

## Biomedicine

John Travis reports from San Diego, Calif., at the annual meeting of the Society for Neuroscience

### Molecular visions help rodent eyesight

In rats, a molecule called nerve growth factor (NGF) can partly substitute for the early visual experiences that usually guide the proper development of vision, researchers report. That surprising finding came in a study of newborn rats kept in darkness in the weeks after birth.

Normally, such rodents have permanently impaired eyesight, lending credence to the idea that the normal maturation of brain regions crucial to vision depends on early visual stimuli. Further evidence for that premise comes from infants whose eyes are clouded at birth by cataracts. They suffer lifelong visual problems if the cataracts are not promptly removed.

To determine NGF's role in visual development, investigators implanted capsules containing cells that secrete the protein into the brains of newborn rats that were then reared in darkness. In a battery of visual tests, including ones where scientists directly monitored the reaction of brain cells that process visual input, the NGF-treated rats fared better than untreated, dark-reared rats. In some tests, such as measures of visual acuity, the treated, dark-reared rodents actually performed as well as normally raised rats, reports Tommaso Pizzorusso of the Institute of Neurophysiology in Pisa, Italy.

Carla J. Shatz of the University of California, Berkeley notes that interpreting these experiments may be difficult, because NGF belongs to a family of molecules called neurotrophins. NGF may have merely mimicked the function of another neurotrophin. "The problem with all these molecules is that they're highly similar," cautions Shatz.

Still, she says, the Italian study is one of many recent efforts showing that NGF and the other neurotrophins do more than keep neurons alive and growing. "They may have many roles. This is cool and really new," says Shatz.

### Imaging hyperactive brains

The child is fidgety and impatient, interrupting conversations and ignoring the comments of others. Easily distracted, he has trouble finishing what he starts or makes careless errors along the way. The parents and family physician face a difficult question: Does the boy have attention deficit-hyperactivity disorder (ADHD), the most commonly diagnosed psychiatric condition among children?

To help resolve such questions and understand what creates the disorder, investigators are studying the brains of ADHD children. In the largest brain imaging study of ADHD children thus far, researchers from the National Institute of Mental Health (NIMH) in Bethesda, Md., have identified three regions of the brain that differ between ADHD and normal children. "The differences are small but robust," says F. Xavier Castellanos of NIMH, who led a group that used a technique called magnetic resonance imaging to compare the brains of 55 healthy boys and 57 with ADHD.

In the three identified brain regions, which have been implicated previously in the control of inhibition, planning, and decision-making, there is normally an asymmetry in volume between the left and right hemispheres of the brain, with the right side of each region being larger. But in the ADHD boys, says Castellanos, that asymmetry was absent. On the right side of the brain, all three regions were smaller than normal, and thus comparable to their counterparts in the left hemisphere.

Castellanos cautions that these observed differences cannot yet serve as a diagnostic tool. The disparity in brain regions may not even be a cause of ADHD but a result of treating it: Most of the studied ADHD boys took stimulants such as Ritalin to alleviate their symptoms. For a future study, the NIMH investigators are gathering a group of ADHD boys who have not taken any medication for their behavioral difficulties. They also plan to look at girls with ADHD, says Castellanos.

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Lisa Seachrist reports from Anaheim, Calif., at the annual meeting of the American Heart Association

### Eggs fit into heart-healthy diet...

At least one-half of the traditional eggs-and-bacon breakfast can show up again on the plates of some people with high concentrations of cholesterol in their blood. A new study by researchers from the University of Washington in Seattle finds that eggs needn't be off-limits for some people with elevated cholesterol as long as they stick to a low-fat diet.

The team studied 161 men and women who had either elevated cholesterol or a combination of elevated cholesterol and elevated blood triglyceride concentrations. For 12 weeks, the participants added either two eggs or the same amount of egg substitute to a diet with less than 30 percent of its calories from fat. At the end of the study, those people with elevated triglycerides who added eggs to their diets increased their total cholesterol from 238 to 250 milligrams per deciliter of blood. But those with simply elevated cholesterol who ate eggs saw no increase in their total cholesterol, although they did enjoy an increase in their HDL, or "good," cholesterol.

"For those individuals with simply elevated cholesterol, eggs can be added in the context of a low-fat diet without raising cholesterol," says study leader Robert H. Knopp. For people with both elevated cholesterol and elevated triglycerides, he suggests that they forego the eggs entirely.

So eggs are back, sort of. But don't expect vindication for bacon anytime soon. The researchers stress that a low-fat diet is essential for controlling cholesterol and heart disease.

### ...coffee may not be so bad...

Marathon runners swear by it. Drinking coffee, they say, helps them push their bodies to the limit. A new study by researchers from the Oregon Health Sciences University in Portland boosts that claim.

The research team studied six healthy but sedentary young men. The participants worked out on exercise bicycles while the scientists recorded blood pressure and the amount of blood pumped by the heart. Each volunteer then drank a double espresso and after 30 minutes performed the task again.

The volunteers' hearts used less oxygen to pump more blood at lower blood pressure after the coffee.

"Presumably, caffeine has its effects because it is a vasodilator," says study leader and marathoner Bruce Hardy. "And we marathoners have sensed that coffee helps, even though science couldn't explain why."

### ...but a fat by any other name is just fat

Health food stores across the country sell medium-chain triglyceride (MCT) oils as a quick energy source for body builders and a less fattening fat for dieters. Enthusiasts claim, with support from some scientists, that because MCT oils are digested differently from larger triglycerides like those in palm oil, they don't raise blood concentrations of cholesterol.

But a new study by researchers from the University of Texas Southwestern Medical Center at Dallas lays waste to such claims. The researchers studied nine middle-aged men who agreed to live at the hospital while being fed a controlled diet containing either palm oil (which increases blood lipids), sunflower oil (which doesn't increase lipids), or MCT oil. After 3 weeks, the researchers measured the volunteers' cholesterol and triglyceride concentrations, then switched the diets. After 12 weeks, all participants had tried all three oils.

Not surprisingly, sunflower oil had no ill effects, and palm oil raised cholesterol and triglyceride concentrations. But MCT oil raised these lipid concentrations just as much as the palm oil.

From measurements of the types of lipids in the men's blood, the team speculates that enzymes in the liver use MCT as building blocks to make the troublesome component of palm oil, says study investigator Nilo B. Cater.