Food Science Gone Bad

In recent years, emerging health care technologies such as stem cell research have garnered media attention and spurred political debate due to their therapeutic potential and ethical implications. Meanwhile, scientific research has played a central, but less controversial role in a topic with universal relevance: proper nutrition. Scientific studies whose outcomes link a nutrient to a health benefit or risk regularly make the front page of national publications (e.g. “High Fibre Diets Reduce Colon Cancer Risk”). The food industry capitalizes on the public’s concern about heart disease and cancer by marketing food products supplemented with nutrients viewed as “good” and free from those deemed “bad”. However, despite research efforts towards finding the healthful elements of food, obesity and its related diseases are increasingly prevalent. This paradoxical phenomenon is partly rooted in the interplay between science, industry, and politics, and it too deserves some heated debate.

In a recent essay, Dr. Michael Pollan explains how political and economic factors are intertwined with the scientific quest for what humans should eat (“Unhappy Meals”, New York Times Magazine, January 28, 2007). For example, early drafts of US food guidelines recommended simply eating less red meat and dairy products to reduce the risk of heart disease. However, in order to appease industry lobby groups, the guidelines were reformulated to recommend avoiding foods that contain harmful nutrients, such as saturated fats. This political compromise protected food industries and justified research to isolate and characterize nutrients using reductionist biology.

Reductionism is the prevailing strategy for studying complex biological systems. It works by isolating the effects of individual variables (such as enzymes) in order to develop an understanding of a system (such as a signaling pathway). Naturally, it is unwise to prematurely generalize about one factor being beneficial or detrimental when the puzzle is not satisfactorily complete. This is not to say that a total understanding is necessary to successfully manipulate a biological system; many medications are useful despite our incomplete understanding of how they work. However, in the case of nutrition, it is unethical to advocate eating habits based on reductionist biology, merely because there is already a simpler, safer and more effective alternative: whole foods. On one hand the choice of nutrients put into processed foods (e.g. orange juice with calcium, omega-3, and vitamin D) is justified by studies that often contradict one another because they focus on individual nutrients in different nutritional contexts. Meanwhile, studies focused on whole foods unanimously confirm the benefits of eating unprocessed grains, fish, vegetables and fruits. This is not surprising, since cultural eating habits that evolved over thousands of years are based on doing just that.

The fact that science is complicit in a food philosophy detrimental to public health presents an ethical dilemma for researchers. Whereas health products based on pseudoscience are reflexively disparaged among scientists, the use of nutrients to build healthy foods is seemingly founded in peer-reviewed research published in reputable journals. Scientists must address this problem by being vocal outside the scientific community, where journalists and product developers stretch the conclusions of nutritional studies beyond their intended context. While it would be naïve to suggest that scientists ought to downplay the significance of their research, the ease with which research findings are misused implies a responsibility to demand balanced reporting. A more practical reason to speak out is that exaggeration in science journalism slowly erodes the credibility of the scientific enterprise in the public eye. Unfortunately, the promise of diet fads and myriad weight loss products makes it even harder to digest the sober truth about the scientific study of nutrition: progress is slow, true breakthroughs are rare, and you still have to eat your vegetables.