

Susan Kovats, Ph.D.

Associate Member
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Education:

1984: B.S., Genetics, University of California
1991: Ph.D., Genetics, University of Wisconsin
1991-1995: Postdoc, Immunology, Virginia Mason Research Center
1995-1997: Postdoc, Immunology, University of Washington

Academic Appointments:

1985-1991: Ph.D. thesis research with Dr. Robert DeMars, Laboratory of Genetics, University of Wisconsin
1991-1995: Postdoctoral Fellowship with Drs. Janice Blum and Gerald Nepom, Immunology & Diabetes Programs, Virginia Mason Research Center, WA
1995-1997: Postdoctoral Fellowship with Dr. Alexander Rudensky, Dept. of Immunology and Howard Hughes Medical Institute, University of Washington
1998-2005: Assistant Professor, Division of Immunology, Beckman Research Institute, City of Hope National Medical Center, Duarte, CA; Member, City of Hope Cancer Center
2005-2014: Assistant Member, Arthritis and Immunology Program, Oklahoma Medical Research Foundation, OK
2015-present: Associate Member, Arthritis & Clinical Immunology Program, Oklahoma Medical Research Foundation
2017-present: Adjunct Assistant Professor, Dept. of Microbiology & Immunology, OUHSC

Awards and Honors:

1983: Honor Scholarship, U.C. Berkeley
1984-1985: Wisconsin Alumni Research Foundation Fellowship
1985-1988: National Science Foundation Graduate Fellowship
1989: Scholar, designed by the American Society for Histocompatibility and Immunogenetics
1993-1994: Leukemia Society of America Fellowship

1994-1997: National Research Service Award, individual fellowship
1998-1999: Arthritis National Research Foundation fellow
1999-2004: Arthritis Foundation Duggan Award
2004-2005: Arthritis National Research Foundation fellow

Other Professional Experiences and Memberships:

2001-2005: Associate Editor, The Journal of Immunology
2002-present: Ad-hoc member, NIH special emphasis and LCMI, CMI-A,-B grant review panels
2011-present: Associate Editor, PLoS One
2011-present: Review Editorial Board, Frontiers in Immunology, Molecular Antigen Presenting Cell Biology

Research Support:

Current:

- 2019-2024: NIH U19 AI62629, "Immune cell mechanisms of Bacillus anthracis sepsis", Role: Co-PI
- 2018-2022: NIH R01 EB025596, "A 3D human tissue-engineered lung model to study immune responses to Respiratory Syncytial Virus", Role: Co-PI
- 2019-2020: NIH P20 GM103648, "Sex differences in human group 2 innate lymphocytes in response to influenza virus", Role: Pilot Project PI
- 2018-2023: NIH R01 AI129458, "Characterization of a distinct NKT subset and its role in influenza responses" Role: Co-I

Selected Publications:

1. Carreras, E., Turner, S., Paharkova-Vatchkova, V., Mao, A., Dascher, C., and Kovats, S. (2008) Estradiol acts directly on bone marrow myeloid progenitors to differentially regulate GM-CSF or Flt3 Ligand mediated dendritic cell differentiation. *J. Immunol.* 180:727.
2. Agrawal, H., Jacob, N., Carreras, E., Bajaña, S., Putterman, C., Turner, S., Neas, B., Mathian, A., Koss, M., Stohl, W., Kovats, S.*, Jacob, C.O.* (2009) Deficiency of type I IFN receptor in lupus-prone NZM 2328 mice decreases dendritic cell numbers and activation and protects from disease. *J. Immunol.* 183:6021-6029. *Senior authors contributed equally.
3. Carreras, E., Turner, S., Frank, M.B., Knowlton, N., Osban, J., Centola, M., Park, C.G., Simmons, A., Alberola-Ila, J., Kovats, S. (2010) Estrogen receptor signaling promotes dendritic cell differentiation by increasing expression of the transcription factor IRF4. *Blood.*115:238-246.
4. Bajaña, S., Roach, K., Turner, S., Paul, J., Kovats, S. (2012) Interferon regulatory factor 4 promotes cutaneous dendritic cell migration to lymph nodes during homeostasis and inflammation. *J. Immunol.* 189:3368-3377. Kovats, S. (2012) Estrogen receptors regulate an inflammatory pathway of dendritic cell differentiation: Mechanisms and implications for immunity. *Horm. Behav.* 62:254-262.
5. Carreras, E. and Kovats, S. (2014) Girl Power: Estrogen promotes HSC self-renewal. *Preview, Cell Stem Cell.* 14:137.
6. Kovats, S. (2015) Estrogen receptors regulate innate immune cells and signaling pathways. *Cellular Immunology* 294:63.
7. Hu, T., Wang, H., Simmons, A., Bajaña, S., Zhao, Y., Kovats, S., Sun, X-H., Alberola-Ila, J. (2013) Increased level of E protein activity during invariant NKT development promotes differentiation of invariant NKT2 and invariant NKT17 subsets. *J. Immunol.*191:5065-5073.
8. Bajaña, S., Turner, S. Paul, J., Ainsua-Enrich, E., Kovats S. (2016) IRF4 and IRF8 act in CD11c+ cells to regulate terminal differentiation of lung tissue dendritic cells. *J. Immunol.* 196:1666-1677. *Featured in the "In this Issue" section of the Feb. 15, 2016 issue of *J. Immunology*
9. Kovats, S.*, Turner, S., Simmons, A., Powe, T., Chakravarty, E., Alberola-Ila, J.* (2016) West Nile Virus Infected Human Dendritic Cells Fail to Fully Activate Invariant Natural Killer T Cells. *Clin. Exp. Immunol.* 186:214-226. *Senior authors contributed equally
10. Patel V.I., Booth J.L., Duggan E.S., Cate S., White, V.L., Hutchings D., Kovats S., Burian D.M., Dozmorov M., and Metcalf J.P. (2017) Transcriptional classification and functional characterization of human airway macrophage and dendritic cell subsets. *J. Immunol.* 198:1183-1201.
11. Barboza, E., Hudson, J., Chang, W-P., Kovats, S., Towner, R., Silasi Mansat, R., Lupu, F., Kent, C., Griffin, T. (2017) Pro-fibrotic infrapatellar fat pad remodeling without M1-macrophage polarization precedes knee osteoarthritis in diet-induced obese mice. *Arthritis & Rheumatology* 69:1221-1232.
12. Ainsua-Enrich E, Hatipoglu I, Kadel S, Turner S, Paul J, Singh S, Bagavant H, **Kovats S**. IRF4-dependent dendritic cells regulate CD8⁺ T-cell differentiation and memory responses in influenza infection. *Mucosal Immunol*, 2019 May, PMID: [31089186](https://pubmed.ncbi.nlm.nih.gov/31089186/), PMCID: [PMC6527354](https://pubmed.ncbi.nlm.nih.gov/PMC6527354/).
13. Pan Z, Dumas EK, Lawrence C, Pate L, Longobardi S, Wang X, James JA, **Kovats S**, Farris AD. Bacillus anthracis Edema Toxin Inhibits Efferocytosis in Human Macrophages and Alters Efferocytic Receptor Signaling. *Int J Mol Sci* 20, 2019 March, PMID: [30866434](https://pubmed.ncbi.nlm.nih.gov/30866434/), PMCID: [PMC6429438](https://pubmed.ncbi.nlm.nih.gov/PMC6429438/).
14. Kadel S, **Kovats S**. Sex Hormones Regulate Innate Immune Cells and Promote Sex Differences in Respiratory Virus Infection. *Front Immunol* 9:1653, 2018 July, PMID: [30079065](https://pubmed.ncbi.nlm.nih.gov/30079065/), PMCID: [PMC6062604](https://pubmed.ncbi.nlm.nih.gov/PMC6062604/).

15. Kadel S, Ainsua-Enrich E, Hatipoglu I, Turner S, Singh S, Khan S, **Kovats S**. A major population of functional KLRG1⁻ ILC2s in female lungs contributes to a sex bias in ILC2 numbers. *Immunohorizons*. 2018 Feb;2(2):74-86. PMID: [PMC5860819](https://pubmed.ncbi.nlm.nih.gov/30000000/).