

DUKE UNIVERSITY MEDICAL CENTER

CURRICULUM VITAE

**for
Permanent Record
and the
Appointments and Promotions Committee**

Date Prepared: 12/4/15

Name: Sallie R. Permar, M.D., Ph.D.

Primary Academic Appointment: Associate Professor with tenure

Primary Academic Department: Department of Pediatrics
Division of Infectious Diseases

Secondary Appointment: Department of Immunology
Department of Molecular Microbiology
and Genetics, Center for Virology

Present Academic Rank and Title: Associate Professor of Pediatrics, Track II

Date and Rank of First Duke Faculty Appointment: Assistant Professor of Pediatrics: 08/01/2011

Medical Licensure: North Carolina License, 2011

Specialty Certification(s) and Dates: Pediatrics: 07/2008
Pediatric Infectious Diseases: 07/2009

<u>Education</u>	<u>Institution</u>	<u>Date (Year)</u>	<u>Degree</u>
High School	Needham Broughton High School Raleigh, NC	1993	HS diploma
College	Davidson College Davidson, NC	1997	BS, cum laude
Graduate or Professional School	Johns Hopkins University Bloomberg School of Public Health Dept. of Molecular Microbiology & Immunology Baltimore, MD	2004	PhD
Graduate or Professional School	Harvard Medical School Boston, MA	2004	MD, magna cum laude

Professional Training and Academic Career:

<u>Institution</u>	<u>Position/Title</u>	<u>Dates</u>
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Children's Hospital Boston Boston Medical Center	Intern/Resident in Pediatrics	07/2004 – 07/2007
Children's Hospital Boston	Clinical Fellow in Pediatric Infectious Diseases	07/2007 – 07/2009
Beth Israel Deaconess Medical Center	Research Fellow	07/2004 – 07/2008
Harvard Medical School	Instructor of Pediatrics	07/2008 – 03/2010
Harvard Medical School	Assistant Professor of Pediatrics	03/2010 – 07/2011
Duke University Medical Center	Assistant Professor of Pediatrics, Molecular Genetics and Microbiology, Immunology	08/2011 – 11/2013
Duke University Medical Center	Associate Professor of Pediatrics	12/2013 – 8/2015
Duke University Medical Center	Associate Professor with tenure of Pediatrics, Molecular Genetics and Microbiology, Immunology	8/2015 - current

Scholarly Societies:

- 1996 Omicron Delta Kappa; Davidson College; Scholarship and Service
2004 Delta Omega Honors Society; Johns Hopkins University; Scholarship in Public Health
2011 Society for Pediatrics Research
2014 Alpha Omega Alpha (AOA) Medical Honors Society
2015 American Society of Clinical Investigation (ASCI)

Leadership training:

Courses:

- 2/2012: Duke University School of Medicine Faculty Development Office LEADER course – selected for participation
12/2014: Association of American Medical Colleges Mid-Career Women Faculty Professional Development Seminar – selected for participation

Seminars:

- 5/2014: Mentoring for the Mentor
6/2014: Emotional Intelligence (EQ) Workshop
3/2015: Negotiation Training for Academic Medical Faculty

Publications: (54 total, 13 first author, 30 last author)

My name in **bold**; trainees are underlined

Refereed Journals:

1. Polack, F. P., Lee, S., **Permar, S.**, Manyara, E., Nousari, H. G., Mustafa, F., Jeng, Y., Valsamakis, A., Adams, R. J., Robinson, H. and Griffin, D.E. DNA vaccines against measles: Protection in rhesus macaques correlates with neutralizing antibody directed to either HA or F glycoprotein. *Nature Medicine*; 6(7): 776-781, 2000.
2. **Permar, SR**, Moss, W.J., Ryon, J.J., Monze, M., Quinn, T.C., Cutts, F., and Griffin, D.E. Prolonged measles virus shedding detected by RT-PCR in HIV-infected Zambian Children. *Journal of Infectious Diseases*; 183(4): 845-849, 2001. PMID: 11170977
3. Zhang, Y, **Permar, S**, and Sun, Z. Conditions that may affect the results of *Mycobacterium tuberculosis* susceptibility testing to pyrazinamide. *Journal of Medical Microbiology*; 51(1):42-49, 2001. PMID: 11800471

4. **Permar, SR**, Klumpp, S.A., Mansfield, K.G., Kim, W.K., Gorgone, D.A., Lifton, M.A., Williams, K.C., Schmitz, J.E., Reimann, K.A., Axthelm, M.K., Polack, F.P., Griffin, D.E., Letvin, N.L. The role of CD8+ T lymphocytes in control and clearance of measles virus infection in rhesus monkeys. *Journal of Virology*; 77(7):4396-4400, 2003. PMID: 12634396
5. **Permar, SR**, Moss, W.J., Ryon, J.J., Douek, D., Griffin, D.E. Increased thymic output during acute measles virus infection. *Journal of Virology*; 77(14): 7872-7879, 2003. PMID: 12829827
6. **Permar, SR**, Klumpp, S.A., Mansfield, K.G., Carville, A., Gorgone, D.A., Lifton, M.A., Schmitz, J.E., Reimann, K.A., Polack, F.P., Griffin, D.E., and Letvin, N.L. Limited contribution of humoral immunity to the clearance of measles viremia in rhesus monkeys. *Journal of Infectious Diseases*; 190(5): 998-1005, 2004. Cover article. PMID: 15295708
7. **Permar, SR**, Griffin, D.E., Letvin, N.L. Immune containment and consequences of measles virus infection in healthy and immunocompromised individuals. *Clinical and Vaccine Immunology*; 13(4): 437-443, 2006. PMID: 16603610
8. Sun, Y., **Permar, SR**, Buzby, A.P., Letvin, N.L., Memory CD4+ T lymphocyte loss and dysfunction during primary simian immunodeficiency virus infection are associated with steady state levels of viral replication. *Journal of Virology*. 81(15):8009-8015, 2007. PMID: 17522197
9. **Permar, SR**, Rao, S.S., Sun, Y., Bao, S., Buzby, A.P., Kang, H.K., Letvin, N.L. Clinical measles after measles virus challenge in simian immunodeficiency virus-infected, measles virus-vaccinated rhesus monkeys. *Journal of Infectious Diseases*. 196 (12):1784-1793, 2007. PMID: 18190259
10. **Permar, SR**, Kang, H.K., Carville, A., Mansfield, K.G., Gelman, R.S., Rao, S.S., Whitney, J.H., Letvin, N.L. Potent SIV-specific cellular immune responses in the breast milk of SIV-infected, lactating rhesus monkeys. *Journal of Immunology*, 181(5): 3643-50, 2008. PMID: 18714039
11. **Permar, SR**, Kang, H.K., Carville, A., Mansfield, K.G., Rao, S.S., Letvin, N.L. Preservation of CD4+ T lymphocytes in breast milk during acute SIV infection of lactating rhesus monkeys. *Journal of Infectious Diseases*, 201(2):301-310, 2010. PMID: 20001855
12. **Permar, SR**, Kang, H.K., Wilks, A.B., Mach, L.V., Carville, A, Mansfield, K.G., Learn, G.H., Hahn, B.H., Letvin, N.L. Local replication of simian immunodeficiency virus in the breast milk compartment of chronically-infected, lactating rhesus monkeys. *Retrovirology*, 7:7-12, 2010. PMID: 20122164
13. **Permar, SR**, Wilks, A.B., Ehlinger, E.P., Kang, H.K., Mahlokozera, T., Coffey, R.C., Carville, A., Letvin, N.L., Seaman, M.S. Limited contribution of mucosal IgA to SIV-specific neutralizing antibody response and virus Envelope evolution in breast milk of SIV-infected, lactating rhesus monkeys. *Journal of Virology*, 84(16):8209-18, 2010. PMID: 20519381
14. Wilks, A.B., Christian, E.C., Seaman, M.S., Sircar, P., Carville, A., Esteban, M.; Gomez, C.E., Pantaleo, G., Barouch, D.H., Letvin, N.L., and **Permar, SR**. Robust vaccine-elicited cellular immune responses in breast milk following systemic simian immunodeficiency virus DNA prime and live virus vector boost vaccination of lactating rhesus monkeys. *Journal of Immunology*, 185(11): 7097-106, 2010. PMID: 21041730.
15. Salazar-Gonzalez, J.F., Salazar, M.G., Learn, G.H., Kang, H.K., Mahlokozera, T., Lovingood, R.V., Stacey, A., Kalilani, L., Meshnick, S.M., Borrow, P; Denny, T.N., Letvin, N.L., Shaw, G.M., Hahn, B.H., and **Permar, SR**. Origin and evolution of HIV-1 in breast milk determined by single genome amplification and sequencing. *Journal of Virology*, 85(6):2751-2763, 2011. PMID: 21191008.

16. Sun Y, Asmal M, Lane S, **Permar SR**, Schmidt SD, Mascola JR, Letvin NL. Antibody-dependent cell-mediated cytotoxicity in Simian Immunodeficiency Virus-infected rhesus monkeys. *Journal of Virology*, 85(14):6906-12, 2011. PMID: 21593181.
17. Wilks, A.B., Perry, J.R., Ehlinger, E.P., Zahn, R. C., White, R, Gauduin, M.C., Carville, A., Seamn, M.S., Schmitz, J.E., **Permar, SR**. High cell-free virus load and robust autologous humoral immune responses in breast milk of simian immunodeficiency virus (SIV)-infected African green monkeys. *Journal of Virology*, (18):9517-26, 2011. PMID: 21734053
18. Fouda, G.G., Yates, N.L., Pollara, J., Overmann, G., Mahlokozera, T., Wilks, A.B., Kang, H.H., Salazar-Gonzales, J.F., Salazar, M.G., Kalilani, L., Meshnick, S.R., Hahn, B.H., Shaw, G.M., Letvin, N.L., Ferrari, G., Tomaras, G.D., Montefiori, D.C.; **Permar, SR**. HIV-1 neutralization and ADCC activity of breast milk mirrors that of plasma and is mediated by IgG antibodies. *Journal of Virology*, 85(18):9555-9567, 2011. PMID:21734046
*Selected as top 5 manuscript for 2011 by the American Society of Microbiology
19. Mahlokozera, T; Kang, H.H.; Goonetilleke, N.; Stacey, A.; Lovingood, R.V.; Denny, T.N.; Kalilani, L.; Bunn, J.E.; Meshnick, S. R.; Barrow, P; Letvin, N.L. **Permar, SR**. The magnitude and kinetics of the mucosal HIV-specific CD8+ T lymphocyte response and virus RNA load in breast milk. *PLoS One*, 6(8):e23735, 2011. PMID: 21886819.
20. Ehlinger, E.E., Webster, E.M., Kang, H.H., Cangialose, A., Simmons, A.C., Barbas, K.H., Burchett, S.K., Gregory, M.L., Puopolo, K.P., and **Permar, SR**. Maternal cytomegalovirus-specific immune responses and symptomatic postnatal cytomegalovirus transmission in very low birth weight preterm infants. *Journal of Infectious Diseases*, 204(11): 1672-82. PMID: 21984738.
21. Parrish, N.F., Wilen, C.B., Banks, L.B., Shilpa, S.I., Pfaff, J.M., Salazar-Gonzalez, J.F., Salazar, M., Decker, J.M., Parrish, E., H., Berg, A., Hopper, J., Hora, B., Kumar, K., Mahlokozera, T., Yuan, S., Coleman, C., Vermeulen, M., Oshsenbauer, C.O., Tilton, J.C., **Permar, SR**, Kappes, J.C., Betts, M.R., Busch, M.P., Gao, F., Montefiori, D., Haynes, B.F, Shaw, G. M., Hahn, B.H., Doms, R. W. Transmitted/founder and chronic subtype C HIV-1 use of CD4 CCR5 receptors with equal efficiency and are not inhibited by blocking the integrin $\alpha 4\beta 7$. *PLoS Pathogens*, 2012 May;8(5):e1002686. PMID: 22693444
22. Friedman, J., Alam, S.M, Shen, X., Xia, S., Stewart, S., Anasti, K., Pollara, J., Fouda, G.G., Yang, G., Kelsoe, G., Ferrari, G., Tomaras, G.D., Haynes, B.F., Liao, H.X., Moody, M.A, **Permar, SR**. Isolation of HIV-1-neutralizing mucosal monoclonal antibodies from human colostrum. *PLoS One*, 2012;7(5):e37648. PMID: 22624058
23. Schmitz, J.E., Ma, Z.M., Hagan, E.A., Wilks, A.B., Furr, K., Linde, C.H., Zahn, R.C., Brenchley, J.M., Miller, C.J., **Permar, SR**. Memory CD4+ T lymphocytes in the gastrointestinal tract are a major source of cell-associated simian immunodeficiency virus in chronic nonpathogenic infection of African green monkeys. *Journal of Virology*, Oct;86(20):11380-5. PMID: 22896600
24. Handley, S; Thackray, L.B.; Zhao, G.; Presti, R.; Miller, A.; Droit, L.; Abbink, P.; Maxfield; L. F., Kambal, A.; Duan, E.; Stanley, K.; Kramer, J.; Macri, S.C.; **Permar, SR**; Schmitz, J.E.; Mansfield, K.; Brenchley, J.; Veazey, R.S.; Stappenbeck, T.S.; Wang, D.; Barouch, D.H., Virgin, H.W. Pathogenic simian immunodeficiency virus infection is associated with significant expansion of the enteric virome. *Cell*, 2012 Oct 12;151(2):253-66. PMID: 23063120
25. Russell ES, Ojeda S, Fouda G, Meshnick SR, Montefiori D, **Permar SR**, Swanstrom R. HIV-1 subtype C variants transmitted through the bottleneck of breastfeeding are sensitive to new generation broadly-neutralizing antibodies directed against quaternary and CD4-binding site epitopes. *AIDS Res Hum Retroviruses*. 2013 Mar;29(3):511-5 PMID: 23075434

26. Fouda, G.G., Mahlokozera, T., Salazar-Gonzalez, J., Salazar, M., Learn, G., Kumar, S., Dennison, S.M., Russell, E., Rizzolo, K., Jaeger, F., Cai, F., Vandergrift, N.A., Gao, F., Hahn, B., Shaw, G.M., Swanstrom, R., Meshnick, S., Mwapasa, V., Kalilani, L., Fiscus, S., Montefiori, D., Haynes, B.F., Kwiek, J., Alam, S.M., and **Permar, SR.** Postnatally-transmitted HIV-1 Envelope variants have similar neutralization-sensitivity and phenotype to that of nontransmitted breast milk variants. *Retrovirology*. 2013 Jan 10;10:3. PMID: 23305422
27. Fouda, G.G., Amos, J., Wilks, A.B., Pollara, J, Ray, C., Chand, A., Kunz, E., Liebl, B., Whitaker, K, Carville, A., Smith, S., Colvin, L., Pickup, D., Staats, H, Overman, R., Lloyd, K.E., Chen, H., Parks, R., LaBranche, C., Barnett, S., Tomaras, G., Ferrari, G., Montefiori, D., Liao, H.X., Letvin, N.L., Haynes, B.F., and **Permar, SR.** Mucosal immunization of lactating female rhesus monkeys with a transmitted/founder HIV-1 Envelope induces robust Env-specific IgA antibody responses in breast milk. *Journal of Virology*. 2013 Jun;87(12):6986-99. PMID: 23596289
28. Amos, JD, Wilks, AB, Fouda, GG, Smith, S, Colvin, L, Mahlokozera, T, Ho, C, Beck, K, Overman, R, DeMarco, C,, Hodge, T, LaBranche, C, Montefiori, D, Denny, T, Liao, H-X, Tomaras, G.D., Moody, MA, and **Permar, SR.** Lack of B cell dysfunction is associated with functional, gp120-dominant antibody responses in breast milk of simian immunodeficiency virus-infected African green monkeys. *Journal of Virology*. 2013 Oct;87(20):11211-34. PMID: 23926338
29. Ho, C., Wu, S, Amos, JD, Colvin, L., Smith, S, Wilks, A.B., DeMarco, C., Brinkley, C., Denny, T, Schmitz, JE, Rodrigo, A, and **Permar, SR.** Transient compartmentalization of SIV variants in the breast milk of African green monkeys. *Journal of Virology*, Oct;87(20):11292-9. PMID: 23926337
30. **Permar SR,** Salazar MG, Gao F, Cai F, Learn GH, Kalilani L, Hahn BH, Shaw GM, Salazar-Gonzalez JF. Clonal amplification and maternal-infant transmission of nevirapine-resistant HIV-1 variants in breast milk following single-dose nevirapine prophylaxis. *Retrovirology*. 2013 Aug 14;10:88. PMID: 23941304
31. Fouda, G.G., Jaeger, F.H., Amos, J.D., Ho, C., Kunz, E., Anasti, K., Stamper, L.W., Liebl, B.E., Barbas, K.H., Ohashi, T, Moseley, A.M., Liao, HX, Erickson, H.E., Alam, S.M., and **Permar, SR** "Tenascin-C is an innate broad-spectrum, HIV-1-neutralizing protein in breast milk". *Proceedings of the National Academy of Sciences*, 2013 Nov 5;110(45):18220-5. PMID: 24145401
32. Madani N, Princiotta AM, Schön A, Lalonde J, Feng Y, Freire E, Park J, Courter JR, Jones DM, Robinson J, Liao HX, Moody MA, **Permar SR,** Haynes B, Smith AB 3rd, Wyatt R, Sodroski J. "CD4-mimetic Small Molecules Sensitize Human Immunodeficiency Virus (HIV-1) to Vaccine-elicited Antibodies". *J Virol*. 2014 Apr 2 PMID: 24696475
33. Chahroudi A, Cartwright E, Lee ST, Mavigner M, Carnathan DG, Lawson B, Carnathan PM, Hashempour T, Murphy MK, Meeker T, Ehnert S, Souder C, Else JG, Cohen J, Collman RG, Vanderford TH, **Permar SR,** Derdeyn CA, Villinger F, Silvestri G. "Target cell availability, rather than breast milk factors, dictates mother-to-infant transmission of SIV in sooty mangabeys and rhesus macaques" *PLoS Pathog*. 2014 Mar 6;10(3). PMID: 24604066
34. Meyer, S., Westreich, DJ, Patel E, Ehlinger, EP; Kalilani, L, Lovingood, RL, Denny, TN, Swamy, GK, **Permar, SR** "Postnatal cytomegalovirus exposure in infants of antiretroviral-treated and untreated HIV-infected mothers" *Infectious Diseases Obstetrics and Gynecology*. 2014:989721. PMID: 24723745
35. Smith, SD, Amos, JD, Beck, KN, Colvin, LN, Franke, KS, Liebl, BE, and **Permar, SR.** "Refinement of a hormone induction of lactation protocol in non-pregnant nonhuman primates by using exogenous hormone treatment." *Journal of the American Association for Laboratory Animal Science*. 2014 Nov; 53:700-07. PMID: 25650978

36. Fouda, G.G.; **Permar, SR.** "Immune-based interventions to prevent postnatal HIV-1 transmission." Trends in Microbiology. 2014 Aug;22(8):425-7 PMID: 25086471
37. Fouda, GG, Cunningham, CK, McFarland, EJ, Borkowsky, W, Muresan, P, Pollara, J, Song, LY, Liebl, BE, Whitaker, K, Shen, X, Vandergrift, N, Overman, RG, Yates, NL, Moody, MA, Fry, C, Kim, JH, Michael, NL, Robb, M, Pitisuttihum, P, Kaewkungwal, J, Nitayaphan, S, Rerks-Ngarm, S, Liao, HX, Haynes, B, Montefiori, DC, Ferrari, G, Tomaras, GD and **Permar, SR.** Infant HIV-1 gp120 vaccination elicits robust and durable anti-V1V2 IgG responses and only rare Envelope-specific IgA responses. Journal of Infectious Diseases. 2015 Feb 15; 211:508-517 PMID: 25170104
- Accompanying editorial:
 Gray GE, Corey L. Reevaluating HIV Vaccine Clinical Trials Policy for Infants. J Infect Dis. 2014 Aug 27. PMID: 25170103
38. Sacha, C.R., Vandergrift, N, Jeffries, TL., McGuire, E, Fouda, G.G., Liebl, BE, Marshall, DJ, Gurley, TC, Stiegel, LC, Whitesides, JF, Friedman, J, Badiabo, A, Foulger, A, Yates, NL, Tomaras, GD, Kepler, TB, Liao, HX, Haynes, BF, Moody, MA, and **Permar, SR.** Restricted isotype, distinct variable gene usage, and high rate of gp120-specificity of HIV-1 Envelope-specific B cells in colostrum compared to those in blood of HIV-1-infected, lactating African women. Mucosal Immunol. 2015 Mar 8: 316-26. PMID: 25100291
39. Bialas, K., Swamy, GK, **Permar, SR.** Perinatal cytomegalovirus and varicella zoster virus infections: epidemiology, prevention, and treatment. Clinics in Perinatology. 2015 Mar; 42:61-75 PMID: 25677997
40. Fong Y, Di C, **Permar SR.** Change Point Testing in Logistic Regression Models with Interaction Term. Statistics in Medicine. Stat Med. 2015 Apr 30;34(9):1483-94.
41. Fouda, G.G.; Moody, M.A.; **Permar, SR.** Antibodies for Prevention of mother to child transmission of HIV-1. Current Opinions in HIV and AIDS. 2015 May; 10:177-82. PMID: 25700205
42. Richard J, Veillette M, Brassard N, Iyer SS, Roger M, Martin L, Pazgier M, Schon A, Freire E, Routy JP, Smith Ab 3rd, Park J, Jones DM, Courter JR, Melillo BN, Kaufman De, Hahn, BH, **Permar SR**, Haynes BF, Madani N, Sodroski JG, Finzi A. CD4 mimetics sensitize HIV-1-infected cells to ADCC. Proc Natl Acad Sci USA 2015 May; 112: E2687-94. PMID: 25941367
43. Shen X, Duffy R, Howington R, Cope A, Sadagopal S, Park H, Pal R, Kwa S, Ding S, Yang OO, Fouda GG, Le Grand R, Bolton D, Esteban M, Phogat S, Roederer M, Amara R, Picker LJ, Seder Ra, McElrath MJ, Barnett S, **Permar SR**, Shattock R, DeVico AL, Felber BK, Pavlakis GN, Pantaleo G, Korber BT, Montefiori DC, Tomaras, GD. Vaccine Induced Epitope Specific Antibodies to SIVmac239 Envelope Are Distinct from Those Induced to the HIV-1 Envelope in Non-Human Primates. Journal of Virology 2015 May; PMID: 26018159
44. **Permar SR**, Fong, Y, Vandergrift N, Fouda GG, Gilbert P, Parks R, Jaeger FH, Pollara J, Martelli A, Liebl BE, Lloyd K, Yates NL, Overman RG, Shen X, Whitaker K, Chen H, Pritchett J, Solomon E, Friberg E, Marshall DJ, Whitesides JF, Gurley Tc, Von Holle T, Martinez Dr, Cai F, Kumar A, Xia SM, Lu X, Louzao R, Wilkes S, Datta S, Sarzotti-Kelsoe M, Liao HX, Ferrari G, Alam SM, Montefiori DC, Denny TN, Moody MA, Tomaras GD, Gao F, Haynes BF. Maternal HIV-1 envelope-specific antibody responses and reduced risk of perinatal transmission. J Clin Invest 2015 June; PMID: 26053661
45. Amos JD, Himes JE, Armand L, Gurley TC, Martinez DR, Colvin, L, Beck K, Overman RG, Liao HX, Moody, MA, **Permar SR.** Rapid development of gp120 –focused, neutralizing B cell responses during acute simian immunodeficiency virus infection of African green monkeys. J Virol. 2015 Sep 15;89(18):9485-98; PMID: 26157116
46. Pollara, J, McGuire, E, Fouda, G, Rountree, W, Eudailey, J, Overman, G.R., Seaton, K, Deal, A, Edwards, R, Tegha G, Kamwendo, D, Kumwenda, J, Nelson, J, Liao, H.X., Brinkley, C, Denny, T.N., Ochsenbauer, C,

Ellington, S, King, C, Jamieson, D, van der Horst, C, Kourtis, A, Tomaras, G, Ferrari, G, and **Permar, S.R.** Association of HIV-1 Envelope-Specific Breast Milk IgA Responses with Reduced Risk of Postnatal Mother-to-Child Transmission of HIV-1. *Journal of Virology*, Oct 1;89(19):9952-61; PMID: 26202232

47. Jeffries T.J, Sacha, C.R., Pollara, J, Himes, J, Jaeger, FJ, Dennison, S.M., McGuire' E, Kunz' E, Eudailey' J, Trama, AM, LaBranche, C, Fouda, GG, Wiehe, K, Montefiori, D, Haynes, BF, Liao, HX, Ferrari, G, Alam, SM, Moody, MA and **Permar, S.R.** The function and affinity maturation of HIV-1 gp120-specific monoclonal antibodies derived from colostrum B cells. *Mucosal Immunology*, 2015 Aug 5; PMID: 26242599
48. Wahl, A, Baker, C, Spagnuolo, RA, Stamper, L, Fouda, G, **Permar, SR**, Hinde, K, Kuhn, L, Bode, L, Aldrovandi, G, and Garcia, V.J. Breast milk of HIV-positive mothers has potent and species-specific in vivo HIV inhibitory activity. *Journal of Virology*, 2015 Nov 1;89(21):10868-78; PMID: 26292320
49. Bialas, K.M.; Tanaka, T; Tran, D; Varner, V; Cisneros De La Rosa, E; Chiuppesi, F; Wussow, F; Kattenhorn, L; Macri, S; Kunz, E; Estroff, J; Kirchherr, J; Yue, Y; Fan, Q; Lauck, M; O'Connor, DH; Hall, A; Xavier, A; Diamond, DJ; Barry, PA; Kaur, A; **Permar, SR.** Maternal CD4+ T cells protect against severe congenital cytomegalovirus disease in a novel nonhuman primate model of placental cytomegalovirus transmission. *Proceedings of the National Academy of Sciences*, 2015 Nov 3;112(44):13645-50; PMID: 26483473
50. Kelly MS, Benjamin DK, Puopolo KM, Laughon MM, Clark RH, Mukhopadhyay S, Benjamin Jr DK, Smith PB, **Permar SR.** Postnatal cytomegalovirus infection and the risk of bronchopulmonary dysplasia. *JAMA Pediatr.* 2015;169(12):e153785; PMID: 26642118

Accompanying editorial:

Kimberlin, DW. Sequalae following Postnatally Acquired Cytomegalovirus Infection in Very Low-birth-Weight Neonates. *JAMA Pediatr.* Published online December 7, 2015. PMID: 26642119

51. Lantos, Paul, **Permar SR**, Hoffman, Kate, Swamy, Geeta. The excess burden of cytomegalovirus in African-American communities: a geospatial analysis. *Open Forum Infect Dis.* Online November 19, 2015.
52. Becker-Dreps S, Choi WS, Stamper L, Vilchez S, Velasquez DE, Moon SS, Hudgens MG, Jiang B, **Permar SR.** Innate Immune Factors in Mothers' Breast Milk and Their Lack of Association With Rotavirus Vaccine Immunogenicity in Nicaraguan Infants. *J Pediatric Infect Dis Soc.* 2015 Nov 17. pii: piv076. PMID: 26582774
53. Bialas Kristy, **Permar SR.** The march towards a vaccine for congenital CMV: rationale and models. *PLoS Pathogens*, in press.
54. Martinez David, **Permar SR**, Fouda Genevieve. Contrasting adult and infant immune responses to HIV infection and vaccination. *Clinical and Vaccine Immunology*, in press.

a. Other Published Commentary

1. **Permar SR**, Staats HF. "Which comes first: the antigen or the adjuvant?" *J. of Clin Invest.* 2014 May 16;1-2. PMID: 24837429
2. Fouda, GG, Cunningham CK, **Permar SR.** Infant HIV-1 vaccines: supplementing strategies to reduce maternal-child transmission. *JAMA* 2015 Apr; 313: 1513-4. PMID: 25898044
3. Wright, CJ. **Permar, SR.** Preventing postnatal cytomegalovirus infection in the preterm infant: should it be done, can it be done, and at what cost? *Journal of Pediatrics* Apr 2015; 166: 795-8. PMID: 25662832

b. Book Chapters

1. Natural hosts of SIV: Implications in AIDS. Chapter 13. SIV Transmission in Natural Hosts. Ann Chahroudi, **Sallie Permar**, and Ivona Pandrea. 2014 Elsevier Inc.

2. Manual of Neonatal Care. Chapter 48. Viral Infections. **Sallie R. Permar**

c. Selected Abstracts:

1. Fouda, G, Cunningham, C, McFarland, E, Borkowsky, W, Muresan, P, Liebl, B, Liao, H, Haynes, B, Overman, G, Yates, N, Tomaras, G, and **Permar, SR**. HIV-1 gp120 vaccination elicits a robust and durable anti-V1/V2 IgG response and yet no HIV-1 Env-specific IgA response in HIV-exposed infants. Poster presentation, Keystone HIV Vaccine meeting 2/2013.
2. Fouda, G., Amos, J, Jaeger, F, Erickson, H.P., Ohashi, T., Alam, S.M., **Permar SR**. "A novel innate HIV-neutralizing protein isolated from breast milk" Oral presentation, Conference on Retroviruses and Opportunistic Infections, Atlanta, GA, 3/2013.
3. Fouda, G, Cunningham, C, McFarland, E, Borkowsky, W, Muresan, P, Liebl, B, Liao, H, Haynes, B, Overman, G, Yates, G, Tomaras, G and **Permar, SR**. HIV-1 gp120 vaccination elicits a robust and durable anti-V1/V2 IgG response and yet no HIV-1 Env-specific IgA response in HIV-exposed infants, Oral Presentation, AIDS Vaccine meeting, Barcelona, 10/2013.
4. Ho, C., Wu, S, Himes, J. Amos, JD, Colvin, L., Smith, S, Wilks, A.B., DeMarco, C., Brinkley, C., Denny, T, Schmitz, JE, Rodrigo, A, and **Permar, SR**. Transient Compartmentalization of SIV Variants in the Breast Milk of African Green Monkeys. Poster Presentation, Conference on Retrovirology and Opportunistic Infection, 2014.
5. **Permar, SR.**, Fong, Y, Fouda, G.G., Vandergrift, N.A., Gilbert, P., Ferrari, G., Alam, M., Tomaras, G.D., Denny, T.D., Haynes, B.F., Women and Infant Transmission Study Group. Maternal HIV Envelope V3-Specific IgG Responses Are a Correlate of Risk of Perinatal Transmission. Poster Presentation, Conference on Retrovirology and Opportunistic Infection, 2014.
6. Bialis, K, Takayuki Tanaka², Dollnovan Tran², Erika L Kunz¹, Valerie Varner², Eduardo Cisneros De La Rosa¹, Flavia Chiuppesi³, Felix Wussow³, Lisa Kattenhorn², Judy Estroff⁴, Jennifer Kirchherr¹, Yajuan Yue⁵, Don Diamond³, Peter Barry⁵, *Amitinder Kaur², ***Sallie Permar**¹. Maternal CD4+ T cell depletion enhances congenital rhesus CMV disease. Platform presentation. International CMV meeting, Brisbane, Australia, April, 2015.
7. Fouda, G Josh Eudailey, Erika Kunz, Josh Amos, Jonathan Himes, Krista Beck, Xinyue Wang, Barton Haynes, Keith Reimann and **Sallie Permar**. Kinetics of B12 IgG/IgA in milk following passive immunization of lactating monkeys. CROI 2015, Seattle, WA
8. Fouda, G. Coleen Cunningham, Elizabeth J. McFarland, William Borkowsky, Nicole Yates, Erika Kunz, Erin McGuire, Hua-Xin Liao, Barton Haynes, Georgia Tomaras and **Sallie Permar**. Broad, highly avid vaccine-elicited anti-V1V2 IgG responses in HIV-exposed infants. CROI 2015, Seattle, WA

Invited lectureships

Duke and associated institution

9/2011 – Annual Duke Center for AIDS Research Meeting – "Protection against postnatal SIV transmission in natural SIV hosts"

10/2011 – DUMC Employee Health Seminar – "Occupational exposure to SIV and other nonhuman primate viruses"

10/2011 – Department of Molecular Microbiology and Genomics Seminar – "Protection against postnatal virus transmission"

2/2012 – Neonatal Grand Rounds – “Evaluation and treatment of perinatal CMV infection”

4/2012 – Katz-Wiliford Update - “Passing the TORCH – Update on Congenital Infections”

4/2012 – Immunology Department Seminar – “Immune protection against SIV transmission”

4/2012 – Pediatric resident core lecture series – “Congenital infections”

5/2012 – Pediatric Research Retreat: “High efficiency dendritic cell-mediated transfer of postnatally-transmitted HIV-1 variants”

7/2012-2015 – Pediatric ID fellows core lecture series – “Congenital infections”

10/2012 – MD-PhD program research talk “Novel HIV-neutralizing protein isolated from breast milk”

1/2013 – Duke Human Vaccine Institute Journal Club: “Novel HIV-neutralizing protein isolated from breast milk”

2/2013 – Durham Regional Hospital Pediatric Grand Rounds – “Perinatal CMV transmission”

3/2013 – Duke University Medical Center Department of Pediatrics Grand Rounds – “Congenital CMV transmission: advances in diagnosis and treatment”

4/2013 – Pediatric resident core lecture series – “Vaccine Preventable Diseases”

10/2013 – Wake Medical Center Pediatrics Grand Rounds – “Perinatal CMV transmission: diagnosis and treatment”

2/2014 – Graduate Medical Education retreat for DUMC residents/fellows - “How to start a research career”

10/2014 – Osher Lifelong Learning Institute at Duke (OLLI) – “Vaccine prevention of neonatal infections”

4/2015 – Southeastern Medical Centers Women’s MD-PhD Symposium – “Getting the motivation and experiences needed for a successful career as a physician scientist”

Region/National Meetings

11/2011 – Wake Forest University Department of Microbiology “Protection against perinatal SIV transmission in natural SIV hosts”

9/2012 – AIDS Vaccine Meeting, Boston, MA: Session co-Chair

2/2013 – University of Pittsburgh Richard Mellon Foundation Pediatric Scholars Seminar “Immune protection against postnatal SIV/HIV transmission”

2/2013 – HIV Vaccine Keystone Meeting, Keystone, CO: “Immune protection against postnatal HIV.SIV transmission”

5/2013 – Pediatric Academic Society Meeting, Washington, D.C. “Mother-to-Child Transmission of HIV/SIV: Advances in Animal Models and Recent Clinical Trials” – Speaker and Session Co-chair

11/2013 – University of North Carolina Department of Microbiology Seminar “The antibody repertoire following maternal HIV/SIV infection and vaccination”

11/2013 – NIH Vaccine Research Center Research Seminar “The antibody repertoire elicited in breast milk following HIV/SIV infection and vaccination”

4/2014 – University of Wisconsin Department of Pathology Research Seminar “B cell responses and protection against mother to child HIV/SIV transmission”

4/2014 – South Eastern Regional Virology Conference (SERVC) “Immune protection against congenital cytomegalovirus transmission”

6/2014 – Department of Microbiology, University of Washington Research Seminar “The antibody repertoire in breast milk following HIV-infection and vaccination.”

6/2014 – Doris Duke Clinical Mentorship Program Annual Meeting, Keynote Speaker – “What motivates you?: Getting the experiences that will shape and drive your career”

9/2014 – Johns Hopkins Bloomberg School of Public Health, Alumni Day 2014. “The public health of a basic science career”

9/2014 – Davidson College Biology Department Seminar and Davidson X Course Kick Off “Can we reach the goal of an HIV-free generation?”

10/2014 – American Academy of Pediatrics National Conference & Exhibition, San Diego, CA “Diagnosis and treatment of CMV infection during pregnancy”

2/2015 – Conference on Retrovirology and Opportunistic Infections, Platform speaker – “Translating immunologic correlates of protection against HIV-1 transmission”

4/2015 – W. Harry Feinstone Department of Molecular Microbiology and Immunology and the Division of Infectious Diseases at the Johns Hopkins Medical Institution 2014-2015 joint seminar series “Immune protection against perinatal HIV-1 and cytomegalovirus”

5/2015 – Pediatric Academic Society meeting, San Diego, CA , Platform speaker – “Prevention of Postnatal CMV infection”

5/2015 – University of Alabama Children’s Hospital Pediatric Grand Rounds – “Immune protection against perinatal CMV infection”

1/2016 – Indiana University Medical Center Department of Pediatrics Grand Rounds

5/2016 – University of San Diego Medical Center Department of Pediatrics Grand Rounds

Professional Awards and Special Recognitions:

1997 Tom Daggy Biology Award, Davidson College

1997 Cum Laude, Davidson College

1997 Fulbright Fellowship, University Teaching Hospital, Lusaka, Zambia.

1998 Eleanor Bliss Honorary Fellowship, Bloomberg School of Public Health

2001 R. Bradley Sack Award, Bloomberg School of Public Health

2004 Pasteur Clinical Research Award, Harvard Medical School.

2004 Magna Cum Laude, Harvard Medical School

2006 Society for Pediatric Research House Officer Research Award

2006 American Medical Association Resident Research Award

2006 Yale Johnson and Johnson International Physician Scholar
 2007 Pediatric Infectious Disease Society/St. Jude Children's Hospital Fellowship in Basic Research
 2008 International Lactation Consultant Association Research Award
 2009 Society for Pediatric Research Fellow Basic Science Research Award
 2009 Maxwell Finland Infectious Disease Fellow Research Award
 2009 Center for HIV/AIDS Vaccine Immunology Young Investigator Award
 2009 Eleanor and Miles Shore 50th Anniversary Scholars in Medicine, Harvard Medical School
 2011 Distinguished Scientist Award, Duke University Medical Center
 2012 Society for Pediatric Research Young Investigator Coaching Award
 2012 National Institute of Health Director's New Innovator Award
 2012 Outstanding Postdoctoral Mentor Award Nominee, Duke University Medical Center
 2013 Center for HIV/AIDS Vaccine Immunology-Immunogen Design Young Investigator Award
 2013 Presidential Early Career Award for Scientists and Engineers (**PECASE**)
 2014 Society for Pediatric Research Young Investigator Award
 2014 Ruth and A. Morris Williams Faculty Clinical Research Prize
 2014 Alpha Omega Alpha Honor Medical Society (**AOA**) inductee
 2015 Triangle Business Journal Health Care Heroes Award: Researcher/Innovator
 2015 Pediatric Infectious Diseases Society Young Investigator Award
 2015 American Society of Clinical Investigation (**ASCI**)

Organizations and Participation:

Massachusetts Medical Society	Member 2000 – 2011
American Academy of Pediatrics	Member 2004
Pediatric Infectious Diseases Society	Member, 2007
North Carolina Pediatric Society	Member, 2011

Journal Editorial Review/Editorial Activities

Journal of Clinical Investigation, Consulting Editor 2012 – current
 Clinical Vaccine Immunology, Editorial Board Member, 2013 – current
 Journal of Virology, ad hoc reviewer 2009 – current
 Journal of Infectious Diseases, ad hoc reviewer 2010 – current
 PLoS One, ad hoc reviewer, 2011 – current
 Journal of AIDS, ad hoc reviewer 2012 – current
 Journal of Pediatric Infectious Diseases, ad hoc reviewer 2013 – current

Grant Review/NIH Study Section Committees:

7/2012 – Early Career Study Section member – AIDS Vaccine (VACC)
 4/2013 – Special emphasis panel AIDS immunopathogenesis (AIP)
 12/2013 – Special emphasis panel HIV vaccine innovation
 4/2014 – Special emphasis panel HIV glycomics research
 7/2014 – Special emphasis panel in HIV/AIDS research: US-South Africa Partnership Grants
 7/2015 – current – Standing Study Section Member, AIDS Vaccine (VACC)

National/International Committees:

3/2014 – current. HIV Prevention Committee Member, International Maternal Pediatric Adolescent AIDS Trials (IMPAACT) Network, Vaccine Working Group leader
 5/2014 – current. Research Affairs Committee, Pediatric Infectious Diseases Society
 10/2015 – Program Committee, Nonhuman Primate Models of AIDS meeting

Patent applications:

1/2013: A novel HIV-1 neutralizing factor in milk PCT/US2014/011659

Clinical Trials

1. PI: IMPAACT 2004 ALVAC-HIV (vCt2438) and Bivalent Subtype Cgp120/MF59 vaccination in breastfeeding African infants
2. PI: Natural immune correlates of protection against postnatal CMV infection in preterm infants (Duke University)
3. Investigator: Mirabivir for Refractory CMV in Transplant Patients (Viropharma, NCT01611974)
4. Investigator: RSV vaccination in pregnancy (Novovax)
5. Investigator: CMX001 for treatment of adenovirus infection (CMX001-304)

Teaching Responsibilities Including Continuing Education:

- Residents and clinical fellows in Pediatric Infectious Disease inpatient rotations and clinic sessions 08/2011 – Present
- Pediatric resident core lecture series (annual) – Congenital Infections, Vaccine-preventable diseases
- Scholarly Oversight Committee for two Pediatric Infectious Diseases fellows/junior faculty:
 - Dr. Genevieve Fouda, Assistant Professor of Pediatrics 2014-current
 - Dr. Mehreen Ashad: Assistant Professor of Pediatrics 2014– current
 - Dr. Ezzeldin Saleh, Pediatric ID Fellow: 2013 – current

Mentee list:

- Dr. Genevieve Fouda, MD, PhD (2011 – 2014) – began mentee relationship as a senior postdoctoral fellow/research associate, promoted to **Assistant Professor of Pediatrics in Feb, 2014**. Mentorship resulted in 4 primary authorship manuscripts in Journal of Virology, Retrovirology and PNAS. Grant success includes: **a small Duke CFAR award (2012)** and **a coinvestigator in an R03 award (2013), Children’s Miracle Network grant (2014), CTSA KL2 award and PI of NIH R03 grant (2015)**.
- James Friedman (2011–2012) – Duke 3rd year medical student, co-mentored with Dr. Bart Haynes. Mentorship resulted in primary author publication of manuscript in PLoS One in 5/2012, **AOA day research award**.
- Joshua Amos (2012 – current) – Masters student in the Immunology Department at NC State University, **primary author manuscript publication in Journal of Virology in 2013 and 2015**.
- Carrie Ho (2011–2012) – Duke undergraduate, senior thesis in the Department of Biology at Duke University. Mentorship resulted in graduation with Honors in 5/2012 and **primary author manuscript published in Journal of Virology in 2013**.
- Scott Boisevert (2012 – 2013) – Duke undergraduate, independent study in Biology during freshman and sophomore year.
- Dr. Shannon Smith (2012 – 2014) – Duke Division of Laboratory Animal Research Veterinary Residency, mentorship resulted in award of a grant from the **American Association for Laboratory Animal Science Grant in 5/2012 and a published primary author manuscript in 2014**
- Caitlin Sacha (2012 – 2013) – Duke 3rd year medical student, co-mentor with Dr. Bart Haynes. Caitlin was awarded a **Howard Hughes Medical Institute Medical Research Fellows and Award** for her project in 5/2012, **primary author manuscript published in Mucosal Immunology in 2014**.
- Trina Arifin (2012 – 2013) – Duke-NUS 3rd year medical student.
- Terry Hodge (summer 2012) – mentor during a 6 week Duke-NC Central University clinical/research experience.
- Angela Zhang (spring 2013) – Duke undergraduate, independent study.
- Kristy Bialas, PhD (2013 – current) – Postdoctoral fellow, projects in congenital CMV transmission. **Selected for position in AIDS research T32 in 2013, recipient of Children’s Miracle Network grant 2014**
- Robin Mansour (2013 – 2014) – Duke 3rd year medical student, **awarded Doris Duke Charitable Foundation Student Mentorship award in 2013**.

- Quang Nguyen (2013 – current) – Duke undergraduate and BioCore program participant, recipient of **Duke Career Center’s Internship Funding Program (2013), the FLEX Funding Grant from Greenhouse Scholars (2014), and the NIH undergraduate research training program (2015)**
- David Martinez (2013 – current) – Duke Department of Molecular Genetics and Microbiology graduate student, **Gates Millennium Scholar**
- Alondra Desantiago (Summer 2014) – Duke Summer Research Opportunity Program (SROP) for URM undergraduates.
- Claire Powers (2014 – 2015) – Duke 3rd year medical student, received the **Stedman Research Grant** for her research year
- Qihua Fan (2014 – 2015) – Duke 3rd year medical student
- Cody Nelson (2014 – current) Duke MTSP MD-PhD candidate in Molecular Genetics and Microbiology
- Charmaine Mutucumarrana – (2015 – current) Duke 3rd year medical student, received the **Doris Duke Charitable Foundation Student Mentorship award 2015**

Areas of Research Interests

- The role of HIV/SIV-specific immune responses in protection against mother to child transmission of HIV
- Evaluation of HIV vaccines to prevent mother/infant transmission in human and nonhuman primate studies
- The role of maternal immune responses in protection of infants from perinatal CMV transmission
- Use of a novel rhesus CMV model of congenital CMV infection to define the immunologic and virologic determinants of placental CMV transmission

External Support - Gifts, Grants, and Contracts

	<u>PI</u>	<u>% Effort</u>	<u>Purpose</u>	<u>Amount per year</u>	<u>Dates</u>
a) Past:	Sallie Permar		Pediatric Infectious Diseases Society-St. Jude’s Children’s Research Hospital Fellowship in Basic Research	215,000	7/1/2008 – 6/30/2011
	Sallie Permar		Nonhuman Primate Early Stage Investigator Scholar Award, NIH U01 (AI067854)	250,000	7/1/2009 – 6/30/2011
	Sallie Permar		Children’s Hospital Boston Office of Faculty Development	100,000	7/1/2009 – 6/30/2011
	Sallie Permar		Harvard Catalyst Grant	50,000	7/1/2010 – 6/30/2011
	Sallie Permar		BD Biosciences Immunology Grant	10,000	12/1/2011 – 11/30/2012
	Sallie Permar		NIAID R21: AI100760-01A1	275,000	3/1/2012 – 2/28/2014
	Sallie Permar		K08 AI087992-05	612,000	9/1/2009 – 8/30/2014
	Sallie Permar		Doris Duke Clinical Scientist Development Award	450,000	8/1/2010 – 12/31/2014
	Barton Haynes		Gates Foundation CAVD	100,000	9/1/2013 – 4/30/2015
	Sallie Permar		NIAID R21: AI106494-01	275,000	2/1/2013 – 1/31/2015
b) Present:	Sallie Permar	6%	Johns Hopkins LOC-IMPAACT 2004 Protocol PI	18,280	4/1/2015 – 11/30/2015
	Herman Staats / Sallie Permar – co-investigator	1%	NIH R01 Mucosal vaccination	401,130	7/1/2012 – 6/30/2016
	Sallie Permar	23%	NIH DP2 Director’s New Innovator Award	1,981,072	9/30/2012 – 8/31/2017

	<u>PI</u>	<u>% Effort</u>	<u>Purpose</u>	<u>Amount per year</u>	<u>Dates</u>
	Sallie Permar	2%	NIH R21 Novel HIV-1 neutralizing protein	275,000	2/1/2013 – 1/31/2016
	Sallie Permar	15%	NIH R01 Transmission-blocking potential of mucosal antibodies	563,111	5/22/2013 – 4/30/2018
	Sallie Permar	2%	IMPAACT Immunology Specialty Laboratory	101,822	1/1/2014 – 11/30/2015
	Herman Staats / Sallie Permar – Co Director	7.5%	Center for AIDS Research NIH Developmental Core co-leader	459,719	7/1/2010 – 6/30/2020
	Sallie Permar (Overall PI)	4%	NIH HIVRAD P01 Administrative Core	51,489	8/1/2014 – 7/31/2016
	Sallie Permar (Overall PI)	21%	NIH Maternal Infant Immunization HIVRAD P01, Project 1	230,884	4/1/2015 – 3/31/2020
	Mary Klotman / Sallie Permar – Investigator	2%	NIH Administrative Core/HIVRAD PO1	1,393,874	4/1/2015 – 3/31/2020
	Sallie Permar	20%	NIH R01 Innate antiviral factors in breast milk and the oral HIV-1 reservoir	500,000	8/01/2015-7/31/2020
c) Pending:	Sallie Permar/Feng Gao Co-PI	Under review	NIH R01 Natural and vaccine-elicited HIV-neutralizing antibodies in MTCT	1,200,000	9/01/2015-6/30/2020

Clinical Activity:

Type of Practice

Time Commitment(s)

- Clinical pediatric infectious diseases inpatient consultation 4 weeks/year
- Perinatal viral infections outpatient clinic 6 weeks/year

Participation in Academic and Administrative Activities of the University and Medical Center:

- Track Director, Duke Scholars in Molecular Medicine Program 2012-2013
- Grant reviewer/mentor “K club” – for junior faculty pursuing a K award application
- Pediatric Department Chair Search Committee 3/2013 – 12/2013
- MD-PhD program admissions committee - 7/2013 – current
- Developmental Core co-Director, Center for AIDS research (CFAR) 7/2014 - current