Experts have identified **key nutrients** that actually help you **stay sharp as you age**. Did you **feed your brain right** today?

The Right Nutrients to Age-Proof Your Brain

BY JULIA TOLLIVER MARANAN

YOU DON'T HAVE TO LOSE BRAIN POWER AS YOU AGE. The cognitive decline often associated with aging—like memory loss and lack of sharpness—is not inevitable if you eat the right foods and take certain supplements, say experts. "Nutrients can have a tremendous impact on brain health," says Gary Small, M.D., director of the Center on Aging and the Memory Clinic at the University of California at Los Angeles and author of *The Memory Bible* (Hyperion, 2002).

In addition to a diet rich in whole foods, like fruits, vegetables, and unprocessed grains, experts recommend the following key vitamins, minerals, and fats to keep your brain at peak performance at any age. If these nutrients don't regularly appear on your plate, add them now. >>

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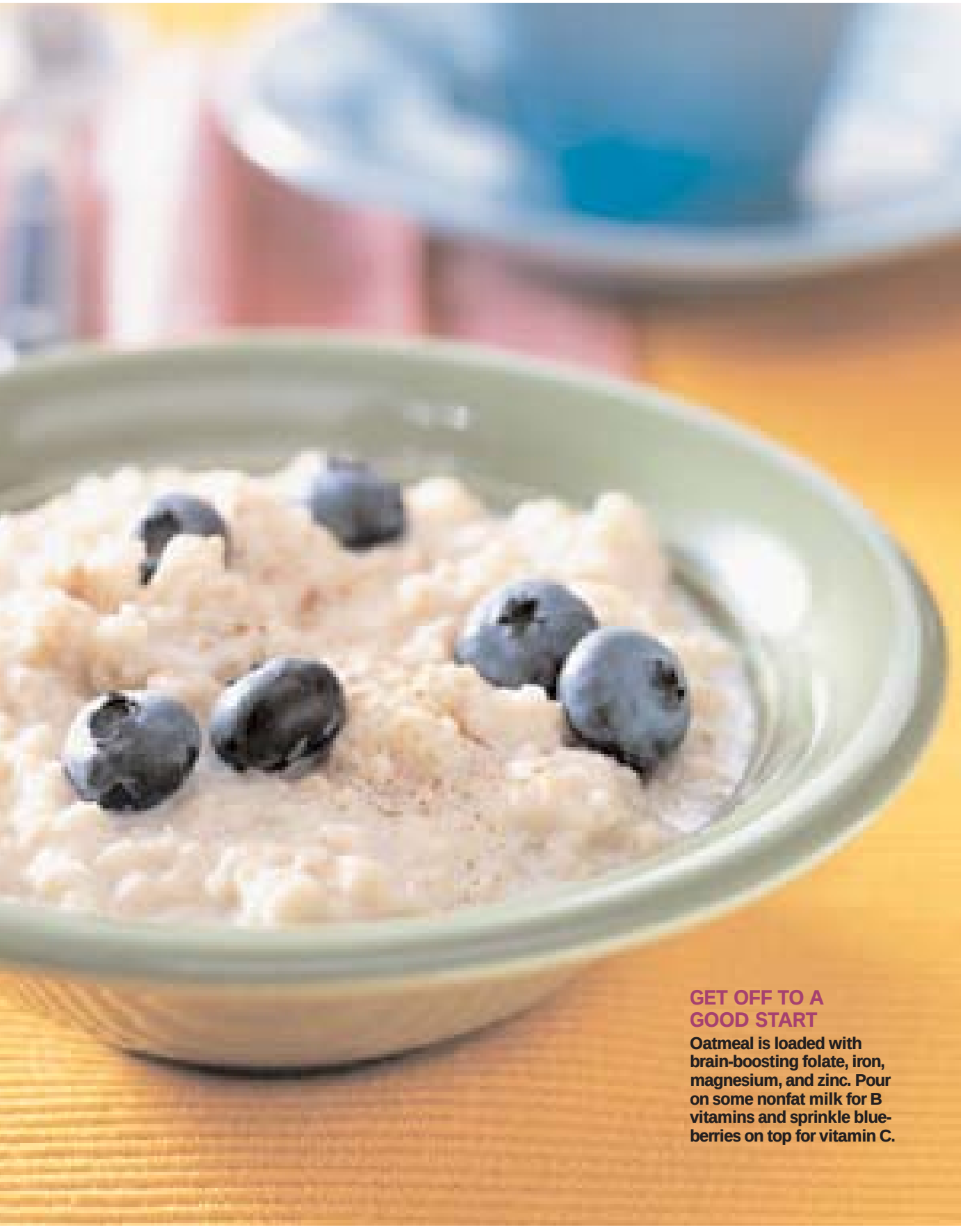

GET OFF TO A GOOD START

Oatmeal is loaded with brain-boosting folate, iron, magnesium, and zinc. Pour on some nonfat milk for B vitamins and sprinkle blueberries on top for vitamin C.

Did You Eat **Plenty of Bs** Today?

◆ **WHAT B VITAMINS DO FOR YOUR BRAIN:** All B vitamins help your brain cells talk to each other by assisting with the production of neurotransmitters like dopamine and serotonin, experts say. And vitamin B_{12} helps produce the neurotransmitter acetylcholine, which allows nerve cells to transmit memory messages, says Elisa Lottor, Ph.D., N.D., a naturopath in Los Angeles and author of *Female and Forgetful* (Warner Books, 2002). Studies have linked a shortage of B_{12} to an increased risk for Alzheimer's disease or Alzheimer's-like symptoms, including memory loss. A 1992 study in *Clinical Therapeutics* showed that those symptoms diminished when subjects received injections of vitamin B_{12}.

Research also shows that B vitamins—especially B_6, B_{12}, and folate—lower levels of artery-hardening homocysteine in the blood. Too much of this substance can lead to memory problems and Alzheimer's disease, according to a 2002 study in the *Journal of Nutrition, Health & Aging*.

Folate helps protect nerve cells in adults, Small says. In fact, a 2001 study published in *Neurology* linked low levels of folate to an increased risk of developing Alzheimer's disease.

◆ **BEST WAYS TO GET THEM:** If you eat a balanced diet and take a multivitamin that provides 100 percent of all the B vitamins, you're likely to get enough of the Bs. Foods rich in B vitamins include dairy products, eggs, fish, lean meats, legumes, and nuts.

But if you're over 50, you may not produce enough stomach acid to properly absorb B_{12}, so experts suggest that everyone in this age group take an extra 100 mcg of B_{12} (your body will flush out any excess). Some older adults have low levels of a substance in the stomach called the intrinsic factor, which also helps you absorb B_{12}, Lottor says. If you don't produce enough intrinsic factor, you can't absorb B_{12} from food or supplements, so your doctor may suggest B_{12} injections, says Guy McKhann, M.D., professor of neurology and neuroscience at Johns Hopkins University School of Medicine in Baltimore and co-author of *Keep Your Brain Young* (John Wiley & Sons, 2002). If you supplement with B_{12} but have memory problems, ask your doctor to test for an intrinsic-factor deficiency.

LUNCH RIGHT **Make a chicken sandwich on whole-grain bread and pile it high with vegetables like avocado and tomato. You'll be lunching on good-for-your-brain nutrients like B vitamins, magnesium, and vitamins C and E.**

Did You Lunch on **Antioxidants?**

◆ **WHAT ANTIOXIDANTS DO FOR YOUR BRAIN:** Antioxidants fight excess free radicals, which cause the oxidative damage that can interfere with how brain cells process nutrients and can lead to cell death. "As part of the brain's metabolism, you accumulate what we call oxidative products, a little like rust in a pipe. Antioxidants help prevent you from accumulating brain rust and may help you get rid of any rust that's formed already," McKhann says.

Excess free radicals wear out your brain cells and keep them from communicating with each other, which leads to memory loss, says Small. A study published in the *Journal of the American Geriatric Society* in 2000 found that not getting enough antioxidants may increase your risk of cognitive decline.

To keep memory problems at bay, experts agree that the most important antioxidants are vitamins E and C. These powerful antioxidants protect your neurons from free radical damage, says D.P. Devanand, M.D., co-director of the Memory Disorders Center at Columbia University in New York City and author of *The Memory Program* (John Wiley & Sons, 2001).

Vitamin E has the most research to support its role in preserving memory. A study in the *Archives of Neurology* in 2002 found that in a group of 2,889 adults over the age of 65, subjects who had the highest vitamin E intake had the lowest rate of cognitive decline. And a 1997 study in the *New England Journal of Medicine* reported that subjects with moderately severe Alzheimer's who received 2,000 IU per day of vitamin E slowed the progression of the disease.

The effects of vitamin C on memory haven't been studied as much, but the *Journal of the American Medical Association* published a study in 2002 that found that a high dietary intake of vitamins C and E may reduce the risk of Alzheimer's disease. And several studies have found that patients with

EVAN SKLAR/FOODPIX

Alzheimer's or dementia have low levels of vitamins C and E.

◆ **BEST WAYS TO GET THEM:** Antioxidants from foods might be even more protective than vitamin supplements, Small says, possibly because other substances in the foods work together to increase the antioxidant activity. So eat five to nine servings of fruits and vegetables daily. Those that are particularly high in E include almonds, avocados, and sunflower seeds; vitamin C-rich foods include broccoli, kiwi, and red peppers. However, vitamin E is difficult to get solely from diet, so experts recommend supplementing daily with 400 to 800 IU of natural vitamin E (d-alpha tocopherol); if you take blood thinners, talk to your doctor before taking vitamin E. Some experts also recommend taking 500 to 1,000 mg of C daily in two doses.

Are **Mineral-Rich** Foods on Your Plate?

◆ **WHAT MINERALS DO FOR YOUR BRAIN:** The minerals magnesium, iron, and zinc show promise on several fronts for maintaining brain health. "Magnesium seems to be important for maintaining normal brain activity," says James G. Penland, Ph.D., research psychologist and supervisor of the Mineral Element, Nutrition, Neuropsychological Function, and Behavior Research Lab at the Grand Forks Human Nutrition Research Center in North Dakota. A 1996 study in *Procedures of the North Dakota Academy of Sciences* showed that a low magnesium intake was linked to poorer scores on memory tests in rats, and Penland notes that low levels have also been associated with decreased cognitive function in humans.

Magnesium also helps stabilize your brain wave patterns and increases blood flow to your brain, says Jacob Teitelbaum, M.D., director of the Annapolis Research Center for Effective FMS/CFS Therapies in Maryland and author of *From Fatigued to Fantastic!* (Penguin Putnam, 2001). People who have a shortage of magnesium, says Teitelbaum, may notice problems with memory and thinking clearly, commonly described as "brain fog."

Iron and zinc both play significant roles in your ability to concentrate, especially on demanding tasks involving memory and reasoning, says Mary Kretsch, Ph.D., research physiologist with the government's Western Human Nutrition Research Center in Davis, Calif. Researchers don't know exactly how iron and zinc affect your mental function, but recent studies indicate that even a slight deficiency will show up right away as a problem with memory and attention span, even before a blood test can detect low levels, Kretsch claims.

A *Pediatrics* study in 2001 found that adolescents who were iron-deficient did worse on math tests than their counterparts with normal iron levels. The *British Journal of Nutrition* published a study in 2001 that showed that a zinc deficiency can interfere with communication between brain cells. And Kretsch's research indicates that there's a direct relationship between iron and zinc levels and poor attention and memory: People with the lowest amount of those minerals also have greater cognitive difficulties. Kretsch is currently studying if cognitive impairment can be reversed by increasing levels of iron and zinc through diet and supplementation.

Even a slight deficiency in iron and zinc may show up right way as a problem with memory and attention span.

◆ **BEST WAYS TO GET THEM:** You can get your recommended daily allowance of magnesium (400 mg for men and 310 mg for women) by eating foods like artichokes, avocados, legumes, nuts, and whole grains. Some medications, like diuretics, interfere with magnesium absorption; if you're concerned, ask your physician.

You can also meet your iron and zinc requirements with diet. Women ages 19 to 50 need 18 mg of iron a day (postmenopausal women need no more than 8 mg daily) and 8 mg of zinc. Men usually need 8 mg of iron and 11 mg of zinc daily. These two minerals tend to occur in the same foods, and good sources for both include lean red meat, legumes (including soybean products like tofu and tempeh), poultry, and whole grains.

If you think your diet has shortcomings, you can take magnesium and zinc in supplement form (like in a multivitamin). However, before you

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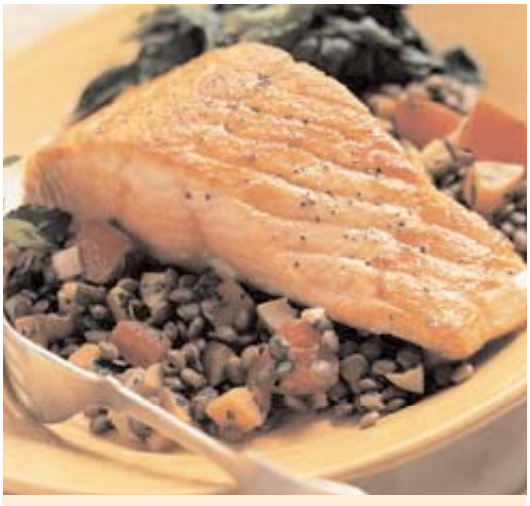

DON'T FORGET DINNER Dine on grilled salmon and you'll feed your brain a day's worth of omega-3 fats. Round out your meal with lentils for even more brain-healthy nutrients.

BRIAN HAGIWARA/FOODPIX

Continued from page 67

supplement with iron you should ask your physician to test your blood levels of iron, says Kretsch. Some studies suggest that excess iron may be associated with coronary heart disease, although other studies show no such connection.

Calcium, fiber, and certain other nutrients abundant in plant foods can block zinc absorption, so if your diet is rich in these substances you should supplement with a multivitamin containing the daily requirement of zinc.

What Kind of **Fat** Did You Eat Today?

◆ **WHAT OMEGA-3 FATS DO FOR YOUR BRAIN:** Fats, and especially the omega-3 fatty acid docosahexanoic acid (DHA), make up a large part of the lining of your brain cells; a diet rich in omega-3 fats helps keep that lining flexible so that memory messages can pass easily between cells, says Ray Sahelian, M.D., a Marina Del Rey, Calif.-based general practitioner and author of *Mind Boosters* (St. Martin's Griffin, 2000).

A study published in *Lipids* in 2000 reported that people with low levels of omega-3 fatty acids may have a higher risk of dementia or cognitive impairment, including memory problems. Researchers also found low levels of DHA in patients suffering from age-related cognitive decline and Alzheimer's disease. A 2001 study in the *Journal of Molecular Neuroscience* showed that increasing DHA intake can reverse some of the mental decline associated with Alzheimer's.

Omega-3 fats also reduce the inflammation that can damage the blood vessels and nerve cells in the brain, Lottor says.

◆ **BEST WAYS TO GET THEM:** You should eat foods rich in omega-3 fats every day. Good sources include cold-water fish like salmon, sardines, tuna, and trout; flaxseed oil; and eggs high in DHA (from algae-fed chickens). If you can't eat these foods every day, consider supplementing with 1,000 mg of fish oil or flaxseed oil. ●

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