BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
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NAME	POSITION TITLE
GEHA, Raif S.	Professor of Pediatrics
eRA COMMONS USER NAME (credential, e.g., agency login) RAIFGEHA	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
American University of Beirut, Lebanon	B.S.	1965	Pre-Medicine
American University of Beirut, Lebanon	M.D.	1969	Medicine

Please refer to the application instructions in order to complete sections A, B, and C of the Biographical Sketch.

A. Positions and Honors.

Positions and Employment

1969-1970 Resident in Pediatrics, American University of Beirut, Beirut, Lebanon
1970-1971 Resident in Pediatrics, Children's Hospital Medical Center, Boston, MA
1971-1974 Research Fellow in Immunology, Children's Hospital, Boston
1974-1976 Assistant in Pediatrics, American University of Beirut, Lebanon
1976-1981 Assistant Professor of Pediatrics, Harvard Medical School, Boston, MA
1976- Chief, Division of Allergy, Children's Hospital Medical Center, Boston, MA
1981-1987 Associate Professor of Pediatrics, Harvard Medical School Boston, MA
1987- Chief, Division of Immunology/Allergy, Children's Hospital, Boston, MA
1987- Professor of Pediatrics, Harvard Medical School, Boston, MA

Other Experience and Professional Memberships

1985-1990 Member, IMS Study Section
1998 Chair, NIH Special Review Panel for Allergic and Immunologic Disease Centers
1999 NIAID Advisory Council

Honors

1986 Mead Johnson Award for Pediatric Research
1990 Lifetime Achievement Award, Jeffrey Modell Foundation, New York
1994 Scientific Achievement Award: International Association of Allergology & Clinical Immunology

B. Selected peer-reviewed publications (in chronological order).

(Publications selected from 300 peer-reviewed publications)

1. Sasahara, Y., Rachid, R., Byrne M. J., de la Fuente M. A, Abraham, R. T\, Ramesh, N. and R. S. Geha, Mechanism of Recruitment of WASP to the Immunological Synapse and of Its Activation Following TCR Ligation. Molec. Cell. 10: 1269-1281, 2002
2. Kettner, A., Kumar, L. Pivniouk. V. and R. S. Geha. Structural requirements of SLP-76 in Signaling via the High-Affinity IgE Receptor (FcεRI) in Mast Cells. Mol. Cell. Biol 23: 2395-2406, 2003 Mol. Cell. Biol 23: 2395-2406, 2003
3. Antón, I. M., Saville, P., Ramesh, N. Hartwig, J. H. and Geha, R.S. WIP is essential for ruffle formation following PDGF stimulation. J. Cell. Sci. 116:2443-51, 2003

4. Brodeur, Angelini, F., Bacharier, L., Blom, A., Mizoguchi, E., S. Fujiwara, Dahlback, B., Plebani, A.H., Tsitsikov, E. and R. S. Geha C4b-binding protein (C4BP) activates B cells through the CD40 Receptor. Immunity. 18:837-48, 2003
5. Laouini, D., Alenius, H., Tsitsikov, E., Bryce, P., Oettgen, H. and R. S. Geha IL-10 skews the immune response to Th2 and is critical for skin eosinophilia in a murine model of allergic dermatitis. J. Clin. Investigation. 112: 1058-1066, 2003.
6. Orange, J.S., Harris. K.E., Andzelm, M.M., Valter, M.M. R. S. Geha and Strominger, J.L. The activating natural killer cell immunologic synapse is formed in distinct stages. Proc. Nat. Acad. Sci. USA. 100:14151-6, 2003.
7. Kettner, A., Anton, I.M., Pivniouk, V. I., Falet, H., Hartwig. J. and Geha, R.S. WIP regulates Signaling via the High Affinity Receptor for IgE in mast cells. J. Exp. Medicine. 199:357-68, 2004
8. Martinez-Quiles, Ho N. H, M. Ramesh, N. and Geha R. S. Erk/Src mediated phosphorylation of Cortactin acts as a switch on/off mechanism that controls its ability to activate N-WASP. Mol. Cell. Biol. 24: 5269-5280, 2004
9. Kawamoto, S., Yalcindag, A., Laouini, D., Brodeur, S., Bryce, P., Lu, B., Humbles, A., A., Oettgen, H., Gerard, C., and R. S. Geha. The anaphylatoxin C3a downregulates the Th2 response to epicutaneously introduced antigen. J. Clin. Invest. 114:399-407, 2004.
10. Vivarelli MS, McDonald D, Miller M, Cusson N, Kelliher M, Geha RS. RIP links TLR4 to Akt and is essential for cell survival in response to LPS stimulation. J Exp Med. 2004; 200:399-404.
11. Castigli E, Wilson S A, Garibyan L, Rachid R, Bonilla FT, Schneider L, and Geha RS. The TACI gene is mutated in common variable immunodeficiency and IgA deficiency. Nat Genet. 2005; 37:829-834.
12. Cameron A, Massaad M, Fiske S, de la Fuente MA, Gallego L, Ramesh N, and Geha RS. Defective nuclear translocation of NF-AT and ERK underlies deficient IL-2 gene expression in Wiskott Aldrich syndrome J All Clin Immunol 2005; 116:1364-1371.
13. Gallego MD, de la Fuente MA, Anton IM, Snapper S, Fuhlbrigge R, and Geha RS. WIP and WASP play complementary roles in T cell homing and chemotaxis to SDF-1alpha. Int Immunol. 2006; 18:221-32.
14. Du W, Kumaki, S, Uchiyama T, Yachie A, Yeng LC, Kawai S, Minegishi M, Ramesh N, Geha RS, Sasahara Y, and Tsuchiya S. A second-site mutation in the initiation codon of WAS (WASP) gene results in expansion of subsets of lymphocytes in a Wiskott-Aldrich Syndrome patient. Hum Mutat. 2006; 27:370-375.
15. Le Bras S, Geha RS. IPEX and the role of Foxp3 in the development and function of human Tregs. J Clin Invest. 2006; 116:1473-1475.
16. De la Fuente, M.A., Sasahara, Y., Calamito, M., Antón, I., Elkhal, A., Gallego, L., Suresh, K., Siminovitch, K., Ochs, H., Anderson, K., Rosen, F., R. S. Geha* and Ramesh, N. WIP is chaperone for WASP. Proc. Nat. Acad Sci. Proc. Nat. Acad. Sci. USA 104:929-931, 2007, PMID: 17213309
*Corresponding author.
17. Koduru, S., Massaad M., Wilbur, C., Kumar L., Geha, R.S., and N. Ramesh. A novel anti-WIP monoclonal antibody detects a new isoform of WIP that lacks the WASP binding domain. Biochemical and Biophysical Research Communications 353:875-881, 2007 PMID: 17207458
18. Garibyan, L., Lobito A. A., Siegel, R.M., Call, M.E., Wucherpfennig, K.W., and R. S. Geha. Dominant-negative effect of the heterozygous C104R TACI mutation in common variable immunodeficiency (CVID). Journal of Clinical Investigation. 117: 1550-1557, 2007 PMID: 17492055
19. Castigli, E., Wilson, S. A., Garibyan, L., Rachid, R. Bonilla, F.T., Schneider L., Morra, M., Curran, J. and R. S. Geha. Reexamining the role of TACI coding variants in common variable immunodeficiency and selective IgA deficiency. Nature Genetics. 39: 430-431, 2007 PMID: 17392798
20. Castigli, E. Wilson, AS., El Khal, A., Ozcan, E., Garibyan, L., and R. S. Geha. Transmembrane activator and calcium modulator and cyclophilin ligand interactor enhances CD40-driven plasma cell differentiation. J Allergy Clin Immunol. 2007 Oct; 120(4):885-91. PMID: 17689597 *Editors' Choice article highlighted*
21. Carman C.V., Sage, P. T., Scuito, T.E., de la Fuente, M. A., Geha, R. S., Ochs, H., D., Dvorak, H. F., DvoraK, A., M., and T. Springer. Trans-cellular diapedesis is initiated by leukocyte podosomes and invadopodia. Immunity. 26: 784-797, 2007 PMID: 17570692

22. Rui, H., Oyoshi, M., and R. S. Geha Epicutaneous antigen exposure induces a Th17 response that drives airway inflammation after inhalation challenge. Proc. Nat. Acad. Sci. USA 104: 15817-22, 2007. PMID: 17893340
23. Scott, J. E., ElKhal, A., Eva-Jasmin Freyschmidt, E-J., MacArthur, D., Michael D. Howell, M. D., Leung, D. Y. M. , Laouar, A., Manjunath, N., Oettgen, H.C and R. S. Geha. Impaired immune response to vaccinia virus inoculated at the site of cutaneous allergic inflammation. J Allergy Clin Immunol. 2007 Sep 20, PMID: 17889291.
24. Jabara, H., Chaudhuri, J., Dutt, S., Dedeoglu, F., Weng, Y., Murphy, M., Franco, S., Alt, F.W., Manis, J., and R. S. Geha. BCR crosslinking delays AID induction and inhibits class switch recombination to IgE. J Allergy Clin Immunol. 2007 Sep 25. PMID: 17900678
25. Anton, I, Jones, G. Geha, R.S.* and N. Ramesh*. WIP (WASP interacting protein), Working in Polymerization and much more. Trends in Cell Biology. 17:555-62, 2007, PMID: 17949983 * *Equal contributor*
26. Shearer, W. T., Cunningham-Rundles,C; Ballow, M.; Ochs, H. D. and Raif S. Geha,. Images in Immunodeficiency. J. All. Clin. Immunol. 120: 982-4, 2007. PMID: 17931568
27. Notarangelo, L., Casanova, J-L Conley, M.E., Fischer, A., Nonoyama, H. Ochs, H., Puck, J., Roifman, C., Seger, R. Wedgwood, J. and R. S. Geha. Primary immunodeficiency diseases: an update from the International Union of Immunological Societies Primary Immunodeficiency Diseases Classification Committee. J Allergy Clin Immunol. 2007 Oct;120(4):776-94. PMID: 17952897
28. McDonald, D. R., Mooster, J., Reddy, M., Bawle, E., Secord, E. and R. S. Geha Heterozygous N-terminal deletion of IκBα results in functional NFκB haploinsufficiency, Ectodermal Dysplasia and Immune Deficiency. J. All. Clin. Immunol. 120: 900-7, 2007 PMID: 17931563
29. Benson, M., Dillon, S. R., Geha, R.S Lam, K-P., and R.J. Noelle . The Roles of BAFF and APRIL in sustaining long-lived humoral immunity. J. Immunol 180: 3655-9, 2008
30. He R, Oyoshi MK, Garibyan L, Kumar L, Ziegler SF, Geha RS. TSLP acts on infiltrating effector T cells to drive allergic skin inflammation. Proc Natl Acad Sci U S A. 2008 Aug 19;105(33):11875-80. Epub 2008 Aug 18 PMID: 18711124

C. Research Support

Ongoing Research Support

T32-AI-007512 Geha (PI) 8/01/86-07/31/11
NIH/NIAID
Molecular Basis of Allergic and Immunologic Disease.
This is an NRSA institutional training grant for pediatricians in allergy/immunology/rheumatology. It is a three-year training program that currently supports eight postdoctoral fellows.
Role: Principal Investigator

HHSN266200400030C/N01-AI-40030 Geha (PI) 3/31/04 – 3/30/09
NIH/NIAID
Atopic Dermatitis and Vaccinia Immunization Network: Animal Studies Consortium.
To establish and manage an Animal Studies Consortium in support of the Atopic Dermatitis and Vaccinia Immunization Network (ADVN), whose purpose is to develop and implement a comprehensive long-term scientific plan to eliminate the risk for eczema vaccinatum or other adverse reactions to vaccinia immunization in patients with atopic dermatitis.
Role: Principal Investigator

R01-AR-047417 Geha (PI) 4/1/2007-3/31/2012
NIH/NIAMS
Immunologic Mechanisms of Atopic Dermatitis (AD).
The general aims are to gain better insight into the pathogenesis of AD by examining 1) the role of T cells and cytokines in allergen induced skin inflammation, 2) induction of a Th2 response following epicutaneous sensitization and by study of the role of chemokines in the recruitment of Th2 cells to the skin.
Role: Principal Investigator

#6-FY07-285 Geha (PI) 6/01/07-5/31/10
March of Dimes
Role of TACI in CVID
This grant is to support studies on a) assembly of mouse TACI and full-length (long) human TACI and mapping the association domains in mTACI, b) analysis of association of mutant TACIs and their ability to signal in 293 cells in vitro, and analysis of their association with WT TACI and their effect on ligand binding and signaling by WT TACI and c) mechanism of synergy between WT TACI and WT CD40.
Role: Principal Investigator

R01-AI-077668 Geha (PI) 03/01/2008 – 02/28/2013
NIH/NIAID
Role of WASP/WIP Complex in T Cell Function.
Our overall hypothesis is that WIP and WASP function in T cells both independently and as a complex. The results of the proposed experiments in the mouse will aid in our understanding of the pathogenesis of WAS in humans and should lead to novel treatments for this disease.
Role: Principal Investigator

Completed Research Support

P01-HL-059561 Geha (PI) 9/30/97-11/30/07
NIH/NHLBI
Signaling and cytoskeletal organization in blood cells: Project 2 (P.I.: Geha): Role of WIP in TCR Signaling and Actin Reorganization.
The specific aims of this project are: 1) characterization of WIP and structural analysis of WIP-WASP interaction, 2) functional and structural interactions of WIP with the cytoskeleton, 3) role of WIP in signal transduction; 4) generation and analysis of WIP deficient mice.
Role: Principal Investigator

P01-AI-035714 Terhorst (PI) 8/01/94-1/31/08
NIH/NIAID
Models of Human Immunodeficiencies: 2 (P.I.: Geha: Mechanisms of WASP Function in T cells.
The results of these studies should help elucidate the mechanism of WASP function in T cell activation and will have important implications for our understanding of normal immunity to infection and for immunologic diseases that include immunodeficiency diseases, cancer, and autoimmunity and allergic diseases.
Role: Principal Investigator

R01-AI-031136 Geha (PI) 3/01/92-12/31/07
NIH/NIAID
Mechanisms of IgE Synthesis by B cells.
To test a mechanistic model of CD40 mediated isotype switching, this proposal will (1) perform a functional analysis of CD40 signaling by mutant CD40 proteins (2) examine the structural requirements for CD40 isotype switching and (3) define the role of molecules downstream of CD40 in isotype switching.
Role: Principal Investigator

P01-AI-031541 9/01/97-2/29/08
NIH-NIAID
Molecular Mechanisms of the IgE Allergic Response (PD: Geha):
Project 2: B cell activation and IgE isotype switching by C4BP (C4 binding protein). Core (Geha) Administrative and Technical.
In this proposal, the mechanisms of IgE isotype switching by the complement regulating protein C4BP will be explored and C4BP knockouts will be generated.
Role: Principal Investigator, Program Director