The first time I looked into an open chest cavity at a heart muscle working to pump blood through the body, I was brought up short by the tragic graffiti of atherosclerotic plaque. This waxy goo, often found in overweight people, builds up in the vessels surrounding the organ in which, philosophers tell us, the soul lives. But I quickly pushed any such distracting thoughts from my mind. I was learning to operate and was frankly thrilled at the prospect of harvesting a leg vein to bypass the blockage. Surgeons are trained to think that way, and rightly so. Do a good day's work and a life is saved, a bad day's work and a patient dies. No room there for anything but the job at hand.

My objective was to heal with steel. That, in some ways, was the easy part. What confounded my colleagues and me was how and why our patients landed in our care in the first place — lying on a gurney, about to have their chest opened with a band saw. The biggest reason was often the simplest one: the food they ate.

Our natural history as a species is a vast canvas of events whose peaks and valleys, successes and tragedies were often determined by the availability or scarcity of food — that is, until the 20th century. While famine remains a terrible reality in some parts of the world, most of us have almost unrestricted access to food. We produce a safe and abundant supply of fruits, vegetables, meats and dairy; we seal it, freeze it and protect it from spoilage and contamination. We even fortify it with vitamins and other healthy additives.

(See photos from the exhibit Food and American Identity at the National Archives.)

This was the kind of bounty early civilizations could only dream of. But our triumph of nutritional ingenuity has had an unfortunate inverse effect. A dietary free-for-all, in the U.S. and elsewhere, is producing not the healthiest generation in history but one in steady decline, with epidemics of obesity, cardiovascular disease and diabetes. More than two-thirds of U.S. adults, and more than a third of kids, are overweight or obese.

The problem isn’t that people don’t want to eat well and be well. Trust me, no one who’s ever been wheeled
into my operating room is happy to be there. And the problem, believe it or not, isn't that they doubt the wisdom of a healthy diet. More often than you'd think, the problem is that a lot of folks just don't know what a healthy diet looks like — and why should they, since the rules keep changing?

Time was, red meat was healthful, and pasta was bad; then pasta was great, and red meat was terrible, all of which lasted until the Atkins craze came along and the rules flipped again. There were the Mediterranean diet and the South Beach diet and the low-fat diet and the grapefruit diet and, yes, the cabbage-soup diet, and all of them promised great things. Red wine is the newest route to health, unless of course it's dark chocolate — or unless it turns out to be neither. With every cure, it seems, comes a problem; every new truth somehow turns out to be part myth.

(See photos of a worldwide day's worth of food.)

The good news is that we now know so much more than we ever did about how food reacts in our bodies — how specific molecules affect specific functions of specific cells. And with that comes new insight into healthy eating that is more than just conventional wisdom or gimmickry. The era of myth and marketing is at last giving way to an era of hard fact. You'll like some of the new insights, and you won't like others, but you'd best get used to them. Unlike the fads and fashions that have come before, the facts aren't going anywhere soon.

**Up Is Down**

Want to get healthy? then forget about diet soda and low-fat foods. Instead, tuck into some eggs, whole milk, salt, fat, nuts, wine, chocolate and coffee.

It's true. Despite conventional wisdom, all of those foods and many more can be beneficial to your body. But overindulge in them, and they can be as problematic as you've always been led to believe. The fact is that simple rules that divide things into good-food and bad-food categories tell you only a small part of the story. The rest of it is more complex than most folks know.

See TIME's special health checkup: Who Needs Organic Food?

Take fat. Of all the parts of the average diet that we've been told to avoid, it's fats that have gotten beaten up the most. The very word seems to be an indictment of the substance: We don't want to be fat, so why in the world should we eat fat?

But fats are by no means universally bad. Monounsaturated and polyunsaturated fats are actually recommended for good health. Monounsaturated fats — canola oil and olive oil — have been found to lower LDL cholesterol (the bad cholesterol) and raise HDL cholesterol (the good kind), thus reducing the risks of
atherosclerosis and heart disease. Polyunsaturated fats like omega-3s lower LDL as well as reducing the risk of inflammation, heart disease and many other diseases. And omega-3s are also terrific for brain health. Bad fats generally include saturated fats (found in animal products), trans fats (found in hydrogenated and partially hydrogenated oils) and their cousin cholesterol (found in egg yolks, meats and dairy products). Even this general grouping, however, can be misleading: new research is finding that some saturated fats (like those found in coconut oil) may actually be good for you and that dietary cholesterol may not affect blood cholesterol as much as was once thought. The only fat that is universally accepted as bad is trans fat, and that’s now been stripped out of most foods.

(See photos of a movable feast.)

The redemption of some fats — in moderation — is also leading to the redemption of the beleaguered egg. As a heart surgeon, I am continually struck by the variability in how people process dietary cholesterol. Most people have little issue with their blood-cholesterol levels after eating foods that are relatively high in cholesterol. But a few struggle with even small amounts of cholesterol in their diet. Those few, however, served as cautionary tales for everyone else, and so eggs and red meat, while dangerous if you eat them in excess, came to be seen as radioactive. Most physicians, however, are now comfortably recommending one egg with the yolk per day as an inexpensive source of high-quality protein, even though a few patients do need to be pulled off the program pending blood-cholesterol tests.

Salt is another example of a demonized compound. While our hearts can’t beat without it, too much sodium can increase blood pressure to dangerous levels — but only in 10% of the population, with African Americans being particularly sensitive. The only way to know for sure if you’re salt sensitive is to check your blood pressure after you consume salt and compare it with when you’ve been relatively salt-free. But even if your numbers stay within a healthy range, don’t go crazy with the saltshaker. Sodium mingles with other elements in processed foods and stimulates our appetite, so it can help pack on pounds. The good news is that almost all hypertensive people, i.e., those whose resting blood pressure is more than 140/90, will benefit from reducing their salt intake — a simple step that translates to an average of five extra years of life for the typical 55-year-old.

(See the best food-writing books in the All-TIME 100 Best Nonfiction Books.)

The reputation of red wine has similarly improved, to the delight of oenophiles. Resveratrol, an antioxidant found in grape skins, reduces the impact of bad cholesterol, which in turn reduces the risk of cardiovascular disease. Some animal studies show that it can help reduce obesity and diabetes too. However, since there’s relatively little resveratrol in red wine — you’d have to drink 60 liters to get the full benefits — it’s best to add this antioxidant to your list of supplements. (See page 62.) Still, you should drink some red wine every day: it has relatively few calories and induces milder hangovers than other sources of alcohol, and it is thought to raise good cholesterol and reduce the bad kind, as well as protect arteries against cholesterol-
related damage. Red wine is also usually consumed in the company of others, so it encourages human connection, a very powerful factor in maintaining health.

Chocolate is another source of antioxidants — in this case, in the form of flavonoids, which are what give cocoa beans their pungent taste. The darker the chocolate, the less adulterated with milk and other ingredients it is and the heavier the concentration of flavonoids. Nuts, though high in unsaturated fats and calories, can lower bad cholesterol and help curb hunger. The polyphenols in coffee, which is often shunned by the health-conscious, is in fact the No. 1 source of antioxidants in the Western world and in some studies has been associated with lower incidences of dementia, Parkinson's disease and Type 2 diabetes.

See a photographic history of culinary culture as a pop phenomenon.

Even the case against whole milk, condemned by some critics as nothing less than a glass of liquid fat, is more complex than it seems. It’s true that kids who drink a lot of whole milk drink a lot of calories, but milk can actually help control weight, since calcium binds with fat in the food digesting in your gut, meaning that you absorb less of that fat. Some studies have seen no significant difference among skim, low-fat and whole milk when it comes to weight control. What’s more, when you take all the fat out of milk, you’re left with too high a concentration of natural sugars, which interacts like candy with your hormones, especially insulin.

The key, for all of these foods, is moderation. Consume more than 16 oz. (0.5 L) of whole milk (or any two servings of dairy) per day and the calorie load swamps the health benefits. More than an ounce of dark chocolate a few times a week or two glasses of red wine per night can lead to weight gain in the first case and an increased risk of court appearances in the second. Too much coffee can make you jittery. Too much red meat — more than 18 oz. (0.5 kg) per week — can contribute to weight gain, not to mention denying you the benefits of getting more of your protein from fish, which is rich in brain-building omega-3 fatty acids.

(See photos of gourmet food trucks.)

**Diet of the Month**

If simple truths about basic foods turn out to be as fraught with complexities as they are, it's no wonder that so many equally simple diet fads have come to grief. The popular landscape is strewn with weight-loss crazes that have come and gone, leaving American consumers disappointed, frustrated and no healthier than they were before.

One of the most dangerous food labels to come along in recent decades is the insidious "fat free" moniker. These two little words granted absolution to anyone who indulged and gave the illusion that portion size and sugar content didn't matter. Manufacturers looking to cash in on fat-phobic consumers became very good at stripping natural fats from products; but what was lost in taste and texture had to be compensated
for by adding more sodium, sugar and thickeners. As people ate more and more fat-free goodies, they got extra-high doses of other ingredients that were bad for them. And without the filling effect of fat in food, you are left hungry and tend to eat more.

Other fads have included diets that dramatically restrict our food choices. With the cabbage-soup and grapefruit diets, advocates identified a new miracle food and built an entire eating regimen around it — a regimen that came with a promise of shedding a full 10 lb. (4.5 kg) in one week. In both of these food-idol diets, some weight does disappear quickly, mostly through loss of fluids. Neither diet is practical or nutritionally sound, and the weight returns as quickly as it comes off.

(See the top 10 TV chefs.)

Much more recent was the earthquake that was the Atkins diet, triggered by a 2002 article in the New York Times Magazine. The Atkins regimen — lots of meat and very few carbohydrates (including the natural sugars in fruits and vegetables) — had been briefly popular more than 30 years earlier but became a cultural phenomenon after the Times story breathed new life into it. Market forces fed the craze, with menus reformulated to remove the last detectable carbohydrate molecule and carb-free labels slapped on foods that never contained them in the first place. Artisanal bakers wept (no carbs means no baguettes), and the überfaithful began to suffer the bad breath of ketoacidosis, which occurs when glycogen stores are too low.

But weight was being lost — lots of it. The problem was, the loss was not being sustained. There are only so many foods you can ban before people’s palates rebel, and when you pretty much take pasta, bread, fruits and vegetables off the menu, that rebellion will happen sooner rather than later. What’s more, the foods that were permitted — particularly the much-relied-on meats — can lead to inflammation and irritation, causing some physicians to worry that heart attacks and strokes could result.

See how the world’s top chefs lose weight.

South Beach and other Atkins derivatives make the diet more palatable by allowing more fruits and vegetables. The newest alterna-Atkins is the popular paleo diet, which postulates that since the human genome appeared in its current form during the Paleolithic Period — about 2.6 million to 10,000 years ago — we are genetically designed to eat what was available then. The paleo diet focuses on lean meats and fish, fresh fruits and nonstarchy vegetables. It eliminates dairy, grains and legumes because they didn’t appear on our menus until about 12,000 years ago. According to some clinical trials, the diet has indeed been shown to lower the risk of cardiovascular disease, high blood pressure and inflammation as well as reduce acne, improve athletic performance and help with weight loss.

Many nutritionists, however, are concerned about eliminating whole grains and dairy products. A wealth of
research shows that both can help decrease the risk of certain cancers and heart disease. What’s more, it’s worth remembering that cavemen tended to be much shorter than modern people and often died in their 40s — in part because they weren’t eating a diet that left them with much ability to fight off infection (or saber-toothed tigers). I would rather follow a diet that sees me lucid and active enough to play with my grandchildren than one under which I die young but look great.

(See the top 10 state fair foods.)

Personalized Eating

It’s no secret that a diet that’s good for a boy in his prime growth-spurt years is not so good for a middle-aged man, or that what counts as adequate nutrients for a woman when she is breast-feeding in her 20s is different from when she is postmenopausal in her 70s. Yet as consumers, we accept blanket statements about how many servings of which food groups to eat and what constitutes optimum calorie counts and vitamin percentages. I have performed more than 5,000 heart surgeries, and I recommend a diet low in saturated and trans fats to prevent the buildup of arterial plaque. But I still can’t tell you why I can see two patients in one afternoon who have both spent decades eating large amounts of bacon, butter and baked goods and yet have completely opposite angiogram reports.

The University of North Carolina Nutrition Research Institute is a leader in the growing field of individualized nutrition, studying what’s known as nutrigenomics: the link between genes and diet. The science is a comparatively new one, but the early reports are tantalizing.

One study of mice, for example, has pinpointed a binding protein in some individuals that overactivates a suite of genes involved in the synthesis and uptake of cholesterol and other fats. That in turn can lead to insulin resistance, high triglycerides and a condition called fatty liver, in which fat builds up in the liver and inhibits its ability to filter toxins in the blood. People with a similar genetic glitch might be similarly sensitive to dietary fats and have to adjust what they eat accordingly. Another mouse study has found a gene variation that specifically affects the risk of developing high-LDL cholesterol. Yet another has found a gene variation that plays a role in how susceptible individuals are to the carcinogens that are produced when meat is cooked at high temperatures.

(See the top 10 things you didn’t know about doughnuts.)

It’s too early for these and other nutrigenomic studies to have clinical applications, but your doctor should already be looking at food as a tool for disease prevention — at least when it comes to regulating the intake of salt, cholesterol and other substances in people who are sensitive to them. Food allergies come into play here too. You can hardly recommend wheat-based cereal to someone who can’t process gluten, or milk to a person who’s lactose intolerant.

But pulling those foods out of the diet and replacing them with nothing — or worse, with junk — is hardly
the answer. Instead, try whole grains without gluten, like quinoa and chia; also try yogurt, kefir, cheese and other fermented dairy products that contain less lactose than fresh dairy foods because the bacteria used to make them digest some of the lactose, so you don't have to. The longer a cheese is aged, the less lactose it has. (A sharp cheddar aged for two years contains almost none at all.) The vast constellation of food that's available to us means that almost anyone's nutritional needs can be met — even if it takes a little work.

See incredible photos of fruit.

The Hard Truth
Of all the changes taking place on the food front, one of the most important concerns the balance between diet and exercise. It's still true that to maintain a healthy weight, calories consumed must equal calories burned. Tip that balance one way and you drop pounds; tip it the other way and you gain. Period. Paragraph.

But this summer a landmark study in the New England Journal of Medicine found that it's not just how much food you eat, but which kind, that influences weight gain. After adjusting for age, baseline body mass index and lifestyle factors such as exercise and sleep duration in 120,000 participants, the authors found that the foods most associated with adding pounds over a four-year period were french fries, potato chips, sugary drinks, meats, sweets and refined grains. The foods most associated with shedding pounds were yogurt, nuts, whole grains, fruits and vegetables. But there's more than simple caloric arithmetic at work here.

When you sit down to a meal, your brain is looking for nutrients, not calories, and will prod you to eat until you're satisfied. That's one of the many reasons it's harder to push away from a plate of fries or a bowl of ice cream than from a healthier meal of fruits, vegetables, grains and lean meats. A simple matter of digestive mechanics is at work too. High-fiber foods expand in the stomach, slowing digestion and augmenting satiety. That's the reason I try to eat fruit or a handful of nuts prior to a big meal. Consuming a controlled amount of calories from the right kind of food now helps avoid taking in many more calories from the wrong kind later.

(See 10 great iPhone apps for foodies.)

Another hard truth is that despite what we think, there is probably not some elusive superfood out in a distant rain forest waiting to be discovered. That said, we do know of some extraordinary foods that are already available in abundance. Berries are increasingly seen as having a profound impact against age-related diseases, including cancer, cardiovascular illness, diabetes and mental decline, thanks to their high levels of antioxidants and anti-inflammatory properties. Broccoli is high in fiber and has been shown to have cholesterol-lowering benefits. It's also rich in sulfur compounds, which are good for the liver and
thus strengthen the body’s natural detoxification systems.

In the category of Things Your Mother Was Right About All Along, you really and truly should take your vitamins. We like to think that if we’re smart, we can get all of our needed nutrients from what we eat. But judging by food diaries, this is true for only a small percentage of the population. What’s more, while the body manufactures some vitamins nonnutritionally — the way sunlight helps us generate vitamin D — there is a long list of nutrients we can get only from food, including calcium, fiber, folate, iodine, iron, magnesium and potassium. Even if you chart every morsel that goes in your mouth, I promise you that a daily multivitamin is an easier and more reliable way to ensure that you’re not leaving anything out.

(See the best lunchboxes for kids and their parents.)

Finally — no surprise — you should be serious about exercising. The Centers for Disease Control and Prevention recommends that all adults get a minimum of 150 minutes of moderate aerobic activity — like brisk walking — per week, which comes down to just over 20 minutes per day. As an alternative, you could go for 75 minutes a week of a vigorous activity like jogging. Muscle-strengthening exercises two or more days a week are also essential to maintaining fitness and building lean muscle mass, which makes your metabolism more efficient. And keep in mind that we all overestimate the caloric benefit of exercise. A 160-lb. (73 kg) person who puts in a full hour of low-impact aerobics burns 365 calories, which is not bad, but all that work is entirely erased if you reward yourself with a muffin instead of an apple after class.

No one pretends that achieving and maintaining an ideal weight is an easy thing to do, but the list of rules to get you there is nonetheless simple: Eat in moderation; choose foods that look like they did when they came out of the ground (remember, there are no marshmallow trees); be an omnivore (there are multiple food groups for a reason); and get some exercise. Human beings are the only species in the world that has figured out how to be in complete control of its own food supply. The challenge now is to make sure the food doesn’t take control of us.

See how foodies can save the green movement.

See the top 10 oddball eateries.

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