

CURRICULUM VITAE

Anil Mishra, Ph.D.

1. PERSONAL DATA

Work Address:

Endowed Schlieder Chair
Professor of Medicine
Director, Eosinophilic Disorder Center
Department of Medicine
Tulane University Medical Center
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New Orleans, LA 70112
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Websites TUMC: <https://medicine.tulane.edu/departments/pulmonary-diseases-critical-care-environmental-medicine-research-tulane-cancer-center-0>

Tulane Cancer Center: <https://medicine.tulane.edu/departments/pulmonary-diseases-critical-care-environmental-medicine-research-tulane-cancer-center-0>

Eosinophilic Disorder Center website: <https://medicine.tulane.edu/departments/medicine-pulmonary-diseases/research/eosinophilic>

Editor-in-Chief. <http://abrinternationaljournal.com/>

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Nationality: Indian

US Visa Status: Permanent Resident USA

2. EDUCATION

University/Graduate: B.S., Rajasthan University, 1977-1979
Jaipur, India
Major Zoology, Botany, Chemistry

M.S., Kanpur University, 1979-1982
Kanpur, India

Major Zoology

Ph.D., Kanpur University, 1982-1985
Kanpur, India

Research Training: Research Fellow, 1982-1984
DAV College
Kanpur University
Kanpur, India

Research Associate, 1984-1988
Inhalation Toxicology Division
Industrial Toxicology Research Centre
Lucknow, India

Visiting Scientist, 1988-1990
Institute of Inhalation
GSF Neuherberg
Munich, Germany

Scientist Pool, 1990-1992
Inhalation Toxicology Division
Industrial Toxicology Research Centre
Lucknow, India

Postdoctoral Fellow, 1993-1993
Department of Physiology
NE Ohio University College of Medicine
Rootstown, OH

Postdoctoral Fellow, 1993-1996
Lung Biology
Tulane University School of Medicine
New Orleans, LA

Postdoctoral Fellow, 1996-1997
Pulmonary Medicine
Indiana University Medical Center
Indianapolis, IN

Research Associate, 1997-2000
Pulmonary Medicine, Allergy and Clinical Immunology
Cincinnati Children's Hospital Medical Center
Cincinnati, OH

3. ACADEMIC APPOINTMENTS

Instructor, 2000-2002
Allergy and Immunology
Cincinnati Children's Hospital Medical Center
Cincinnati, OH 45229

Assistant Professor of Pediatrics, 2002-2008
Cincinnati Children's Hospital Medical Center
University of Cincinnati College of Medicine
Cincinnati, OH 45229

Associate Professor of Pediatrics, 2009-2012
Tenure Track
Cincinnati Children's Hospital Medical Center
University of Cincinnati College of Medicine
Cincinnati, OH 45229

Professor of Medicine from September 2012
Resigned on August 2013
Division of Gastroenterology and Liver Diseases
Case Western Reserve University
College of Medicine
Cleveland, OH 44106

Current Position: Professor of Medicine (Tenured)
Edward G. Schlieder Educational Foundation
Chair of Pulmonary Diseases
Director, Tulane Eosinophilic Disorder Center
Tulane University Medical Center,
New Orleans, LA 20112

4. AWARDS AND HONORS

Student Award for Attending Research Workshop, Duke University Medical Center, Durham, NC, 1987

British Council Travel Fellowship, 1990

Research Fellowship Award, National Research Council, Washington, DC, 1993

Excellence in Research Award, Tulane University, New Orleans, LA, 1996

Young Investigator Award, Central Society of Clinical Research, Washington, DC, 1996

Elected Fellow, American Academy of Allergy, Asthma and Immunology, Milwaukee, WI, 2004

Junior Faculty Award, American Association of Immunologists, Bethesda, MD, 2009

Elected Fellow, American Gastrointestinal Association, Bethesda, MD, 2009

Laboratory Grant Award, American Association of Immunologists, Bethesda, MD, 2011

Faculty Member, American Academy of Allergy, Asthma and Immunology, Milwaukee, WI, 2013 Course: Animal Models and Allergic Diseases

2014-15 Excellence in Research Award, Department of Medicine, Tulane University School of Medicine, New Orleans, LA

2016-17AAI Laboratory Research Grant Award.

2017, Keynote lecture, at Allergy Immunology Conference, Edinburg, UK on “Interleukin immunotherapy for Astma”

2017 Chair a Session at International Conference of Allergy and Immunology, Edinburg, UK

5. NATIONAL/INTERNATIONAL GRANT REVIEWS

NIH Challenge Grants 2009, Ad hoc Reviewer

NIH Integrative and Molecular Gastroenterology (CIMG) Study Section 2010,

NIH Special Emphasis Panel, Immune Mechanism Study Section, ZRG1, IMM-N (02) M 2011,

NIH Kidney, Nutrition, Obesity and Diabetes (KNOD) Study Section 2011

American Institute of Biological Sciences (AIBS) contracted by US Army Medical Research and Materiel Command (USAMRMC) and a Congressionally Directed Medical Research Program (CDMRP)’s GRANT REVIEW (2012-present)

Ohio Science Academy, Grant Reviewer (2009-2016)

Digestive Health Center (NIH P30), Grant Reviewer of Internal CCHMC grants (2008-2012)

NIH Grant Reviewer: Study Sections (CIMG, KNOD and ZRG1 DKUS-A 58). Duty includes reviewing and scoring each grant application for their merit as per the defined NIH guidelines, 2012

NIH grant reviewer for the Rare Diseases Clinical Research Consortium (RDCRD) Review Special Emphasis Panel (SEP) on March 11-13, 2014 in Bethesda, MD.

Member, NIH Study Section “Integrative and Molecular Gastroenterology (CIMG) Study Section 2014”

NIH Special Emphasis Panel 2015/01 ZAI1 LAR-I (J1) 1 Consortium for Food Allergy Research (U19) and NIAID Investigator Initiated Program Project Applications (P01) Nov 4-5, 2014

NIH Study section **ZRG IMM J(90)S** and **ZRG IMM J(91)S**
Member Application R21 and RO1 June 24-26, 2015

NIH Special Emphasis Panel/Scientific Review Group 10/21/2015-10/23/2015

NIH Study Section 2016/01 DDK-C 1 Digestive Diseases and Nutrition C
Subcommittee. Feb 12, 2016

NIH Study Section ZRG1 IMM-S (90)S Immune Mechanisms in Autoimmunity
and Allergy 2016/05 Feb 25-26, 2016

NIH Xenobiotic and Nutrient Disposition and Action (XNDA) Study Section
ZRG1 DKUS-N (05) M Gastrointestinal and Pancreatic Physiopathology.
July 16-2018

NIH Special Emphasis Panel/Scientific Review Group **2019/05 ZTR1
RD-8 (01) 1**

6. MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Academy of Allergy, Asthma and Immunology, 2000-Present

American Gastroenterological Association, 2000-Present

American Association of Immunologists, 2005-Present

Society of Leukocyte Biology, 2006-Present

Society of Toxicology, India, 1985-Present (Life time Member)

International Eosinophil Society, 2004-Present

7. SERVICE

Committee Assignments

Member: Eosinophil Gastrointestinal Disorder Committee, American Academy of Allergy, Asthma and Immunology (AAAAI) (2011-Present)..

Reviewer and Member: Scholarship Grants Review Committee, Ohio Academy of Science, Ohio state, USA (2008-12)

Chair, Ghory Lecture Series Speaker Nomination Committee Chair (2008-12), Cincinnati Children's Hospital Medical Center

Faculty and Course Chair, American Academy of Allergy, Asthma and Immunology, Orland, FL 2013

Invited Lectures / Chairmanship of Meeting

Free Radicals in Health and Disease. "Sepsis-induced enhancement of oxygen metabolite production by rat pulmonary intravascular mononuclear phagocytes", Morgantown, WV, 1993. Invited Speaker

The American Thoracic Society Annual Meeting. "Inhalation exposure to asbestos activates expression of p53 and PCNA in rat lung", New Orleans, LA, 1996. Invited Speaker

The American Thoracic Society Annual Meeting "P53-deficient mice are resistant to radiation-induced lung injury", New Orleans, LA, 1996. Presentation

The American Thoracic Society Annual Meeting, "Computer based morphometric analysis of bleomycin-induced DNA breaks in lung", San Francisco, CA, 1997. Presentation

The American Society for Clinical Investigation Annual Meeting, "Intra-tracheal instillation of keratinocyte growth factor in mice increases surfactant protein A", Chicago, IL, 1997. Invited Speaker

The American Academy of Allergy, Asthma and Immunology Annual Meeting, "Regulation of gastrointestinal eosinophils", Orlando, FL, 1999. Oral Presentation

The American Thoracic Society Annual Meeting, "Allergic airway inflammation inhibits the expression of human surfactant protein C promoter in transgenic mice", Toronto, Canada, 2000. Oral Presentation

The American Academy of Allergy, Asthma and Immunology Annual Meeting, "IL-5 mediated allergic airway inflammation inhibits the human surfactant protein C promoter in transgenic mice", New Orleans, LA, 2001. Oral Presentation

The 2nd International Meeting of the International Eosinophil Society, "Aeroallergens role in the development of experimental esophagitis in mice", Banff, Canada, 2001. Oral Presentation

The American Academy of Allergy, Asthma and Immunology Annual Meeting, "Expression of eotaxin in enterocytes induces intestinal eosinophilia", New York, NY, 2002. Oral Presentation

The American Academy of Allergy, Asthma and Immunology Annual Meeting, “IL-13 induces eosinophilic esophagitis is regulated by IL-5, eotaxin and STAT6”, Denver, CO, 2003. Oral Presentation

The 3rd International Meeting of the International Eosinophil Society, “Lymphocyte-mediated immunity is essential for the development of experimental allergic eosinophilic esophagitis”, Aspen, CO, 2003. Oral Presentation

The American Academy of Allergy, Asthma and Immunology Annual Meeting, “Lymphocyte-mediated Immunity is essential for the development of experimental allergic eosinophilic esophagitis”, Cincinnati, OH, . Invited Speaker

The American Academy of Allergy, Asthma and Immunology Annual Meeting. “Resistin-like molecule (REL μ)- α and β are allergen-induced cytokines with potent remodeling activity in the murine lung”, San Francisco, CA, 2004. Oral Presentation

The American Academy of Allergy, Asthma and Immunology Annual Meeting. “Resistin-like molecule (REL μ)- α and β are cytokines with inflammatory and remodeling activity in Th2-associated asthmatic responses”, San Antonio, CA, 2005. Oral Presentation

American Academy of Allergy, Asthma and Immunology Annual Meeting. “Critical role of antigen specific lymphocytes in the induction of asthma associated eosinophilic esophagitis”, Maim, Florida, 2006. Oral Presentation

First International Conference on Gastrointestinal Eosinophils, “Molecular mechanism of anti-cytokine treatment of eosinophilic esophagitis”, Orlando, FL, 2006. Invited Speaker

American Academy of Allergy, Asthma and Immunology Annual Meeting. “Critical role for adaptive T cell immunity in experimental eosinophilic esophagitis”, San Diego, CA, 2007. Oral Presentation

The 5th International Meeting of the International Eosinophil Society, “Role of T regulatory cells in the development of eosinophilic esophagitis”, Salt Lake City, CO, 2007. Invited Cutting-edge Abstract Speaker

The 5th International Meeting of the International Eosinophil Society, “Esophageal remodeling develops as a consequence of tissue specific IL-5 induced eosinophilia”, Salt Lake City, CO, 2007. Presentation

American Gastrointestinal Association Annual Digestive Disease Week, “Role of IL-15 in the pathogenesis of eosinophilic esophagitis”, San Diego, CA, 2008. Oral Presentation

American Association of Immunologists Annual Meeting, “T reg cells in the pathogenesis of eosinophilic esophagitis”, San Diego, CA, 2009. Invited Lecture

The 6th International Meeting of the International Eosinophil Society, “Key role of IL-15 in the pathogenesis of eosinophilic esophagitis (EE)”, Bruges, Belgium, 2009.

Society of Leukocyte Biology Annual Meeting, “Essential role of IL-15 in the pathogenesis of eosinophilic esophagitis”, San Diego, CA, 2010. Presentation

American Association of Immunologists Annual Meeting, “Role of iNKT cells in the pathogenesis of EoE”, San Francisco, CA, 2011. Invited Lecture

The 7th International Meeting of the International Eosinophil Society, “Induction and activation of invariant natural killer T cells are critical in inducing pathogenesis of eosinophilic esophagitis (EE)”, Quebec City, Canada, 2011. Invited Lecture

American Academy of Allergy, Asthma and Immunology Annual Meeting. “Significance of mouse model to dissect the mechanism of human gastrointestinal diseases. Invited Faculty Course and Talk 2013

DDW, American Gastroenterologist Association International Meeting 2013 “IL-13 is not required for allergen-induced EoE pathogenesis,” Orlando, FL

CSIR-IITR invited as an expert for Brain Storming Session on Food allergy Future Research and Therapy. Dec 9, 2013 at Indian Institute of Toxicology, India

DDW, American Gastroenterologist Association International Meeting 2014 “Future Therapy of EoE pathogenesis,” Chicago, IL. Invited Lecture

American Association of Immunologist International meeting 2015 “Common and differential roles of inducible NO synthase and poly (ADPribose) polymerase in allergen induced inflammation and airway hyperresponsiveness: a potential connection to NO levels” Poster Presentation, New Orleans, LA 7-19 May, 2015

American Association of Immunologist International meeting 2015 “Overexpression of IL18 promotes iNKT cell mediated eosinophilic esophageal inflammation in experimental murine model of eosinophilic esophagitis” Oral Presentation., New Orleans, LA 7-19 May, 2015

American Academy of Allergy, Asthma and Immunology Annual Meeting. 2016 IL-18 Is Induced in Food Allergic Eosinophilic Esophagitis (EoE) Patients and Its Overexpression Promotes Disease Pathogenesis in Mice March 7-9, 2016 at Los Angeles, Poster Presentation

American Academy of Allergy, Asthma and Immunology Annual Meeting. 2016 Novel Noninvasive Biomarker for Eosinophilic Esophagitis (EoE). March 7-9, 2016 at Los Angeles, Poster Presentation

American Academy of Allergy, Asthma and Immunology Annual Meeting. CACXCR4/SDF-1 Axis Promotes EMT Mediated Fibrosis in Eosinophilic Esophagitis (EoE). Oral Presentation March 7-9, 2016 at Los Angeles, CA.

Overexpression Protect Mice from the Allergen-Induced Airway Obstruction. Journal of Allergy and Clinical Immunology, Vol. 137, Issue 2, AB15, 2016.

American Association of Immunologist International meeting 2016. CD274⁺ and CD274⁻ eosinophil subsets in health and Disease. 2015 Oral Presentation at Seattle, CA, May 13-16, 2016.

International Congress of Immunology 2016. IL-18 is required for the maturation of pathogenic eosinophils. Held at Melbourne, Australia. August 21-27, 2016. Oral Presentation.

Invited Key Note Speaker, “Role of Il-15 in Airway Obstruction” in the 11th International Conference on Allergy and Immunology September 07-08, 2017 Edinburg, UK

Invited Lecture, CURED-CCHMC conference at Cincinnati Childrens Hospital Medical Center, Cincinnati, Ohio on October 19, 2017 VIP is an eosinophil chemoattractant and has a role in promoting Eosinophilic Esophagitis”

Invited Lecture on Pathogenic eosinophils in 5th International Conference of European Congress of Immunology (ECI2018), September 2-5, 2018 at Amsterdam, Netherland

Invited key Note Speaker, “Role of Il-18 in Allergy” in the 13th International Conference on Allergy and Immunology Dec 13-14, 2018 Abu Dhabi, UAE

Professional Activities

Editorial Services:

Editor-in Chief. International Journal of Agricultural and Biological Research <http://abrinternationaljournal.com>.

Editorial Board Member. Journal of Gastroenterology and Hepatology Research <http://www.ghrnet.org>.

Editorial Board Member. Journal Allergy and Asthma. <http://www.hoajonline.com/allergyasthma>

Editorial Board Member, Gastrointestinal Cancer Review Letters

Editorial Board Advisory Member. American Journal of Current Immunology (<http://www.ivyunion.org/index.php/ajci>).

Editorial Board Member. Journal of Allergy and Asthma
<http://www.hoajonline.com/allergyasthma/editorialboard>

Editorial Board Member. SM J of Pulmonary Medicine
<http://smjournals.com/index.php/pulmonary-medicine>

Editorial Board Member. Journal Pulmonary Medicine & Respiratory Research.

Editorial Board Member. Journal of Clinical Gastroenterology and Treatment. <http://clinmedjournals.org/Journal-of-Clinical-Gastroenterology-and-Treatment.php>

Managing Editor, International Journal of Clinical & Medical Allergy
<http://www.scidoc.org/IJCMA.php>

Managing Editorial Board Member. Journal of Translational Biomarkers & Diagnosis (jbr-tbd). <http://scidoc.org/jbr-tbd.php>

Editorial Board Member. Chronic Obstructive Pulmonary Disease
<http://chronic-obstructive-pulmonary-disease.imedpub.com/>

Editorial Board Member. SRL Gastroenterology and Hepatology
<http://scireslit.com/Gastroenterology/aboutJ.php>

Editorial Board Member. Austin Journal of Allergy
<http://www.austinpublishinggroup.com>

Editorial Board Member. Blood Disorder
<http://www.scireslit.com/blooddisorders/editorsj.php>

Editorial Board Member. Clinical Immunology & Research
<http://www.cmepub.com/journals/clinical-immunology-research-home>

Editorial Board Member. International Journal of Immunology
http://helicsgroup.net/journal/member_details/ImmuneScientificNetworks/70/21

Reviewer in the Journals:

Yearly

Science Advance (AAAS journal)	1-2 manuscript
J. Clinical Investigation	1-2 manuscript
Journal Allergy and Clinical Immunology (USA)	2-3 manuscripts
Gastroenterology (USA)	1-3 manuscripts

Gut (UK)	1-2 manuscripts
Journal of Immunology (USA)	1-2 manuscripts
Therapy (UK)	1-2 manuscripts
Digestive Diseases and Sciences	1-2 manuscripts
Asthma (USA)	2-4 manuscripts
J. Pediatric Gastroenterology and Nutrition (USA)	1-2 manuscripts
Pediatrics (USA)	2-3 manuscripts
AJP-Lung Cell. Mol. Biol	2-3 manuscripts
Canadian J Gastroenterology and Hepatology	1-2 manuscript
European Medical Journal	2-3 manuscript

Department and Institutional Recruitment:

Interviewer: Candidates for faculty, postdoctoral or clinical fellow, and research assistant positions for the Division of Allergy and Immunology, Division of Gastroenterology, and Division of Immunobiology at Cincinnati Childrens Hospital medical Center, Cincinnati, Ohio and Pulmonary Medicine at Tulane University, New Orleans.

Community Activities:

Volunteer Science Fair Judge: Yearly judge of student science fair presentations at University and State science fairs.

Volunteer Teacher: Teach general science topics at local high school (Mount Notre Dame High School).

Invited Speaker: Presented research work at number of local and national institutes upon invitation.

8. TEACHING

Academic/Education

Graduate student teaching in the Department of Physiology at Tulane School of Medicine, New Orleans.

I spend approximately 15% of my time in teaching basic immunology and providing research training to graduate students, clinical and postdoctoral fellows, and research

technicians individually as well as in groups at TUMC. These students, fellows, and technicians present their data at local, national, and international conferences. In addition, I regularly involved in teaching the basic Immunology and research techniques, writing a successful grant applications for inside and outside research funding.

Past Trainees

- 1. James Schlotman, MD.** Joined in 2004 after completing his undergraduate (BS) from Drexel University, Philadelphia. James joined my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati and worked more than two years on T cells role in EoE and Resistin like molecule-beta on remodeling till June 2007. He left the laboratory after getting admission in University of Cincinnati College of Medicine, Cincinnati, Ohio and completed MD in 2011-12. He is currently working as a physician at College of Medicine in Houston, Texas.
- 2. Zeenath Unnisa, PhD.** Joined in 2004 after completing her PhD from Osmania University, Hyderabad, India. Zeenath, worked in my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati as a postdoctoral fellow and worked on mast cell role in EoE. Current position and place of work not known.
- 3. Venkatarajani R, MS.** Joined as a research assistant in my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati and worked on esophageal remodeling. Current, position and place of work is not known.
- 4. Mequin Wang, MD, PhD.** Joined in 2005 as a research associate after completing her PhD from John Hopkins School of Medicine, Baltimore. Mequin, worked in my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati till 2008 on esophageal remodeling in EoE and regulatory T cells role in EoE. Currently she is working as Assistant professor at Children's Hospital, Denver, CO.
- 5. Calab H. Crump, BS.** Joined in 2005 as a research assistant from University of Cincinnati after completing his undergraduate studies. Calab, worked in my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati till 2008. He re-joined law college and currently doing private practice.
- 6. Xiang Zhu, PhD.** Joined in 2007 as a postdoctoral fellow, in the University of Cincinnati. Xiang, moved to my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati in 2009 and worked on the role of IL-15 and regulatory T cells in EoE. Dr. Zhu is currently working as junior faculty Cincinnati Children's Hospital, Cincinnati, OH.
- 7. Parm Mavi, MS.** Joined in 2010 as a research assistant, from University of Cincinnati after completing BS. Parm, worked in my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati till 2012 on mast cells and eosinophil role in the development of esophageal functional abnormalities in EoE. Parm recently completed MD and working as resident at University of Cincinnati College of Medicine, Cincinnati, OH.
- 8. Akhilesh Pandey, PhD.** Joined in 2012 as a visiting postdoctoral fellow for 3 months in my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati and currently working as an Instructor at Garner's Institute of Aging in Texas.
- 9. Shankar Narayann, BS.** Joined in 2011 as a research assistant after graduating from Ohio State University. Shankar, worked in my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati till 2011 and currently completing his Medical Degree (MD) at Wright College of Medicine, Dayton, Ohio.

10. Priya Rajuvelu, PhD. Joined in 2009 as a research associate, from University of Cincinnati after 6 months of postdoctoral training in Dr. Chaubey's laboratory. Priya worked in my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati till 2012 on the role of IL-15 and IL-18 on eosinophil biology and EoE pathogenesis. She is currently working as Assistant Scientist at University of Cincinnati, Ohio.

11. Madhavi Rayapudi, MBBS, MD. Joined in 2008 as a research associate. She was a Medical graduate from Guntur Medical School, Guntur, AP, India. Madhavi, worked in my laboratory at Cincinnati Children's Hospital Medical Center, Cincinnati till 2013 on a number of projects that included food and indoor allergen-induced EoE, INKT cells role in EoE and anoinvasive biomarkers for EoE. She is currently doing her fellowship in pathology at Mayo clinic.

12. Scott Dynda, MS, Joined in 2012 as a research assistant after completing his master degree from Kent State University Kent, OH. Scott worked in my laboratory at Case Western Reserve University, Cleveland till 2013, on the role of IL-15 in lung and intestinal diseases. He is currently working as Laboratory Manager at Cleveland Clinic, Cleveland, Ohio.

13. Rituraj Niranjana, PhD. Joined in 2011 as a postdoctoral fellow after doing his initial research training at Central Drug Research Center, Lucknow, India and obtained his PhD from Jawaharlal Nehru University, New Delhi, India. Rituraj worked in my laboratory at Cincinnati Children's Hospital Medical Center and further continued his research to Case Western Reserve University. He worked on the IL-15 biology and its role in allergen-induced airway hyperreactivity and lung fibrosis. Currently, he is working as Scientist-C at Indian Institute of Medical Research, India.

14. Parmesh Dutt, PhD. Joined in 2012 as a postdoctoral fellow after losing a grant and closing of FDA sponsored research laboratory at Washington DC. He worked in my laboratory at Case Western and Tulane University on eosinophili subsets identification and eosinophilic inflammation in lung and esophagus. Currently joined Food and Drug Administration, USA as a Scientist.

15. Asifa Zaidi, PhD, Joined in 2012 as a postdoctoral fellow after losing a postdoctoral job at John Hopkins School of Medicine due to loss of NIH funding by his supervisor. Asifa obtained her PhD in biosciences from Bhabha Atomic Research Center, Mumbai, India and had her postdoctoral training at John Hopkins Medical School, Baltimore. She left in 2014 and currently working as Statistical analysis at Case Western reserve University, Cleveland, OH.

16. Aditi Mathur, PhD Aditi joined our laboratory as a postdoctoral fellow in 2014 and moved to Chicago, IL due to the some family reason.. Aditi obtained his PhD from Tulane University School of Medicine, New Orleans, LA in 2014 and recently joined Eosinophilic Disorder Center at New Orleans, LA. Current place and position is not known.

17. JaiShanker Shukla, PhD Jaishankar obtained his PhD from Kanpur University, India and he is a staff member at Sanjay Gandhi Postgraduate Medical Institute at Lucknow, India, India. He came to my laboratory for a year on study leave to learn some molecular and immunology techniques in December 2013 and worked till 2015. He is currently working at Staff Member at Sanjay Gandhi Post Graduate Institute (SGPGI) Lucknow, India.

18. Rakesh Mishra, PhD., Postdoctoral fellow. Joined in 2014 as a postdoctoral fellow to work on the role of IL-18 and IL-15 celiac disease. Rakesh obtained his PhD from Patel Chest

Research Center, New Delhi, India and completed two years of postdoctoral training at University of Illinois, Chicago. Currently placed in New York, NY

19. Ruijuan Gao, PhD. Postdoctoral fellow. She joined our laboratory in 2014 as a Research Associate and currently working as Data Analyst in a private farm at Florida.

20. Siddhesha J. Mariswamy, PhD., Postdoctoral fellow. Siddhesha obtained his PhD from University of Mysore, Mysore, Karnataka, India, India and has done his postdoctoral training at NIH and joined Tulane eosinophilic disorder center in 2014.

21. Anshi Shukla, PhD., Postdoctoral fellow. Anshi completed her PhD degree from BHU, Varanasi, India. Joined our laboratory in 2014 as a pre doctoral fellow and currently moved to the Transplant Clinic, Washington University, Washington, DC.

22. Dewan Majid, MD. Joined recently Tulane eosinophilic Disorder Center after completing MD degree from Tulane University School of Medicine, New Orleans, LA. Dr. Majid is doing Residency at St. Louis, MS

23. Chandrashekara P. Madhadevappa, PhD Joined Tulane Eosinophilic disorder Center in July 2015 and worked on CXCR4/SDF1 pathway in EMT associated esophageal functional disorders in EoE. Chandrashekhera obtained his PhD degree from University of Mysore, Mysore, Karnataka, India, India. Dr. Madhadevappa moved back to India in July 2016 joined faculty position in Mysore, India

maturation. Sathisha, obtained his PhD degree from University of Mysore, Mysore, Karnataka, India, India. Sathisha, moved to University of Missouri, Columbia, MO

24. Murli Manohar, PhD. Joined Tulane Eosinophilic disorder center in May 2015 and worked on the role of IL-15 in the pathogenesis of acute and chronic pancreatic fibrosis. Murli, obtained his PhD from Central drug Research institute (CSIR) Lucknow, India. Currently Dr Manohar moved in Feb 2018 to Standford University, San Fransico, CA for his further training in research.

25. Alok K. Verma, PhD. Joined Tulane Eosinophilic Disorder Center in July 2015 and working on the role of vasoactive intestinal peptide in eosinophil trafiking in the muscular mucosa. Dr. Verma graduated in 2014 and obtained his PhD degree from Indian Toxicology research Center, Lucknow, India. Dr. Verma moved to Cincinnati Childrens Hospital Medical Center in 2018.

Students Past/Present

The following high school/graduate students were introduced to medical research in summer (June-August) of all years and trained in my laboratory.

1. Kalyan M. Rao, 2008 May-July, Currently working as Statistical Analyst at Procotor and Gable, Cincinnati, Ohio

2. Srichandan Rajmouli, 2008 May-July, Currently Medical student at Collage of Medicine University of Cincinnati, OH

4. Mathew Moffitt, 2009 May-July, Valpariso University, Indiana. Currently Medical student in Indiana.

5. Birva Dave, 2009 May-July, Anderson High School, Cincinnati, Ohio. Currently working as Pharmacist in Florida

6. Anupreet K.Lekhi, 2010 May-July, Ohio State University, Columbus, Ohio.

7. Archit Sahay, 2012 May-July, Ohio State University, Columbus, Ohio. Currently doing medical education in Toledo, Ohio

8. Akanksha Mishra, 2012 June-August, University of Cincinnati, Ohio. Currently doing her medical studies.

9. Prithvi Jami, 2013 JUNE-AUGUST, Currently doing medical education in Toledo, Ohio

10. Ahaad Mushad, 2014, November-June 2014. Independent research student, currently doing his medical education in LSU.

11. Nathan Sanders 2015-16 Independent research student to complete his undergraduate course for Tulane University, New Orleans, LA Currently doing his academic medical education (MD, PhD) in Boston, MA

Current Faculty and Postdoctoral Fellow.

1. Sathisha U. Venkateshaiah, PhD. Joined the Tulane eosinophilic disorder center in July 2014 and worked on the IL-15 role in airway resistance and compliance following the induction of experimental asthma. Additionally he showed a critical role of IL-18 in eosinophils. Dr. Venkateshaiah is now promoted to the faculty position at Tulane School of Medicine and he is now managing my laboratory research and guiding new postdoctoral fellows and students.

2. Hemanth K. Kandikattu, PhD Joined Tulane Eosinophilic Disorder Center in March 2018 and working on pathogenesis of acute and chronic eosinophil associated pancreatic fibrosis and Malignancy. Hemanth obtained his PhD from the Defense Food Research laboratory/University of Mysore, Karnataka, India. Before joining my laboratory Hemanth worked at University of Missouri, Columbia, Missouri from 2015 to March 2018 on the project involving the role of RECK (Reversion inducing cysteine rich protein with kazal motifs) and TRAF3IP2 in cardiac hypertrophy, fibrosis and obesity.

Jaya Mishra, PhD. Clinical Coordinator. She has a vast experience of basic and clinical research and currently involved in the translational research work of our laboratory. laboratory and

Current Student

1. Arjun Verma, 2016- Independent research student to complete his undergraduate course for Tulane University, New Orleans, LA

9. GRANTS AND CONTRACTS

Present

1. National Institute of Health (NIH/NIAID)

Anil Mishra, Principal Investigator

1 R01 AI080851 5/2013-8/2019

Role of IL-15 in the pathogenesis of eosinophilic esophagitis

\$250,000 (annual direct cost)

2. National Institute of Health (NIH/NIAID)

2R01AI080581-09A1 2018-2023

Immune signaling molecules involved in promoting the pathogenesis of eosinophilic esophagitis.

\$353,000 (annual direct cost)

Scored: Percentile 11

PENDING

1. PI. Name: MISHRA, Anil

Application ID: 1 R01 AI144614-01

Title: The significance of neuroimmune axis in promoting esophageal functional abnormalities in human EoE

NIH/NIAID

Past

1. National Institute of Health (NIH/NIDDK)

Anil Mishra, Principal Investigator

2 R01 DK067255-06A1 4/2011-7/2016

Mechanistic analysis of eosinophilic esophagitis

\$220,000 (annual direct cost)

2. National Institute of Health (NIH/NIDDK)

Anil Mishra, Principal Investigator

1 R01 DK067255-01A1 2005-2010

Mechanistic analysis of eosinophilic esophagitis

\$250,000 (annual direct cost)

3. National Institute of Health (NIH/NIAID)

Anil Mishra, Principal Investigator

1 R01 AI080851 2009-2011

Role of IL-15 in the pathogenesis of eosinophilic esophagitis

\$250,000 (annual direct cost)

4. National Institute of Health (NIH/NIDDK)

Anil Mishra, Principal Investigator

R01 DK067255-S1 2009-2010

Mechanistic analysis of eosinophilic esophagitis: eosinophilis in health and disease (ARRA grant)

\$30,000 ARRA Summer trainee program

5. National Institute of Health (NIH/NIAID)

Marc Rothenberg, Principal Investigator

Anil Mishra, Co-Investigator

NIH 2R01AI045898-05 2004-20012

Regulation of gastrointestinal eosinophils at baseline and inflammatory state

10. PATENT FILED

CTC Reference #: 2008-0110

Title: A Critical Role of IL-15 in the Pathogenesis of Eosinophilic Esophagitis

Inventors: Anil Mishra and Marc Rothenberg

Disclosure Date: 01/28/2008

CTC Reference #: 2011-0405

Title: Invariant Natural Killer T-Cell Are The Potent Therapeutic Target Molecules for the Treatment of Eosinophilic Esophagitis

Inventors: Anil Mishra

Disclosure Date: 03/13/2014

International Publication Number WO 2013/155010A1

Title: Non-Invasive Biomarker for Eosinophilic Esophagitis (EoE)

Inventors: Anil Mishra

Disclosure Date: International Published date 10/07/2013,

International patent filed on July, 16, 2014

PCT/US/2014/045249

Recombinant interleukin-15 is a therapeutic agent for the treatment of airway hyperactivity, resistance and fibrosis in chronic asthma

Inventor: Anil Mishra, PhD, and Akanksha Mishra, Elite Biosciences, 12090 Crestfield, CT, Cincinnati, OH 4529

11. PEER-REVIEWED RESEARCH PUBLICATIONS

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BOOK CHAPTERS

96. Rothenberg ME, **Mishra A,** Brandt EB, Hogan SP. Regulation of gastrointestinal eosinophils. *Advances in Immunology*, 2001; 78:291-328.
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15. Most Cited Articles

(> 100 Cited publications)

Total Citation. 7596 (December. 2018)

SN	CV Pub#	Title	Journal	Year	Total citation
1	24	An etiological role for aeroallergens and eosinophils in experimental esophagitis	J Clin Invest	2001	573
2	41	Eotaxin-3 and a uniquely conserved gene-expression profile in eosinophilic esophagitis	J Clin Invest	2006	700
3	32	Dissection of experimental asthma with DNA microarray analysis identifies arginase in asthma pathogenesis	J Clin Invest	2003	520
4	31	IL-5 promotes eosinophil trafficking to the esophagus	J Immunol	2002	325
5	34	Intratracheal IL-13 induces eosinophilic esophagitis by an IL-5, eotaxin-1, and STAT6-dependent mechanism.	Gastroenterology	2003	361
6	17	Fundamental signals that regulate eosinophil homing to the gastrointestinal tract	J Clin Invest	1999	313

7	25	A pathological function for eotaxin and eosinophils in eosinophilic gastrointestinal inflammation	Nat Immunol	2001	274
8	27	Pathogenesis and clinical features of eosinophilic esophagitis	J Allergy Clin Immunol	2001	277
9	28	Gastrointestinal eosinophils.	Immunol Rev	2001	272
10	29	IL-13 induces eosinophil recruitment into the lung by an IL-5- and eotaxin-dependent mechanism	J Allergy Clin Immunol	2001	256
11	22	Murine eotaxin-2: a constitutive eosinophil chemokine induced by allergen challenge and IL-4 overexpression.	J Immunol	2000	184
12	47	Esophageal remodeling develops as a consequence of tissue specific IL-5-induced eosinophilia	Gastroenterology	2008	204
13	38	Inhibition of human interleukin-13-induced respiratory and oesophageal inflammation by anti-human-interleukin-13 antibody (CAT-354).	Clin Exp Allergy	2005	162
14	39	Epicutaneous antigen exposure primes for experimental eosinophilic esophagitis in mice	Gastroenterology	2005	168
15	20	A critical role for eotaxin in experimental oral antigen-induced eosinophilic gastrointestinal allergy	Proc Natl Acad Sci U S A	2000	161
16	45	Critical role for adaptive T cell immunity in experimental eosinophilic esophagitis in mice	J Leukoc Biol	2007	135
17	36	Transcript signatures in experimental asthma: identification of STAT6-dependent and -independent pathways	J Immunol.	2004	120
18	44	Resistin-like molecule beta regulates innate colonic function: barrier integrity and inflammation susceptibility.	J Allergy Clin Immunol	2006	121
19	26	Gastrointestinal eosinophils in health and disease.	Adv Immunol	2001	100
20	37	Expression and regulation of a disintegrin and metalloproteinase (ADAM) 8 in experimental asthma	Am J Respir Cell Mol Biol	2004	105
21	84	Gastrointestinal eosinophils in health and disease	Advances in Immunology	2001	105

16. DISTRIBUTION OF EFFORT

Research: 75%
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I have reviewed the curriculum vitae for completeness and accuracy and agree with its contents.

A handwritten signature in black ink, appearing to read "Anil Mishra". The signature is written in a cursive style with a horizontal line underneath the name.

Anil Mishra, Ph.D.
Dated March, 2018