

# Immune booster drugs meant to kill tumors found to improve Alzheimer's symptoms in mice

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Credit: martha sexton/public domain

(MedicalXpress)—A team of researchers working at the Weizmann

Institute of Science in Israel has found that a type of drug meant to help the immune system kill tumors also reduces Alzheimer's type symptoms in mouse models. In their paper published in the journal *Nature Medicine*, the team describes their study of drugs known as PD-1 immune checkpoint blockades, on mouse models, and the results they found.

As scientists close in on the cause of Alzheimer's disease and hopefully find a cure, more and more evidence points at problems with the immune system and inflammation as a factor. For the past several years, the prevailing view has been that an overactive immune system might be the root cause, but new studies have begun to suggest the opposite might be true—and that boosting the immune response in the brain might help reduce symptoms of the disease. In this new effort, the researchers looked at PD-1 immune checkpoint blockades because they do their work by disabling immunity checkpoints which is where the body sets up roadblocks to stop the immune system from attacking normal body parts. But tumors have been found to trick this same part of the immune system to prevent it from attacking them. Thus, the idea behind PD-1 blockers is to override the checkpoints and force the [immune system](#) to attack the tumor anyway, causing it to shrink and disappear. In this new effort, the goal was to learn if such drugs might help stop or reverse the symptoms of Alzheimer's disease by boosting an [immune response](#) in the brain.

To find out, the researchers genetically engineered test mice to develop Alzheimer's symptoms, both memory loss and the buildup of amyloid in the brain, and then gave each of them PD-1 blockers to see if it caused any improvement. They report that amyloid buildup in the brain of the mice was reduced by half and that most of them were once again able to make their way through a maze—a test of their memory abilities.

The research team notes that some PD-1 blockers are already on the

market, Keytruda, for example has already been approved for use in treating tumors—thus, testing the drug on human patients in clinical trials should go rather quickly if further tests suggest it might actually work on people with Alzheimer's disease.

**More information:** Kuti Baruch et al. PD-1 immune checkpoint blockade reduces pathology and improves memory in mouse models of Alzheimer's disease, *Nature Medicine* (2016). [DOI: 10.1038/nm.4022](https://doi.org/10.1038/nm.4022)

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