CURRICULUM VITAE

Franklin R. Toapanta Yanchapaxi, M.D. Ph.D.
Assistant Professor, Department of Medicine
University of Maryland School of Medicine

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CONTACT INFORMATION

Center for Vaccine Development
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Foreign languages: Spanish (native)

EDUCATION

1998	M.D.	Universidad Central del Ecuador, Escuela de Medicina Quito, Ecuador Graduated with Honors and Distinction
2006	Ph.D.	University of Pittsburgh School of Medicine Pittsburgh, PA Thesis: Immune Enhancement Mechanism by the Complement Protein C3d Advisor: Ted M. Ross Ph.D.

POST GRADUATE EDUCATION AND TRAINING

Fellowships

2006-2009 Post-doctoral Fellow
Center for Vaccine Research
University of Pittsburgh School of Medicine
Pittsburgh, PA.
Mentor: Ted M. Ross, Ph.D.
Subjects: 1) Senescence of the lung immune responses to influenza infections in mice.
2) Role of electronegative charges of C3d in the interaction with CR2.
3) Development of mammalian virus-like particle influenza vaccines

2009-2011 Post-doctoral Fellow
Center for Vaccine Development
Division of Geographic Medicine
University of Maryland School of Medicine
Baltimore, MD
Mentor: Marcelo B. Sztein, M.D.
Subjects: 1) Evaluation of immune responses elicited by the live-attenuated oral vaccine candidate CVD 1256 (*Shigella dysenteriae* 1) in cynomolgus macaques.
2) Development of a phosphoflow assay for analysis of the T-cell receptor and B-cell receptor signaling pathways in infectious diseases.

EMPLOYMENT HISTORY

2011-2014 Research Associate
Center for Vaccine Development
Division of Geographic Medicine
University of Maryland School of Medicine
Baltimore, MD
Subjects: 1) Evaluation of immune responses elicited by the live-attenuated oral vaccine candidate CVD 1256 (*Shigella dysenteriae* 1) in cynomolgus macaques.
2) Development of a phosphoflow assay for analysis of the T-cell receptor and B-cell receptor signaling pathways in infectious diseases.
3) Development of human antigen-specific memory B (B_M) cells and different activation susceptibility among B_M subsets following stimulation with a cognate antigen
4) Development of a novel humanized-mouse model for studying immune responses to oral infections with *S.* Typhi and vaccine candidates

2014-Present Assistant Professor
Center for Vaccine Development
Division of Geographic Medicine
University of Maryland School of Medicine
Baltimore, MD
Subjects: 1) Evaluation local and systemic cell mediated immune responses elicited by the live-attenuated oral vaccine candidate CVD 1256 (*Shigella dysenteriae* 1) in cynomolgus macaques.
2) Study the development of memory B (B_M) cells in human volunteers following in vaccination followed by wild-type S. Typhi challenge.
3) Study the role of monocytes and dendritic cells in the protection from disease in a human S. Typhi challenge model.
4) Study of the development of human antigen-specific memory B (B_M) cells following immunization

Other Employment:

1997-1998 Physician Internship:
Hospital VozAndes
Quito, Ecuador

1998-2000 Staff Physician/Research Assistant:
Ministerio de Salud Publica del Ecuador
Corporacion Ecuatoriana de Biotecnologia &
The Harvard Institute for International Development
Esmeraldas, Ecuador

2000-2001 Staff Physician/Research Assistant:
Corporacion Ecuatoriana de Biotecnologia
Quito, Ecuador

PROFESSIONAL SOCIETY MEMBERSHIPS

1994-present Corporacion Ecuatoriana de Biotecnologia
2003-present American Society for Virology
2004-present American Society for Microbiology

2006-present	The American Association of Immunologist
2009-present	Society for Mucosal Immunology
2011-present	Member, Federation of Clinical Immunology Societies

HONORS AND AWARDS

2001-2003	**FUNDACYT/LASPAU** Scholarship for graduate studies in foreign countries $40,000 USD to support graduate studies Quito-Ecuador
2003	**American Society for Virology** Travel Grant to attend the ASV 22nd Annual Meeting Davis, CA
2004	**American Society for Virology** Travel Grant to attend the ASV 23rd Annual Meeting Montreal, Quebec, Canada
2005	**Institute of Human Virology** Travel Grant to attend the Annual Meeting of the Institute of Human Virology Baltimore, MD
2007	**Aegean Conference Series** Travel Grant to attend the " 2nd International Conference on Cross Roads Between Innate and Adaptive Immunity" . Creete, Grece
2008	**Emory University** Travel Scholarship to attend the "Immunology and pathogenesis of influenza infections" Atlanta, GA
2009	**Society for Mucosal Immunology** Young Investigator Travel Award for the 14th ICMI Boston, MA
2011	**Federation of Clinical Immunology Societies (FOCIS)** Travel award for the 11th Annual Meeting of the Federation of Clinical Immunology Societies Washington, DC

ADMINISTRATIVE SERVICE

Institutional Service

University of Maryland School of Medicine

School of Medicine Council

2014-2016	Alternate Member as Department of Medicine Representative
2016-2018	Alternate Member as Department of Medicine Representative

Scientific Review Committee (SRC) on Intellectual Property

2015-2016	Member of the SRC of the University of Maryland, Baltimore
2016-2017	Member of the SRC of the University of Maryland, Baltimore

Other

2013	Judge at 36th Medical Student Research day. Poster sessions 1 and 2
2015	Judge at 38th Medical Student Research day. Poster sessions 1 and 2
2016	Judge at 39th Medical Student Research day. Poster sessions 3

National Service

2010 to present Reviewer, *Journal Public Library of Science* (PLoS ONE)

Total number of journals reviewed per year:
2010 - 1 2012 – 1 2016 - 1

2010 to present Reviewer, *Mechanism of Aging and Development*
Total number of journals reviewed per year:
2011 – 1

2014 to present Reviewer, *Jounal of Virology and Retrovirology*
Total number of journals reviewed per year:
2014 – 3

2014 to present Reviewer, *Pathogens and Disease*
Total number of journals reviewed per year:
2014 – 1

2015 to present Reviewer, *BioMed Central Research Notes*
Total number of journals reviewed per year:
2015 – 2

TEACHING SERVICE

Student Teaching

East Carolina University – Brody School of Medicine

2003 Clinical Case Study Sessions. Medical Microbiology and Immunology
Duties included preparation and demonstration of assay used in clinical microbiology-immunology laboratories
Discussion of results obtained in context of problem-based learning (PBL)
15-20 medical students
6 hours contact annually

University of Pittsburgh – School of Medicine

2004 - 2005 Clinical Case Study Sessions. Medical Microbiology
Small group leader for microbiology and immunology.
Duties included preparation and demonstration of assay used in clinical microbiology laboratories and discussion of results obtained in context of clinical cases (problem-based learning)
20-25 medical students
16 hours contact annually

2008 Vaccines and Immunity Course. Lecturer.
8-10 graduate students
3 hours contact annually

2009 Teaching team member/Lecturer. Biosciences 1760 – Immunology
30 undergradute students
4 hours contact annually

University of Maryland School of Medicine

2013 Preceptor in small groups discussions in Host Defenses and Infectious Diseases
10-12 medical students
3-4 hours contact annually

2014	Preceptor in small groups discussions in Host Defenses and Infectious Diseases 10-12 medical students 3-4 hours contact annually
2015	Preceptor in small groups discussions in Host Defenses and Infectious Diseases 10-12 medical students 4-6 hours contact annually
2016	Preceptor in small groups discussions in Host Defenses and Infectious Diseases 10-12 medical students 4-6 hours contact annually
2017	Preceptor in small groups discussions in Host Defenses and Infectious Diseases 10-12 medical students 4-6 hours contact annually

Mentoring of Undergraduate, Junior Graduate Students and Research Technicians

2004	Sean McBurney University of Pittsburgh – Rotating graduate student at the Ross Lab Project: Cloning of Ebola genes into the expression vector TR600 Contact: 5 hours/daily for 12 weeks
2005-2006	Kevis T'sai University of Pittsburgh / Carnegie Mellon University - Undergraduate Rotating in the Ross Lab Project: Role of CD4 cells in the enhancement of the immune response by C3d Contact: 5 hours/daily for 6 months
2006	Donald Carter University of Pittsburgh – Laboratory Technician Project: Basic techniques for the study of influenza (genetic manipulation, virus culture, gene isolation, animal models) and the immune interaction with the host Contact: 5 hours/daily for 4 months
2007	Hermancia Eugene University of Pittsburgh – Rotating graduate student at the Ross Lab Project: Engineering single point mutations to alter the electrostatic interaction with CR2 into the C3d gene Contact: 5 hours/daily for 12 weeks
2007	Brendan Giles University of Pittsburgh – Rotating graduate student at the Ross Lab Project: Cloning of truncated Envgp120 (89.6) into C3d mutants altering the interaction with CR2 Contact: 5 hours/daily for 12 weeks
2007 - 2008	Karen Triff University of Pittsburgh – Junior Technician Project: Generation of stable inducible cell lines expressing HIV-1 Gag(p55) as a budding core for the generation of virus-like particles for infectious agents Contact: 4 hours/daily for one year
2008 - 2009	Dilhari DeAlmeida University of Pittsburgh – Laboratory Technician

Projects: 1) Age related changes in the immune response to influenza virus: differences in ROS production by macrophages. 2) C3d mutations that alter the electrostatic interaction with CR2: in-vivo evaluation of the adjuvant effect
Contact: 4 hours/daily for 1 1/2 year

2009 Samantha Slight
University of Pittsburgh – Rotating graduate student at the Ross Lab
Project: Effect of subchronic smoke exposure in the lung immune responses to influenza virus
Contact: 5 hours/daily for 12 weeks

2011 Scott Mu
University of Maryland – Rotating undergraduate student at the Sztein Lab
Project: Induction of gut homing markers (α4β7 and CCR9) in THP1-1 derived macrophages by Retinoic Acid and TLR-2 agonists.
Contact: 5 hours/daily for 4 weeks

2010-Present Paula Bernal
University of Maryland – Research Assistant Sztein Lab
Project: 1) Study of activation of the BCR signaling pathways using novel multicolor flow cytometry techniques (phospho-flow and fluorescent cell barcoding). 2) Differences in activation of intracellular signaling pathways of peripheral and gut homing macrophages and dendritic cells upon stimulation with TLR ligands and pathogen antigens.
Contact: 8 hours/daily

2016-Present Glen Hatfield
University of Maryland – Research Specialist Assistant at Sztein Lab
Project: 1) Study of induction of class-switch recombination and somatic hypermutation on B cells after vaccination by mass cytometry
2) Study of immune responses in various immune compartments in non-human primates
Contact: 4 hours/daily

2016 Michael S. Lee
University of Maryland – MD/PhD Student – Summer Rotation
Project: 1) Differences in the activation of BCR-associated signaling pathways between newborns and adults

GRANT AND CONTRACT SUPPORT

Active

09/16/2016-03/31/2020 (Lab-PI, 30%) Clinical PI: Kathleen Neuzil
NIH UMB-VTEU 15-0066.B1C1D1.0041
Annual Direct Costs: $525,000
Total Direct Costs: $2,100,000
Role: This proposal focuses on evaluating the B cell and T cell mediated immunity induced by an experimental anti-influenza vaccine (H5N9 inactivated whole virus) alone or adjuvated with MF59 and AS03

06/01/2016-05/31/2018 (PI, 10%)
Changes in M1 and M2 human macrophages induced by wild-type *Salmonella* Typhi infection
NIH CCHI - U19 AI082655
Annual Direct Costs: $60,000
Total Direct Costs: $120,000
Role: to characterize the changes (phenotypic and molecular) that M1 and M2

macrophages undergo after wt *S*. Typhi challenge and contrast these results between the volunteers who developed (TD), or not, disease (NoTD).

05/1/2014-04/30/2019 (Co-investigator RP1 15%) PI: Marcelo Sztein
Cooperative Centers for Translational Research in Human Immunology and Biodefense
NIH U19 AI082655
Annual Direct Costs: $1,937,371
Total Direct Costs: $9,686,855
Role: Dr. Toapanta will be responsible for the identification of signaling pathways activated in response to specific *S.* Typhi stimulants (e.g., LPS or flagellin) in B and T cells. Additionally, in close collaboration with other members of Dr. Sztein's group, Dr. Toapanta will assess activation of signaling pathways of cell populations that show a role in the protection/pathophysiology of salmonellosis (e.g., T_{regs}).

10/01/15 – 09/30/20 (Co-investigator 15%) PI: Marcelo Sztein
NIH UMB-VTEU FY.2015.A4D14.0033
Annual Direct Costs: $1,937,371
Total Direct Costs: $9,686,855
Role: This proposal focuses on the establishment of central facilities to analyze clinical samples for levels of circulating cytokines and activation and/or increase in sub-sets of natural immune cells as well as T and B cells from multiple DMID-funded VTEU clinical studies and trials. Dr. Toapanta will be responsible for studying antigen-specific B cell responses to a variety of microorganisms.

Pending Grants

03/01/17 – 2/28/22 PI: Franklin R. Toapanta (30%)
Immunity in Neonates and Infants (U01)
U01 RFA-AI-16-001
Role: Understanding the mechanisms of B cell unresponsiveness in newborns

Completed Grants:

12/01/14-05/31/16 (PI, 20%)
Development of assays to study T-cell responses to shigellosis
NIH CCHI - U19 AI082655
Annual Direct Costs: $50,000
Total Direct Costs: $100,000
Role: This proposal is directed to develop a novel T-cell assay to study CD4 and CD8 T cell responses in volunteers immunized with an experimental anti-*Shigella* vaccine. Various methodologies will be used to determine the best method to evaluate T-cell mediated immunity.

03/1/12-02/28/14 (PI, 30%)
Specific B cell receptor signaling activation pathways in *Shigella* vaccination in humans
NIH CCHI - U19 AI082655
Annual Direct Costs: $50,000
Total Direct Costs: $100,000
Role: Evaluate differences in activation of B-cell-receptor-associated signaling pathways following stimulation with *Shigella* antigens that have different structure (LPS and IpaB).

PUBLICATIONS

Peer-reviewed journal articles

1. The Zinc Against Plasmodium Study Group (The ZAP study group is composed of Fernando Sempertegui, Bertha Estrella, **Franklin R. Toapanta**, Darwin S. Torres, and Dheyanira E. Calahorrano (Ecuador); Emmanuel Addo-Yobo, Paul Arthur (deceased), and Sam Newton (Ghana); Mloka Hubert and Cyprian S. Makwaya (Tanzania); Freddie Ssengooba, Joseph Konde-Lule, and Emmanuel Mukisa (Uganda); and Modest Mulenga, Thomas Sukwa, and John Tshiula (Zambia)). Effect of Zinc on the treatment of Plasmodium falciparum malaria in children: a randomized control trial. Am J Clin Nutr 2002;76:805-12.

2. **Toapanta FR**, Ross TM. Mouse strain-dependent differences in enhancement of immune responses by C3d. Vaccine. 2004 Apr 16;22(13-14):1773-81.

3. **Toapanta FR**, Haas KM, Oliver JA, Poe JC, Weis JH, Karp DR, Bower JF, Ross TM, Tedder TF. Cutting Edge: C3d functions as a molecular adjuvant in the absence of CD21/35 expression. J Immunol. 2004 May 15;172(10):5833-7.

4. Duggan C, MacLeod WB, Krebs NF, Westcott JL, Fawzi WW, Premji ZG, Mwanakasale V, Simon JL, Yeboah-Antwi K, Hamer DH and The Zinc Against Plasmodium Study Group (The ZAP study group is composed of Fernando Sempertegui, Bertha Estrella, **Franklin R. Toapanta**, Darwin S. Torres, and Dheyanira E. Calahorrano (Ecuador); Emmanuel Addo-Yobo, Paul Arthur (deceased), and Sam Newton (Ghana); Mloka Hubert and Cyprian S. Makwaya (Tanzania); Freddie Ssengooba, Joseph Konde-Lule, and Emmanuel Mukisa (Uganda); and Modest Mulenga, Thomas Sukwa, and John Tshiula (Zambia)). Plasma zinc concentrations are depressed during the acute phase response in children with falciparum malaria. J. Nutr. 2005:135: 802–807,

5. **Toapanta FR**, Craigo JK, Montelaro RC, Ross TM. Reduction of anti-Gag immunity during co-immunizations: Immune interference by the HIV-1. Current HIV Research. 2007 March; 5(2):199-209.

6. Bright RA, Carter DM, Daniluk S, **Toapanta FR**, Ahmad A, Gavrilov V, Massare M, Pushko P, Mytle N, Rowe T, Smith G, Ross TM. Influenza virus-like particles elicit broader immune responses than whole virion inactivated influenza virus or recombinant hemagglutinin. Vaccine. 2007 May 10;25(19):3871-8

7. Bright RA, Carter DM, Crevar CJ, **Toapanta FR**, Steckbeck JD, Cole KS, Kumar NM, Pushko P, Smith G, Tumpey TM, Ross TM. Cross-clade protective immune responses to influenza viruses with H5N1 HA and NA elicited by an influenza virus-like particle. PLoS ONE. 2008 Jan 30;3(1):e1501.

8. **Toapanta FR**, Ross TM. Impaired immune responses in the lungs of aged mice following influenza infection. Respir Res. 2009 Nov 18; 10:112.

9. **Toapanta FR**, DeAlmeida DR, Dunn MD, Ross TM. C3d adjuvant activity is reduced by altering residues involved in the electronegative binding of C3d to CR2. Immunology Letters. 2010 Mar 10;129(1):32-8.

10. Brown B, Price I, **Toapanta FR**, DeAlmeida DR, Wiley CA, Ross TM, Oury TD, and Vodovotz Y. An Agent-Based Model of Inflammation and Fibrosis Following Particulate Exposure in the Lung. Mathematical Biosciences. 2011 Jun;231(2):186-96. Epub 2011 Mar. 2011. PMID:21385589.

11. Chen WH, **Toapanta FR**, Shirey KA, Zhang L, Giannelou A, Page C, Frieman MB, Vogel S, Cross AS. Potential role for alternatively activated macrophages in the secondary bacterial infection during recovery from influenza. Immunol Lett. 2012 Jan 30;141(2):227-34. Epub 2011 Oct 20. PMID: 22037624

12. **Toapanta FR**, Bernal PJ, Sztein, and MB. Diverse phosphorylation patterns of B cell receptor-associated signaling in naïve and memory human B cells revealed by phosphoflow, a powerful technique to study signaling at the single cell level. *Front. Cell. Inf. Microbio.* **2:**128. doi: 10.3389/fcimb.2012.00128. PMID: 23087912

13. Davis CL, Wahid R, **Toapanta FR**, Simon JK, Sztein MB, et al. Applying Mathematical Tools to Accelerate Vaccine Development: Modeling *Shigella* Immune Dynamics. PLoS ONE 8(4): e59465. doi:10.1371/journal.pone.0059465. Epub 2013 April 2. PMID:23589755

14. Seekatz AM, Panda A, Rasko DA, **Toapanta FR**, Eloe-Fadrosh EA, Khan AQ, Liu Z, Shipley ST, DeTolla LJ, Sztein MB, Fraser CM. (2013) Differential Response of the Cynomolgus Macaque Gut Microbiota to Shigella Infection. PLoS ONE 8(6): e64212. doi:10.1371/journal.pone.0064212. PMID: 23755118

15. Hernandez-Vargas EA, Wilk E, Canini L, **Toapanta FR**, Binder S, Uvarovskii A, Ross TM, Guzmán CA, Perelson AS, Meyer-Hermann M. The effects of aging on influenza virus infection dynamics. J Virol. 2014 Apr;88(8):4123-31. doi: 10.1128/JVI.03644-13. Epub 2014 Jan 29. PMID: 24478442

16. Booth JS*, **Toapanta FR***, Salerno-Goncalves R, Patil S, Kader H, Safta A, Czinn S, Greenwald B and Sztein MB (2014). Characterization and functional properties of gastric tissue-resident memory T cells from children, adults and the elderly. Front Immunol. 2014 Jun 19;5:294. doi: 10.3389/fimmu.2014.00294. eCollection 2014. PMID: 24995010. ***Joint first authorship.**

17. **Toapanta FR**, Simon JK, Barry EM, Pasetti MF, Levine MM, Kotloff KL and Sztein MB (2014). Gut-homing conventional plasmablasts and $CD27^{-}$ plasmablasts elicited after a short time of exposure to an oral live-attenuated *Shigella* vaccine candidate in humans. *Front. Immunol.* **5**:374. doi: 10.3389/fimmu.2014.00374. PMID: 25191323. PMCID: PMC4138503

18. Price I, Mochan-Keef ED, Swigon D, Ermentrout GB, Lukens S, **Toapanta FR**, Ross TM, Clermont G (2015). The inflammatory response to influenza A virus (H1N1): an experimental and mathematical study. Journal of Theoretical Biology. J Theor Biol. 2015 Jun 7;374:83-93. doi: 10.1016/j.jtbi.2015.03.017. Epub 2015 Apr 3. PMID: 25843213. PMCID: PMC4426089

19. **Toapanta FR**, Bernal PJ, Fresnay S, Darton TC, Jones C, Waddington CS, Blohmke CJ, Dougan G, Angus B, Levine MM, Pollard AJ, Sztein MB. Oral Wild-Type Salmonella Typhi Challenge Induces Activation of Circulating Monocytes and Dendritic Cells in Individuals Who Develop Typhoid Disease. PLoS Negl Trop Dis. 2015 Jun 11;9(6):e0003837. doi: 10.1371/journal.pntd.0003837. eCollection 2015 Jun. PMID: 26065687. PMCID: PMC4465829.

20. **Toapanta FR**, Bernal PJ, Fresnay S, Magder LS, Darton TC, Jones C, Waddington CS, Blohmke CJ, Angus B, Levine MM, Pollard AJ, Sztein MB. Oral Challenge with Wild-Type Salmonella Typhi Induces Distinct Changes in B Cell Subsets in Individuals Who Develop Typhoid Disease. PLoS Negl Trop Dis. 2016 Jun 14;10(6):e0004766. doi: 10.1371/journal.pntd.0004766. eCollection 2016 Jun. PMID: 27300136

Review Articles

1. **Toapanta FR** and Ross TM. Complement-mediated activation of adaptive immune responses: Role of C3d in linking innate and adaptive immunity. Immunol Res. 2006;36(1-3):197-210.

2. Boianelli A, Nguyen VK, Ebensen T, Schulze K, Wilk E, Sharma N, Stregemann-Koniszewski S, Bruder D, **Toapanta FR**, Guzman C, Meyer-Hermann M, Hernandez-Vargas EA. Modeling Influenza Virus Infection: A Roadmap for Influenza Research. Viruses 2015, 7(10), 5274-5304; doi:10.3390/v7102875. *In press.*

Abstracts (peer-reviewed):

1. **Toapanta FR**, Green TD and Ross TM. Enhancement of immune response by DNA vaccinations using envelope coupled to C3d: Comparison of mice with different genetic background. HIV Vaccine development: Immunological and biological challenges. Banff, Alberta, Canada: Poster Presentation, March 2003.

2. **Toapanta FR**, Green TD and Ross TM. Enhancement of immune response by DNA vaccinations using envelope coupled to C3d: Comparison of mice with different genetic background. ASV 22th Annual Meeting. Davis, CA: Oral Presentation, July 2003.

3. **Toapanta FR**, Haas KM, Green TD, Bower JF, Tedder TF and Ross TM. Mouse Strain-dependent differences in enhancement of the immune response by C3d. Keystone Symposia on Rational Design of Vaccines and Immunotherapeutics. Keystone, CO: Poster presentation, January 2004.

4. **Toapanta FR**, Haas KM, Green TD, Bower JF, Tedder TF and Ross TM. C3d enhances the immune response in the absence of complement receptor 2. ASV 23th Annual Meeting. Montreal, Canada: Oral Presentation, July 2004.

5. **Toapanta FR** and Ross TM. C3d, various mechanism of enhancement of the immune response. Immunopotentiators in modern vaccines 2005. Malaga, Spain: Oral Presentation, May 18, 2005.

6. **Toapanta FR** and Ross TM. HIV-1 Envgp120, but not influenza sHA (A/PR/8/34), affects the anti-Gag immune responses following DNA Co-Immunizations. ASV 24th Annual Meeting. University Park, PA: Poster Presentation, June 2005.

7. **Toapanta FR** and Ross TM. Interference of elicited immunity to HIV-1 Gagp55 by Envgp120, but not influenza HA during co-immunizations. Institute of Human Virology Annual Meeting. Baltimore, MD: Poster Presentation, August 2005. Published on: December 8, 2005. *Retrovirology* 2005, **2**(Suppl 1):P96

8. Bower J, **Toapanta FR**, Young KR, Ross TM. C3d enhancement of anti-Env immunity using modified HIV-1 envelopes. Institute of Human Virology Annual Meeting. Baltimore, MD: Oral Presentation, August 2005. Published on: December 8, 2005. *Retrovirology* 2005, **2**(Suppl 1):S119

9. **Toapanta FR**_and Ross TM. Mild enhancement of secondary anti-influenza hemagglutinin humoral immune responses in the absence of CD4+ T-cells reduces morbidity after lethal challenge. Immunology 2006 (AAI Annual Meeting), Boston, MA: Poster Presentation, May 2006.

10. **Toapanta FR** and Ross TM. Reduced morbidity and mortality in the absence of CD4+ T-cells in influenza hemagglutinin-C3d vaccinated mice. ASM Biodefense and Emerging Diseases Research Meeting. Washington DC: Poster Presentation, February 2007.

11. **Toapanta FR** and Ross TM. C3d induces lung anti-hemagglutining antibody titers that reduce morbidity and prolong survival following lethal influenza virus challenge. UPPDA Meeting. Pittsburgh, PA: Poster Presentation, May 2007.

12. **Toapanta FR** and Ross TM. Immune enhancement mechanisms by the complement proteins C3d. 2nd International Conference on Crossroads between innate and adaptive immunity. Crete, Greece: Oral and Poster Presentations: June 2007.

13. **Toapanta FR** and Ross TM. Differences in innate and acquired immune responses in adult mice infected with lethal and non-lethal doses of influenza virus. Keystone Symposia on Viral Immunity. Keystone, CO: Poster Presentation, January 2008.

14. **Toapanta FR.** Enhancement of the immune response by the complement protein C3d. Immunopotentiators in modern vaccines 2008. Montego Bay, Jamaica: Oral Presentation, May 22, 2008

15. **Toapanta FR** and Ross TM. Changes in lung immune cells of elderly and adult mice following sub-lethal infection with influenza virus. Vaccine Development 2008. Pittsburgh, PA: Oral Presentation. September 29, 2008.

16. Price I, Swigon D, Ermentrout B, **Toapanta F**, Ross T, Clermont G. Immune response to Influenza Virus A. SIAM Comference on the Life Sciences. Poster (PP1). August 4, 2008. Published on: September 2009. *Journal of Critical Care,* Vol. 24, Issue 3, Page e33, DOI: 10.1016/j.jcrc.2009.06.039

17. **Toapanta FR** and Ross TM. Impaired immune responses in the lungs of aged mice following influenza infection. 14th ICMI 2009. Boston MA: Oral Presentation (I.D. OR.24), July 6, 2009.

18. **Toapanta FR** and Chen W. Alternatively Activated Macrophages and Susceptibility to Secondary Bacteria Infection in Influenza Infected Mice. Keystone Symposia on Pathogenesis of Influenza: Virus-Host Interactions. Hong Kong, China: Poster Presentation (Poster # 240), May 26, 2011

19. **Toapanta FR**, Khan AQ, Panda A, Shipley S, DeTolla L, Chen H, Barry EM, Levine MM and Sztein MB. Oral Immunization with CVD 1256 Attenuated *Shigella dysenteriae* 1 Results in Partial Protection Following Wild-Type Challenge in Cynomolgus Macaques. FOCIS 2011. Washington DC: Oral Presentation (I.D. 1069529), June 23-28, 2011.

20. **Toapanta FR**, Khan AQ, Panda A, Shipley S, DeTolla L, Chen H, Barry EM, Levine MM and Sztein MB. Immunization with CVD 1256 Attenuated *Shigella dysenteriae* 1 Reduces Bacterial Shedding Following Wild-Type Challenge in Cynomolgus Macaques. 15th International Congress of Mucosal immunology. Paris, France. Poster Presentation (Poster # F160), July 5-9, 2011.

21. Hernandez-Vargas E.A, Binder S, Perelson AS, **Toapanta FR**, Meyer-Hermann M. The effects of aging on influenza virus infection dynamics. 1st Workshop on Virus Dynamics, Frankfurt, Germany, July 15, 2013. Oral presentation by German collaborators.

22. **Toapanta FR**, Simon J, Barry E, Pasetti M, Levine M, Kotloff K and Sztein MB. Classic plasmablasts and $CD27^-$ plasmablasts infiltrate peripheral blood following CVD 1208S (*Shigella*) vaccination. 16th International Congress of Mucosal immunology. Vancouver, BC, Canada. Poster Presentation (Poster # F.87) July 19, 2013.

23. **Toapanta FR**, Bernal PJ, Fresnay S, Darton TC, Jones C, Waddington CS, Blohmke CJ, Dougan G, Angus B, Levine MM, Pollard AJ, Sztein MB. Oral challenge with wild-type Salmonella Typhi induces activation of circulating monocytes and dendritic cells in individuals who develop typhoid disease. FOCIS 2015. San Diego, CA. Oral Presentation. June 24-27, 2015.

24. **Toapanta FR**, Bernal PJ, Fresnay S, Darton TC, Jones C, Waddington CS, Blohmke CJ, Dougan G, Angus B, Levine MM, Pollard AJ, Sztein MB. Oral Challenge with Wild-type Salmonella Typhi Induces Distinct Changes in B cell Subsets in Individuals Who Develop Typhoid Disease. 17th International Congress of Mucosal immunology. Berlin, Germany. Poster Presentation. July 17, 2015.

MAJOR INVITED SPEECHES

National

1. Enhancement of the immune response by the complement protein C3d. IBC's 18th Annual International Conference, San Diego, CA. December 2007

2. Diverse phosphorylation patterns of B cell receptor-associated signaling in naïve and memory human B cells reveled by phosphoflow. Annual NIAD Cooperative Centers on Human Immunology (CCHI) Network meeting. Rockville, MD. September 2012

3. Evaluation of antigen-specific B cells following vaccination/infection. Annual NIAD Cooperative Centers on Human Immunology (CCHI) Network meeting. Rockville, MD. October 2013

4. Gastric tissue-resident memory T (T_{RM}) cells in healthy individuals. Annual NIAD Cooperative Centers on Human Immunology (CCHI) Network meeting. Rockville, MD. October 2013

5. Changes in circulating monocytes induced by S. Typhi Infection. Annual NIAD Cooperative Centers on Human Immunology (CCHI) Network meeting. Rockville, MD. December 5, 2014

6. Activation of circulating monocytes and dendritic cells in a wt-S. Typhi human challenge model. Frontiers in Vaccinology. University of Maryland, Center for Vaccine Research, Baltimore, MD. November 2015

International

1. Local and systemic immune responses to mucosal pathogens. Novel approaches in biomedical research 2015: Immunology. Universidad de Las Americas. Quito, Ecuador. July 2015.