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University of California, San Francisco

CURRICULUM VITAE

Name: Gabrielle Ann Rizzuto, MD, PhD

Position: Assistant Adjunct Professor, Step 1
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EDUCATION

2010 - 2013	University of California, San Francisco		Anatomic Pathology residency	
2002 - 2010	Weill Medical College of Cornell University, NY, NY	MD	Medicine	
2002 - 2010	Weill Cornell Graduate School of Medical Sciences, NY, NY	PhD	Immunology	Dr. Alan Houghton and Dr. Jedd Wolchok
1998 - 2002	Georgetown University, Washington DC	BS	Biology (major), Chemistry (minor), summa cum laude	

LICENSES, CERTIFICATION

07/2013	Board Certification, Anatomic Pathology.
09/2011	Physician license, Medical Board of California.

PRINCIPAL POSITIONS HELD

07/2017 - present	University of California, San Francisco	Assistant Adjunct Professor	Anatomic Pathology
07/2013 - 06/2017	University of California, San Francisco	Clinical Research Fellow	Anatomic Pathology
07/2010 - 06/2013	University of California, San Francisco	Resident	Anatomic Pathology
09/2003 - 08/2004	Examkrackers, NY, NY	Teacher/MCAT instructor	

09/2005 - 09/2006	Amlon Tutors, NY, NY	Tutor/Teacher High school level science	
02/1999 - 05/2002	Georgetown University, Washington DC	Undergraduate Researcher	Immunology
01/1996 - 08/1998	Various churches, Westchester County, NY	Substitute organist/pianist	

HONORS AND AWARDS

2018	Young Investigator Research Grant Award	Society for Pediatric Pathology (US and Canada)
2013	University of California President's Postdoctoral Fellowship	University of California
2013	Finalist for AP Giannini Foundation Postdoctoral Research Fellowship	AP Giannini Foundation
2013	Young Investigator Research Grant Award	Society for Pediatric Pathology (US and Canada)
2011	Resident Subspecialty Grant to support elective study (placental and fetal pathology with Dr. T. Yee Khong in Adelaide, Australia)	American Society for Clinical Pathology
2011	Surgical Pathology Study Grant to support elective study (placental pathology with Dr. Kurt Benirschke at University of California, San Diego)	Arthur Purdy Stout Society
2011	Julius Krevans Award, Anatomic Pathology	San Francisco General Hospital
2010	Janet M Glasgow-Rubin Memorial Achievement Citation	Cornell Medical College
2010	Herman L Jacobius Prize in Pathology	Cornell Medical College
2009	Trainee Award	American Association of Immunology
2006	Pre-doctoral Fellowship	Cancer Research Institute
2004	Alpha Omega Alpha	Cornell Medical College
2002	Phi Beta Kappa	Georgetown University
2002	Alpha Sigma Nu Jesuit Honor Society	Georgetown University
2001	Barry M Goldwater Scholarship	Georgetown University
1998	Howard Hughes Undergraduate Research Scholar	Georgetown University

KEYWORDS/AREAS OF INTEREST

Immunology, tolerance, macrophages, placental biology, placental pathology, tumor immunology.

CLINICAL ACTIVITIES

CLINICAL ACTIVITIES SUMMARY

For the 2018-2019 year, I am appointed as an Assistant Adjunct Professor in the Department of Anatomic Pathology. I acquired sub-speciality expertise in placental and fetal pathology during a one-month rotation in February 2014 under the mentorship of Dr. T. Yee Khong at Women's and Children's Hospital in Adelaide, Australia and a one-month rotation in September 2011 under the mentorship of Dr. Kurt Benirshke at UCSD. At Zuckerberg San Francisco General Hospital (ZSFGH) I sign out placental and fetal specimens, and instruct pathology residents and medical students on the gross pathologic and microscopic evaluation of placentas. I serve as the first resource for problem placental cases from the UCSF pathology department.

PROFESSIONAL ACTIVITIES

MEMBERSHIPS

2007 - present American Association of Immunologists, Trainee Member.

2011 - present United States and Canadian Academy of Pathology, Trainee Member.

2018 - present Society for Pediatric Pathology, Full Member.

INVITED PRESENTATIONS - NATIONAL

2016	International Federation of Placental Associates (IFPA) annual meeting, Portland OR. "A tight infection bottleneck undermined by inadequate early immune responses define the dynamics of decidual listeriosis." G Rizzuto, E Tagliani, P Manandhar, A Erlebacher, A Bakardjiev.	Presenter
2015	Society for Pediatric Pathology Spring meeting and United States and Canadian Academy of Pathology (USCAP) annual meeting. Boston, MA. "Dissecting the Unique Immune Response to Listeria monocytogenes Infection of Human and Mouse Decidua," G Rizzuto, M Weinstein, A Bakardjiev.	Presenter
2009	Block Symposium, American Association of Immunology Conference, Seattle, WA. "CD8+ T cell Precursor Frequency Determines the Quality of the Anti-Tumor Immune Response".	Presenter

CONTINUING EDUCATION AND PROFESSIONAL DEVELOPMENT ACTIVITIES

2015 Perinatal Pathology course, Society for Pediatric Pathology, Chicago, IL.

UNIVERSITY AND PUBLIC SERVICE

SERVICE ACTIVITIES SUMMARY

During my Anatomic Pathology residency at UCSF, I served as the resident representative to the Resident-Fellow council for the 2011-2012 year. During residency and my fellowship, I was a member of the University Tissue Committee. Also during my residency and fellowship, I served as Co-organizer of the Pathology Department's Research Interest Group (RIG) for two separate academic years (2012-2013 and 2014-2015), as as Co-organizer of the Immunology Department's Post-doc seminar series for one year (2014-2015). My responsibilities as Co-organizer for these groups included arranging the presenter schedule and snacks for the monthly meetings.

Additional volunteer activities I have taken part in include teaching high school students biology with the UCSF Science and Health Education Partnership, and as a first generation college graduate in my own family, I serve as a mentor for the UCSF First Generation to College Program.

UCSF CAMPUSWIDE

2012 - 2016	Tissue Committee	Resident member
2012 - present	First Generation to College Program (UCSF FG2C)	Mentor
2012 - 2013	Science and Health Education Partnership (UCSF SEP)	Volunteer teacher for high school students
2011 - 2012	Resident-Fellow Council	Resident representative from Anatomic Pathology

DEPARTMENTAL SERVICE

2014 - 2015	Pathology Research Interest Group	Co-organizer
2014 - 2015	Immunology Department Post-doc Research Seminar Series	Co-organizer
2012 - 2013	Pathology Research Interest Group	Co-organizer

CONTRIBUTIONS TO DIVERSITY

CONTRIBUTIONS TO DIVERSITY

As a contribution to diversity, for the past 5 years, I have chosen to do my clinical work at Zuckerberg San Francisco General Hospital and Trauma Center where I provide care for the diverse San Francisco community, including underserved and undocumented patients.

I was the first in my family to attend college, and I was compelled a few years ago to participate in UCSF's FirstGen (FG2C) community events and am now enrolled as a mentor for students in this program.

TEACHING AND MENTORING

TEACHING SUMMARY

My planned teaching and mentoring responsibilities for the 2018 - 2019 year are as follows: I assist and instruct residents and medical students in the gross description and pathologic evaluation of placental specimens at UCSF and Zuckerberg San Francisco General Hospital (ZSFGH). I instruct pathology residents and medical students on the microscopic features of placental diseases when they rotate through the ZSFGH pathology department and when the residents consult me on problem cases from the UCSF pathology department. I serve as the first resource for these referrals, instead of the resident going directly to the surgical pathology attending faculty. I present two, forty-five minute long teaching lectures on placental pathology to pathology residents and interested obstetrics and pediatrics residents rotating through ZSFGH pathology department. I present relevant correlative placental pathology for cases discussed at interdepartmental conferences (ie/obstetrics, radiology, pediatrics, neonatology). I assist in the one-on-one teaching of gross and microscopic pathology in the first and second year medical student laboratories for the pathology component of the new multidisciplinary curriculum, as needed. I serve as a role model and advisor to residents and medical students and be available to advise them on careers in pathology, including various aspects of subspecialty training as related to an academic practice in the field of anatomic pathology. This year I will begin to advise and assist residents and medical students in clinical research, including preparation of abstracts, manuscripts, posters, etc.

Additionally, I teach medical school small group pathology sessions throughout the school year.

FORMAL TEACHING

	Academic Yr	Course No. & Title	Teaching Contribution	School	Class Size
	2018 - 2018	Foundations 1 - Ground School	Pathology Small Group Instructor	Medicine	13
	2018 - 2018	Foundations 1 - Leukemia/lymphoma	Pathology Small Group Instructor	Medicine	13
	2018 - 2018	Foundations 1 - REGN (glomerular disease, GI, liver)	Pathology Small Group Instructor	Medicine	13
	2016 - 2017	Foundations 1 - Airways, Blood, and Circulation	Pathology Small Group Instructor	Medicine	11
	2016 - 2017	Foundations 1 - Life Stages	Pathology Small Group Instructor	Medicine	11
	2016 - 2017	Foundations 1 - Ground School	Pathology Small Group Instructor	Medicine	11

	Academic Yr	Course No. & Title	Teaching Contribution	School	Class Size
	2016 - 2017	Foundations 1 - Pathogens and Host Defenses	Pathology Small Group Instructor	Medicine	11
	-			Medicine	

RESEARCH AND CREATIVE ACTIVITIES

RESEARCH AND CREATIVE ACTIVITIES SUMMARY

I aspire to a career as an academic physician scientist conducting basic research in immunology with limited clinical responsibilities in Perinatal Anatomic Pathology. As an immunologist, I am most fascinated by studying classical sites of immune privilege, such as tumors and the maternal-fetal interface. As a pathologist, my clinical interest is the placenta, a fascinating yet shockingly enigmatic organ. My current post-doctoral research in the Laboratory of Dr. Adrian Erlebacher seeks to elucidate mechanisms that prevent maternal immune activation agains the "foreign" fetus and placenta. I expect that such efforts will significantly expand the current understanding of how the maternal immune system is modulated during pregnancy. My long-term goal is to use these discoveries to better understand the immune pathogenesis of pregnancy complications and to develop novel therapeutics for application in transplantation, tumor immunology, and autoimmunity.

As a placental pathologist, I am a member of a research team (UCSF and Makerere University, Uganda) investigating prophylaxis against malaria during pregnancy. I serve as Co-Mentor for a Ugandan technician who was awarded a UCSF Pre-term Birth Initiative grant in 2016 to study the incidence and significance of placental infection (acute chorioamnionitis) in pregnant women in Uganda.

Since my pathology residency at UCSF (07/2010 to the present time), I have been involved in several translational research projects. This work predominantly involves retrospective microscopic analysis of human tissue, and assessing the clinical implications of our findings.

RESEARCH AWARDS - CURRENT

1. 1K08AI137209-01 PI 90 % effort Rizzuto (PI)
   NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES 01/01/2018 12/31/2022
   Maternal T cell recognition of placental antigen $ 186,000 direct/yr 1 $ 930,000 total

The placenta sheds a vast amount of □foreign□ protein into maternal circulation during pregnancy, to be taken up and presented by maternal antigen presenting cells (APCs). Remarkably, the ensuing T cell response is neither immunogenic nor tolerogenic as pregnant mice neither become immunized to the antigen (Ag), even when given strong adjuvants and depleted of regulatory T cells, nor do they become tolerized to it. Thus, placental Ag is best considered □non-immunogenic,□ a potentially unique category without clear physiological antecedent. The objectives of this proposal are to elucidate the cellular and molecular basis for why placental Ag is non-immunogenic. This question is central to understanding how the placenta and fetus avoid immune rejection, and is also relevant to peripheral immune tolerance in general. As such it aligns perfectly with the long-term goal of Dr. Rizzuto which is to understand the immune pathogenesis of pregnancy complications and develop new therapies for use in transplantation, tumor immunology, and autoimmunity. The overall hypothesis of the proposal is that the non-immunogenicity of placental Ag can be explained by its physical/biochemical properties and/or the phenotype of the maternal APC, and has three specific aims. In Aim 1, Dr. Rizzuto will investigate the Ag presentation pathways governing CD4+ T cell responses and determine why these are non-immunogenic. This Aim builds upon preliminary data that B cells rather than DCs are critical for presenting placental Ag to maternal CD4+ T cells. In Aim 2, she will define the physical/biochemical properties of placental Ag that render it non-immunogenic, including exploring the functional significance of her finding that the Ag accumulates maternal antibodies. In Aim 3, she will define the Ag cross-presentation pathways that govern CD8+ T cell responses and determine why these are nonimmunogenic. This Aim focuses on the classical Batf3-dependent DC subset known to cross-present Ag, as well as a currently undefined, and atypical APC. This work is relevant to the mission of NIAID because it will significantly expand the understanding of peripheral immune tolerance mechanisms.

I am performing the proposed experiments in the research laboratory of Dr. Adrian Erlebacher. As this is a Mentored Clinical Scientist Research Career Development Award, I will follow a training plan to foster the goal of becoming an academic physician scientist. This includes scientific and career advisory by Dr. Erlebacher and a committee, coursework in reproduction, proteomics, and biostatistics, attendance at meetings to foster collaboration, and career development activities.

2. PI Rizzuto (PI)

Society for Pediatric Pathology Young Investigatory Research Grant 07/01/2018

Profiling the maternal T cell response to placental antigen $ 15,000 direct/yr 1 $ 15,000 total

I received funding for a pilot study to discover the molecular signature associated with the non-immunogenic maternal CD8+ and CD4+ T cell responses that occur in response to placental antigen. This study will lay the foundation for future work investigating the molecular mechanism behind the generation of the non-immunogenic T cell response.

RESEARCH AWARDS - PAST

1. GRANT11285545 PI/Post-doc

RUTH L. KIRSCHSTEIN NATIONAL RESEARCH SERVICE AWARDS (NRSA) FOR INDIVIDUAL POSTDOCTORAL FELLOWS (PARENT F32)	07/01/2013	07/01/2016
Immune responses to infection at the maternal-fetal interface	$ 57530 direct/yr 1	$ 174696 total

2. PI/Post-doc

University of California Partnerships for Faculty Diversity	07/01/2013	07/01/2015
University of California President's Post-doctoral Fellowship	$ 5,000 direct/yr 1	$ 5,000 total

3. PI/Post-doc

Society for Pediatric Pathology	2013	2013
Young Investigator Research Grant		$ 10,000 total

PEER REVIEWED PUBLICATIONS

1. Pimtanothai N, Rizzuto GA, Slack R, Steiner NK, Kosman CA, Jones PF, Koester R, Ng J, Hartzman RJ, Katovich Hurley C. Diversity of alleles encoding HLA-B40: relative frequencies in united states populations and description of five novel alleles. Hum Immunol. 2000 Aug; 61(8):808-15.
2. Steiner NK, Gans CP, Kosman C, Baldassarre LA, Edson S, Jones PF, Rizzuto G, Pimtanothai N, Koester R, Mitton W, Ng J, Hartzman RJ, Hurley CK. Novel HLA-B alleles associated with antigens in the 8C CREG. Tissue Antigens. 2001 Apr; 57(4):373-5.
3. Steiner NK, Jones P, Kosman C, Edson S, Rizzuto G, Gans CP, Mitton W, Koester R, Rodriguez-Marino SG, Ng J, Hartzman RJ, Hurley CK. Novel HLA-B alleles associated with antigens in the 7C CREG. Tissue Antigens. 2001 May; 57(5):486-8.
4. Steiner NK, Kosman C, Jones PF, Gans CP, Rodriguez-Marino SG, Rizzuto G, Baldassarre LA, Edson S, Koester R, Sese D, Mitton W, Ng J, Hartzman RJ, Hurley CK. Twenty-nine new HLA-B alleles associated with antigens in the 5C CREG. Tissue Antigens. 2001 May; 57(5):481-5.
5. Hurley CK, Steiner N, Gans CP, Kosman C, Mitton W, Koester R, Jones P, Edson S, Rizzuto G, Hartzman RJ, Ng J, Rodriguez-Marino SG. Twelve novel HLA-B*15 alleles carrying previously observed sequence motifs are placed into B*15 subgroups. Tissue Antigens. 2001 May; 57(5):474-7.
6. Bradshaw D, Gans CP, Jones P, Rizzuto G, Steiner N, Mitton W, Ng J, Koester R, Hartzman RJ, Hurley CK. Novel HLA-A locus alleles including A*01012, A*0306, A*0308, A*2616, A*2617, A*3009, A*3206, A*3403, A*3602 and A*6604. Tissue Antigens. 2002 Apr; 59(4):325-7.

7. Rizzuto G, Li L, Steiner N, Slack R, Tang T, Heine U, Lin YS, Ng J, Hartzman R, Hurley CK. Diversity within the DRB1*08 allele family in four populations from a United States hematopoietic stem cell donor database and characterization of five novel DRB1*08 alleles. Hum Immunol. 2003 Jun; 64(6):607-13.

8. Turk MJ, Guevara-Patiño JA, Rizzuto GA, Engelhorn ME, Sakaguchi S, Houghton AN. Concomitant tumor immunity to a poorly immunogenic melanoma is prevented by regulatory T cells. J Exp Med. 2004 Sep 20; 200(6):771-82.

9. Rizzuto GA, Wolchok JD. Persistence makes perfect: the benefits of IL-2 in adoptive immunotherapy. Cytotherapy. 2005; 7(5):391-2.

10. Rivera A, Van Epps HL, Hohl TM, Rizzuto G, Pamer EG. Distinct CD4+-T-cell responses to live and heat-inactivated Aspergillus fumigatus conidia. Infect Immun. 2005 Nov; 73(11):7170-9.

11. Uchi H, Stan R, Turk MJ, Engelhorn ME, Rizzuto GA, Goldberg SM, Wolchok JD, Houghton AN. Unraveling the complex relationship between cancer immunity and autoimmunity: lessons from melanoma and vitiligo. Adv Immunol. 2006; 90:215-41.

12. Guevara-Patiño JA, Engelhorn ME, Turk MJ, Liu C, Duan F, Rizzuto G, Cohen AD, Merghoub T, Wolchok JD, Houghton AN. Optimization of a self antigen for presentation of multiple epitopes in cancer immunity. J Clin Invest. 2006 May; 116(5):1382-90.

13. Cohen AD, Diab A, Perales MA, Wolchok JD, Rizzuto G, Merghoub T, Huggins D, Liu C, Turk MJ, Restifo NP, Sakaguchi S, Houghton AN. Agonist anti-GITR antibody enhances vaccine-induced CD8(+) T-cell responses and tumor immunity. Cancer Res. 2006 May 1; 66(9):4904-12.

14. Zakrzewski JL, Kochman AA, Lu SX, Terwey TH, Kim TD, Hubbard VM, Muriglan SJ, Suh D, Smith OM, Grubin J, Patel N, Chow A, Cabrera-Perez J, Radhakrishnan R, Diab A, Perales MA, Rizzuto G, Menet E, Pamer EG, Heller G, Zúñiga-Pflücker JC, Alpdogan O, van den Brink MR. Adoptive transfer of T-cell precursors enhances T-cell reconstitution after allogeneic hematopoietic stem cell transplantation. Nat Med. 2006 Sep; 12(9):1039-47.

15. Engelhorn ME, Guevara-Patiño JA, Merghoub T, Liu C, Ferrone CR, Rizzuto GA, Cymerman DH, Posnett DN, Houghton AN, Wolchok JD. Mechanisms of immunization against cancer using chimeric antigens. Mol Ther. 2008 Apr; 16(4):773-81.

16. Zakrzewski JL, Suh D, Markley JC, Smith OM, King C, Goldberg GL, Jenq R, Holland AM, Grubin J, Cabrera-Perez J, Brentjens RJ, Lu SX, Rizzuto G, Sant'Angelo DB, Riviere I, Sadelain M, Heller G, Zúñiga-Pflücker JC, Lu C, van den Brink MR. Tumor immunotherapy across MHC barriers using allogeneic T-cell precursors. Nat Biotechnol. 2008 Apr; 26(4):453-61.

17. Saenger YM, Li Y, Chiou KC, Chan B, Rizzuto G, Terzulli SL, Merghoub T, Houghton AN, Wolchok JD. Improved tumor immunity using anti-tyrosinase related protein-1 monoclonal antibody combined with DNA vaccines in murine melanoma. Cancer Res. 2008 Dec 1; 68(23):9884-91.

18. Rizzuto GA, Merghoub T, Hirschhorn-Cymerman D, Liu C, Lesokhin AM, Sahawneh D, Zhong H, Panageas KS, Perales MA, Altan-Bonnet G, Wolchok JD, Houghton AN. Self-antigen-specific CD8+ T cell precursor frequency determines the quality of the antitumor immune response. J Exp Med. 2009 Apr 13; 206(4):849-66.

19. Hirschhorn-Cymerman D, Rizzuto GA, Merghoub T, Cohen AD, Avogadri F, Lesokhin AM, Weinberg AD, Wolchok JD, Houghton AN. OX40 engagement and chemotherapy combination provides potent antitumor immunity with concomitant regulatory T cell apoptosis. J Exp Med. 2009 May 11; 206(5):1103-16.

20. Nakahara T, Uchi H, Lesokhin AM, Avogadri F, Rizzuto GA, Hirschhorn-Cymerman D, Panageas KS, Merghoub T, Wolchok JD, Houghton AN. Cyclophosphamide enhances immunity by modulating the balance of dendritic cell subsets in lymphoid organs. Blood. 2010 Jun 3; 115(22):4384-92.

21. Cohen AD, Schaer DA, Liu C, Li Y, Hirschhorn-Cymmerman D, Kim SC, Diab A, Rizzuto G, Duan F, Perales MA, Merghoub T, Houghton AN, Wolchok JD. Agonist anti-GITR monoclonal antibody induces melanoma tumor immunity in mice by altering regulatory T cell stability and intra-tumor accumulation. PLoS One. 2010; 5(5):e10436.

22. Schaer DA, Li Y, Merghoub T, Rizzuto GA, Shemesh A, Cohen AD, Li Y, Avogadri F, Toledo-Crow R, Houghton AN, Wolchok JD. Detection of intra-tumor self antigen recognition during melanoma tumor progression in mice using advanced multimode confocal/two photon microscope. PLoS One. 2011; 6(6):e21214.

23. Lesokhin AM, Hohl TM, Kitano S, Cortez C, Hirschhorn-Cymerman D, Avogadri F, Rizzuto GA, Lazarus JJ, Pamer EG, Houghton AN, Merghoub T, Wolchok JD. Monocytic CCR2+ Myeloid-Derived Suppressor Cells Promote Immune Escape by Limiting Activated CD8 T-cell Infiltration into the Tumor Microenvironment. Cancer Res. 2012 Feb 15; 72(4):876-86.

24. Diab A, Jenq RR, Rizzuto GA, Cohen AD, Huggins DW, Merghoub T, Engelhorn ME, Guevara-Patiño JA, Suh D, Hubbard-Lucey VM, Kochman AA, Chen S, Zhong H, Wolchok JD, van den Brink MR, Houghton AN, Perales MA. Enhanced responses to tumor immunization following total body irradiation are time-dependent. PLoS One. 2013; 8(12):e82496. PMID: 24349298. PMCID: PMC3861406

25. Kohi MP, Rizzuto GA, Fidelman N, Lucero J, Thiet MP. Retained Placenta Accreta Mimicking Choriocarcinoma. Case Rep Pathol. 2015; 2015:167986. PMID: 26495146. PMCID: PMC4606209

26. Malandro N, Budhu S, Kuhn NF, Liu C, Murphy JT, Cortez C, Zhong H, Yang X, Rizzuto G, Altan-Bonnet G, Merghoub T, Wolchok JD. Clonal Abundance of Tumor-Specific CD4(+) T Cells Potentiates Efficacy and Alters Susceptibility to Exhaustion. Immunity. 2016 Jan 19; 44(1):179-93. PMID: 26789923. PMCID: PMC4996670

27. Rizzuto GA, Kapidzic M, Gormley M, Bakardjiev AI. Human Placental and Decidual Organ Cultures to Study Infections at the Maternal-fetal Interface. J Vis Exp. 2016 Jul 21; (113). PMID: 27500727

28. Kakuru A, Jagannathan P, Muhindo MK, Natureeba P, Awori P, Nakalembe M, Opira B, Olwoch P, Ategeka J, Nayebare P, Clark TD, Feeney ME, Charlebois ED, Rizzuto G, Muehlenbachs A, Havlir DV, Kamya MR, Dorsey G. Dihydroartemisinin-Piperaquine for the Prevention of Malaria in Pregnancy. N Engl J Med. 2016 Mar 10; 374(10):928-39. PMID: 26962728. PMCID: PMC4847718

29. Faralla C, Rizzuto GA, Lowe DE, Kim B, Cooke C, Shiow LR, Bakardjiev AI. InlP - a New Virulence Factor with Strong Placental Tropism. Infect Immun. 2016 Oct 10. PMID: 27736782. PMCID: PMC5116735

30. Natureeba P, Kakuru A, Muhindo M, Ochieng T, Ategeka J, Koss CA, Plenty A, Charlebois ED, Clark TD, Nzarubara B, Nakalembe M, Cohan D, Rizzuto G, Muehlenbachs A, Ruel T, Jagannathan P, Havlir DV, Kamya MR, Dorsey G. Intermittent Preventive Treatment With Dihydroartemisinin-Piperaquine for the Prevention of Malaria Among HIV-Infected Pregnant Women. J Infect Dis. 2017 Jul 01; 216(1):29-35. PMID: 28329368

31. Rizzuto G, Tagliani E, Manandhar P, Erlebacher A, Bakardjiev AI. Limited Colonization Undermined by Inadequate Early Immune Responses Defines the Dynamics of Decidual Listeriosis. Infect Immun. 2017 Aug; 85(8). PMID: 28507070. PMCID: PMC5520438

32. Kapisi J, Kakuru A, Jagannathan P, Muhindo MK, Natureeba P, Awori P, Nakalembe M, Ssekitoleko R, Olwoch P, Ategeka J, Nayebare P, Clark TD, Rizzuto G, Muehlenbachs A, Havlir DV, Kamya MR, Dorsey G, Gaw SL. Relationships between infection with Plasmodium falciparum during pregnancy, measures of placental malaria, and adverse birth outcomes. Malar J. 2017 Oct 05; 16(1):400. PMID: 28982374. PMCID: PMC5629777

33. Nancy P, Siewiera J, Rizzuto G, Tagliani E, Osokine I, Manandhar P, Dolgalev I, Clementi C, Tsirigos A, Erlebacher A. H3K27me3 dynamics dictate evolving uterine states in pregnancy and parturition. J Clin Invest. 2017 Nov 27. PMID: 29202469

34. Fels Elliott DR, Finkbeiner WE, Rizzuto G. Aspiration pneumonia in the setting of diffuse esophageal retention cysts: An autopsy case report. Human Pathology Case Reports. 2018 September pages 53-55, https://doi.org/10.1016/j.ehpc.2018.05.003.

35. Faralla C, Bastounis EE, Ortega FE, Light SH, Rizzuto G, Nocadello S, Anderson WF, Robbins JR, Theriot JA, Bakardjiev AI. Listeria monocytogenes InlP interacts with afadin and facilitates basement membrane crossing. PloS Pathogens. 2018 May 30; 14(5):e1007094. PMID: 29847585.

BOOKS AND CHAPTERS

1. Gabrielle Rizzuto & Anna Bakardjiev. Listeria monocytogenes. Chapter in "Congenital and Perinatal Infections", Oxford University Press. 2018.

SIGNIFICANT PUBLICATIONS

1. **Rizzuto GA,** Merghoub T, Hirschhorn-Cymerman D, Liu C, Lesokhin AM, Sahawneh D, Zhong H, Panageas KS, Perales MA, Altan-Bonnet G, Wolchok JD, Houghton AN. Self-antigen-specific CD8+ T cell precursor frequency determines the quality of the antitumor immune response. J Exp Med. 2009 Apr 13; 206(4):849-66.

   My graduate thesis work explored the CD8+ T cell response to melanoma. A primary goal of cancer immunotherapy is to improve the naturally occurring, but weak, immune response to tumors. We hypothesized that ineffective responses to cancer vaccines may be due in part to low numbers of self-reactive lymphocytes surviving negative selection, and we tested this hypothesis by measuring the frequency of naïve CD8+ T cells that recognize a self-antigen (gp100) expressed by melanocytes and melanoma cells in mice. Each individual mouse possesses only a few (0-10) gp100-specific CD8+ T cells. We demonstrated that vaccine-elicited tumor immunity (rejection of melanoma) and autoimmunity (mouse coat depigmentation) can be enhanced by supplementing the naïve CD8+ T cell repertoire with additional naïve, gp100 specific CD8+ T cells. Surprisingly, though, we found that a threshold is reached whereby transfer of increased numbers of antigen-specific cells impairs functional benefit. Our results showed that impairment is due to competition between the clones of T cells. We showed that CD8+ T cell responses primed at frequencies below this threshold, proliferate more, acquire poly-functionality (secrete multiple effector cytokines and cytotoxic mediators), and eradicate melanoma tumors more effectively.

2. **Rizzuto G**, Tagliani E, Manandhar P, Erlebacher A, Bakardjiev AI. Limited Colonization Undermined by Inadequate Early Immune Responses Defines the Dynamics of Decidual Listeriosis. Infect Immun. 2017 Aug; 85(8). PMID: 28507070. PMCID: PMC5520438

   My primary project as a postdoctoral researcher in the Bakardjiev laboratory at UCSF assessed the dynamics of Listeria monocytogenes infection in primary human decidual organ cultures and in the murine decidua in vivo. I discovered that although the decidua restricts initial infection, innate immune responses (including the recruitment of monocytes, macrophages, and NK cells to the sites of infections) are severely compromised and correlate with rapid and robust bacterial burden int he uterus. The main manuscript from this study was published in Infection and Immunity.

3. Hirschhorn-Cymerman D, **Rizzuto GA**, Merghoub T, Cohen AD, Avogadri F, Lesokhin AM, Weinberg AD, Wolchok JD, Houghton AN. OX40 engagement and chemotherapy combination provides potent antitumor immunity with concomitant regulatory T cell apoptosis. J Exp Med. 2009 May 11; 206(5):1103-16.

   During graduate school, I was fortunate to collaborate with members of the Houghton/Wolchok laboratory on tumor immunology projects related to co-stimulation (augmentation of immune responses by stimulating OX40 and GITR), the immune-enhancing properties of low-dose chemotherapy (cyclophosphamide), the mechanism of synergy between monoclonal antibody therapy and vaccine-elicited T cell responses, myeloid-derived suppressor cells (examining how these cells inhibit responses to melanoma in mice), and in-vivo two-photon microscopy of anti-tumor responses in the tumor-draining lymph node of melanoma-bearing mice. I also collaborated with others in the department, studying mechanisms of T-cell reconstitution after allogeneic bone marrow transplant (van den Brink Laboratory, Sloan-Kettering Institute).

4. Schaer DA, Li Y, Merghoub T, **Rizzuto GA**, Shemesh A, Cohen AD, Li Y, Avogadri F, Toledo-Crow R, Houghton AN, Wolchok JD. Detection of intra-tumor self antigen recognition during melanoma tumor progression in mice using advanced multimode confocal/two photon microscope. PLoS One. 2011; 6(6):e21214.

   Similar to reference #3 this paper emanated from collaborative efforts with other members of the Houghton/Wolchok laboratory while I was a graduate student. Here we used two photon microscopy to visualize the behavior of anti-tumor T cells in tumor-draining lymph nodes during tumor progression.

5. Turk MJ, Guevara-Patiño JA, **Rizzuto GA**, Engelhorn ME, Sakaguchi S, Houghton AN. Concomitant tumor immunity to a poorly immunogenic melanoma is prevented by regulatory T cells. J Exp Med. 2004 Sep 20; 200(6):771-82.

   As an early graduate school rotation student, I was fortunate to work on a project defining the role of regulatory T cell in a mouse melanoma model of "concomitant immunity". We found that regulatory T cells prevent CD8+ T cell-mediated rejection of a challenge tumor in mice already bearing a primary tumor at a different site. Inhibition or depletion of regulatory T cells unmasks an effective CD8+ T cell anti-tumor response, and we observed rejection of challenge tumors in mice already bearing primary neoplasms at different sites.

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