

[IZA News](#)[About IZA](#)[Organization Chart](#)[People](#)[Research](#)[Labor Policy](#)[Publications](#)[Discussion Papers](#)[Policy Papers](#)[Standpunkte](#)[Books](#)[Research Reports](#)[IZA Compact](#)[IZA in the Press](#)[Publication Record](#)[Journals](#)[Events](#)[IZA Prize / YLE Award](#)[Teaching](#)[Links / Resources](#)[Press](#)

IZA



Transcriptional Modulation of the Developing Immune System by Early Life Social Adversity

by Steven W. Cole, Gabriella Conti, Jesusa M. Arevalo, Angela M. Ruggiero, James J. Heckman, Stephen J. Suomi
(October 2012)

Abstract:

To identify molecular mechanisms by which early life social conditions might influence adult risk of disease in rhesus macaques (*Macaca mulatta*), we analyze changes in basal leukocyte gene expression profiles in 4-month-old animals reared under adverse social conditions. Compared to the basal condition of maternal rearing (MR), leukocytes from peer-reared (PR) animals and PR animals provided with an inanimate surrogate mother (surrogate/peer reared; SPR) show enhanced expression of genes involved in inflammation, cytokine signaling, and T lymphocyte activation, and suppression of genes involved in several innate antimicrobial defenses including Type I Interferon antiviral responses. Promoter-based bioinformatic analyses implicate increased activity of CREB and NF- κ B transcription factors and decreased activity of Interferon Response Factors (IRFs) in structuring the observed differences in gene expression. Transcript origin analyses identify monocytes and CD4+ T lymphocytes as primary cellular mediators of transcriptional up-regulation and B lymphocytes as major sources of down-regulated genes. These findings show that adverse social conditions can become embedded within the basal transcriptome of primate immune cells within the first 4 months of life, and they implicate sympathetic nervous system-linked transcription control pathways as candidate mediators of those effects and potential targets for health-protective intervention.

Text: See [Discussion Paper No. 6915](#)



[Back](#)