# M-MDSCs shut down arthritis in mouse model of the disease

March 6 2015

Using a mouse model of rheumatoid arthritis, scientists have discovered that a form of cellular immunotherapy by intravenous administration of monocytic myeloid-derived suppressor cells, or M-MDSCs, might be an effective treatment for the disease in humans. In a report published in the March 2015 issue of the *Journal of Leukocyte Biology*, researchers show that M-MDSCs are capable of inhibiting T cell proliferation, as well as B cell proliferation and antibody production. As a result, the arthritic mice experienced improvements in their symptoms.

"I hope this study will lead to a better understanding of MDSCs' potential in cell-based therapies against autoimmune diseases," said Peng Liu, M.D., Ph.D., a researcher involved in the work from the Department of Medicine at the University of North Carolina at Chapel Hill.

To make this discovery, scientists used T cell and B cell proliferation assays to test the suppressive ability of M-MDSCs isolated from mice induced with arthritis. Specifically, two groups of mice were used. One group was treated with control solution and the other group was treated with M-MDSCs isolated from mouse donors with arthritis. All mice received five treatments through intravenous injections. Arthritis scores and joint swelling measurements determined disease severity. The scientists found that the mice treated with M-MDSCs had significantly reduced arthritis compared with mice treated with control solution.

"Cellular therapies using cells from the immune system are

revolutionizing clinical treatments for cancer and other diseases, but typically use T cells," said John Wherry, Ph.D., Deputy Editor of the *Journal of Leukocyte Biology*. "These new studies not only identify a potential role for the myeloid derived M-MDSCs in cellular therapies, but also demonstrate that these types of approaches may be effective in autoimmune diseases."

**More information:** Kristen R. Crook, Mengyao Jin, Michael F. Weeks, Rishi R. Rampersad, Robert M. Baldi, Amy S. Glekas, Yajuan Shen, Denise A. Esserman, Paul Little, Todd A. Schwartz, and Peng Liu. Myeloid-derived suppressor cells regulate T cell and B cell responses during autoimmune disease. *J. Leukoc. Biol.* March 2015 97:573-582; DOI: 10.1189/jlb.4A0314-139R