



DMS researchers William Wade, Ph.D., and Ronald Taylor, Ph.D., are making progress on identifying a vaccine for cholera, according to papers in recent issues of *Infection and Immunity*.

Memorable findings from imaging study

It's unnerving but normal for people to have occasional memory lapses as they get older. Yet some people insist that their forgetfulness is more serious than such "senior moments," even though they do fine on memory performance tests.

MRI scans tell a different story, however. They can detect brain abnormalities in people with these perceived "cognitive complaints"—those who, "on detailed clinical interviews and questionnaires, . . . really feel their memory and other cognitive functions are showing changes," says Andrew Saykin, Psy.D., a professor of psychiatry and of radiology. He reported this unexpected finding, based on a study of 120 older adults, at the Ninth International Conference on Alzheimer's Disease and Related Disorders.

"I thought at first if we saw complaints it would be associated with depression, because people who are depressed tend to feel their cognitive function isn't very efficient," Saykin says. After excluding subjects with clinically significant depression, "it turned out that we were looking at something very specific to the memory system and that we found neural correlates for what people were telling us."

A combination of anatomic and functional MRI, or magnetic resonance imaging, can detect changes in the brains of

people with diagnosed memory problems—from mild cognitive impairment (MCI) to Alzheimer's disease. Typically, the hippocampus, the walnut-sized part of the brain that is critical in learning and memory, begins to atrophy in early stages of cognitive disorders. Functional MRI, which maps changes in blood oxygenation during brain activity, showed that fewer brain cells are activated during memory exercises in people who are cognitively impaired than in people whose memory is normal. Subjects with "cognitive complaints" did well on memory tests, but their brains showed changes characteristic of MCI: atrophy of the hippocampus and reduced signaling in the frontal lobes.

Early: The finding may mean the cognitive complaint group could benefit from early intervention for Alzheimer's. About 50% of people with MCI go on to develop Alzheimer's or another dementia, says Saykin, though it's too soon to tell what percentage of those with "cognitive complaints" will do so.

In a different study—this one with only 18 patients, nine of them cognitively healthy and nine diagnosed with MCI—Saykin tested a drug called donepezil. While lying in an MRI scanner, subjects take a test that involves listening to a string of consonants and pressing a button when they hear certain patterns. They take the test without the drug and again after being on it for 10 weeks. "What we found was that in comparison to the control group, the people on drug basically were able to activate their frontal lobes," says Saykin, and that "correlated with better cognitive task performance."

In addition, data from a large trial suggests that the medication can delay the transition from MCI to Alzheimer's.

But while all the results are promising, Saykin cautions that much more study is needed. LAURA STEPHENSON CARTER



Andy Saykin uses imaging to diagnose dementias.

CONGILBERT FORX

Changing view of MS

The "recognition of new 'players'" in the causes and progression of multiple sclerosis (MS) has been one of the biggest changes in MS research in recent years, according to a literature review by two Dartmouth neurologists. MS is predominantly an autoimmune disorder, they explain, but "recent studies have challenged this existing paradigm, supporting the role of other immune cells and factors (even nonimmune)." They concluded that the future of MS therapy is in novel approaches that target "a multifaceted spectrum of immune activity." The paper was published in *Frontiers in Bioscience*.



Inflammatory insight

In a review of the published research on glucocorticoids (GCs)—steroids with metabolic and anti-inflammatory effects—a DMS team found a big gap between the literature and clinical practice. "It seems clear that the long-held clinical view that GCs act solely as anti-inflammatory agents needs to be reassessed," the authors wrote.

"Varying doses of GCs do not lead simply to varying degrees of inflammation suppression, but rather GCs can exert a full range of effects from permissive to stimulatory to suppressive." The paper appeared in the journal of the Scandinavian Society of Anaesthesiology and Critical Care Medicine.

