. And say no to sushi—raw fish often contains all sorts of parasites, from tapeworm larvae to liver flukes.

DON'T EAT: PROCESSED OR GENETICALLY MODIFIED OILS

Seeds are the most powerful sources of parent essential oils. The outer husk of the seed protects it from oxygen, which would oxidize the oil and destroy its ability to germinate. Oxidized oils are equally damaging to our body. When certain fragile oils are heated, they turn toxic and inflammatory, which is why PEOs must be organic, cold pressed, and minimally processed. The more polyunsaturated, the more fragile the oil. Proper oil extraction is performed by only a few small manufacturers, using cold-pressing techniques under a blanket of nitrogen to protect the oils from oxidative damage. Additionally, they should be packaged in dark or opaque bottles to shield them from light, which is one thousand times more deleterious to those delicate oils than oxygen is. They should be kept refrigerated.

Of course, this is not how most oil manufacturers do it! The vast majority use high pressures and temperatures to squeeze out the oils for mass production (corn, canola, soy, sunflower, safflower cottonseed, walnut, etc.), which also squeezes out their nutritional value. Sunflower, safflower and soybean oils were once high in linoleic acid but are now high in oleic acid. Regardless of the quality of the seeds of origin, a heated MUFA or PUFA oil is nothing but toxic.

Stay away from inorganic and/or genetically modified oils, as they are typically contaminated with fat-soluble pesticides and other cell-damaging agents. Avoid genetically modified oils even if advertised as "cold processed".

DON'T EAT: CANOLA OIL, PEANUT OIL, AND OTHER VERY-LONG-CHAIN FATTY ACIDS (VLCFAS)

When it comes to fatty acid molecules, size matters! Carbon chains of twenty-two or more present a problem because they're too long to be metabolized in your mitochondria, so they end up "dangling" outside mitochondrial membranes. This category includes canola oil, peanut oil (and whole peanuts and peanut butter), and mustard oil. Although borage oil is rich in GLA, it is also one of the very-long-chain fatty acids so is best avoided.

DON'T EAT: TRANS FATS

I'm sure this isn't the first time you've heard this warning. Trans fats (a.k.a. hydrogenated fats or trans-fatty acids) are those with an altered molecular structure making them indigestible and toxic to your cells. Studies are clear that trans fats drive up inflammation, raise your risk for heart disease and probably increase your risk for type 2 diabetes. The most common culprits are the partially hydrogenated vegetable oils found in margarine and butter substitutes.

The bottom line is, if you want to rev up your metabolism, you must feed your cells and heal their membranes because they oversee all metabolic operations. To keep them working like well-oiled machines, you need the right fats! Your diet should include a substantial intake of PEOs in that optimal 4:1 ratio.[27] These are precisely the foods featured in the Radical Metabolism plan!

SUMMARY

To summarize what you've learned in this chapter, the following is a chart listing good fats and bad fats.

FATS TO USE, FATS TO LOSE

FATS TO USE FRESH, ORGANIC, NON-GMO, COLD-PRESSED	FATS TO LOSE OXIDIZED, OVERHEATED, RANCID
Seeds and Cold-Pressed Seed Oils Hempseed, hemp hearts, hempseed oil (brand: Nutiva) High-linoleic safflower oil Raw sunflower seeds high-linoleic sunflower oil Sesame seeds and sesame oil Flaxseed and high-lignan flaxseed oil Chia seed Pumpkin seeds and pumpkin seed oil Seed creams (soak overnight and blend) Black cumin seeds, a.k.a. black seed, black seed oil, black oil, black coriander oil Sacha inchi seeds, a.k.a. Incan peanut (brand: SaviSeeds) Apricot seeds/kernels and apricot seed oil Clary sage seed oil	Heated, processed, pressurized, and/or oxidized Nonorganic and GMO oils Very-long-chain fatty acids (VLCFA): peanuts and peanut oil, canola oil, mustard oil, borage oil Trans-fatty acids
Raw nuts, nut oils, nut butters	Heated/roasted/irradiated nuts and nut products
Extra-virgin Siberian pine nut oil (brand: Tiger Naturals)	
Avocados and avocado oil	
Whole olives and olive oil	
Spirulina	
Coconut, coconut oil, coconut cream, coconut milk, coconut yogurt, coconut manna	
MCT oil	
Thrive algae oil	
Wild cold-water fish Salmon (low-mercury) Sardines Anchovies Caviar Tuna (low-mercury)	Farmed fish, sushi and sashimi
Grass-pastured meat, poultry, eggs, and dairy (the last if not casein or lactose sensitive) Poultry Beef Lamb Buffalo Animal fats, such as tallow and lard Cottage or ricotta cheese Hard cheese Cream Kefir Yogurt Butter Ghee	Conventionally raised meat, poultry, eggs, and dairy

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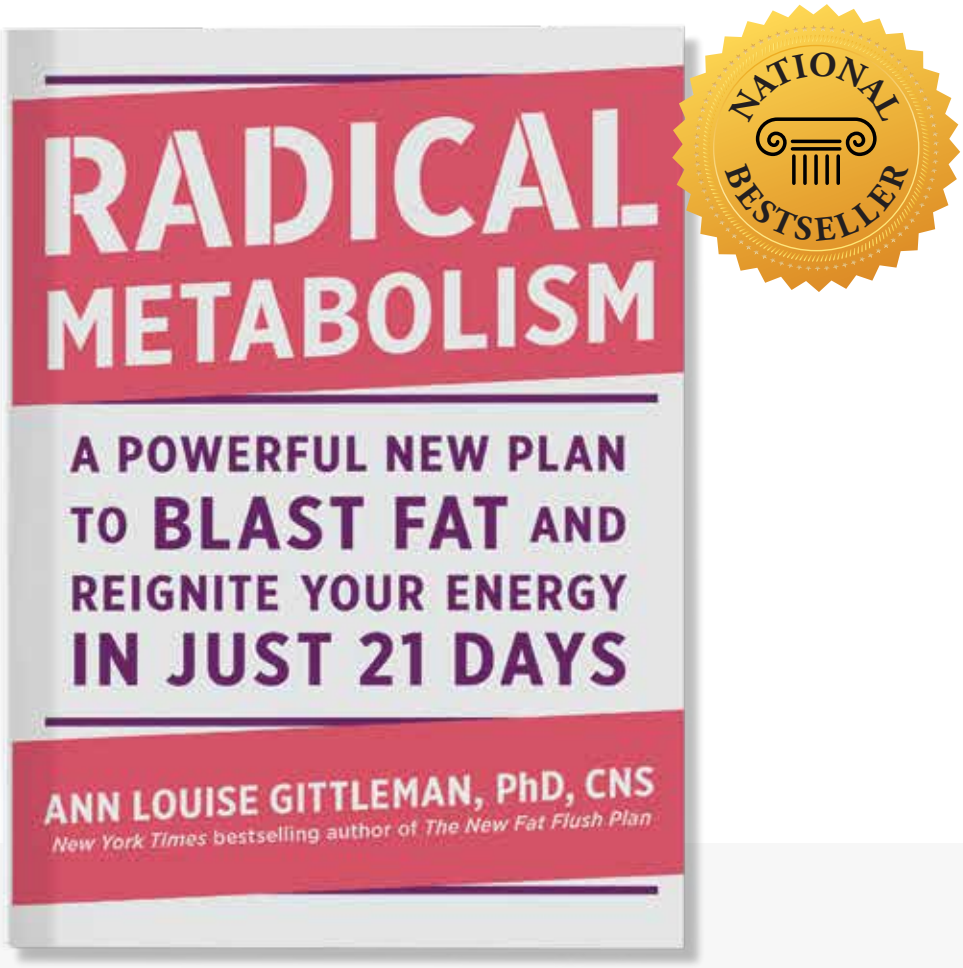

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