



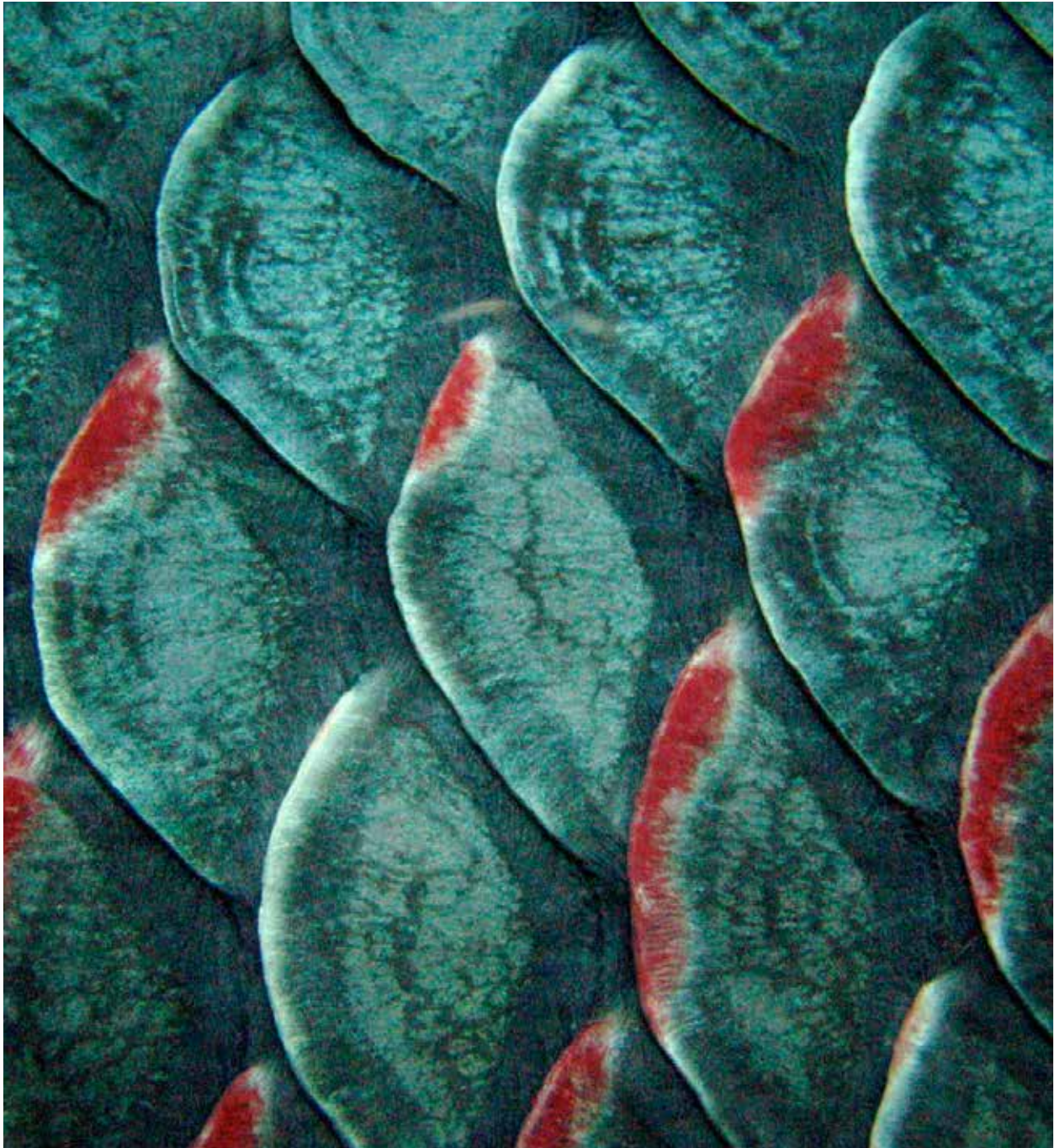
The Journal of the Palo Alto Institute

PAI is a 501(c)(3) nonprofit
creativity laboratory,
dedicated to the pursuit
and promotion of
unconventional truths
through research,
education and entertainment.

Vol. 10
December 2012

ISSN: 1948-7843

E-ISSN: 1948-7851



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Successful investing is about having an outlier view that's correct. If you have a correct view that's with the herd, it is unlikely you will generate excess returns. If you have an outlier view that's incorrect, you could lose a lot of money. Investing is being in the small intersection of truth and being an outlier.

This view, of course, is hardly a novel one. Chapter 3 of Robert Hagstrom's book *The Warren Buffett Way* is entitled "Mr. Market and the Lemmings" discusses the importance of not joining the herd, and contains the following passage about the herd instincts of lemmings:

"When confronted by barriers, the number of lemmings in the pack increases until a panic-like reaction drives them over the obstacle. As this behavior intensifies, lemmings begin to challenge other animals they normally would avoid. Although many lemmings die from starvation, predators, and accidents, most reach the sea. There they plunge in and swim until they die from exhaustion"

It's a great visual, except it was entirely made up. The visual of lemmings jumping over the cliff together was partly imprinted on the public consciousness through a 1958 Disney film *White Wilderness*, which won an Academy Award for Documentary Feature. The film was shot by 9 photographers over 3 years and the lemmings were imported to Alberta Canada, which is not their native habitat. Led by James R. Simon, a handful of lemmings were placed on turntables to create the illusion of a mass migration scene and were launched over cliffs.

Even though the fact that the events had been staged and biologists have long known that lemmings are solitary creatures except during migrations and stress (a feature common to many animals including humans) — the reputation of lemmings as the epitome of a foolish herd animal had been sealed. To this day, the visual of lemmings jumping over a cliff together is frequently used as a metaphor to describe people who go along unquestioningly with popular opinion, with potentially dangerous consequences.

The true story of lemmings, however, suggest that the erroneous use of the lemmings to exemplify unquestioning herd behavior — even respected investors like Warren Buffett use the lemming metaphor — is itself an example of unquestioning herd behavior. Mandelbrot would have enjoyed this intellectual fractal.

This would be yet another example of how people live with their “heads in the sand” like an ostrich — another popular visual except it’s also another fictional meme that no one bothers to fact check (yet another intellectual fractal).

Stress is the Mechanism by
Which Food Causes Human
Disease

Palo Alto Institute
November 27, 2012

Joon Yun

Something remarkable has happened to our food. The notion that food can affect our health has been around since antiquity, but fears about food have increased dramatically in the past half-century. The word “diet” used to mean the sum of food eaten, but today the word is associated with not eating. New pejorative phrases like “junk food” have been invented.¹ Many foods that have long been part of the human diet are now suddenly implicated in diseases. What’s going on?

Notably, all the diseases commonly attributed to food — heart disease, hypertension, diabetes, depression, inflammation, and obesity to list just a few — are without exception also associated with chronic stress. In addition, as chronicled by *Omnivore’s Dilemma*, *Food, Inc.* and others, virtually every aspect of modern food cultivation and distribution exposes animal and plant life to chronic stress. It’s time to ask the obvious question only a child would ask: is the chronic stress we are imparting on the food coming back full circle to stress us in a perverse rendition of “you are what you eat”?

Take dietary cholesterol, for example, which increases the risk of heart disease and other stress-mediated diseases. Chronic stress elevates serum cholesterol levels — not only in humans, but also among animals raised in the industrial complex, through a process mediated by cortisol. The net effect is that we impart chronic stress on animals; and when we consume the biochemical marker of that stress (cholesterol), we develop the exact diseases we would have developed had we been experiencing chronic stress.

Take dietary salt, which increases the risk of heart disease and hypertension. More recent studies have also implicated salt in diabetes and obesity.² Animals experiencing chronic stress — such as those raised in the modern industrial complex — retain salt. When we consume the biochemical marker of that stress (salt) we develop the exact diseases we would have developed had we been experiencing chronic stress.

Take dietary sugars, which increase the risk of heart disease and other stress-mediated diseases. We know that chronic stress elevates sugar levels in humans — condition known as diabetes that contributes to heart disease — through a process mediated by cortisol. It turns out that chronic stress also makes fruits sweeter through their stress hormone, ethylene, which is triggered when the fruit is plucked, bruised during transport, or cut during processing. To add insult to injury, ethylene is sprayed by grocers to make it look more luscious. The net effect: we impart chronic stress on fruits and when we consume the biochemical marker of that stress (sugars) we develop the exact diseases we would have developed as if we had been experiencing chronic stress.

Take dietary omega-6 fatty acids, which increase the risk of heart disease and other stress-mediated diseases. Plants respond to chronic stress by raising their levels of omega-6 fatty acids, a process driven by ethylene.³ Animals don't make omega-6 fatty acids and only acquire them through their diet. When farmed animals and fish are fed a plant diet that has undergone tremendous processing and stress, such as refined corn, their omega-6 fatty acid levels go up. When we impart stress on corn, the biochemical markers of that chronic stress (omega-6 fatty acids) flow through the industrial food chain to cause the exact same diseases in us as if we had been directly experiencing that stress.

The use of biochemicals of one species by another species that consumes it is called “xenohormesis”⁴. Sensing ecosystem stress

through species-to-species molecular messengers in the diet to convert oneself into a stressed phenotype (fat) is adaptive in nature. In natural environments, impending winter sweetens fruits through ethylene to promote seed dispersal and fattens animals for the winter through cortisol. Fatty and sweet foods are most available in autumn, and the consumption of such foods would raise the cortisol level in humans and fatten them in preparation for winter.

Thanks to the modern industrial food complex, however, today salty, sweet, and fatty foods are available and can be consumed year-round. As a result, people now take on the stress phenotype (high cortisol levels and fat, diseased bodies) as if they are preparing for a year-long winter — a clear Darwinian maladaptation in a world where food is generally available plentifully year-round.

While the potential health risks of salt, cholesterol, sugar, and omega-6 fatty acids are well publicized, there may be other molecular messengers of stress lurking in our foods. For example, chronic stress experienced by hens leads to increased levels of the stress hormone corticosterone in their eggs.⁵ Corticosterone is ingestible and carries forward the hormonal effects onto the consuming animal.⁷ It is well known that human who consume synthetic cortisol analogues long-term develop heart disease, hypertension, diabetes, depression — essentially all the diseases associated with chronic stress. Nonetheless, cortisol is not among the biochemical markers measured in meat or eggs by the USDA.

Similarly, human consumption of the plant stress hormone ethylene warrants further investigation. Old scientific data from the 1920s when ethylene was used as an anesthetic suggest that it has many biologic effects on humans including hypertension, pain relief, and water retention, which also happen to be some of the effects of cortisol.^{7,8,9} Today, over 100 million metric tons of ethylene is synthesized each year — making it the most commercially-synthesized

chemical on the planet — for various industries including the food industry.¹⁰

So what can we eat? A low-stress diet is about focusing on the quality or character of the food irrespective of what type of food it is. Specifically, provenance of the food matters. How was it treated? What was done to it?

Think about what is least likely to cause stress to our food. Macro whole foods would be better than processed foods. Natural plants grown in-season and in ecologically-appropriate context and soil would be preferred. Animals raised in cage-free, free-range conditions and fed grass instead of a highly-processed diet would be preferred. Wild meats would be better than farmed. As freezing and heating can cause oxidative stress on foods, raw foods might be preferable in some situations. Long transport times and distances also induce oxidative stress on plants and animal foods, so local foods eaten as close to the vine or farm would be ideal.

In science, when tackling big problems, it behooves us to look for the most elegant solutions — the Occam's razor — that explain the largest number of cases. Indeed, Low-Stress Food could be the unifying paradigm that mechanistically links the health benefits of the diverse array of food movements including organic foods, local foods, "slow foods", vegetarianism, raw foods, in-season foods, non-GMO foods, macrobiotics, unprocessed foods, natural foods and free-range meats. It is a fundamental framework that enables the generation of novel hypotheses and scientific experiments.

Here are some specific recommendations:

- Buy in-season produce at local farmers markets. Since it's local and recently harvested, less ethylene will have been produced.
- Support humanely raised animals, without added hormones or antibiotics.

- Beef should only ever be free-range and natural grass-fed, preferably a diet high in omega-3 fatty acids.
- Pork and poultry should be free-range and vegetarian-fed, preferably a diet high in omega-3 fatty acids.
- Eggs should come from free-range, vegetarian-fed hens, preferably a diet high in omega-3 fatty acids.
- Eat wild or line-caught fish. Avoid farmed fish raised on high omega-6 diets.
- Buy extra virgin olive oil. First pressed olives from healthiest trees have higher omega-3 fatty acid.
- De-stemming induces plant stress response. Eat as close to the vine as possible.
- Cut food as little as possible as it triggers ethylene-mediated stress response. If it has to be cut, eat it as soon as possible.
- Avoid leftovers, over-ripe or stale foods which are all high in ethylene.
- Ask your grocer if ethylene is sprayed on produce.
- Avoid fried foods or high-heat cooking. Cholesterol that undergoes stress oxidation causes more cardiovascular disease.
- Think twice about desserts. Most desserts (ex: ice cream and donuts) are made by combining fat and sugar — two molecular messengers of stress that are so powerful they virtually never occur together in nature.

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