In the news

TB'S PROTECTIVE SHIELD

Most individuals infected with *Mycobacterium tuberculosis* remain asymptomatic and do not develop tuberculosis, despite the persistent presence of the bacteria. Researchers based in India have discovered a new mechanism that could explain how *M. tuberculosis* can persist in the face of potent immune responses. They say the bug's trick is to recruit mesenchymal stem cells (MSCs) to the site of infection, where these cells suppress anti-mycobacterial T cell responses (*Proc. Natl Acad. Sci. USA*, 6 Dec 2010).

Joanne Flynn, an immunologist at the University of Pittsburgh School of Medicine, Pennsylvania, USA, acknowledged that this was "a novel finding" and suggested that MSCs "may be an important cell subset for balancing inflammation" (*The Scientist*, 7 Dec 2010). Indeed, MSCs, which are bone marrow-derived pluripotent stem cells, are known to have immuno-suppressive properties. Here, the scientists suggest that these stem cells form "a protective coating around granulomas and produce a range of immunosuppressant molecules, such as nitric oxide" (*ABC Online*, 7 Dec 2010). MSCs that accumulated at the periphery of granulomas containing live *M. tuberculosis* organisms secreted nitric oxide, which was shown to inhibit T cell proliferation. The MSCs also promoted the induction of regulatory T cells. Sam Behr of Harvard University, Cambridge, Massachusetts, USA, explained: "What they're suggesting is that these stem cells are interposed between T cells and the infected macrophages … preventing access of the T cells to the macrophages" (*The Scientist*).

The authors claim that the findings "identify these cells as unique targets for therapeutic intervention in tuberculosis" (*Bloomberg*, 7 Dec 2010), a disease that causes 2 million deaths each year. Gobardhan Das, senior author of the study, says that "If you can target these MSCs then you can destroy the protective layer and expose the bacteria to the macrophages" (*ABC Online*).

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