

BIOGRAPHICAL SKETCH

Junior Trainer

NAME: Stanic Kostic, Aleksandar

eRA COMMONS USER NAME: stanickostic

POSITION TITLE: Assistant Professor, Department of Obstetrics and Gynecology, Divisions of Reproductive Sciences and Reproductive Endocrinology and Infertility, Director of Research in Reproductive Personalized Medicine.
University of Wisconsin-Madison

EDUCATION/TRAINING:

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Novi Sad, Novi Sad, Serbia	B.S. eqv	04/98	Medicine
Vanderbilt University School of Medicine	Ph.D.	08/03	Immunology
Vanderbilt University School of Medicine	M.D.	05/06	Medicine
Massachusetts General and Brigham and Women's Hospitals, Harvard Medical School		06/10	Resident, Obstetrics, Gynecology and Reproductive Biology
Massachusetts General Hospital, Harvard Medical School		06/14	Fellow, Reproductive Endocrinology and Infertility

A. Personal Statement

Dr. Stanic studies the immunology underlying reproductive disorders, with a special interest into the role of lymphocytes in the establishment and maintenance of pregnancy. Dr. Stanic has extensive basic research experience in molecular and cellular immunology necessary for elucidation of innate and adaptive immune-regulatory mechanisms in reproductive pathophysiology. He has initially applied his insight into immunological processes to mechanisms governing endometriosis establishment (disorder associated with ovarian cancer), as well as inflammatory bias of the Toll-like receptor system in preeclampsia. Most recently, his lab has focused on the development of machine learning-aided approaches to mine the “reproductive immunome” in human health and disease. This approach has led to a research partnership with Dr. Cooney in the study of inflammation in PCOS and infertility. Clinically, Dr. Stanic is a board-certified Obstetrician and Gynecologist, subspecializing in Reproductive Endocrinology and Infertility. Dr. Stanic’s clinical training greatly informs his research endeavor towards questions of critical importance to deciphering the modifiable pathobiology underlying reproductive pathology.

- Li Y, Lopez GE, Vazquez J, Sun Y, Chavarria M, Lindner PN, Fredrickson S, Karst N, **Stanic AK**. Decidual-Placental Immune Landscape During Syngeneic Murine Pregnancy. *Front. Immunol.* 9:2087. doi: 10.3389/fimmu.2018.02087. (2018).
- Vazquez, J; Chavarria, M; Li,Y; Lopez, GE.; **Stanic, AK**. Computational Flow Cytometry Analysis Reveals a Unique Immune Signature of the Human Maternal-Fetal Interface. *American Journal of Reproductive Immunology*. DOI: 10.1111/aji.12774. (2017).
- Stanic AK**, Kim M, Styer AK, Rueda BR: Dendritic Cells Attenuate the Early Establishment of Endometriosis-Like Lesions in a Murine Model. *Reproductive Sciences* 2014; 21(10):1228-36. PMID: 24594835
- Attaman JA*, **Stanic AK***, Kim M, Lynch MP, Rueda BR, Styer AK: The Anti-Inflammatory Impact of Omega-3 Polyunsaturated Fatty Acids During the Establishment of Endometriosis-Like Lesions. *AJRI*. 2014; PMID: 24898804 ***Joint 1st Author**

B. Positions and Honors

Positions and Employment

- 2000 – 2006 Fellow, Medical Scientist Training Program (MSTP), Vanderbilt University School of Medicine
2006 – 2010 Clinical Fellow in Obstetrics, Gynecology and Reproductive Biology. Massachusetts General and Brigham and Women's Hospitals, Harvard Medical School, Boston, MA
2010-2011 Assistant in Gynecology and Obstetrics, Massachusetts General Hospital, Boston, MA
2010-2014 Instructor in Obstetrics, Gynecology and Reproductive Biology, Harvard Medical School
2011-2014 Reproductive Endocrinology and Infertility Fellow, Massachusetts General Hospital.
2014-Present Assistant Professor, Divisions - Reproductive Sciences, Reproductive Endocrinology and Infertility, Dept of Ob/Gyn, University of Wisconsin-Madison, Madison, WI
2017-Present Director of Research in Reproductive Personalized Medicine, Dept of Ob/Gyn, UW-Madison.

Honors

- 2003 Sidney P. Colowick Award (Outstanding Graduate Student Award),
Vanderbilt University School of Medicine, Nashville, TN
2006 Dean's Award for Research, Vanderbilt University School of Medicine, Nashville, TN
2008,2009 Ob/Gyn Clerkship Teaching Award, Brigham and Women's Hospital, Boston, MA
2012 Best New Investigator Poster Award, Society for Gynecological Investigation
2013 North American Menopause Society, TEVA Excellence Award
2015 NIH / Mead Johnson Nutrition Early Career Investigator Award, Perinatal Research Society

Professional Memberships

- 2006-2010 Junior Fellow, American College of Obstetrics and Gynecology
2002-Present American Association of Immunologists
2010-Present American Society for Reproductive Medicine
2010-2011 American Medical Association
2012-Present Society for Gynecologic Investigation – now Society for Reproductive Investigation
2014-Present American Society for Re
2015-Present Perinatal Research Society (Associate Member '15, '16-Full member)

Board Certification

- 2015 American Boards of Obstetrics and Gynecology – General Ob/Gyn

Licensure

- 2010-2014 Medical License – State of Massachusetts
2014-Current Medical License – State of Wisconsin

C. Contribution to Science

Invariant Natural Killer T (iNKT) cell development: iNKT cells are CD1d-restricted, glycolipid-sensing, innate T cells implicated in immune surveillance and autoimmunity, capable of rapid and profound trans-activation of all major arms of adaptive immune system. As lymphocyte function is specified by stochastic and instructive events during development I investigated the molecular developmental checkpoints. Our work demonstrated a central role for NF- κ B in signaling iNKT survival, differentiation and acquisition of effector competency.

- a. **Stanic AK**, Bezbradica JS, Park JJ, Matsuki N, Mora AL, Van Kaer L, Boothby MR, Joyce S: NF- κ B controls cell fate specification, survival, and molecular differentiation of immunoregulatory natural T lymphocytes. *J Immunol* 2004;**172**:2265-2273 PMID: 14764695
- b. **Stanic AK**, Bezbradica JS, Park JJ, Van Kaer L, Boothby MR, Joyce S: Cutting edge: the ontogeny and function of V α 14J α 18 natural T lymphocytes require signal processing by protein kinase C θ and NF- κ B. *J Immunol* 2004;**172**:4667-4671 PMID: 15067039
- c. Bezbradica JS, Hill T, **Stanic AK**, Van Kaer L, Joyce S: Commitment toward the natural T (iNKT) cell lineage occurs at the CD4+8+ stage of thymic ontogeny. *Proceedings of the National Academy of Sciences of the United States of America* 2005;**102**:5114-5119. PMID: 15792999
- d. Bezbradica JS, Gordy LE, **Stanic AK**, Dragovic S, Hill T, Hawiger J, Unutmaz D, Van Kaer L, Joyce S: Granulocyte-macrophage colony-stimulating factor regulates effector differentiation of invariant natural killer T cells during thymic ontogeny. *Immunity* 2006;**25**:487-497. PMID: 16949316

iNKT cell antigen recognition and development of a novel flow cytometry platform for investigation of cellular receptor trafficking. To determine the structural features of iNKT T-cell receptor (Tcr) – antigen interaction and probe quaternary features of iNKT Tcr organization I synthesized antigen-loaded CD1d tetramers and developed a number of flow cytometry approaches for investigating receptor trafficking that have since been applied to studies of GABA_A receptor trafficking.

- a. **Stanic AK**, Shashidharamurthy R, Bezbradica JS, Matsuki N, Yoshimura Y, Miyake S, Choi EY, Schell TD, Van Kaer L, Tevethia SS, Roopenian DC, Yamamura T, Joyce S: Another view of T cell antigen recognition: cooperative engagement of glycolipid antigens by V α 14J α 18 natural T(iNKT) cell receptor. *Journal of Immunology* 2003;**171**:4539-4551 PMID: 14568927
- b. **Stanic AK**, De Silva AD, Park JJ, Sriram V, Ichikawa S, Hirabyashi Y, Hayakawa K, Van Kaer L, Brutkiewicz RR, Joyce S: Defective presentation of the CD1d1-restricted natural V α 14J α 18 NKT lymphocyte antigen caused by β -D-glucosylceramide synthase deficiency. *Proceedings of the National Academy of Sciences of the United States of America* 2003;**100**:1849-1854 PMID: 12576547
- c. Todd E, Gurba KN, Botzolakis EJ, **Stanic AK**, Macdonald RL: GABAA receptor biogenesis is impaired by the γ 2 subunit febrile seizure-associated mutation, GABRG2(R177G). *Neurobiology of disease* 2014; **69**:215-224 PMID: 24874541
- d. Botzolakis EJ, Gurba KN, Lagrange AH, Feng HJ, **Stanic AK**, Hu N, Macdonald RL. Comparison of GABA-A Receptor $\alpha\beta\gamma$ and $\alpha\beta\delta$ Expression Using Flow Cytometry and Electrophysiology: Evidence for Alternate Subunit Stoichiometries and Arrangements. *J Biol Chem.* 2016 Aug 4. pii: jbc.M115.698860.

iNKT and T cell regulation of cardiovascular disease, autoimmunity, HIV. Having created a platform for iNKT cell investigation using highly sensitive probes, I have collaborated with numerous laboratories in the study of the role iNKT cells play in disease. I have played a major role in determining their role in cardiovascular disease, experimental autoimmune encephalomyelitis (multiple sclerosis model), non-obese diabetic model of type I diabetes, and HIV (refs below and full bibliography).

- a. **Stanic AK**, Stein CM, Morgan AC, Fazio S, Linton MF, Wakeland EK, Olsen NJ, Major AS: Immune dysregulation accelerates atherosclerosis and modulates plaque composition in systemic lupus erythematosus. *Proceedings of the National Academy of Sciences of the United States of America* 2006;**103**:7018-7023. PMID: 16636270
- b. Matsuki N, **Stanic AK**, Embers ME, Van Kaer L, Morel L, Joyce S: Genetic dissection of V α 14J α 18 natural T cell number and function in autoimmune-prone mice. *Journal of Immunology* 2003;**170**:5429-5437. PMID: 12759418
- c. Singh AK, Wilson MT, Hong S, Olivares-Villagomez D, Du C, **Stanic AK**, Joyce S, Sriram S, Koezuka Y, Van Kaer L: Natural killer T cell activation protects mice against experimental autoimmune encephalomyelitis. *The Journal of Experimental Medicine* 2001;**194**:1801-1811. PMID: 11748281
- d. Yang JQ, Singh AK, Wilson MT, Satoh M, **Stanic AK**, Park JJ, Hong S, Gadola SD, Mizutani A, Kakumanu SR, Reeves WH, Cerundolo V, Joyce S, Van Kaer L, Singh RR: Immunoregulatory role of CD1d in the hydrocarbon oil-induced model of lupus nephritis. *Journal of Immunology* 2003;**171**:2142-2153. PMID: 12902521

Complete List of Published Works in My Bibliography (35 published works):

<https://www.ncbi.nlm.nih.gov/sites/myncbi/aleksandar.stanic-kostic.1/bibliography/47219318/public/?sort=date&direction=descending>

D. Research Support

Ongoing Research Support

5 K12 HD 000849-28 (RSDP Program PI: K. Moley)

07/01/2013 – 06/30/2022

NIH/NICHD Reproductive Scientist Development Program (RSDP)

RSDP Role: Scholar

Title: *The role of Innate Lymphoid Cells in Decidual Function*

Phase I 07/01/2016-06/30/2018

Phase II **07/01/2018-06/30/2020**

RSDP Research Support (PI: Stanic-Kostic)

07/01/2016 – 06/30/2020

American Society for Reproductive Medicine (ASRM), March of Dimes, Burroughs Wellcome Fund (BWF).

Basil O'Connor Starter Scholar Research Award (PI:Stanic-Kostic) 04/01/2018-03/31/2020
March of Dimes 5-FY18-541
Title: The Role of Dendritic Cell-Innate Lymphoid Cell Cross-Talk in Preeclampsia and Normal Pregnancy

1R21 AI136014 (PI: Golos, **co-I: Stanic-Kostic**) 09/04/2017-
08/31/2019

NIH/NIAID Stanic Lab ~\$15,000/yr
Title: *Immune response to Zika infection at the primate maternal-fetal interface*

UWCCC CCSG Program Pilot (co-PI Patankar, Galipeau, Stanic-Kostic) 04/01/2018 – 03/31/2019
Title: *Fusokine-activated peritoneal innate lymphoid cell therapy for ovarian cancer*

ASRM Research Grant (co-PIs: Cooney, Stanic-Kostic) 07/01/2018-06/30/2020
Project Title: *Personalized and predictive immune signature of pregnancy outcome in women with PCOS undergoing IVF*

1R01 AI132519-01A1 (PI: Golos, **co-I: Stanic-Kostic**) 04/25/2018-03/31/2023
NIH/NIAID
Title: *Pathways of vertical Zika virus transmission in nonhuman primate pregnancy*

Completed Research Support

BAY 98-7196/15832 07/15/2015-12/31/2016
Bayer

Project Role: Site PI (Stanic)

A phase II dose finding placebo and comparator controlled study to assess the efficacy and safety of combinations of an aromatase inhibitor and a progestin via intravaginal ring in women with symptomatic endometriosis

RSDP Research Supplements (2 periods) 07/01/2016 – 06/30/2017, 07/01/2017 – 06/30/2018
March of Dimes (MOD)

Competitive Supplement to funding associated with Dr. Stanic's role as a Phase I RSDP Scholar

AAI Careers in Immunology Fellowship 09/01/2016 – 08/31/2017

American Association of Immunologists

Project Role: PI (Stanic) Funded fellow: Dr. Yan Li

Title: *Innate Lymphoid Cell – Dendritic Cell Axis Regulates Vascular Remodeling at the Maternal-Fetal Interface.*