

Researchers publish results settling multiple sclerosis debate

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In an effort to develop therapeutic remedies for multiple sclerosis, scientists debate two possible interventional approaches - but they're on opposite sides of the spectrum. Researchers at Wayne State University's School of Medicine, however, have reached a definitive conclusion as to which approach is correct, putting an end to a long-disputed issue.

Harley Tse, Ph.D., associate professor of immunology and microbiology at WSU's School of Medicine and resident of West Bloomfield, Mich., whose study was published in the January 2011 edition of the [Journal of Neuroimmunology](#), found that targeting [white blood cells](#) of the immune system known as T cells is the effective approach to block the disease in an animal model of MS, experimental autoimmune encephalomyelitis.

Normally, T cells are programmed to attack foreign substances in the body. However, sometimes these T cells attack an essential component of the [central nervous system](#), the protective layer of [nerve cells](#) known as the myelin sheath. This causes the symptoms associated with MS, which include tremors, fatigue, memory loss and other problems.

The debate was centered on treatment of the most common form of the disease, the remitting-relapse form, in which attack episodes alternate with periods of remission. Roughly 85 percent of the 2.5 million sufferers of MS worldwide exhibit the remitting-relapse pattern. "Scientists have been trying to understand how and why the relapse cycles occur and to design therapy to delay disease relapses and hence prolong the remission period," said Tse.

Scientists came up with two conflicting conjectures. Some found that the T cells involved in each relapse were different and were directed against different myelin proteins. As such, these T cells are not suitable targets for therapy. Others, however,

could not find support for this in their studies. "It was important to resolve this issue because the two models suggested totally different therapeutic approaches," Tse said.

Studying the possibilities, Tse constructed a special mouse strain to tag the disease-causing T cells and observed that when these marked T cells were eliminated after a relapse, subsequent relapses did not occur.

"Elimination of marked donor T cells could be done after development of the second or the third relapse episodes and each time, no further relapses occurred," said Tse. "This work is significant because for the first time we are able to definitively establish a cause-and-effect relationship linking the marked T cells to the development of relapses and show unambiguously that it was the same T cells that mediated relapsing cycles. "

"Targeting such disease-causing [T cells](#) in MS is definitely a valid therapeutic approach that should be pursued," Tse added.

Provided by Wayne State University

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