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## EXCERPT FROM *THE CHINA STUDY*

### “Introduction”

The public’s hunger for nutrition information never ceases to amaze me, even after devoting my entire working life to conducting experimental research into nutrition and health. Diet books are perennial best-sellers. Almost every popular magazine features nutrition advice, newspapers regularly run articles and TV and radio programs constantly discuss diet and health.

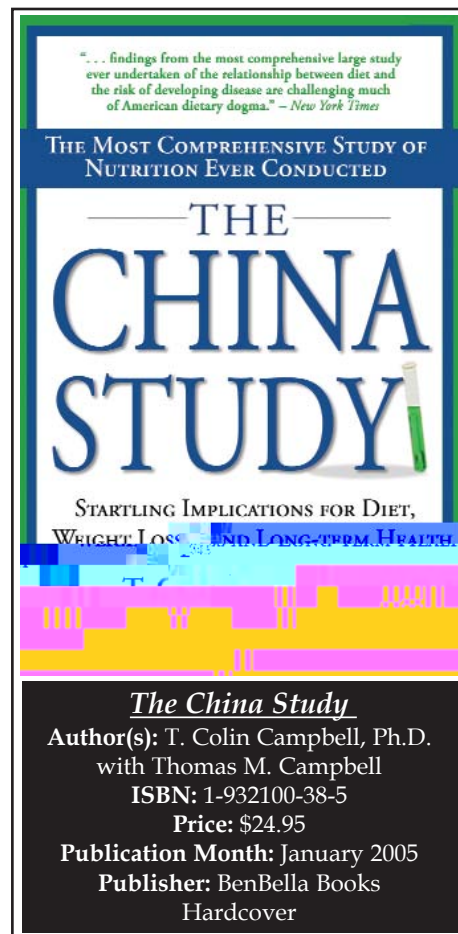
Given the barrage of information, are you confident that you know what you should be doing to improve your health?

Should you buy food that is labeled organic to avoid pesticide exposure? Are environmental chemicals a primary cause of cancer? Or is your health “predetermined” by the genes you inherited when you were born? Do carbohydrates really make you fat? Should you be more concerned about the total amount of fat you eat, or just saturated fats and trans-fats? What vitamins, if any, should you be taking? Do you buy foods that are fortified with extra fiber? Should you eat fish, and, if so, how often? Will eating soy foods prevent heart disease?

My guess is that you’re not really sure of the answers to these questions. If this is the case, then you aren’t alone. Even though information and opinions are plentiful, very few people truly know what they should be doing to improve their health.

This isn’t because the research hasn’t been done. It has. We know an enormous amount about the links between nutrition and health. But the real science has been buried beneath a clutter of irrelevant or even harmful information—junk science, fad diets and food industry propaganda.

I want to change that. I want to give you a new framework for understanding nutrition and





health, a framework that eliminates confusion, prevents and treats disease and allows you to live a more fulfilling life.

I have been “in the system” for almost fifty years, at the very highest levels, designing and directing large research projects, deciding which research gets funded and translating massive amounts of scientific research into national expert panel reports.

After a long career in research and policy making, I now understand why Americans are so confused. As a taxpayer who foots the bill for research and health policy in America, you deserve to know that many of the common notions you have been told about food, health and disease are wrong:

- Synthetic chemicals in the environment and in your food, as problematic as they may be, are not the main cause of cancer.
- The genes that you inherit from your parents are not the most important factors in determining whether you fall prey to any of the ten leading causes of death.
- The hope that genetic research will eventually lead to drug cures for diseases ignores more powerful solutions that can be employed today.
- Obsessively controlling your intake of any one nutrient, such as carbohydrates, fat, cholesterol or omega-3 fats, will not result in long-term health.
- Vitamins and nutrient supplements do not give you long-term protection against disease.
- Drugs and surgery don’t cure the diseases that kill most Americans.
- Your doctor probably does not know what you need to do to be the healthiest you can be.

I propose to do nothing less than redefine what we think of as good nutrition. The provocative results of my four decades of biomedical research, including the findings from a twenty-seven-year laboratory program (funded by the most reputable funding agencies) prove that eating right can save your life.

I will not ask you to believe conclusions based on my personal observations, as some popular authors do. There are over 750 references in this book, and the vast majority of them are primary sources of information, including hundreds of scientific publications from other researchers that point the way to less cancer, less heart disease, fewer strokes, less obesity, less diabetes, less autoimmune disease, less osteoporosis, less Alzheimer’s, less kidney stones and less blindness.

Some of the findings, published in the most reputable scientific journals, show that:

- Dietary change can enable diabetic patients to go off their medication.
- Heart disease can be reversed with diet alone.
- Breast cancer is related to levels of female hormones in the blood, which are determined by the food we eat.





to school instead of me paying them. There I did a master's degree. I was the last graduate student of Professor Clive McCay, a Cornell professor famed for extending the lives of rats by feeding them much less food than they would otherwise eat. My Ph.D. research at Cornell was devoted to finding better ways to make cows and sheep grow faster. I was attempting to improve on our ability to produce animal protein, the cornerstone of what I was told was "good nutrition."

I was on a trail to promote better health by advocating the consumption of more meat, milk and eggs. It was an obvious sequel to my own life on the farm and I was happy to believe that the American diet was the best in the world. Through these formative years, I encountered a recurring theme: we were supposedly eating the right foods, especially plenty of high-quality animal protein.

Much of my early career was spent working with two of the most toxic chemicals ever discovered, dioxin and aflatoxin. I initially worked at MIT, where I was assigned a chicken feed puzzle. Millions of chicks a year were dying from an unknown toxic chemical in their feed, and I had the responsibility of isolating and determining the structure of this chemical. After two and one-half years, I helped discover dioxin, arguably the most toxic chemical ever found. This chemical has since received widespread attention, especially because it was part of the herbicide 2,4,5-T, or Agent Orange, then being used to defoliate forests in the Vietnam War.

After leaving MIT and taking a faculty position at Virginia Tech, I began coordinating technical assistance for a nationwide project in the Philippines working with malnourished children. Part of the project became an investigation of the unusually high prevalence of liver cancer, usually an adult disease, in Filipino children. It was thought that high consumption of aflatoxin, a mold toxin found in peanuts and corn, caused this problem. Aflatoxin has been called one of the most potent carcinogens ever discovered.

For ten years our primary goal in the Philippines was to improve childhood malnutrition among the poor, a project funded by the U.S. Agency for International Development. Eventually, we established about 110 nutrition "self-help" education centers around the country.

The aim of these efforts in the Philippines was simple: make sure that children were getting as much protein as possible. It was widely thought that much of the childhood malnutrition in the world was caused by a lack of protein, especially from animal-based foods. Universities and governments around the world were working to alleviate a perceived "protein gap" in the developing world.

In this project, however, I uncovered a dark secret. *Children who ate the highest-protein diets were the ones most likely to get liver cancer!* They were the children of the wealthiest families.



I then noticed a research report from India that had some very provocative, relevant findings. Indian researchers had studied two groups of rats. In one group, they administered the cancer-causing aflatoxin, then fed a diet that was composed of 20% protein, a level near what many of us consume in the West. In the other group, they administered the same amount of aflatoxin, but then fed a diet that was only composed of 5% protein. Incredibly, every single animal that consumed the 20% protein diet had evidence of liver cancer, and every single animal that consumed a 5% protein diet avoided liver cancer. It was a 100 to 0 score, leaving no doubt that nutrition trumped chemical carcinogens, even very potent carcinogens, in controlling cancer.

This information countered everything I had been taught. It was heretical to say that protein wasn't healthy, let alone say it promoted cancer. It was a defining moment in my career. Investigating such a provocative question so early in my career was not a very wise choice. Questioning protein and animal-based foods in general ran the risk of my being labeled a heretic, even if it passed the test of "good science."

But I never was much for following directions just for the sake of following directions. When I first learned to drive a team of horses or herd cattle, to hunt animals, to fish our creek or to work in the fields, I came to accept that independent thinking was part of the deal. It had to be. Encountering problems in the field meant that I had to figure out what to do next. It was a great classroom, as any farm boy can tell you. That sense of independence has stayed with me until today.

So, faced with a difficult decision, I decided to start an in-depth laboratory program that would investigate the role of nutrition, especially protein, in the development of cancer. My colleagues and I were cautious in framing our hypotheses, rigorous in our methodology and conservative in interpreting our findings. I chose to do this research at a very basic science level, studying the biochemical details of cancer formation. It was important to understand not only whether but also how protein might promote cancer. It was the best of all worlds. By carefully following the rules of good science, I was able to study a provocative topic without provoking knee-jerk responses that arise with radical ideas. Eventually, this research became handsomely funded for twenty-seven years by the best-reviewed and most competitive funding sources [mostly the National Institutes of Health (NIH), the American Cancer Society and the American Institute for Cancer Research]. Then our results were reviewed (a second time) for publication in many of the best scientific journals.

What we found was shocking. Low-protein diets inhibited the initiation of cancer by aflatoxin, regardless of how much of this carcinogen was administered to these animals. After cancer initiation was completed, low-protein diets also dramatically blocked subsequent cancer growth. In other words, the cancer-producing effects of this highly carcinogenic chemical were rendered insignificant by a low-protein diet. *In fact, dietary protein proved to be so powerful in its effect that we could turn on and turn off cancer growth simply by changing the level consumed.*



Furthermore, the amounts of protein being fed were those that we humans routinely consume. We didn't use extraordinary levels, as is so often the case in carcinogen studies.

But that's not all. We found that not all proteins had this effect. What protein consistently and strongly promoted cancer? Casein, which makes up 87% of cow's milk protein, promoted all stages of the cancer process. What type of protein did not promote cancer, even at high levels of intake? The safe proteins were from plants, including wheat and soy. As this picture came into view, it began to challenge and then to shatter some of my most cherished assumptions.

These experimental animal studies didn't end there. I went on to direct the most comprehensive study of diet, lifestyle and disease ever done with humans in the history of biomedical research. It was a massive undertaking jointly arranged through Cornell University, Oxford University and the Chinese Academy of Preventive Medicine. *The New York Times* called it the "Grand Prix of Epidemiology." This project surveyed a vast range of diseases and diet and lifestyle factors in rural China and, more recently, in Taiwan. More commonly known as the China Study, this project eventually produced *more than 8,000 statistically significant associations between various dietary factors and disease!*

What made this project especially remarkable is that, among the many associations that are relevant to diet and disease, so many pointed to the same finding: people who ate the most animal-based foods got the most chronic disease. Even relatively small intakes of animal-based food were associated with adverse effects. People who ate the most plant-based foods were the healthiest and tended to avoid chronic disease. These results could not be ignored. From the initial experimental animal studies on animal protein effects to this massive human study on dietary patterns, the findings proved to be consistent. The health implications of consuming either animal or plant-based nutrients were remarkably different.

I could not, and did not, rest on the findings of our animal studies and the massive human study in China, however impressive they may have been. I sought out the findings of other researchers and clinicians. The findings of these individuals have proved to be some of the most exciting findings of the past fifty years.

These findings—the contents of Part II of this book—show that heart disease, diabetes and obesity can be reversed by a healthy diet. Other research shows that various cancers, autoimmune diseases, bone health, kidney health, vision and brain disorders in old age (like cognitive dysfunction and Alzheimer's) are convincingly influenced by diet. Most importantly, the diet that has time and again been shown to reverse and/or prevent these diseases is the same whole foods, plant-based diet that I had found to promote optimal health in my laboratory research and in the China Study. *The findings are consistent.*

Yet, despite the power of this information, despite the hope it generates and despite the urgent



need for this understanding of nutrition and health, people are still confused. I have friends with heart disease who are resigned and despondent about being at the mercy of what they consider to be an inevitable disease. I've talked with women who are so terrified of breast cancer that they wish to have their own breasts, even their daughters' breasts, surgically removed, as if that's the only way to minimize risk. So many of the people I have met have been led down a path of illness, despondence and confusion about their health and what they can do to protect it.

Americans are confused, and I will tell you why. The answer, discussed in Part IV, has to do with how health information is generated and communicated and who controls such activities. Because I have been behind the scenes generating health information for so long, I have seen what really goes on—and I'm ready to tell the world what is wrong with the system. The distinctions between government, industry, science and medicine have become blurred. The distinctions between making a profit and promoting health have become blurred. The problems with the system do not come in the form of Hollywood-style corruption. The problems are much more subtle, and yet much more dangerous. The result is massive amounts of misinformation, for which average American consumers pay twice. They provide the tax money to do the research, and then they provide the money for their health care to treat their largely preventable diseases.

This story, starting from my personal background and culminating in a new understanding of nutrition and health, is the subject of this book. Six years ago at Cornell University, I organized and taught a new elective course called Vegetarian Nutrition. It was the first such course on an American university campus and has been far more successful than I could have imagined. The course focuses on the health value of a plant-based diet. After spending my time at MIT and Virginia Tech, then coming back to Cornell thirty years ago, I was charged with the task of integrating the concepts and principles of chemistry, biochemistry, physiology and toxicology in an upper-level course in nutrition.

After four decades of scientific research, education and policy making at the highest levels in our society, I now feel I can adequately integrate these disciplines into a cogent story. That's what I have done for my most recent course, and many of my students tell me that their lives are changed for the better by the end of the semester. That's what I intend to do for you; I hope your life will be changed as well.