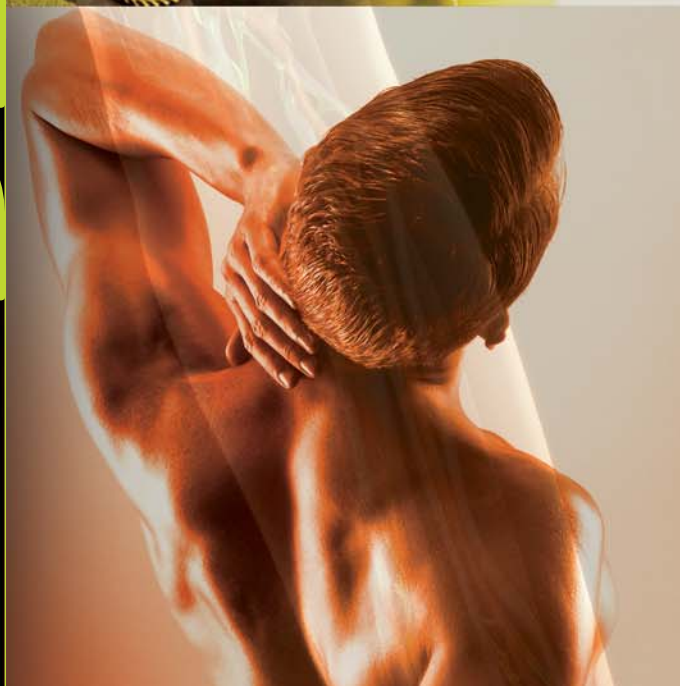


Your
immune
system
works to keep
you healthy
24 hours a day.
Here's how to
help it operate at
peak efficiency.

DEFENSE

The BEST



What should have been a kid's paradise wound up being a forbidden playground for Thomas Rau. Growing up in the mountains of Switzerland, Rau suffered from eczema, allergies and severe asthma, all of which prevented him from enjoying the outdoors. Instead, his life revolved around inhalers, antihistamines and cortisone shots.

When Rau, MD, HMD, now a world-renowned physician, started his medical practice at the Paracelsus Clinic in Lustmühle, Switzerland, he began to study how diet, exercise and other lifestyle factors affect the immune system. His research soon allowed him to control his allergy symptoms, but he still needed an inhaler.

Then, 10 years ago, during a routine dental checkup, his dentist discovered that Rau had two improperly sealed mercury fillings. "It was a eureka moment," says Rau, the author of *The Swiss Secret to Optimal Health* (Berkeley, 2007). "The toxins from the fillings had been disabling my immune system."

Ever since Rau ditched those fillings, he has celebrated a life completely free of allergies and asthma. "I love my life," he says. "I hike, I drive my convertible with the top down, and I even bought myself a motorbike."

Before he fine-tuned his immune system, Rau was one of a vast number of people who find themselves at the mercy of health problems — from autoimmune diseases and allergies to chronic infections and cancer — that result directly or indirectly from immunity-supporting biological systems that are either too protective or not protective enough to do their intended jobs properly.

Having a healthy immune system translates into better protection from disease and an overall sense of vitality and well-being. A weakened immune system, on the other hand, not only makes us more vulnerable to a variety of diseases and opportunistic infections, it can also contribute to interrupted and fitful sleep, feelings of moodiness and depression, excessive muscle pain, slow-healing wounds, fitness limitations, and a general feeling of fatigue and lethargy.

If you find yourself catching every cold that swirls around the office — or suffering from a host of health problems you can't seem to get on top of — it might be time to reevaluate how well you're respecting and reinforcing your body's natural defenses.

DE-FENSE! DE-FENSE!

Boosting your immune system can yield rich dividends, but it's not as easy as popping a pill. The immune system is incredibly complex, involving and affecting virtually every cell, tissue and organ in your body, says Elson Haas, MD, founder and director of the Preventive Medical Center of Marin in San Rafael, Calif., and author of *Staying Healthy with Nutrition* (Celestial Arts, 2006).

Thus, improving a sluggish or compromised immune system generally requires a multipronged approach, one that may include nutrition, activity, and other lifestyle-

related adjustments. It also requires at least a general understanding of how your immune system works — and where it can get hung up.

IMMUNITY ESSENTIALS

In super-simple terms, the immune system is responsible for distinguishing between "self" and "non-self." It then responds accordingly — supporting and defending the parts it perceives as "you" (your cells, tissues, organs, etc.), and blocking or attacking anything it perceives as "not you."

Our bodies' first line of defense in this effort is known as the "innate" immune system, which includes skin, hair, eyelashes, stomach acid, sweat, tears, and cilia (small fibers) in your lungs and nose.

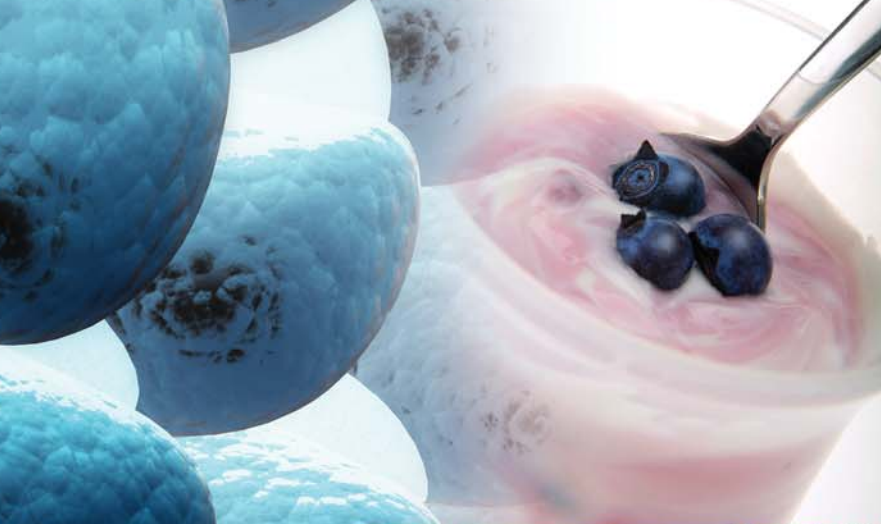
The second line of defense is the "adaptive" immune system, which includes antibodies, antigen presenters (dendritic cells and macrophages), attack cells (lymphocytes), and your own SWAT-like surveillance team of proteins and peptides (cytokines).

Fully 60 percent of your adaptive immune system resides in your small intestine. But the spleen, lymph nodes, thymus, tonsils, adenoids, appendix and bone marrow also act as key staging grounds for these adaptive cells.

Our immune system requires ongoing maintenance to function properly; if it doesn't get it, the immune response can malfunction in one (or more) of four ways:

- **Overresponse to External Stimuli:** When the immune system overreacts to antigens in the environment, allergic reactions — including eczema, and allergies to food, the environment and toxins — are the typical result.
- **Underresponse to External Stimuli:** When the immune system slacks on its job of countering microbes, you become more vulnerable to parasitic, bacterial, fungal and viral infections, including things like *Staphylococcus aureas* (staph infection), cold virus, herpes (caused by the herpes simplex virus) and toxoplasmosis.
- **Overresponse to Internal Stimuli:** A misguided or confused immune system can start attacking healthy organs and tissues, creating autoimmune diseases, such as lupus, rheumatoid arthritis, scleroderma (a connective tissue disease), dermatomyositis (a muscle disease) and inflammatory bowel disease.
- **Underresponse to Internal Stimuli:** If the immune system fails to recognize and clear out irregular cells, those cells can grow and multiply out of control, potentially leading to cancer — any one of 200 diseases that have the ability to invade and damage normal tissues. Ironically, the immune system is sometimes the source of the overgrowth, in the case of leukemias and lymphomas.

While the immune-supporting strategy that's best for you will depend on the nature of the immune-system →



challenge you're facing, many of the most essential elements of immune boosting have their roots in the same tactics that support good basic health. These include things like prioritizing good nutrition and healthy digestion, avoiding toxins, minimizing stress, and giving your body ample opportunity to recover from the demands you place on it every day.

GUT REACTION

The small intestine functions as the epicenter of the adaptive immune system. Here, billions of healthy bacterial organisms kill off invading bacteria; help digest food; produce immune molecules, vitamins and cancer-prevention compounds; and even help to regulate your hormonal metabolism. (For more on how to build a healthy gut, see "Good Bacteria Welcome" in the July/August 2007 archives at experiencelifemag.com.)

A healthy person has about 3 pounds and 500 different species of good bacterial flora, which Rau compares to moist, black topsoil, infused with rich compost and swarming with earthworms. But depending on diet, exercise, stress and toxicity, the body's flora can be diminished — think crumbly, dry, nutrient-depleted dirt. The difference represents nothing less than the body's ability to effectively fight disease.

"In good soil, a weak plant has a chance of living," says Rau. "But if you have bad soil, even a strong plant may not survive."

The most effective way to build up that good flora? A diet rich in plant foods and fiber will nourish your bacterial flora and supply your immune system's other nerve centers with a steady supply of antioxidants, vitamins, minerals, amino acids and other nutritional goodies.

For example, allicin, a phytonutrient found in the onion family, deters the growth of cancer cells; sulforaphane, a phytonutrient in broccoli, Brussels sprouts and cabbage, speeds up enzymes that break down carcinogens; and lutein, a carotenoid phytonutrient in spinach, green peas and avocados, slows macular degeneration. The alpha-carotene in carrots, winter squash and cilantro helps to block cell damage caused by free radicals.

The highest concentrations of these nutrients are found in high-quality whole foods. It's also a good idea to fill your tank with gut-friendly fermented foods such as yogurt, tempeh, miso and sauerkraut, which lower the pH of the large intestine to its healthy range of 5.5 to 7.0, which deters harmful bacteria.

Bacterial flora can also get a boost from probiotic supplements: live bacterial organisms ingested orally. Look for tested brands with



Careful manufacturing and shipping procedures. If it has to be refrigerated, that's a good sign. For general immune support, Haas prescribes between 5 billion and 10 billion organisms per day for people with average diets and exercise regimens.

ON PATROL

Your body comes equipped with one particularly vigilant security guard: your gut-associated lymphoid tissue, or GALT, that lies just under the lining of the intestinal tract. The GALT, specifically the secondary lymphoid organs called the Peyer's patches, surveys material coming across the gastrointestinal tract and identifies each organism as friend or foe. The GALT then sends supply orders for antibodies and other immune responses.

But things can go awry with the GALT. For example, the soft mucus barrier between the GALT and the contents of the intestines could be compromised if you're not ingesting enough fiber or essential vitamins, or if you're taking antibiotics; acid-blocking compounds such as Pepcid, Prilosec OTC and Tagamet HB 200; or anti-inflammatory compounds such as Anacin, Bayer and ibuprofen. In some people, the barrier is so weakened that gut contents (bacteria, food particles, toxins) can leak onto the GALT, leading to Leaky Gut Syndrome.

"Basically, your outside environment suddenly gets exposed to your inside environment, and your immune system goes, 'Agggghh!'" says Mark Hyman, MD, author of *The New York Times* bestseller *UltraMetabolism: The Simple Plan for Automatic Weight Loss* (Scribner, 2006). In response, the immune system might overreact. In extremely severe cases, the body can go into sepsis, an overwhelming infection that can lead to death.

Rau and Hyman also believe that your GALT can be compromised if you eat food to which you are allergic or intolerant. These experts estimate that between 70 and 80 percent of Westerners may unknowingly be suffering from a food allergy or sensitivity.

Introducing these food allergens into your system puts your GALT in the uncomfortable position of fighting a war on two fronts, says Rau. "The army gets weak because it's permanently trying to fight a war inside against your unknown food allergy, and then you begin losing the war against the bad bacteria or the virus that comes in from the outside."

The scientific data connecting food allergies to the function of the gastrointestinal immune system has been a topic of lively debate for many years, but the theory got a significant boost in February 2007 when the journal *Nature* published a University of Pennsylvania School of Veterinary Medicine study indicating that mouse epithelial cells, part of the intelligence-gathering GALT, seem to react when exposed to known food allergens.

To strengthen your GALT, avoid allergens and irritants whenever possible, take a daily multivitamin with immune boosters such as zinc and vitamin C, eat whole plant foods with plenty of fiber, and take probiotics daily.

Also, take the time to slow down and chew. By giving that nutritious bite a good working over, says Haas, you dramatically increase your digestion capabilities.

Meanwhile, if you suspect that you might be suffering from a hidden food allergy that is compromising your immune response, consider an elimination diet to pinpoint the source. Hyman offers a seven-day elimination diet that specifically targets immune-related food allergens. (You can find out more at www.ultrasimplifiediet.com.)

REDUCE YOUR TOXIC LOAD

As you revamp your immune system by tuning in to the health of your intestinal flora, checking up on possible hidden food allergies, and upping your intake of whole, gut-friendly foods, it's also important to consider that there's a whole world of other toxins that are affecting your body's defensive and offensive moves. Rau had to learn that the hard way, with his mercury dental fillings.

"I think it's fair to say that the second-most frequent cause of chronic diseases in our clinic comes from the buildup of toxins like heavy metals and food preservatives," he says. It's useful, Rau adds, to imagine an empty oil drum inside your body that is equipped to handle and process a limited amount of toxins. But some people are exposed to so much waste — junk food toxins from poor-quality food, pesticide residues, stress chemicals such as adrenaline and cortisol, industrial chemicals, and secondhand smoke, to name a few — that the oil drum inside their body overflows.

Of all the toxins you can put in your body, stress is one of the worst. Rau has connected high stress levels with increased activity in the "sympathetic tonus" (muscle contractions of the sympathetic nervous system), which shows that the adrenal system has been working too hard. Long term, says Rau, this can cause cancer or chronic disease.

A 2001 study published in the *Journal of Interferon and Cytokine Research*, which tested first-year medical students for the production of "immune molecules," such as cytokines and chemokines, after a major exam, found that the stress of test-taking markedly affects the body's immune-cell distribution and its ability to fight off disease.

Of course, no matter how well intentioned we may be about taking it easy, most of us face stress at one time or another. Lack of sleep, airplane travel, surgery, emotional extremes and exposure to environmental chemicals, for example, can all knock your immune system down a notch. So when you know your schedule or activities will probably stress your immune system, make sure to be particularly →

Of all the toxins you can put in your body, stress is one of the worst.

mindful of your diet and fortify your body with multivitamins and probiotics. Get extra rest, meditate, indulge in some massage or bodywork, and avoid irritants and toxins.

Exercise is another excellent way to boost your immune system. Movement increases the capacity of the glands, improves circulation, reduces stress and boosts adrenal function. Among the multitude of studies connecting immune health with exercise, an April 2007 study in the *Journal of the American Geriatrics Society* found that older people (ages 59 to 86) who regularly practiced the Chinese martial art of tai chi significantly decreased their risk of contracting the varicella zoster virus, which causes shingles.

Finally, don't overlook the power of your emotional life and relationships. According to a study published in the January 2007 issue of *Psychosomatic Medicine*, women who had difficulty establishing close relationships had lower activity in their natural killer cells. Additional research by the same team found that women without close relationships were more likely to develop immune-related skin disorders such as plaque psoriasis (scaly patches on the skin) and alopecia areata (an autoimmune disease that causes hair loss).

You'll find that caring for your immune system goes far beyond the physiological rewards of resiliency and vitality. There's also the added sense of empowerment that comes from working *with* your body to protect your body.

"Preventive medicine is about truly caring about yourself," says Hyman, "and knowing that you're worth all the self-love." ●

Alyssa Ford is a St. Paul-based writer and editor.

For more tips on how to improve your immune system, check out the following articles, available in the online archives at experiencelifemag.com: "The Way of the Healthy Person" (January/February 2006), "Owning Your Health" (January/February 2003) and "Grant Yourself Immunity" (November/December 2003).

BIG BOOSTS

Top 5 Immune System Turn-Ons

1

WHOLE FOODS AND H₂O. The body doesn't ask for much — mostly water and regular feedings that supply vitamins, minerals, fatty acids, enzymes, antioxidants, fiber and phytonutrients. Respect its simple demands, and your immune system will serve you valiantly.

2

STRESS RELIEF. Excess stress overworks your adrenal system and slows the production of immunity molecules. Help your body cope by setting work-life boundaries and by getting regular exercise, bodywork, and regular periods of rest and recovery. Bond with loved ones and get the support you need.

3

HAPPY GUT FLORA. Good nutrition and lifestyle habits help boost the intestinal flora that defend you from invaders. A regular dose of probiotics can help, too. (See "Good Bacteria Welcome" in the July/August 2007 archives at experiencelifemag.com.)

4

TOXICITY REDUCTION. All the working parts of the immune system, from the antibodies to the macrophages and T-cells, have very specific job descriptions that can be stalled by the presence of heavy metals, chemicals and preservatives. Remove these chemical roadblocks and you'll help your immune system work as it was designed to.

5

IRRITANT ELIMINATION. Functional medicine expert Mark Hyman, MD, believes that up to 70 percent of the American population is intolerant to one or more foods they eat regularly. The "sensitive 7," as he calls them, include dairy, nuts, eggs, soy, sugar, corn and wheat. Early research into anti-food-allergen drugs is under way, but right now an elimination diet is considered by many experts to be the best detection method.

