

CURRICULUM VITAE**I. PERSONAL DATA**

- A. Name:** Paula Winter Annunziato, MD
- B. Home Address:** 1130 Cleaver Rd
Lower Gwynedd, PA 19002
- C. Home Telephone:** (215) 643-8225

II. EDUCATION

<u>School</u>	<u>Date</u>	<u>Major/Minor Courses</u>	<u>Degree</u>
University of Texas Health Science Center – San Antonio San Antonio, TX	1988		MD
Creighton University Omaha, NE	1984	Biology	BS

III. MERCK/MRL EMPLOYMENT HISTORY (most recent first)

<u>Title</u>	<u>From - To</u>
Vice President and Therpeutic Area Head, Vaccines Clinical Research	July 2015-Present
Associate Vice President, Clinical Research Section Head, Adult and Adolescent Vaccines	Jan 2015-June 2015
Executive Director, Clinical Research Section Head, Adult and Adolescent Vaccines	Oct 2013-Dec 2014
Executive Director, Clinical Research Section Head, Immunology	July 2012-Sept 2013
Sr. Director, Clinical Research Section Head, Immunology	April 2012-July 2012
Sr. Director, Vaccines Clinical Research Section Head, Pediatric Vaccines	April 2010-March 2012
Sr. Director, Vaccines Clinical Research Herpes zoster vaccines	Jan 2008-April 2010

Director, Vaccines Clinical Research
Herpes zoster vaccines

Aug 2002-Dec 2007

IV. NON-MERCK EMPLOYMENT HISTORY

<u>Title</u>	<u>From - To</u>
Associate Professor of Clinical Pediatrics Columbia University New York, NY	7/01-8/02
Assistant Professor – Pediatrics Columbia University New York, NY	7/94 – 6/01
Instructor – Pediatrics University of Rochester Rochester, NY	7/91 – 6/94

V. ACADEMIC EXPERIENCE

7/01 – 8/02	Associate Professor of Clinical Pediatrics Columbia University
7/94 – 6/01	Assistant Professor – Pediatrics Columbia University
7/91 - 6/94	Instructor – Pediatrics University of Rochester

VI. TRAINING

<u>Source</u>	<u>Date</u>	<u>Type</u>
University of Rochester Strong Memorial Hospital Rochester, New York	1991 to 1994	Fellow, Department of Pediatrics, Division of Infectious Diseases
Schneider Children's Hospital/Long Island Jewish Medical Center New Hyde Park, New York	1989 to 1991	Resident Department of Pediatrics
University of Connecticut Health Center Farmington, Connecticut	1988 to 1989	Intern Department of Pediatrics

VII. SOCIETY MEMBERSHIPS (Past and Present)

Society for Pediatric Research
Pediatric Infectious Diseases Society
Infectious Diseases Society of America
American Society for Microbiology
American Academy of Pediatrics

VIII. ACADEMIC AND PROFESSIONAL HONORS

Bradford Fellow, University of Rochester 1992-1993

Irving Assistant Professor, Columbia University 1998-2001

IX. PUBLICATIONS AND PATENTS

ORIGINAL PUBLICATIONS

Silver RP, **Annunziato P**, Pavelka MS, Pigeon RP, Wright LF, and Wunder DE. 1993. Genetic and Molecular Analyses of the Polysialic Acid Gene Cluster of E.coli K1. 59-71. In J. Roth, U. Rutishauser, and F.A. Troy (ed.), Polysialic Acid. Birkhäuser Verlag, Basel, Switzerland.

Annunziato PW, Rothstein EP, Bernstein HH, Blatter MM, Reisinger KS, and Pichichero ME. Comparison of a Three-Component Acellular Pertussis Vaccine in 4- Through 6-Year-Old Children. Arch Pediatr Adolesc Med 1994; 148: 503-507.

Annunziato PW, Wright LF, Vann WF, and Silver RP. Nucleotide Sequence and Genetic Analysis of the *neuD* and *neuB* Genes in Region 2 of the Polysialic Acid Gene Cluster of *Escherichia coli* K1. Journal of Bacteriology 1995; 177: 312-319.

Lungu O, **Annunziato PW**, Gershon A, Staugatis S, Josephson D, LaRussa P, and Silverstein S. Reactivated and latent varicella-zoster virus in human dorsal root ganglia. Proc Nat Acad Sci USA 1995; 92: 10980-10984.

Annunziato P, Lungu O, Gershon A, Silvers DN, LaRussa P, and Silverstein S. *In situ* hybridization detection of varicella zoster virus in paraffin-embedded skin biopsy samples. Clinical and Diagnostic Virology 1996; 7: 69-76.

Ussery XT, **Annunziato P**, Reid BS, Lungu O, Langston C, Gershon AA, Silverstein S, and Baker CJ. Congenital varicella zoster infection and Barret's esophagus. J Infect Dis 1998;178: 539-43.

Annunziato P, LaRussa P, Lee P, Steinberg S, Lungu O, Gershon A, and Silverstein S. Evidence of latent varicella-zoster virus in rat dorsal root ganglia. J Infect Dis 1998; 178(Suppl 1): S48-51.

Lungu O, Panagiotidis CA, **Annunziato PW**, Gershon AA., and Silverstein SJ. Aberrant intracellular localization of varicella-zoster virus regulatory proteins during latency. Proc Nat Acad Sci USA 1998; 95: 7080-7085.

Annunziato PW, Lungu O, Panagiotidis C, Zhang JH, Silvers DN, Gershon AA, Silverstein SJ. Varicella zoster virus proteins in skin lesions: Implications for a novel role of ORF29p in chickenpox. J. Virol 2000: 74: 2005-2010.

Kemble GW, **Annunziato P**, Lungu O, Winter RE, Cha TA, Silverstein SJ, Spaete RR. Open Reading Frame S/L of Varicella-Zoster Virus Encodes a Cytoplasmic Protein Expressed in Infected Cells. *J. Virology*. 2000; 74; 11311-11321.

Annunziato PW, Lungu O, Panagiotidis C. Varicella zoster virus in human and rat tissue specimens. *Arch Virol*: 2001: [suppl] 17; 135-142.

Ampofo K, Saiman L, LaRussa P, Steinberg S, **Annunziato P**, Gershon A. Persistence of immunity to live attenuated varicella vaccine in healthy adults. *Clin Infect Dis* 2002; 34;774-9.

Oxman MN, Levin MJ, Johnson GR, Schmader KE, Straus SE, Gelb, LD, Arbiet, RD, Simberkoff MS, Gershon AA, Davis LE, Weinberg A, Boardman KD, Williams HM, Zhang JH, Peduzzi, PN, Beisel CE, Morrison VA, Guatelli, JC, Brooks, PA, Kauffman CA, Pachucki CT, Neuzil KM, Betts RF, Wright PF, Griffin MR, Brunell P, Soto NE, Marques AR, Keay SK, Goodman RP, Cotton DJ, Gnann JW, Loutit J, Holodniy M, Keitel WA, Crawford GE, Yeh SS, Lobo Z, Toney JF, Greenberg RN, Keller PM, Harbecke R, Hayward AR, Irwin MR, Kyriakides TC, Chan CY, Chan ISF, Wang WWB, **Annunziato PW**, Silber JL. A vaccine to prevent herpes zoster and postherpetic neuralgia in older adults. *N Engl J Med* 2005; 352; 2271-84.

Tyring SK, Diaz-Mitoma F, Padget L, Nunez M, Poland G, Cassidy WM, Bundick ND, Li J, Chan ISF, Stek J, **Annunziato PW**. Safety and tolerability of a high-potency zoster vaccine in adults ≥ 50 years of age. *Vaccine* 2007; 25;1877-83.

Levin MJ, Oxman MN, Zhang JH, Johnson GR, Stanley H, Hayward AR, Caulfield MJ, Irwin MR, Smith JG, Clair J, Chan IS, Williams H, Harbecke R, Marchese R, Straus SE, Gershon A, Weinberg A; Veterans Affairs Cooperative Studies Program Shingles Prevention Study Investigators. Varicella-zoster virus-specific immune responses in elderly recipients of a herpes zoster vaccine. *J Infect Dis*. 2008 Mar 15;197(6):825-35.

Oxman MN, Levin MJ; Shingles Prevention Study Group. Vaccination against Herpes Zoster and Postherpetic Neuralgia. *J Infect Dis*. 2008 Mar 1;197 Suppl 2:S228-36.

Harbecke R, Oxman MN, Arnold BA, Ip C, Johnson GR, Levin MJ, Gelb LD, Schmader KE, Straus SE, Wang H, Wright PF, Pachucki CT, Gershon AA, Arbeit RD, Davis LE, Simberkoff MS, Weinberg A, Williams HM, Cheney C, Petrukhin L, Abraham KG, Shaw A, Manoff S, Antonello JM, Green T, Wang Y, Tan C, Keller PM; Shingles Prevention Study Group. A real-time PCR assay to identify and discriminate among wild-type and vaccine strains of varicella-zoster virus and herpes simplex virus in clinical specimens and comparison with the clinical diagnosis. *J Med Virol*. 2009 Jul;81(7):1310-22.

Weinberg A, Zhang JH, Oxman MN, Johnson GR, Hayward AR, Caulfield MJ, Irwin MR, Clair J, Smith JG, Stanley H, Marchese RD, Harbecke R, Williams HM, Chan IS, Arbeit RD, Gershon AA, Schödel F, Morrison VA, Kauffman CA, Straus SE, Schmader KE, Davis LE, Levin MJ; US Department of Veterans Affairs (VA) Cooperative Studies Program Shingles Prevention Study Investigators. Varicella-zoster virus-specific immune responses to herpes zoster in elderly participants in a trial of a clinically effective zoster vaccine. *J Infect Dis*. 2009 Oct 1;200(7):1068-77.

Simberkoff MS, Arbeit RD, Johnson GR, Oxman MN, Boardman KD, Williams HM, Levin MJ, Schmader KE, Gelb LD, Keay S, Neuzil K, Greenberg RN, Griffin MR, Davis LE, Morrison VA, **Annunziato PW**; Shingles Prevention Study Group. Safety of herpes zoster vaccine in the shingles prevention study: a randomized trial. *Ann Intern Med*. 2010 May 4;152(9):545-54.

MacIntyre CR, Egerton T, McCaughey M, Parrino J, Campbell BV, Su SC, Pagnoni MF, Stek JE, Xu J, **Annunziato PW**, Chan IS, Silber JL. Concomitant administration of zoster and pneumococcal vaccines in adults ≥ 60 years old. *Hum Vaccin*. 2010 Nov;6(11):894-902.

Murray AV, Reisinger KS, Kerzner B, Stek JE, Sausser TA, Xu J, Wang WW, Chan IS, **Annunziato PW**, Parrino J. Safety and tolerability of zoster vaccine in adults ≥ 60 years old. *Hum Vaccin*. 2011 Nov;7(11):1130-6.

Vermeulen JN, Lange JM, Tying SK, Peters PH, Nunez M, Poland G, Levin MJ, Freeman C, Chalikhonda I, Li J, Smith JG, Caulfield MJ, Stek JE, Chan IS, Vessey R, Schödel FP, **Annunziato PW**, Schlienger K, Silber JL. Safety, tolerability, and immunogenicity after 1 and 2 doses of zoster vaccine in healthy adults ≥ 60 years of age. *Vaccine*. 2012 Jan 20;30(5):904-10.

Schmader KE, Levin MJ, Gnann JW Jr, McNeil SA, Vesikari T, Betts RF, Keay S, Stek JE, Bundick ND, Su SC, Zhao Y, Li X, Chan IS, **Annunziato PW**, Parrino J. Efficacy, safety, and tolerability of herpes zoster vaccine in persons aged 50-59 years. *Clin Infect Dis*. 2012 Apr;54(7):922-8.

Schmader KE, Oxman MN, Levin MJ, Johnson G, Zhang JH, Betts R, Morrison VA, Gelb L, Guatelli JC, Harbecke R, Pachucki C, Keay S, Menzies B, Griffin MR, Kauffman C, Marques A, Toney J, Keller PM, Li X, Chan IS, **Annunziato P**; Shingles Prevention Study Group. Persistence of the efficacy of zoster vaccine in the shingles prevention study and the short-term persistence substudy. *Clin Infect Dis*. 2012 Nov 15;55(10):1320-8.

Morrison VA, Oxman MN, Levin MJ, Schmader KE, Guatelli JC, Betts RF, Gelb LD, Pachucki CT, Keay SK, Menzies B, Griffin MR, Kauffman CA, Marques AR, Toney JF, Simberkoff MS, Serrao R, Arbeit RD, Gnann JW, Greenberg RN, Holodniy M, Keitel WA, Yeh SS, Davis LE, Crawford GE, Neuzil KM, Johnson GR, Zhang JH, Harbecke R, Chan IS, Keller PM, Williams HM, Boardman KD, Silber JL, **Annunziato PW**; Shingles Prevention Study Group. Safety of zoster vaccine in elderly adults following documented herpes zoster. *J Infect Dis*. 2013 Aug 15;208(4):559-63.

Mullane KM, Winston DJ, Wertheim MS, Betts RF, Poretz DM, Camacho LH, Pergam SA, Mullane MR, Stek JE, Sterling TM, Zhao Y, Manoff SB, **Annunziato PW**. Safety and immunogenicity of heat-treated zoster vaccine (ZVHT) in immunocompromised adults. *J Infect Dis*. 2013 Nov 1;208(9):1375-85.

Levin MJ, Schmader KE, Gnann JW, McNeil SA, Vesikari T, Betts RF, Keay S, Stek JE, Bundick ND, Su SC, Zhao Y, Li X, Chan IS, **Annunziato PW**, Parrino J. Varicella-zoster virus-specific antibody responses in 50-59-year-old recipients of zoster vaccine. *J Infect Dis*. 2013 Nov 1;208(9):1386-90.

Morrison VA, Johnson GR, Schmader KE, Levin MJ, Zhang JH, Looney DJ, Betts R, Gelb L, Guatelli JC, Harbecke R, Pachucki C, Keay S, Menzies B, Griffin MR, Kauffman CA, Marques A, Toney J, Boardman K, Su SC, Li X, Chan IS, Parrino J, **Annunziato P**, Oxman MN; Shingles

Prevention Study Group. Long-term persistence of zoster vaccine. *Clin Infect Dis*. 2015 Mar 15;60(6):900-9.

Willis ED, Woodward M, Brown E, Popmihajlov Z, Saddier P, **Annunziato PW**, Halsey NA, Gershon AA. Herpes zoster vaccine live: A 10 year review of post-marketing safety experience. *Vaccine*. 2017 Dec 19;35(52):7231-7239.

Benson CA, Andersen JW, Macatangay BJC, Mailliard RB, Rinaldo CR Jr, Read S, Bozzolo DR, Purdue L, Jennings C, Keefer MC, Glesby M, Tebas P, Russell AF, Martin J, **Annunziato P**, Popmihajlov Z, Lennox JL. Safety and Immunogenicity of Zoster Vaccine Live in HIV-Infected Adults with CD4+ Cell Counts Above 200 Cells/mL Virologically Suppressed on Antiretroviral Therapy. *Clin Infect Dis*. 2018 Nov 13;67(11):1712-1719.

Winston DJ, Mullane KM, Cornely OA, Boeckh MJ, Brown JW, Pergam SA, Trociukas I, Žák P, Craig MD, Papanicolaou GA, Velez JD, Panse J, Hurtado K, Fernsler DA, Stek JE, Pang L, Su SC, Zhao Y, Chan ISF, Kaplan SS, Parrino J, Lee I, Popmihajlov Z, **Annunziato PW**, Arvin A; V212 Protocol 001 Trial Team. Inactivated varicella zoster vaccine in autologous haemopoietic stem-cell transplant recipients: an international, multicentre, randomised, double-blind, placebo-controlled trial. *Lancet*. 2018 May 26;391(10135):2116-2127.

Mullane KM, Morrison VA, Camacho LH, Arvin A, McNeil SA, Durrand J, Campbell B, Su SC, Chan ISF, Parrino J, Kaplan SS, Popmihajlov Z, **Annunziato PW**, V212 Protocol 011 Trial Team. Safety and efficacy of inactivated varicella zoster virus vaccine in immunocompromised patients with malignancies: a two-arm, randomised, double-blind, phase 3 trial. *Lancet Infect Dis*. 2019 Aug 6. pii: S1473-3099(19)30310-X. doi: 10.1016/S1473-3099(19)30310-X. [Epub ahead of print].

CHAPTERS and REVIEWS

Annunziato P and Pichichero M. 1992. Purulent Rhinitis. 37-39. In S.L. Kaplan (ed.), *Current Therapy in Pediatric Infectious Disease*. 3rd Edition. Mosby-Year Book, Inc.

Annunziato PW and Frenkle LM. The Epidemiology of Pediatric HIV-1 Infection. *Ped Ann* 1993; 22: 401-405.

Annunziato PW and Pichichero ME. New Developments in Pertussis Vaccines. *CIT* 1995; 3: 287-296.

Annunziato PW and Powell KR. 1996. Infections of the Upper Respiratory Tract. In R. E. Reese and R. F. Betts, (ed.), *A Practical Approach To Infectious Diseases*. Fourth Edition. Little, Brown and Company.

Annunziato P and Gershon A. Herpes simplex virus infections. *Pediatrics in Review* 1996; 17: 415-423.

Annunziato PW. 1997. Herpes Simplex Infections. In S.L. Katz, A.A. Gershon, P. Hotez, (eds.), *Infectious Diseases of Children*. Tenth edition. Mosby Yearbook.

Annunziato P and Gershon AA. 1998. Herpesvirus Infections in Children with HIV Infection. In P.A. Pizzo and C.M. Wilfert, (eds.), *Pediatric AIDS. The Challenge of HIV Infection in Infants, Children, and Adolescents*. Third Edition. Williams and Wilkins, 205-225.

Lee PJ and Annunziato P. Herpes zoster: The legacy of chicken pox. *Infections in Medicine* 1998;15; 709-13.

Lungu O and Annunziato P. 1999. Varicella zoster virus: latency and reactivation. 61-75. In M.H. Wolff S. Schunemann and A. Schmidt (eds.), Contributions to Microbiology, Vol.3 Varicella Zoster Virus: Molecular Biology, Pathology, and Clinical Aspects. S. Karger AG, Basel

Annunziato PW and Gershon AA. 2000. Primary immunization against varicella. 460-476. In A. Arvin and A.A. Gershon (eds) *Varicella Zoster Virus*. Cambridge University Press .

Annunziato PW and Gershon AA. 2001. Varicella-zoster virus infections. 67-70. In R.E. Rakel and E.T. Bope (eds) *Conn's Current Therapy*. W.B.Saunders Company .

Annunziato P. 2002. Herpes zoster infections/chickenpox. 395-396. In L.C. Garfunkel, J. Kaczorowski, and C. Christy (eds) *Mosby's Pediatric Clinical Advisor*. Mosby, Inc.

Annunziato P. 2002. Herpes simplex virus infection. 393-394. In L.C. Garfunkel, J. Kaczorowski, and C. Christy (eds) *Mosby's Pediatric Clinical Advisor*. Mosby, Inc.

Annunziato P and Gershon AA. 2002. Varicella-zoster virus infection. In F.D. Burg, A.A. Gershon, J.R. Ingelfinger, and R.A. Polin (eds) *Gellis and Kagan's Current Pediatric Therapy* 17. W.B.Saunders Company.

Annunziato P. Herpes simplex virus infection. In F.D. Burg, A.A. 2002. Gershon, J.R. Ingelfinger, and R.A. Polin (eds) *Gellis and Kagan's Current Pediatric Therapy* 17. W.B.Saunders Company.

Annunziato PW and Gerson AA. 2003. Management strategies for varicella-zoster infection in patients with cancer. 233-244. In J.R. Wingard and R.A. Bowden (eds) *Management of Infection in Oncology Patients*. Martin Dunitz/Taylor & Francis Group.