Breakfast might be the day's most important meal, but you may need a score card to decide what to eat. Will knocking back a few cups of java (a) raise your risk of pancreatic cancer, (b) lead to rheumatoid arthritis, or (c) protect you against Parkinson's disease? Is it butter or margarine that's healthier on your toast? Are eggs OK or did you get the message scrambled?

You have good reason to be confused, and not just at breakfast. Americans get the bulk of their nutrition news from TV, magazines, and newspapers, where headlines seem to turn on the latest pronouncement by anyone wearing a lab coat. Just within the past few months, stories have reported the failure of fiber to protect against colon growths, touted its benefits for Type 2 diabetes, and warned, “Fiber supplement found likely to harm colon.” The flip-flops are enough to exhaust even the most conscientious eater. A Yankelovich survey shows that while more than half of Americans respond to each new crumb of dietary information, about 1 in 5 has given up and stopped paying attention. “I think I'm an educated guy, and I'm pretty befuddled,” says Steven Goldstein, a 48-year-old communications executive in New York. “You really aren't sure [what to eat], and the medical profession, including the dietitians, don't really know what to do either.”

Magic foods? None of this would matter so much if you were talking about new evidence refuting the Big Bang theory. But health is personal. Consumers can largely control what they eat, and there's a perennial desire to find talismans against killer diseases. If that means bulking up on bran or skipping the eggs, coffee, salt, or butter, it seems a small price to pay. (OK, maybe skipping coffee is too much.)

Yet there are few absolutes. “No foods are so good that if you ate them to the exclusion of all else, you would be healthy,” says M.R.C. Greenwood, a biologist and chancellor of the University of California-Santa Cruz. Nor are there many outright poisons. Says David Kritchevsky, a professor at the Wistar Institute: “The only people who died after one meal were people who ate dinner with the Borgias.”

The answer is not to stop worrying about what you eat, but to sort out the sound advice from the babble. In spite of all the high-profile reversals, the tried and true still holds: Follow the food pyramid, load up on fruits, vegetables, and whole grains, practice portion control, and exercise regularly. And don't react to every new study. That's easier to do once you understand why nutrition information seems so bewildering.

Much of the public—including the media—doesn't see that good science unfolds slowly, and its advance is seldom steady. Says Harvard University epidemiologist Walter Willett, “If things didn't shift, it would be bad science.” Indeed, each study, no matter how well designed, has limitations. Few researchers interpret ambiguous findings in the same way. “For every Ph.D., there is an equal and opposite Ph.D.,” quips David Murray, director of research at the Statistical Assessment Service, a watchdog organization in Washington.
Add government public health experts trying to come up with simple advice based on science that's in flux and companies trying to draw your attention to the health benefits of cereals, or orange juice, or tomato soup, and it's no wonder you feel whipsawed.

The saga of fiber and its claimed protective effect against colon cancer shows how uncertain science can lead to confusion. The possible benefits were first reported in 1971 by British missionary surgeon Denis Burkitt, who observed that rural Africans had a lower incidence of bowel-related disorders than Westerners. He hypothesized that the Ugandans' high-fiber diet could explain the difference. It made biological sense: Fiber helps move food through your gut faster, reducing the time carcinogens make contact with your intestinal walls. Over the next several years, more evidence came from other populations that eat a high-fiber diet and from experiments with rats and mice.

Yet studies with animals don't necessarily apply to humans. “Who cares if you prevent colon cancer in a rat?” asks David Klurfeld, chairman of the department of nutrition and food science at Wayne State University. Even human studies that seek correlations between a behavior--a fiber-rich diet, say--and a disease have pitfalls. For one thing, they rely on people's ability to remember (and tell the truth about) what and how much they ate. And analyzing the effects of one behavior is almost always confounded by the effects of another: Do the subjects exercise, smoke, eat lots of fruits and vegetables?

Even though the evidence remained circumstantial, in 1984 the American Cancer Society made its first specific recommendation to eat fiber to help prevent colon cancer. On boxes of All-Bran cereal, Kellogg's printed a claim sanctioned by the National Cancer Institute that scientific evidence linked a high-fiber diet with a reduced risk of colon cancer. The little blurb caused a big stir. Fiber includes a whole range of compounds found in plants, and “there were those who felt that it wasn't clear whether it was cereal fiber per se that was responsible,” says Tim Byers, a professor of preventive medicine at the University of Colorado School of Medicine.

When the results of a more rigorous genre of studies, clinical trials, were reported in the late 1980s and early 1990s, according to Joanne Lupton, a nutritionist at Texas A&M University, fiber's protective effect was surprisingly weaker than earlier studies had predicted. But the evidence still seemed encouraging, and the morning papers tended to make statements like, “Worried about colon cancer? Look to your cereal bowl. So suggests a new test of high-fiber All-Bran cereal.” The public shelled out more money for cereal, convinced science was on their side.

Yet a decade later, the cancer benefits of fiber--and how much you need--remain in question. Last year, researchers with the Nurses' Health Study in Boston, which has tracked the diets and health of more than 88,000 American female nurses since 1980, reported discouraging news. Nurses who ate about 30 grams of fiber a day got colorectal cancer just as often as the average American, who consumes just 13 grams. In a similar study, a high-fiber diet didn't seem to protect men, either. This year, additional negative findings from two large clinical trials seemed to seal fiber's fate. “Fiber's Good-for-You
Image Wilts in Face of New Study,” read one headline; “‘Nature's Broom’ May Not Sweep Away Cancer Risk” was another.

But again the message that reached the public was more definitive than the science warranted. Researchers still suspect that whole fruits and vegetables as well as whole grains are protective against colon cancer. It might not be fiber that helps—or at least not fiber alone—but something else in the fruits and vegetables.

While it lacks a tidy ending, the fiber story demonstrates the basic incompatibility between the demands of science and those of news. “The way a lab finding makes its way to the headlines is like a conveyor belt,” explains the Statistical Assessment Service's Murray. “At each step there is a potential distortion. Where science is contingent and unfinished, journalists want something definitive. They will impose closure by deadline. Out of that, the public thinks experts are always reversing direction.”

Chief among the complaints about news reports is that they tend to omit information that would help readers decide how seriously to take a new finding: whether the study corroborates or contradicts past findings, who will benefit or be put at risk, who sponsored the study, and whether the link could have occurred by chance. “The shallow nature of reporting is the reason we go through these food fads,” says Linda Lichter, vice president of the Center for Media and Public Affairs, which analyzed food and nutrition coverage over a three-month period last year.

But the blame doesn't rest solely on reporters and news organizations. “The scientists get very enthusiastic,” says Gina Kolata, a veteran science reporter for the New York Times. “They say, ’I myself am taking folic acid.' I used to feed off their enthusiasm. But when you see one [study] after another fall, I've become much more of a skeptic.” Gilbert Omenn, executive vice president for medical affairs at the University of Michigan, concurs. Scientists “try to make as strong a case as possible” for their work, he says. The bigger the claim, the greater the attention and the more research dollars they receive.

The danger is when scientists and the reporters who cover their work allow correlations to slide into cause and effect. Over the past 20 years, coffee has been linked to a succession of ills, from cancer to high cholesterol to arthritis, generating a series of alarming headlines. But many correlations have vanished in later studies—and the others seem weak at best.

Even prestigious medical journals allow scientists to get away with exaggerating the importance of results, says Marcia Angell, former editor-in-chief of the New England Journal of Medicine. What's more, medical journals favor positive studies that appear to link a food to a benefit or hazard over negative ones that show no link. Klurfeld of Wayne State University, who also edits the Journal of the American College of Nutrition, published a study earlier this year showing a tentative association between tofu and dementia in Japanese-American men. “It was a very provocative study, and that's what you want,” he says. Provocative, yes, but according to Clare Hasler, executive director of
the Functional Foods for Health Program at the University of Illinois, also “preliminary and inconclusive.”

Nonetheless, Klurfeld received more than 700 press inquiries about the tofu study--more than triple the usual number. His hope, he says, is that the notoriety will bolster circulation; at some other journals, attention translates into advertising pages.

The fact that companies and industry groups sponsor studies--and drum up publicity for favorable results--also contributes to the whipsaw effect. Over the past year, a series of headlines have gladdened chocoholics' hearts: “Medicating with Chocolate? Scientists Find It Helps Protect the Heart,” read one. The Chocolate Manufacturers Association partially funded the research, which linked flavonoid compounds in chocolate to healthy arteries. Not that private funding necessarily means the research is suspect. But “you only get answers to the questions you ask,” says Joseph Hotchkiss, a food scientist at Cornell University. “Campbell's can sponsor studies that ask what's good in a tomato. If that's the question I ask, I'm likely to find out.”

Shifting public health messages add to the confusion. Thirty years ago, concerned about the effects of cholesterol in a nation where coronary heart disease was nearly an epidemic, the American Heart Association recommended that people limit themselves to three eggs a week. By the early '90s, however, better tools showed that eggs had about 10 percent less cholesterol than had been thought, and the AHA raised the allowance to four eggs a week. Now the accepted cholesterol content of an egg is still lower, and new studies have indicated that saturated fat, not cholesterol in food, bears the weight of responsibility in raising blood cholesterol. Recently, the AHA upped the allowance to one egg per day for healthy people.

In spite of all the back and forth, science does make progress. “In the '50s, no one had any idea about trans fat,” says Michael Jacobson, executive director of the Center for Science in the Public Interest, a nutrition advocacy group. Today, trans fatty acids, found in commercial baked goods and some margarine, are known to raise “bad” cholesterol (LDL) and lower beneficial HDL. It's also a safe bet that a diet high in saturated and total fat leads to heart disease and obesity, and, conversely, that fruits and vegetables are good, even if not in all the ways that have been claimed. “We go into a grocery store today more informed about the health benefits of foods,” says Sylvia Rowe, president and CEO of the International Food Information Council.

But the bedrock of nutrition advice, the government's Dietary Guidelines for Americans, which give rise to the food pyramid and are based “on the preponderance of scientific evidence,” have changed remarkably little since they were first issued in 1980. “The best recommendations are really boring,” says Klurfeld. “It's moderation and variety.” Steven Goldstein, the New Yorker, agrees. “At some point, you have to trust your own instincts. I try to seek the answers from everyone else when the answers are probably inside me. ‘Eat a sensible diet and it's OK to have a piece of cake every once in a while.' The problem is the definition of once in a while.”
READ CLOSELY BEFORE YOU GO WHOLE HOG: CLUES IN THE NEWS
You knew if you waited long enough, you'd come across headlines like one that recently exhorted: “Time to Put Lard Back in the Larder.” Before going whole hog on the rendered pig fat or doing some other 180-degree turn in your diet, you need to know how seriously to take a new study. Here are clues to look for when you read health news stories:

• Does the study corroborate earlier research?

• How big is the claimed benefit or harm, and can reasonable amounts of the food produce it?

• Does the news story give numbers or just anecdotes?

• Does the story offer a biological explanation for the effect?

• Were the tests conducted on humans?

• Was the study published in an established journal and not just delivered at a conference?

• Who sponsored it? If industry or an advocacy group funded the research, a little extra skepticism is in order.

• Most important, “read past the headline,” says Diane Quagliani of the American Dietetic Association. “The breakthroughs are in the first paragraph,” agrees Marcia Angell, former editor-in-chief of the *New England Journal of Medicine*, “and the caveats are in the fifth.”