

Tulane researchers find therapy that may better treat tuberculosis

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Dr. Deepak Kaushal leads the tuberculosis research program at the Tulane National Primate Research Center (Photo by Paula Burch-Celentano).

A study involving Tulane researchers identifies a therapy that may be a better treatment for tuberculosis. The [research results](#) are published in the latest edition of the *Proceedings of the National Academy of Sciences*.

All *Mycobacterium tuberculosis* infections lead to the formation of a granuloma, a cluster of immune cells that forms when the immune system tries to wall off substances it perceives as foreign but cannot eliminate. In the lungs, the granuloma

defines whether the disease is contained - as happens in the case of a majority of humans, known as latent TB infection - or worsens (active TB).

Previous research showed *Mycobacterium tuberculosis* bacteria works to compromise T cells, which form the outer shell of the granuloma. For the current study, [Deepak Kaushal](#), director of the TB Research Program at the Tulane National Primate Research Center, and coauthor Smriti Mehra, associate professor of research at LSU, led a team of researchers who looked at the impact of a metabolic enzyme on the tuberculosis granuloma. The indoleamine 2,3-dioxygenase (IDO) enzyme breaks up tryptophan, an essential acid that may suppress immunity. Researchers looked at TB infections in macaques and found by inhibiting the IDO enzyme, the T cells were better able to reach the core of the granuloma and kill tuberculosis bacteria.

Kaushal says the enzyme is the key signal that controls the latent to active switch in the granuloma.

“Such a signal can then provide the bacteria with bullet-proofing against a strong immune response,” Kaushal says. “Therefore, in many clinical cases of TB there is plenty of immune response, perhaps even hyper-exuberant response - but no protection.”

Tuberculosis kills nearly two million people each year and is the number one killer of people with AIDS. This study represents one of the more advanced attempts to treat TB using a “host-directed approach.” Such an approach is advantageous because the bacteria is unlikely to develop resistance to it.