Which diet can help people lose weight and keep it off? So far, no one has found a magic bullet.

“We had three decades of low-fat, and we had a decade of ‘Oh, wait, no, maybe low-carb,’ and then at the end of that we said ‘Oh, never mind, neither of them works,’” says Christopher Gardner, director of nutrition studies at the Stanford Prevention Research Center.

But several glimpses of new evidence are giving researchers renewed hope. They’re looking not just at how many calories people eat and burn, but at their genes, the microbes in their gut, how much they sleep, and more.

Here are some clues that may tip the scales in your favor.

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Q: Why are you testing low-fat vs. low-carb diets for weight loss?

A: For decades, we said “Eat a low-fat diet to lose weight,” and then the obesity epidemic kept going. So a bunch of people said “No, it has to be a low-carb diet,” though we had no data to know if that was correct or not. So ten years later we have data. And if you pool all the studies, there’s no difference in weight loss between low-fat and low-carb diets.

Q: Was that true in your trial?

A: Yes. Our A TO Z Weight Loss Study randomly assigned 311 overweight or obese premenopausal women to one of four diets. Atkins was the lowest-carb and Ornish was the lowest-fat. The Zone and the LEARN diets were in the middle.

After one year, the average weight loss was ten pounds for Atkins, six for LEARN, five for Ornish, and three and a half for The Zone.

Q: So Atkins was slightly better?

A: Yes, but no one’s going to get excited about ten pounds. For these women, who wanted to lose 15 to 100 pounds, we couldn’t say “Congrats, the study’s over. On average, you lost five or ten pounds. Everybody jump up and down.” They’d say “I didn’t even go down a dress size.”

But what about the women in the study who lost 30 or 40 pounds? They went down multiple dress sizes. And what about those who tried their hardest and lost nothing or even gained a few pounds?

Q: How much did weight loss vary?

A: In every group, some women lost 40 or 50 pounds, and some gained five or ten pounds. So we have a 60-pound range of weight change over 12 months.

We wondered what could explain that difference. We found two small feeding studies suggesting that insulin-resistant people lost more weight on a low-carb diet, and people who were not insulin resistant lost more on a low-fat diet.

Q: If you’re insulin resistant, your insulin doesn’t work properly?

A: Yes. So we went back to our A TO Z data and did a post hoc analysis, which isn’t definitive because the study wasn’t designed to look at insulin resistance. All we had were fasting insulin levels, which are a crude measure of insulin resistance.

We assumed that the third of the women with the highest fasting insulin were probably more insulin resistant, and the third with the lowest fasting insulin were probably less insulin resistant.

And we found that those who were more insulin resistant lost more weight on the...
Up at Night, Up in Weight?

Could lack of sleep or eating at night make you heavier?

Sleep. People who report sleeping less (usually 6 or less hours a night) are more likely to gain weight over the years than those who sleep more (7 or 8 hours).1 But does less sleep cause weight gain?

To find out, researchers deprive people of sleep to see if they put on pounds. In a recent study, scientists allowed nearly 200 people to sleep from only 4 a.m. to 8 a.m. for the five consecutive nights they lived in the research lab. Thirty others were allowed to sleep anytime from 10 p.m. to 8 a.m. during their stay in the lab.

The results: on average, the sleep-restricted people ended the study two pounds heavier. Data from a subgroup suggested that they ate an extra 550 calories between 10 p.m. and 4 a.m. In contrast, those whose sleep was not limited gained no weight.2

Why might less sleep make people eat more?

“We’re currently examining the effects of sleep loss on changes in brain activity in areas related to reward and impulse control,” says lead author Andrea Spalleth of the University of Pennsylvania.

Other studies have found that lack of sleep raises blood sugar, makes insulin less effective, or boosts ghrelin, a hormone that stimulates appetite.3,4

Night eating. Researchers are just starting to look at whether it matters when you eat.

For example, scientists kept 160 people in a research lab with unlimited free access to food from a vending machine for three days. Those (roughly a third) who ate between 11 p.m. and 5 a.m. on at least one night gained an average of 14 pounds over the next three years. Those who didn’t eat during those hours gained only 4 pounds.5

“It’s not necessarily the timing of the eating that mattered, because those who ate at night consumed about 300 more calories than the others,” explains lead author Marci Gluck of the National Institute of Diabetes and Digestive and Kidney Diseases in Phoenix.

“There’s a lot of media attention paid to the idea that if you eat more late at night, you don’t burn off those calories,” notes Gluck. “I don’t know of studies showing that. In our study, the night eaters burned the same number of calories as those who didn’t eat at night.” They just ate more food.6

We need more research to know if eating at night causes weight gain, says Gluck. But, she cautions, “from a psychological perspective, nighttime is a trigger for some people to eat when they’re alone.”

Q: Is that because they stuck to their diets better?
A: Possibly. We think some people have a harder time adhering to a diet because it’s the wrong one for them metabolically.

Q: How can people tell if they’re insulin resistant?
A: It’s not easy to find out, but you’re more likely to be insulin resistant if you meet the criteria for the metabolic syndrome [see p. 3]. It’s exciting because it may explain part of the difference between success and failure.

If you just randomized everyone to one of several diets, the successes and the failures might cancel each other out and make it look like no diet was better than any other.

If you tease them apart, there’s a bigger difference.

Q: How much more could someone lose on the right diet?
A: We don’t know. It may be only an extra five pounds, but it could be considerably more. We won’t know until we finish our new year-long study on 600 people.

Q: Is insulin resistance common?
A: Yes. Roughly a third of the women in the A TO Z Study met the criteria for the metabolic syndrome.

So much of the country is now overweight or obese. That means that more people are insulin resistant. So if a low-fat diet—which is high in carbs—is worse for people who are insulin resistant, that diet is less appropriate now than it was before the obesity epidemic.

Q: Shouldn’t people with insulin resistance cut back on carbs anyway?
A: Yes. Cutting carbs, and especially added sugars, can help lower triglycerides, which is part of the metabolic syndrome.

Q: Does insulin resistance alone explain why people lose so little weight in most studies?
A: Not entirely. Another issue is that when we put people on low-carb or low-fat diets, we’re not very good at differentiating the diets.

If you look at the biggest and longest study—the Pounds Lost Study—it randomly assigned 800 people to four different diets for two years. The original design was elegant because the four diets had two levels of fat, two levels of protein, and four levels of carbs. But people didn’t adhere to the diets well.

Q: So in practice, the four diets weren’t that different?
A: Right. The weight-loss trajectories were identical in the four groups, and the diets eaten by all the participants were pretty similar. So why would you expect a different outcome?

In our new large study, we’re pushing people to huge extremes—Atkins, Ornish, even beyond that—but we’re anticipating and allowing them to scale it back, because people always do in these studies.

We’re asking them to go as low as they can in either fat or carbs. They haven’t been on the diets for 12 months yet, but boy, at six months we’re seeing really different diets.

Q: When will you have results?
A: Put it on your calendar to call me in 2017, and I’ll tell you what happened. It’ll be a long time before we have all 600 people on the diets for a year.

Q: What are the participants eating?
A: They’re high-quality diets. Some studies have tested a great low-carb diet and a crappy low-fat diet that is high in added sugars. Or they tested a great low-fat diet, full of plant foods, but the low-carb diet was whipped cream and butter. That’s not fair. If you want to compare diets fairly, you have to test the best of both.

Can our gut bacteria help explain why we’re fat or thin?

In one of the latest advances, scientists studied gut bacteria from pairs of twins in which one sibling was lean and one was obese. They transplanted the lean twin’s bacteria into one group of mice and the obese twin’s bacteria into another.

A month later, the mice that got the lean twin’s bacteria were still lean. But the mice that got the obese twin’s bacteria were fatter, even though they ate no more food.

Next came what the scientists called “the battle of the microbiota.” They housed each mouse that had been given what one could call the “slimming microbes” in a cage with a mouse that had been given the “fattening microbes.” (The mice had received the microbes only five days earlier, so those given the fattening microbes hadn’t yet gained weight.)

Since mice eat each others’ feces, their gut microbes got mixed. Which microbes won?

The slimming ones. They invaded the mice with fattening microbes, so all the mice stayed lean. One explanation: mice with fattening microbes (and obese people) have fewer and less diverse microbes in their gut than mice with slimming microbes (and lean people).

“We think the lack of diversity leaves open niches...that can be filled by microbes associated with leanness,” explained Jeffrey Gordon, director of the Center for Genome Sciences & Systems Biology at Washington University in St. Louis, according to the university’s Web site.

But there’s a catch: the slimming microbes invaded mice with fattening microbes only if the mice with fattening microbes ate a diet that’s high in fruits and vegetables and low in saturated fat.

“Eating a healthy diet encourages microbes associated with leanness to quickly become incorporated into the gut,” says Gordon. A diet high in saturated fat and low in fruits and vegetables “thwarts the invasion.”

Of course, mice aren’t humans. But preliminary findings in people are intriguing. For example, some studies find that Bacteroidetes bacteria are more common in lean people, while Firmicutes bacteria are more common in the obese, though other studies disagree. What’s more:

- Researchers put 12 obese people on a low-calorie diet for a year. As they lost weight, they acquired Bacteroidetes and lost Firmicutes.
- Scientists overfed 12 lean and 9 obese people for three days. Bacteria didn’t change in the obese people, but when the lean people ate 3,400 calories a day, their Firmicutes increased and their Bacteroidetes decreased.

What’s more, the lean overfed people who had a 20 percent increase in Firmicutes — and a 20 percent drop in Bacteroidetes — absorbed 150 more calories per day from their food.

How do microbes affect weight gain? The bacteria in Gordon’s lean mice digested more fiber, so they gave off more short-chain fatty acids than the bacteria in the obese mice. Short-chain fatty acids may cause less fat to accumulate in fat cells, boost calorie burning, and increase satiety hormones.

“It’s often harder to translate results across species than you might expect,” cautions co-author Rob Knight, a microbiologist at the University of Colorado.

“But it’s possible that we could eventually prevent or treat obesity by giving people the right microbes and the right diet.”

Q: Are participants told that all grains should be whole?
A: Yes, but not even whole wheat flour, which is processed. We’re encouraging people to eat wheatberries, barley, whole grain oats, steel cut oats.

And we advise people on both diets to minimize or eliminate added sugars.

Q: Why cut added sugar for everyone?
A: To keep the diets high quality. There are no nutrients in all those sugary products. Sugary processed packaged stuff isn’t...
real food. Once people figure out what their low-carb or low-fat level is, they need a high-quality diet that they can follow for the rest of their lives. Processed sugary foods are not high quality.

Q: Is the low-carb diet an Atkins diet?
A: No, but it’s similar. All the participants take eight one-hour classes to learn what to eat. And we’re telling people on both diets to eat a salad every single day. The carbs in salads aren’t that high. It’s a lot of water and a lot of nutrients.

And you can make salad low-carb and high-fat by putting nuts and seeds and avocados and real salad dressing on it. So they’re getting low-carb and diverse fiber at the same time.

Q: What do you mean by high quality?
A: We’re looking for quality on several levels. We’re pushing environmental sustainability as well as health. So we’re going for organic and seasonal vegetables and fruits, pasture-raised chicken and eggs, and grass-fed beef or pork. But if those are beyond their financial means, the key is minimally processed whole foods—chicken, not chicken nuggets.

Q: So people can eat meat and cheese, not just chicken and fish?
A: Yes. The low-carb diet is high in unsaturated fats like avocados, nuts, seeds, and regular salad dressing, but it’s also pretty heavy in animal products. We emphasize fish, especially from the Monterey Bay Aquarium’s list of sustainable seafood.

If they want cheese, we’d say don’t go for the Kraft Singles. Go for some cheese from grass-fed cows at your local farmers market, and don’t have a lot of it.

GENES, MICROBES, ETC.

Q: Are you looking at genetic differences between the groups?
A: Yes. In earlier studies, we identified a genotype for people who respond to a low-carb diet and a genotype for those who respond to a low-fat diet.

Using data from our A TO Z Weight Loss Study, we found that women who were matched to the right diet—say, women with low-carb-responsive genes who were assigned to a low-carb diet—lost more weight than those who were mismatched. We want to see if those differences hold up in our new study.

Q: So genes may make people respond better to one diet or another?
A: Right. And we’re looking at the microbiota—the microbes in your body, especially in your gut.

We have two simple hypotheses. One is that different microbiota profiles might help to explain differences in adherence to the diets and therefore differences in weight loss. The second is that going on a low-fat or low-carb diet might change the microbiota.

Q: Why would a diet change the microbes in a person’s gut?
A: The low-fat diet is going to have more fiber and good fiber, so it might have a beneficial effect on the microbiota. I don’t know if that’s true yet. We’re collecting poop as we speak. Then my colleague, Julie Parsonnet, a professor of medicine at Stanford, will profile the gut bacteria in the samples.

Q: What leads to healthy microbiota?
A: Healthy microbiota thrive on a high volume of diverse fiber. So we’re getting back to eating more plant foods. Another colleague, Justin Sonnenberg, an assistant professor of microbiology and immunology at Stanford, studies the effect of diet on microbiota in mice.

For example, when he feeds the mice a “no fiber” sugar diet, their microbiota deteriorates rapidly. On a low-fiber diet, their microbiota does a little better. But the mice fed a diet with large amounts of diverse fiber maintain a healthy microbiota. The animals fed no- and low-fiber diets recover to a healthy state once they go back to a high-fiber diet.

Q: Which foods have diverse fiber?
A: Whole grains, beans, vegetables, and fruit. And you won’t have to wait until 2017 for those results. We just did a pilot study where we collected poop from 100 people. In six months, we’ll see if it has changed.

Q: Are we at the point where we can tailor a diet to the individual?
A: No. But we all know two people who tried to follow the same diet the same way and one succeeded and one failed miserably. And now we’ve got insulin resistance, genotyping, microbiota. So I think we’re starting to untangle some of that mystery.

Q: What advice do you have for people while we’re waiting for more results?
A: At the moment, it’s still going to boil down to eat less added sugars. Whether you do low-carb or low-fat, when we focus on quality, we ask everybody to eliminate added sugars to the degree possible.

That means less processed packaged food and more cooking. I tell people to go to farmers markets more, because those words are somehow more intuitive than telling them to add up how many grams of unsaturated fat, how many grams of fish oil, how many grams of fiber, soluble or insoluble, glycemic index or load…my brain’s on overload.

So I say “Go to the farmers market and buy what’s fresh.” 🌼