

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Reinhold W. Vieth et al.
U.S. Patent No.: 9,066,958 Attorney Docket No. 53953-0001IP1
Issue Date: June 30, 2015
Appl. Serial No.: 11/674,234
Filing Date: February 13, 2007
Title: VITAMIN D COMPOSITIONS AND METHOD OF
ADMINISTRATION TO A HUMAN BEING

DECLARATION OF DR. J. USHA RAJ

I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: April 11, 2024

By: Usha Raj

Dr. J. Usha Raj



I. INTRODUCTION

1. My name is Usha Raj. I am over 21 years of age and otherwise competent to make this Declaration. I have been retained by counsel as an expert witness to provide assistance regarding U.S. Patent No. 9,066,958 (“the ’958 Patent”). It is my understanding that MOM Enterprises, LLC (“Petitioner” or “MOM”) has submitted an IPR petition challenging Claims 1, 3, 4, and 5 of the ’958 Patent (“Challenged Claims”). Specifically, I have been asked to review translated versions of the prior art reference Harder, and opine on how a pediatrician would have understood Harder as it relates to the claims of the ’958 Patent. I have personal knowledge of the facts and opinions set forth in this declaration and believe them to be true. If called upon to do so, I would testify competently thereto.

2. I am being compensated for my time at my standard hourly consulting rate of \$630. If I am deposed in this case I will be compensated at the hourly rate of \$780 for the time spent sitting in deposition. I am also being reimbursed for expenses that I incur during the course of this work. My compensation is not contingent upon the results of my review, the substance of my opinions, or the outcome of any proceeding involving the Challenged Claims. I have no financial interest in the outcome of this matter or on the pending litigation between Petitioner and Patent Owners.

3. In providing the opinions in this Declaration, I have considered the following documents:

- EX1006 – A Section by Ulrike Harder¹ written in German;
- EX1007 – Harder Translation + Declaration of Mr. David Joshua Sherman;
- EX1021 – Harder Translation + Declaration of Ms. Rebecca Amy Tinworth;
- EX1022 – Harder + Supplemental Declaration of Mr. David Joshua Sherman; and
- EX1023 – Harder + Declaration of Mr. Stephen Benyunes.

Of these, I understand from counsel that the EX1007 translation of Harder is the primary translation Petitioner relied upon in its Petition.

4. My opinions, as explained below, are based on my education, experience, and expertise in the fields relating to the '958 Patent. Unless otherwise stated, my testimony below refers to the knowledge of a pediatrician as of the earliest priority date of the '958 Patent.

¹ I do not speak or read German, however, I reviewed the original Harder reference to confirm to my satisfaction that the subsequent certified translations appear to relate to this document.

5. My analysis of the materials produced in this proceeding is ongoing and I will continue to review any new material as it is provided. This declaration represents only those opinions I have formed to date. I reserve the right to revise, supplement, and/or amend my opinions stated herein based on new information and on my continuing analysis of the materials already provided.

II. QUALIFICATIONS AND BACKGROUND INFORMATION

6. I am a physician licensed to practice medicine in the States of Illinois.

7. I received the degree of Bachelor of Medicine, Bachelor of Surgery (M.B.B.S.) from Seth G.S. Medical College, University of Bombay, India in 1973. I completed a residency in pediatrics at B.J. Wadia Hospital for Children, University of Bombay in 1976. I completed a year as an Instructor at B.J. Wadia Hospital for Children in Bombay India in 1977. I completed a clinical fellowship in neonatology at Tulane University, New Orleans, Louisiana in 1980. I have since continually been engaged in the practice of pediatrics and neonatology.

8. From 2008-2015, I was the Head of the Department of Pediatrics and the Physician-in-Chief of the Children's Hospital University of Illinois.

9. Since 2008, I have been a Professor in the Departments of Pediatrics, Physiology and Biophysics, Pharmacology, Anatomy and Cell Biology at the University of Illinois at Chicago.

10. Since 2020 I have also held academic appointments as Adjunct Assistant Professor in the Department of Biomedical Engineering at Northwestern University, Evanston, Illinois and as Visiting Professor at the School of Public Health, Jodhpur University, Jodhpur, India.

11. I have received numerous educational and research honors and have published extensively in peer reviewed medical journals. My published work and professional activities are set forth in my curriculum vitae, attached to this declaration.

12. I have been qualified as an expert witness in neonatology in the courts of California, Illinois, and other venues.

III. OPINIONS ON HARDER

13. I have reviewed each of the translations of Harder that I was provided with in connection with this case. I understand that these translations include minor variations in the translation of the sentence: “der Mahlzeit wird 1 Tropfen Vigantol® Öl vorne auf einem Löffel dem Baby zum Ablecken gegeben” on page 259 of Harder. EX1006, 21. Specifically, I understand the parties are focused on the sentence from each translation read as follows:

- a. “1 drop of Vigantol® oil is given to the baby to be licked off from the tip of a spoon once a day before a breastfeed or a meal,” (EX1007, 6);

- b. “1 drop of Vigantol® oil is given to the baby from the tip of a spoon once a day before a breastfeed or a meal,” (EX1021, 5);
- c. “1 drop of Vigantol® oil is given to the baby to be licked off from the tip of a spoon once a day before a breastfeed or a meal,” (EX2022, 25);
and
- d. “Once a day before breastfeeding or a meal, the baby is given 1 drop of Vigantol® oil on the tip of a spoon to lick off.” (EX2023, 8).

14. Regardless of the translation used, it is my opinion that a practitioner reading this instruction would understand each of these instructions to amount to the same steps: that a drop of the Vigantol® oil should be placed on the tip of a spoon and given to the baby so that the baby can lick it off from the spoon.

15. As part of my review, a sample of one of the Patent Owners’ Ddrops products was purchased and sent for me to physically inspect. Specifically, the product that was ordered was “Ddrops Organic Baby 400 IU 90 Drops – Daily Vitamin D Liquid for Infants.” This product was purchased through Amazon and sent to me. A copy of the webpage is shown as EX1030.

16. In addition, I was also sent 12 Munchkin® Soft Tip Infant Spoons. This product was purchased through Amazon and sent to me. A copy of the webpage is shown as EX1041.

17. It is my opinion that the smaller plastic spoon, which has smooth edges, is very suitable for placing a drop of a Vitamin D oil, such as the Ddrops product I received, at its tip for presentation to a baby for the baby to lick the drop off. It is also my opinion that a baby can take the whole spoon into its mouth and suck and/or lick the drop off from this spoon.

18. Using these products, I was able to follow the steps for administration I reviewed in Harder.

19. First, I tested whether a drop of the Ddrops Vitamin D solution/oil can be placed on the tip of the spoon. I wanted to make sure that just one drop can be placed and that when tilting the bottle upside down to get a drop out, several drops do not fall out. The test was positive.

20. I was able to place just one drop on the tip of the small plastic spoon. I also found that if the spoon is held with a slight tilt downwards the drop stays at the tip of the spoon, and does not fall off, which would make it very easy to give it to a baby to lick off.

21. I also found that if the spoon is tilted backwards, the drop rolls down to the hollow bowl of the spoon. Therefore, to administer the drop to a baby from the tip of the spoon would require the spoon to be tilted downwards when presenting it to a baby so that the drop will roll forward to the tip of the spoon.

22. Alternately, since the spoon is quite small, it can be given to a baby into its mouth so that the drop can be either licked or sucked off the bowl of the spoon.

23. After performing this test, I came to the following conclusions:

- a. The recommendation in Harder that one drop of Vitamin D oil be placed at the tip of a spoon and be given to a baby to be licked off is very feasible and easy to perform;
- b. The small plastic spoon is suitable for the method of administration described in Harder;
- c. If the drop rolls down to the center of the spoon, either the spoon should be washed, and the drop placed accurately at the tip of spoon so that the baby can lick it off. Alternately, the entire spoon could be placed in the baby's mouth for the baby to lick and/or suck the drop off.

J. USHA RAJ, M.D.

RAJ_USHA_CV November 5, 2022

J. USHA RAJ, M.D.

Anjuli S. Nayak Endowed Professor of Pediatrics
Professor, Departments of Physiology and Biophysics, Pharmacology, Anatomy and Cell Biology
University of Illinois at Chicago

PERSONAL DATA

Place of Birth: Calcutta, India
Citizenship: U.S.
University Mailing Address: M/C 856, 840 S. Wood St, 1252 CSB
Chicago, IL 60612
Tel: 312-996-5081; 312-413-8502 (laboratory)
Fax: 312-996-1646
Email: usharaj@uic.edu

EDUCATION AND TRAINING

Undergraduate

1967-68 St. Xavier's College, University of Bombay, India, I. Sc.

Graduate

1968-73 Seth G.S. Medical College, University of Bombay, India, M.B.B.S.

Post-Graduate

1974-77 B.J. Wadia Hospital for Children, University of Bombay, India, D.C.H., M.D.
Pediatrics, Residency in Pediatrics (Mentor: Dr. S.M. Merchant)

1978-80 Tulane University, New Orleans, Clinical Fellowship in Neonatology (Mentor:
Dr. N. Woody)

1980-82 Cardiovascular Research Institute, University of California San Francisco,
Research Fellow (Mentors: Dr. Richard Bland, Dr. Jahar Bhattacharya, Dr. S.J.
Lai-Fook, Dr. Norman Staub)

2015-17 University of Illinois at Chicago, Clinician Executive Master's in Health Care
Administration (MHA)

2016 Honorary Doctorate University of Lausanne, Switzerland.

ACADEMIC APPOINTMENTS

1982-83 Instructor, Dept. of Pediatrics, University of California, 505 Parnassus Avenue,
San Francisco, CA 94143

1983-84 Assistant Professor, Dept. of Pediatrics, University of California, 505
Parnassus Avenue, San Francisco, CA 94143

1984-90 Assistant Professor, Dept. of Pediatrics, Harbor-UCLA Medical Center, UCLA
School of Medicine, 1000 W. Carson Street, Torrance, CA 90509

1990-94 Associate Professor with tenure (1990), Dept. of Pediatrics, Harbor-UCLA
Medical Center, UCLA School of Medicine, 1000 W. Carson Street, Torrance,
CA 90509

1994-2008 Professor, Dept. of Pediatrics, Harbor-UCLA Medical Center, UCLA

J. USHA RAJ, M.D.

2008- School of Medicine, 1000 W. Carson Street, Torrance, CA 90509
Professor of Pediatrics, Physiology and Biophysics, Pharmacology, Anatomy and Cell Biology, University of Illinois at Chicago, 1835 W. Polk Street, Chicago, IL 60612

2012- Anjuli S. Nayak Professor of Pediatrics

2020- Adjunct Assistant Professor, Department of Biomedical Engineering, Northwestern University, Evanston, IL 60208;

2020- Member, Institute for Global Health, Northwestern University

2020- Visiting Professor, School of Public Health, Jodhpur University, Jodhpur, India

ADMINISTRATIVE APPOINTMENTS

1985-98 Director, Well Baby Nursery, Harbor-UCLA Medical Center.

1996-99 Director, Level II Nursery.

1992-99 Director, Neonatal Intensive Care Unit, Harbor UCLA Medical Center.

1996-98 Director, Perinatal Biology Research Training Program, Harbor UCLA Medical Center.

1995-2008 Chief, Division of Neonatology, Harbor UCLA Medical Center, UCLA School of Medicine.

1996-2008 Director, Neonatal Fellowship Training Program, Harbor UCLA.

1999-2008 Co-Director, Perinatal Research Center, Los Angeles Biomedical Research Institute at Harbor-UCLA.

2006-2008 Vice-Chairman of Research, Department of Pediatrics, Harbor-UCLA

2008-10 Director, Neonatal Fellowship Training Program, University of Illinois at Chicago

2008-15 Head, Department of Pediatrics, University of Illinois at Chicago.

2010-15 Physician-in-Chief, Children's Hospital University of Illinois, University of Illinois Hospital and Health Sciences System

COMMUNITY SERVICE

2009- Founding member, Friends of UIC Pediatrics

2016- Mentor, Polsky Center for Innovation and Entrepreneurship, University of Chicago, Chicago

2017-19 Consultant, Mental Health Curriculum in Walt Disney Magnet Elementary School

BOARD MEMBERSHIP

2010- Founding Member, Friends of UIC Pediatrics

2018- Advisory Board member, A Safe Haven

2018-20 Board member, Woman Made Gallery

2019- Board member, WHAMglobal Women's Health Activist Movement

LICENSES AND CERTIFICATIONS

1980 Board of Medical Quality Assurance, State of California

J. USHA RAJ, M.D.

1981 Diplomate, American Board of Pediatrics -Pediatrics
1982 Diplomate, American Board of Pediatrics -Neonatal-Perinatal Medicine
2008 Medical License, State of Illinois

EDUCATIONAL HONORS

1968 First in Order of Merit, Intermediate Science, St. Xavier's College, University of Bombay
1972 First among Women Medical Students, Seth G.S. Medical College, University of Bombay
1975 First in D.C.H. Examination, B.J. Wadia Hospital for Children, University of Bombay
1976 Second in Order of Merit, Doctorate Examination in Pediatrics, University of Bombay

RESEARCH HONORS

1985 Young Investigator Award, Southern California Pulmonary Research Conference, Palm Desert, California

1987 March of Dimes Birth Defects Foundation, Basil O'Connor Starter Scholar Research Award

1989 **Richard E. Weitzman Memorial Award:** Award given each year to an outstanding young investigator at Harbor-UCLA Medical Center

1994 Elected to the American Society for Clinical Investigation

2003 Award for Excellence in Research to Women, Harbor-UCLA Research and Education Institute, Inc.

2008 **American Thoracic Society Recognition Award for Scientific Accomplishment.** Award given to ATS members for outstanding scientific contributions in basic or clinical research to the understanding, prevention, and treatment of acute or chronic lung diseases.

2011-2 **Fellow in the Hedwig van Ameringen Executive Leadership** in Academic Medicine (ELAM) Program for Women.

2014 **American Thoracic Society Elizabeth A. Rich Award.** Award given each year to a woman who has made significant contributions to the field of pulmonary, critical care and sleep medicine and who is recognized as a leader and mentor and made contributions to ATS.

2015 **American Physiological Society. Julius H. Comroe, Jr. Distinguished Lectureship of the Respiration Section.** Selection as the Julius H. Comroe,

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Jr. Distinguished Lectureship is a reflection of the scientific contributions to that field, which distinguish the awardee as a leader and a role model for younger scientists.

- 2015** **American Physiological Society, Elected to inaugural class of Fellows.** Fellows are in the top tier of all eligible members and represent members who have distinguished themselves in science and contributions to the society.
- 2016** **Distinguished Achievement Award, American Thoracic Society.** An award given for outstanding contributions to fighting respiratory disease through research, education, patient care and advocacy.
- 2016** **Doctorat honoris causa de l'Université de Lausanne.** The honorary doctorate from the University of Lausanne in Switzerland was conferred for the exemplary contributions as a researcher in developmental biology and for being a great role model for women.
- 2020** **Elected as Fellow, American Thoracic Society**
Fellows are in the top tier of all eligible members and represent members who have distinguished themselves in science and contributions to the society.

TEACHING AND MENTORING AWARDS

- 1979** Owl Club Award; Excellence in Teaching. Tulane Medical School.
2004 Joseph B. Whitehead, Educator of Distinction Award
2008 American Medical Association, Women Physicians Congress Mentoring Award

COMMUNITY SERVICE AWARDS

- 2002** Physicians for Social Responsibility: Physician in Profile
2011 smarTECHS.net Champion Award for Community Service

FUNDED RESEARCH GRANTS

INTRAMURAL:

1. Faculty Development Award, University of California, San Francisco, "Lung Micropuncture", **P.I. J. Usha Raj**, 7/1/83 to 6/30/84, \$ 6,000
2. Research and Education Institute, Inc., Harbor-UCLA Medical Center Grant, "Research Laboratory Support", **P.I. J. Usha Raj**, 10/1/84 to 9/30/85, \$ 6,000
3. Research and Education Institute, Inc., Harbor-UCLA Medical Center, Research Grant, "Response of the neonatal pulmonary circulation to hypoxia." **P.I. J. Usha Raj**, 11/1/84 to 10/31/85, \$ 3,000
4. UCLA Academic Senate Research Grant, **P.I. J. Usha Raj**, 1/22/85 to 6/30/85, \$ 2,000
5. Research & Education Institute, Inc., Harbor-UCLA Medical Center, Research Grant, "Differential responses of pulmonary arterioles and venules." **P.I. J. Usha Raj**, 3/1/87 to 2/28/88, \$ 3,000

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6. Research and Education Institute, Inc., Harbor UCLA Medical Center, Research Grant, "Endothelins: Role in regulation of pulmonary microcirculation." **P.I. J. Usha Raj**, 3/1/89 to 2/28/90, \$ 3,000
7. Harbor-UCLA Research and Education Institute, Inc. Seed Grant. "Leukocyte and endothelium interactions in Sickle Cell Disease." **P.I. Basil Ibe, Co-I, J. Usha Raj**, 08/18/98-08/31/99. \$ 5000.
8. University of California, Los Angeles. "Perinatal Lung Vascular Reactivity and Lipid Mediators" **P.I. J. Usha Raj**. 08/01/98-07/31/99. \$ 50,000.

EXTRAMURAL:

1. **American Lung Association** of Los Angeles County, Research Grant, "Response of the pulmonary microcirculation to hypoxia in the newborn." **P.I. J. Usha Raj**, 2/1/85 to 1/31/86, \$ 29,000
2. **American Lung Association** of California, Research Grant, "Influence of surface forces on the microcirculation in the developing lung." **P.I. J. Usha Raj**, 7/1/85 to 6/30/86, \$ 8,000
3. **American Heart Association** - Greater Los Angeles Affiliate, Research Grant, "Response of lung microcirculation to edema in the newborn." **P.I. J. Usha Raj**, 9/1/85 to 8/31/86, \$ 20,000
4. **National Heart Lung Blood Institute**, R-29, New Investigator Award, "Studies of lung microcirculation in the newborn." **P.I. J. Usha Raj**, 7/1/85 to 6/30/88, \$ 107,500
5. American Lung Association of Los Angeles County, Research Grant, "Role of arachidonic acid metabolites in pulmonary hypoxic vasoconstriction in the newborn." **P.I. J. Usha Raj**, 5/1/87 to 4/30/88, \$ 20,000
6. **American Heart Association** - Greater Los Angeles Affiliate, Research Grant, "Rheological effects in the pulmonary microcirculation." **P.I. J. Usha Raj**, 7/1/87 to 6/30/88, \$ 20,000
7. **American Lung Association** of Los Angeles County, Research Grant, "Effect of vasoactive peptides in the neonatal pulmonary circulation." **P.I. J. Usha Raj**, 8/1/87 to 7/30/88, \$ 20,000
8. **March of Dimes Birth Defects Foundation**, Basil O'Connor Starter Scholar Research Award, "Eicosanoids in control of perinatal pulmonary circulation." **P.I. J. Usha Raj**, 9/1/87 to 6/31/90, \$ 70,000
9. **American Heart Association** - Greater Los Angeles Affiliate, Research Grant, "Role of the pulse wave in the pulmonary circulation." **P.I. J. Usha Raj**, 7/1/88 to 6/30/89, \$ 20,000
10. **National Heart Lung Blood Institute**- RO1, "Studies of lung microcirculation in the newborn." **P.I. J. Usha Raj**, 3/1/88 to 2/28/93, \$ 458,777; MIRS - Research Supplement to RO1 for Dr. Basil Ibe, Ph.D.- 3/1/89 to 2/28/93, \$ 200,000, MIRS- Research Supplement to RO1 for Dr. Adora Okogbule-Wonodi- 10/1/94-9/30/97, \$ 110,000.
11. **American Heart Association**, Greater Los Angeles Affiliate. Investigative Group Research Fellowship Award, **P.I. J. Usha Raj**, 7/1/94-7/31/97, \$ 85,500.
12. **National Institute of Child Health and Human Development**: Perinatal Emphasis Research Center. "New strategies to mature the preterm fetus". **P.I. Alan Jobe**, 4/1/93-3/31/98. \$ 2,446,363. **Project III: Vascular Maturation. P.I. J. Usha Raj**, \$ 277,721/yr.
13. **Ross Research Laboratories**- " Pathogenesis of pulmonary hemorrhage in surfactant treated immature lungs." **P.I. J. Usha Raj**, 6/1/92 to 12/31/98, \$ 60,000.

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14. **Guenther Foundation**-Permanent equipment support for Molecular Biology Research, **Total Direct \$835,900**, 1999-2000.
15. **National Heart Lung and Blood Institute**, RO1, HL-047804-10, **P.I. J. Usha Raj**, 7/1/93-6/30/03. Perinatal Lung Vascular Reactivity and Lipid Mediators. **Total Direct \$ 200,000/yr.**
16. **Sepracor Research Foundation**, (**PI. Raj, Usha**), “Mechanisms by which (S)-albuterol attenuates the effect of (R)-albuterol on human airway muscle cells” 01/01/03-01/12/04. **Total \$ 60,000.**
17. **MIRS** for Theresa A. John, Ph.D., MHPE, RO1 HL059435-05 Raj (PI) **NIH/NHLBI**, 02/01/04 – 06/30/07, Mechanisms of cGMP-mediated Vasodilation in Perinatal Lung (Research Supplement).
18. **MIRS** for Sewite Negash, Ph.D. RO1 HL075187-01S1 Raj (PI) **NIH/NHLBI** 05/01/04–07/31/08, Functional Heterogeneity of Pulmonary Arteries and Veins (Research Supplement)
19. **MPDS** for Victoria N. Nwafor-Anene, M.D. RO1 HL059435-07S1Raj (PI) **NIH/NHLBI** 07/01/05 – 06/30/08 Mechanisms of cGMP-mediated Vasodilation in Perinatal Lung (Research Supplement).
20. **National Heart Lung and Blood Institute**, RO1, HL-077819-05 (**P.I. Raj, J. Usha, M.D.**), 07/01/04-06/30/09, PAF and Hypoxia-induced Pulmonary Hypertension.

RECENTLY COMPLETED

1. **National Heart Lung and Blood Institute**, RO1, HL-059435-14 (**P.I. Raj, J. Usha, M.D.**) 07/01/98-06/30/12, Mechanisms of cGMP mediated vasodilation in Perinatal Lung
2. **National Heart Lung and Blood Institute**, RO1, HL-075187-10 (**P.I. Raj, J. Usha, M.D.**) 8/1/03-07/31/13, Functional Heterogeneity of Pulmonary Arteries and Veins.
3. **National Heart Lung and Blood Institute**, 1R03HL110829-02, (**P.I. Raj, J. Usha, M.D.**), MicroRNAs in Regulation of Pulmonary Vascular Smooth Muscle Cell Proliferation, 09/23/11-07/31/13.
4. **PDR-032** Chicago Biomedical Consortium (**PI Raj, J. Usha**)
Identifying PDLIM5 Downstream Targets in Human Pulmonary Smooth Muscle Cells, 7/01/2014 – 6/30/2015 0.24 CM
5. **1C1CMS331342-01-00** (**Van Voorhees Project Director; Raj, J. Usha**, Associate Project Director) 9/1/2014 – 8/31/2019 \$19.8 millions
The major goal of this project is to provide comprehensive, community-based care to 6000 children and young adults on Medicaid with chronic illnesses in Cook County, Illinois.
Role: Associate Project Director 1.8 CM
6. **Gilead Sciences Research Scholar Program in PAH** (**PI Tianji Chen**)
Role: Mentor 1/2/2018-12/31/2019 \$65,000
A protective role of miR-212-5p in pulmonary hypertension
7. **1R01HL123804-01A1** **NIH/NHLBI** (**Raj, Zhou, MPI**)
Role: Lead and Co-Principal Investigator 7/15/2015 – 4/30/2020 1.80 CM
Role of microRNA-17-92 and PDLIM5 Signaling in Pulmonary Arterial Hypertension

CURRENT

1. **1R56HL141206-01A1** **NIH/NHLBI** (**Raj, Chen MPI**)

J. USHA RAJ, M.D.

Role: Lead and Co-Principal Investigator 09/20/2020-08/31/2022 1.8 CM \$375,000 Direct
Endothelium-derived Extracellular Vesicles, MicroRNAs and Pulmonary Hypertension

2. Chicago Biomedical Consortium Catalyst Award (Raj, Chen, Hubbell MPI)

Role: Lead and Co-Principal Investigator

Endothelium-Derived Extracellular Vesicles, MicroRNAs and Pulmonary Hypertension

03/01/2020-02/01/2023 \$250,000

PROFESSIONAL SOCIETIES

1981	American Academy of Pediatrics
1985	Western Society for Pediatric Research
1985	American Thoracic Society
1985	American Physiological Society
1988	Society for Pediatric Research
1988	Microcirculatory Society
1990	Western Society for Clinical Investigation
1992	Perinatal Research Society
1994	American Society for Clinical Investigation
1996	American Pediatric Society
1998	California Association of Neonatologists
1999	Los Angeles Academy of Medicine
2008	Midwest Society for Pediatric Research
2011	Pulmonary Vascular Research Institute (PVRI)
2018	International Society for Extracellular Vesicles

REVIEWER

American Journal of Physiology: Lung Cell Molecular Physiology

Journal of Applied Physiology

American Journal of Respiratory and Critical Care Medicine

Microvascular Research

Pediatric Pulmonology

Pediatric Research

Journal of Clinical Investigation

American Journal of Pathology

Journal of American Association for Pediatric Ophthalmology and Strabismus

Swiss National Foundation Grants

EDITORIAL SERVICE

Associate Editor

2011-16 American Journal of Respiratory Cell and Molecular Biology

Editorial Board

2005-2010 American Journal of Physiology: Lung Cellular and Molecular Physiology

J. USHA RAJ, M.D.

2008-11 American Journal of Respiratory Cell and Molecular Biology
2010- American Journal of Respiratory and Critical Care Medicine
2015- American Journal of Respiratory Cell and Molecular Biology
2020- Member, Pulmonary Circulation

Executive Committee

2013-20 Member, Pulmonary Circulation Journal Executive Committee

COMMITTEE MEMBERSHIP

INTRAMURAL

Harbor-UCLA Medical Center: Hospital Committees

1990-95 Institutional Rules and By-Laws Committee.
1992-present Chair, Neonatal Intensive Care Unit Steering Committee, Harbor-UCLA
1992-94 Sabbatical Committee, Faculty Society, Harbor UCLA Medical Center.

Harbor-UCLA Research and Education Institute, Inc.

1991-02 Institutional Animal Use and Review Committee
1988-94 Institutional Clinical Study Center Research Review Committee.
1990-92 Institutional Human Subjects Research Review Committee.
1990-91 Institutional Infrastructure Task Force.
1997-99 Vice-Chair, Institutional Animal Use and Care Review Committee
1999-02 Chair, Institutional Animal Use and Care Review Committee
1992-95, 97-00 Member, Administrative Policies Committee, Harbor-UCLA Research & Education Institute.
1999 Member: Nominating Committee, Board of Governors, Harbor UCLA Research and Education Institute.
1999 Harbor-UCLA Research & Education Institute Infrastructure Committee
1999 Member, Research Committee, Harbor-UCLA REI.
1999-05 Member, Finance Committee, Harbor-UCLA REI.
2006-08 Member, Research Committee, Los Angeles Biomedical Research at Institute at Harbor-UCLA

UCLA School of Medicine

1997-2008 Member: Tenure and Promotions Committee, Department of Pediatrics, UCLA School of Medicine

University of Illinois at Chicago

2008-15 Member: MSP Board, UIC College of Medicine
2009-10 Member, Search Committee, Head of Pathology
2009-10 Member, Search Committee, Chief Development Officer, COM
2009-11 Member, Advisory board, Academy for Excellence in Teaching, COM
2010-2011 Member, Search Committee, Head of Medicine
2012-2016 Chair, Faculty Academic Advancement Committee (FAAC)
2017- Member Executive Committee, Women for UIC

J. USHA RAJ, M.D.

2021- Member, Pediatric Department Tenure and Promotion Committee
2021 Member, Selection Committee for ELAM candidate UIC

EXTRAMURAL

American Physiological Society

1999-02 Member, Respiration Section, Experimental Biology Meeting Program Planning Committee, American Physiological Society
2000-02 Program Chair, Respiration Section
 Member, Joint Program Committee, EB 2001 Meetings
2003 Member, Program Committee, International EB (IUPS) meeting, 2005
2006 Chair, Organizing Committee, Conference of “Physiological Genomics and Proteomics of Lung Disease”, Ft. Lauderdale, FL.
2009-12 Council Member.
2009-12 FASEB sub-committee on Clinical Research
2020- Member, Committee on Diversity, Inclusion and Equity
2020- Chair, Awards Committee
2021- Member, Leadership Committee, APS 2023

American Academy of Pediatrics

2006-2008 Representative, Chapter 2, District IX, Section on Perinatal Pediatrics
2010-15 Member, Committee on Pediatric Education
2010-12 Member, Executive Committee, Illinois Chapter of AAP
2015-Present Member, IRB committee
2018-19 Member, Committee on New Century Scholars Program

American Thoracic Society

1990-96 Program Planning Committee, Section of Pulmonary Circulation, American Thoracic Society.
1998-present Member, Program Planning Committee, Pulmonary Circulation Assembly, American Thoracic Society
1998-2000 Member, American Thoracic Society Committee on Pulmonary and Critical Care Training.
1998-2000 Member, California Thoracic Society, Perinatal-Pediatric Committee.
2000-03 Member, Honors and Awards Committee.
2003-06 Member, Revenue Development Committee
2005-06 Chair, Nominating Committee, Pulmonary Circulation Assembly
2008-12 Member, Strategic Research Planning Committee
2013-16 Member, Research Advocacy Committee
2016-17 Member, Scientific Advisory Committee
2017-20 Member, Planning and Evaluation Committee
2020- Member, Awards Committee
2022 Member, Nominating Committee, Board of Directors

J. USHA RAJ, M.D.

American Heart Association

1992	Investigative Group Study Section, American Heart Association, Greater Los Angeles Affiliate.
1993-95	Program Committee, Council on Cardiopulmonary and Critical Care, American Heart Association.
1993	Member, Investigative Group Study Section, American Heart Association, Greater Los Angeles Affiliate.
1996-99.	Member: Research Committee, American Heart Association, Greater Los Angeles Affiliate.
2004	Member, Lung Vascular Biology Study Section.

National Institutes of Health

1992	Ad hoc review group and site visit team, Sickle Cell Center Grants, National Institutes of Health.
1992-96	Member, National Institutes of Health Study Section, Lung Biology and Pathology Review Group.
1995	Member: Special Review Group, National Heart Lung Blood Institute.
1996	Member: Special SCOR Grant Review Group, National Institute of Child Health and Human Development.
2000	Member: Ad hoc Study Section Group, ZRG1 Metabolism, Center for Scientific Review, National Institutes of Health.
2000	Member: Special Study Section, Pediatric Pulmonary SCOR, NHLBI
2001	Ad hoc Member: Study Section, NHLBI, Lung Biology and Pathology
2001	Member: Special Emphasis Panel, NIH, NHLBI
2002	Chair: Special Study Section, NHLBI, NIH
2002	Member: CSR Special panel on Respiratory IRG
2003	Ad-hoc member, Respiratory Physiology Study Section
2004-8	Member, Respiratory Integrative Biology and Translational Research Study Section
2008-10	Long Range Planning Committee, Pediatric Pulmonary Research
2015	Ad Hoc member, Respiratory Integrative Biology and Translational Research Study Section
2016 June	Ad-hoc Study Section member, Cardiovascular Function and Hypertension
2017	Ad-hoc member, Special Emphasis Study Section
2018 June	Ad-hoc member, Respiratory Integrative Biology and Translational Research Study Section
2018	Member, CSR Anonymization Study
2019 June	Ad-hoc member, Respiratory Integrative Biology and Translational Research Study Section
2020 February	Ad-hoc member, Respiratory Integrative Biology and Translational Research Study Section
2020 October	Member Special Study Section RFA INCLUDE grants
2021 March	Member Special Study Section RFA INCLUDE grants
2021 May	Member Special Study section RFA NCATS

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2021 July **Co-Chair** and Member, NIH-CSR CVRS-H 03 M Special Emphasis Panel
2021 December Member, NICHD Study Section, Training Grants
2022 March Member Special Study Section RFA INCLUDE grants

Western Society for Clinical Investigation

1993-95 President, Western Respiration Club.

California Association of Neonatologists

2000-03 Member of the Board-representing Southern California-Los Angeles.

Parker B. Francis Foundation

2006-9 Member, Scientific Advisory Committee

Pediatric Pulmonary Hypertension Network

2009- Member, External Advisory Board
2016-20 Chair, Front Door Committee
2015- Chair, Research and Publications Review Committee

AMSPDC and APS

2012-15 Representative to COPE for the Association of Medical School Pediatric Department Chairs and the American Pediatric Society

Board Membership

2010- Founding Member, **Friends of UIC Pediatrics**
2017-20 Board Member, **Woman Made Gallery**
2017- Advisory Board Member, **A Safe Haven**
2019- Board Member, **WHAM Global**

OTHER PROFESSIONAL ACTIVITIES

May, 1986 **Invited Speaker:** Resolution of Pulmonary Edema: Symposium, American Thoracic Society Meeting, Kansas City, MO. "Normal and Abnormal Clearance of Lung Liquid in the Newborn"
June, 1986 **Invited Speaker:** Research Seminar, Loma Linda University School of Medicine, Division of Perinatal Biology. "Pulmonary Microcirculation in the Newborn"
Mar, 1987 **Invited Speaker:** NIH Workshop - "Lung Micromechanics", Sponsored by National Heart, Lung and Blood Institute. "Interstitial Liquid Pressures in Fetal Lungs"
April, 1987 **Participant:** NIH Workshop - "Lung Growth and Development", Sponsored by National Heart, Lung & Blood Institute
Feb, 1988 **Co-Chair:** Subspecialty Session in Pulmonology, Combined WSCI/WSPR Meetings, Carmel

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- Feb, 1989** **Co-Chair:** Subspecialty Session in Microcirculation, Combined WSCI/WSPR Meetings, Carmel
- Oct, 1989** **Invited Speaker:** Pulmonary Microcirculation Symposium. Joint Meeting of the American Physiological and American Thoracic Societies, Rochester. "Pulmonary Microvascular Pressure Profile in Neonatal Lungs"
- March, 1989** **Co-Chair:** Symposium on Lung Fluid Balance, FASEB Meeting, New Orleans
- Oct, 1989** **Co-Chair:** Pulmonary Microcirculation, Joint ATS/APS Mtg, Rochester.
- Feb, 1990** **Co-Chair:** Subspecialty session in Pulmonology, Combined WSCI/WSPR meetings, Carmel.
- Feb, 1990** **Co-Chair:** Subspecialty session in Perinatology, Combined WSCI/WSPR meetings, Carmel.
- April, 1990** **Co-Chair:** Session on Lung Fluid Balance, FASEB meetings, Washington DC.
- May, 1990** **Co-Chair:** Symposium on Pulmonary Circulation, SPR meetings, Anaheim.
- April, 1991** **Chair:** Symposium on Pulmonary Circulation, FASEB Meetings, Atlanta.
- Feb, 1992** **Co-Chair:** Session on Perinatology, WSPR Meetings, Carmel, CA.
- May, 1992** **Invited Speaker:** Symposium on "Developmental aspects of the pulmonary circulation". ATS Meetings, Miami, FL.
- May, 1992** **Invited Speaker:** Symposium on "Pulmonary circulation" at the Centenary celebrations of the Children's Hospital in Groningen, Holland.
- June, 1992** **Invited Speaker:** Plenary session of Annual Meeting of the European Society for Pediatric Research, Uppsala, Sweden.
- March, 1993** **Invited Speaker:** "Effect of pulsatile flow on the pulmonary microvasculature". ECMO conference, Keystone, Colorado.
- May, 1993** **Co: Chair:** Neonatal Pulmonology session, SPR meetings, Washington, D.C. 1993.
- June, 1993** **Invited Speaker:** Developmental pulmonology research conference, Department of Pediatrics, University of Utah Medical Center, Salt Lake City, Utah.
- Sept, 1993** **Invited Speaker:** 2nd World Congress of Perinatal Medicine. Rome, Italy. Symposium on Neonatal Respiratory Disorders.
- June, 1994** **Invited Speaker:** 14th European Congress of Perinatal Medicine, Finland. Symposium on Regulation of perinatal pulmonary circulation.
- April, 1995** **Invited Speaker:** Developmental pulmonology research conference, Department of Pediatrics, University of Utah Medical Center, Utah.
- April, 1995** **Invited Speaker:** Symposium on Pulmonary Circulation, Lausanne, Switzerland.
- April, 1995** **Chair:** Poster symposium on Lung Injury and Pulmonary circulation, Experimental Biology meetings, Atlanta, Ga.

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April, 1996	Invited Speaker: Regulation of pulmonary vasomotor tone and reactivity in the fetus and newborn. Experimental Biology, Washington, D.C. 1996.
May, 1996	Chair: Session on Neonatal Pulmonology, Society for Pediatric Research, Washington, D.C., 1996.
Sept, 1996	Invited Speaker: Symposium on "Pulmonary Edema." American Heart Association and NHLBI, Sedalia, CO.
May, 1997	Symposium Facilitator: Pulmonary Circulation Session, American Thoracic Society Meetings, San Francisco.
April, 1998	Co-Chair, Session on Pulmonary Vascular Reactivity, Experimental Biology Meetings, San Francisco, CA.
May, 1998	Chair, Session on Developmental Biology, Society for Pediatric Research Meetings, New Orleans, LA.
Oct, 1998	Visiting Professor, Institut Gustave Roussy, Villejuif, France, Henri Mondor Hospital, Creteil, France, Port Royal Hospital, Paris.
Jan, 1999	Chair, Session of Neonatal Pulmonology, WSPR Meetings, Carmel, CA.
Feb, 1999	Invited Speaker, Annual Symposium on ECMO, Keystone, Colorado.
April, 1999	Co-chair, Poster Symposium, Pulmonary Vasoreactivity, ATS Meetings, San Francisco.
August, 1999	Visiting Professor, Lung Biology Research Laboratory, St. Lukes Roosevelt Medical Center, Columbia University, NY.
April, 2000	Chair, Symposium on Physiological Genomics of the Respiratory System. EB 2000 Meetings, San Diego, CA.
Sept, 2000	Visiting Professor, Division of Neonatology, Department of Pediatrics, University Hospital, Lausanne, Switzerland.
March, 2001	Invited Speaker, 28 th Neonatal and Infant Symposium, Lake Tahoe, Nevada.
March, 2001	Chair, Symposium on Cell Signaling, Experimental Biology meetings, Orlando, FL.
Nov, 2001	Speaker, ANOSC meeting, TriCity, CA.
April, 2002	Chair, Symposium on Oxygen dependent Cell Signaling in Pulmonary smooth muscle. EB meetings, 2002.
Sept, 2002	Speaker, Grover Conference on Pulmonary Circulation, Sedalia, CO.
Oct 2002	Speaker, ANOSC Meeting, CHOC, Orange, CA
Dec 2002-May, 2003	Visiting Professor, University of Lausanne, Switzerland
March 2003	Featured Speaker, XXXIII Journees Nationales de Neonatologie , Paris
April 2003	Chair, Symposium on Regulation of Smooth Muscle Cell Phenotype: Proliferative vs Contractile, EB meetings, 2003.
Sept 2003	Invited Speaker, European Pediatric Research Society Meetings, Bilbao, Spain
Jan 2004	Visiting Pulmonary Scholar, University of North Carolina, Duke University, North Carolina State, NIEHS.
Feb 2004	Visiting Professor, Stanford University.
May 2004	Visiting Professor, Columbia University

J. USHA RAJ, M.D.

July 2004	Invited Lecturer , Rayne Institute, British Heart Foundation, London
Feb 2005	State of the Art Lecturer , WSCI/WAP/WSPR meetings, Carmel, CA
May 2005	Symposium Organizer and Speaker , "Subcellular microdomains and regulation of signaling in lung cells." ATS meetings, San Diego.
October 2005	Norwegian Association of Pediatricians, Guest Lecturer , Oslo Norway.
November 2005	Chair, Academic Day for Neonatologists of Southern California , Orange, CA
December 2005	Visiting Professor , University of Florida, Gainesville
September, 2006	Invited Speaker , Symposium for Prof Micheli, University of Lausanne
November 2006	Chair, Organizing Committee , Conference on Physiologic Genomics and Proteomics of Lung Disease, sponsored by APS and NIH.
June, 2007	Invited Speaker , Perinatal Circulation Symposium, Oslo, Norway.
August, 2007	Visiting Professor , Department of Medicine, Kanazawa University, Kanazawa, Japan.
November 2007	Invited Speaker , DOHAD Meeting, Perth Australia
December 2007	Invited Speaker , National Neonatal Conference, Pune, India
March 2009	Moderator , International Pediatric Pulmonary Hypertension meeting, San Francisco, CA
March 2010	Invited Speaker , Molecular Cardiology Research Institute, Tufts University, Boston, USA.
March 2010	Moderator , International Pediatric Pulmonary Hypertension meeting, Banff, Canada.
May 2010	Co-Chair , Symposium on Pulmonary Hypertension, PAS meeting, Vancouver, Canada
June 2010	Grand Rounds Speaker , Columbia University, NYC, USA
November 2010	Visiting Professor , Beijing University, Northwest A and F University, Yangling, and Shenzhen University
March 11-12, 2011	Moderator , Pediatric Pulmonary Hypertension meeting, San Francisco
March 17-22, 2011	Visiting Professor , Jizan University, Saudi Arabia.
May 16, 2011	Symposium Speaker , American Thoracic Society meeting, Denver, CO
Jan 9-13, 2012	Visiting Professor , B.J. Wadia Hospital for Children, Bombay, India
March 9-10, 2012	Moderator , Pediatric Pulmonary Hypertension meeting, San Francisco
May 14-15, 2012	Visiting Professor , University of Pittsburgh
May 18, 2012,	Symposium Speaker , UC San Francisco
Sept 26-28, 2012	Invited Speaker , "Hemodynamics in the newborn". Lausanne, Switzerland
October 18-19, 2012	Visiting Professor , UC Davis
January 22-24, 2013	Visiting Professor , Marmara University, School of Medicine
February 25-27, 2013	Member, Task Force , Pediatric Pulmonary Hypertension, World Congress for Pulmonary Hypertension, Nice, France
May 6, 2013	Symposium Speaker , Pediatric Academic Societies meeting, Washington, DC
May 22, 2013	Symposium Speaker , American Thoracic Society meetings, Philadelphia.

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June 21-22, 2013	Moderator , Pediatric Pulmonary Hypertension meeting, San Francisco
June 27, 2013	Invited Speaker , Symposium on Advances in Pediatrics, CHUV, Lausanne, Switzerland
Jan 23-24, 2014	Visiting Professor , Pulmonary Division, Department of Medicine, Duke University
Jan 27-31, 2014	Session Moderator and Core Program Faculty , Pediatric Pulmonary Hypertension, Pulmonary Vascular Research Institute annual International meeting, Geissen, Germany
March 27-29, 2014	Invited Moderator , Pediatric Pulmonary Hypertension meeting, San Francisco
April 1-2, 2014	Invited Professor , Liggins Institute, Auckland, New Zealand
April 25th, 2014	Invited Panel Discussant , APSA's 10 Annual Meeting, "The Intertwining Growth of Women and Medicine in the 21st century" panel, ASCI Meetings, Chicago.
May 6th, 2014	Session Moderator , Pulmonary Vascular Biology, PAS Meetings, Vancouver, CA.
March 27th, 2015	Invited Speaker , Pediatric Pulmonary Hypertension meeting, San Francisco
March 31st, 2015	Named Lecturer , Julius Comroe Jr. Lecture , American Physiological Society, EB meetings, Boston
May 15th, 2015	Invited Speaker , Postgraduate Course in Pediatric Pulmonary Hypertension, American Thoracic Society Meetings, Denver
September 7-18, 2015	Visiting Professor , University of Lausanne, Switzerland.
October 14-16, 2015	Visiting Professor , University of New Mexico
March 10-11, 2016	Session Moderator , Pediatric Pulmonary Hypertension meeting, San Francisco
July 26-28, 2016	Visiting Professor , Columbia University
October 17-20, 2016	Visiting Professor , University of Lausanne, Switzerland.
October 21-23, 2016	Invited speaker , European Pediatric Association Society meeting, Geneva, Switzerland
November 10, 2016	Invited Speaker , ANOSC meeting, Orange County, CA
March, 2017	Invited Speaker , Pediatric Pulmonary Hypertension meeting, San Francisco
April, 2017	Invited Speaker , 2 nd Latin American meeting on Pediatric Pulmonary Hypertension, Buenos Aires
October 7, 2017	Invited Speaker , 8 th Takao International Symposium on Molecular Mechanisms of Cardiopulmonary Disease, Matsue Japan.
October 11, 2017	Invited Speaker , 3 rd European Conference on Neonatal and Pediatric Pulmonary Vascular Disease.
November 3, 2017	Visiting Professor , Department of Health and Human Physiology, University of Iowa.
April, 2018	Conference Moderator , Pediatric Pulmonary Hypertension meeting, San Francisco
May, 2018	Conference Moderator , American Thoracic Society Meetings, San Diego

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June 2018	Invited faculty , American Academy of Pediatrics Fellow's conference, Snowmass, CO.
September 2108	Visiting Professor/Grand Rounds Speaker , Department of Pediatrics, Harbor-UCLA Medical Center
November 2018	Invited faculty , Indiana University, Fellow's retreat.
March 2019	Conference Session Moderator , Pediatric Pulmonary Hypertension meeting, San Francisco
March 2019	Visiting Professor , Institute of physiology, Campus Charite Mitte, Berlin
March 2019	Visiting Professor , INSERM, Universite Paris Sud.
May, 2019	Invited Speaker , 3 rd Latin American Conference on Pediatric Pulmonary Hypertension, Merida, Mexico
July, 2019	Visiting Professor , College of Medicine, Ulaan Baatar, Mongolia
September 4-8, 2019	Inviting Speaker , Grover Conference, Sedalia, Colorado
December 6, 2019	Grand Rounds Speaker , University of Missouri, Columbia, MI
January 16, 2020	Invited Speaker , International Press Club of Chicago
March 5-8, 2020	Invited Speaker , Pediatric Pulmonary Hypertension meeting, San Francisco
April 2-3, 2020	Visiting Professor , Children's Hospital University of Pennsylvania
Sept 11-14, 2020	Invited speaker , Symposium of Extracellular Vesicles, Berlin, Germany
October 7, 2020	Invited Speaker , International Women's Associates
March 4, 2021	Invited Speaker , International Pediatric Pulmonary Hypertension meeting, San Francisco
March 5, 2021	Invited Speaker , Webinar, "On becoming a Leader" Women in Neonatology, American Academy of Pediatrics, Perinatal Section
September 28, 2021	Key Note Speaker , Pulmonary Circulation Early Career Workshop
October 6, 2021	Member , Mock Study Section, Department of Medicine, Tufts Medical Center
February 25, 2022	Invited Speaker , International Pediatric Pulmonary Hypertension meeting, San Francisco
June 22, 2022	Moderator , Session on Pediatric Pulmonary Hypertension, 15 th Annual World Congress, Pulmonary Vascular Research Institute, Athens, Greece
October 17-19, 2022	Member , NICHD Study Section, Leesburg, Virginia
March 15-18, 2023	Moderator , Scientific Session, International Pulmonary Vascular Disease Meeting, San Francisco
April 20-23, 2023	Moderator , Scientific Sessions, American Physiological Society meetings, Long Beach CA

CONSULTING AND OTHER ACTIVITIES

Expert witness on Medico-legal cases

Quality Improvement Advisory Panel for Torrance Memorial Hospital-1992-current.

Consultant to NHLBI on the use of Inhaled Nitric Oxide-1996

J. USHA RAJ, M.D.

Member-Panel on Use of Nitric Oxide-American Thoracic Society
Active member and Consultant-Physicians for Social Responsibility
Consultant-Medicines for Nepal
Co-Vice President and Treasurer: MEG Foundation

TEACHING ASSIGNMENTS UNIVERSITY OF ILLINOIS AT CHICAGO

1. Lectures for MSMP Master of Science in Medical Physiology
2. Lectures for masters in Physiology
3. GEMS Foundations of Biomedical Science II lectures
4. Neonatology fellows: Pulmonary Physiology in the Neonate
5. Lectures for PHD students in Department of Pharmacology PCOL-530
6. Lectures for Medical Students COM

POST-DOCTORAL TRAINEES

1. **Priscilla Chen, M.D.**, Research fellow, 1985-87
Current Position: Pediatrician, Fresno, CA
2. **R. Ramanathan, M.D.**, Research Fellow, 1986-87-Support: USC
Current Position: Professor of Pediatrics, University of Southern California,
Chief, Division of Neonatology, USC-LA County Hospital
3. **Robert Hillyard, M.D.**, Neonatal Fellow, 1986-89-Support: Long Beach Memorial Hospital.
Current Position: Assistant Clinical Professor, UC Irvine
4. **Pekka Kaapa, M.D., Ph.D.**, Research Fellow, 1988-89: Support: University of Turku
Current Position: Associate Professor of Neonatology, Director, Neonatal Research,
Turku, Finland
5. **Hirohisa Toga, M.D.**, Research Fellow, 1990-92-Support: Kanazawa University
Current Position: Professor of Medicine, Chairman, Department of Medicine,
Kanazawa Medical University, Ishikawa, Japan
6. **Sue Hibler, M.D.**, Neonatal Fellow, 1990-93 Support: LA County
Current Position: Staff Neonatologist, Kaiser Group, Atlanta, GA
7. **Masafumi Matsuda, M.D., Ph.D.**, Research Fellow, 1992-3. Support: Kanazawa University.
Current Position: Assistant Professor of Medicine, Kanazawa Medical University, Ishikawa, Japan
8. **Yuansheng Gao, M.D., Ph.D.**, Research Fellow, 1992-93; Support: NICHD Perinatal Biology Research Training Grant
Current Position: Professor of Physiology, Department of Physiology, Beijing University, China.
9. **Keith Kolber, M.D.**, Neonatal Fellow, 1992-95. Support: NICHD Perinatal Biology Research Training Grant.

J. USHA RAJ, M.D.

Current Position: Neonatologist, Daniel Freeman Hospital, LA

10. **Hai Shen, M.D., Ph.D.**, Research Fellow, 1993-95. Support: Research Grant, NIH.
Current Position: Postdoctoral Research Fellow, University of Alabama, Birmingham
11. **Yuan Tian, Ph.D.**, Research Fellow, 1993-96. Support: California Lung Association
Research Fellowship Award
Current Position: Postdoctoral Fellow, UC San Diego
12. **Adora Okogbule-Wonodi, M.D.**, Research Fellow, 1994-97. Support: NHLBI MIRS
Current Position: Assistant Professor of Pediatrics, Division of Neonatology, University of Maryland.
13. **Jean-Francois Tolsa, M.D.**, Research Fellow, 1995-97. Support: University of Lausanne
Current Position: Professor of Neonatology, University Hospital of Lausanne and Academic Society, Switzerland, Chief, Division of Neonatology
14. **Srinivas Dhanakoti, Ph.D.**, Research Fellow, 1995-97. Support: Group Investigative Fellowship Award, American Heart Association, Greater Los Angeles Affiliate
15. **George Emerson, M.D.**, Neonatal Fellow, 1995-98. Support: NICHD Perinatal Biology Research Training Grant
Current position: Assistant Professor of Pediatrics, Harbor-UCLA Medical Center, UCLA School of Medicine, CA.
16. **Audrey Davis, M.D.**, Neonatal Fellow, 1996-99. Support: NICHD Perinatal Biology Research Training Grant. Current Position: Staff Neonatologist, Hollywood Presbyterian Hospital, LA
17. **Kim Altamirano, M.D.**, Neonatal Fellow, 1996-98. Support: LA County
Current Position: Pediatrician.
18. **Shahla Yazdi, M.D.**, Neonatal Fellow, 1998-2000. Support: LA County
19. **Young Sook Hong, M.D.** Visiting Researcher, 1998-1999
Current Position: Neonatologist, Seoul, Korea.
20. **Sanghee Kim, M.D.** Visiting Researcher, 2000
Current Position: Neonatologist, Seoul, Korea
21. **Sanjay Patel, M.D.** Neonatal Fellow, 2000-2001 Current Position, Neonatologist, Texas.
22. **Christine Bixby, M.D.** Neonatal Fellow, 2004-7, Current Position, Staff Neonatologist, Children's Hospital of Orange County
23. **Sudha Rani Narasimhan, MD**, Neonatal Fellow, 2005-8
Current Position, Staff Neonatologist, San Jose Medical Center
24. **Victoria Anene, MD**, Neonatal Fellow, 2005
25. **Lavonne Sheng, MD**, Neonatal Fellow, 2005-8, Current Position, Staff Neonatologist, Children's Hospital of Orange County
26. **Eddie Chai, MD**, Neonatal Fellow, 2006
27. **Aarti Raghavan, MD** Neonatal Fellow, 2008-10
28. **Prasanna Tanaka, MD** Neonatal Fellow, 2008-10
29. **Joyce Ibe, MD** Neonatal Fellow, 2009-12
30. **Rodica Popa, MD** Neonatal Fellow, 2010-13
31. **Tianji Chen, PhD**, 2011-14.
32. **Saurabh Patel, MD**, 2014-17.

STUDENTS:

J. USHA RAJ, M.D.

1. Bephine Hychong High School Student-Harbor Collegium-NIH Grant Awardee, Summer, 1991
2. David Knapp High School Student-Harbor Collegium-NIH Grant Awardee, Summer, 1992
3. Ador Bustamante, M.D. Research Volunteer, 1992
4. Lelicia Discipulo, M.D. Research Volunteer, 1992
5. David Osato High School Student, Harbor Collegium-NIH Grant Awardee, Summer, 1993
6. Hyginus Onwudiwe High School Science Teacher, Harbor Collegium-NIH Grant Awardee, Summer 1995
7. Brian Yue Summer student, 1995
8. Meena Oberoi, M.D. Summer research student, 1996
9. Gustavo Sujo High School student, Harbor Collegium- NIH Grant Awardee, Summer 1996
10. Laura Thompson High School student-Harbor Collegium- NIH Grant Awardee, Summer, 1997
11. Steve Hsu Summer student, 1997
12. Laura Thompson Summer student, 1998
13. Minh Nguyen High School student, Harbor Collegium-NIH Grant Awardee, Summer, 1998
14. Taunisha Stepter Undergraduate student, Bridges to Baccalaureate-NIH Grant Awardee, 1999
15. Minh Nguyen Summer student, 1999
16. Fernando Vasquez Summer student, 1999
17. Akila Watson Undergraduate student, U-STAR program, 2000
18. Maritoni Dumlao High School student, Harbor Collegium-NIH Grant Awardee, Summer, 2000
19. Sarah Flod High School student, Harbor Collegium-NIH Grant Awardee, Summer 2000
20. Martha Casillas High School Student, Harbor Collegium, Summer 2001
21. Elizabeth Elimimian Crenshaw Charter High School, Harbor Collegium Fellow, Summer 2003
22. Angela Chang Peninsula High School, Summer, 2003
23. Benjamin Sugar Mira Costa High School, Summer 2003
24. Melissa Mueller Peninsula High School REI Summer Student 2004
25. Amy McPeak UCLA, 2004-2007
26. Nikki Learned Columbia University, Summer 2004
27. Felice Wei Palos Verdes High School, Summer 2005
28. Frances Javier CAMS, Summer 2005, UCLA
29. Loren Lail UC Santa Barbara, Summer 2005
30. Felice Wei UCLA 2006
31. Marli Wang South High School 2006, Princeton University
32. Jonathan Shaw Palos Verdes High School 2007, UCLA
33. Jason Huang UIC College of Medicine, M1

J. USHA RAJ, M.D.

ORIGINAL ARTICLES

1. Bland RD, Hansen TN, Haberkern CM, Bressack MA, Hazinski TA, **Raj JU**, Goldberg RB. Lung fluid balance in lambs before and after birth. **J. Appl. Physiol.** 53:992-1004, 1982. PMID: 7153132
2. **Raj JU**, Bland RD. Neutrophil depletion does not prevent oxygen-induced lung injury in rabbits. **Chest.** 3:20S-21S, 1983. PMID: 6839842
3. **Raj JU**, Goldberg RB, Bland RD. Vibratory ventilation decreases filtration of fluid in the lungs of newborn lambs. **Circ. Res.** 53:456-463, 1983. PMID:6627605
4. **Raj JU**, Hazinski TA, Bland RD. Oxygen-induced lung microvascular injury in neutropenic rabbits and lambs. **J. Appl. Physiol.** 58:921-7, 1985. PMID: 3980393
5. **Raj JU**, Bland RD, Lai-Fook SJ. Microvascular pressures measured by micropipettes in isolated edematous rabbit lungs. **J. Appl. Physiol.** 60:539-545, 1986. PMID: 3949659
6. **Raj JU**, Bland RD. Lung luminal liquid clearance in newborn lambs: Effect of pulmonary microvascular pressure elevation. **Am. Rev. Respir. Dis.** 134:304-310, 1986. PMID:3740657
7. **Raj JU**, Chen P, Navazo L. Micropuncture measurement of lung microvascular pressure profile in 3-4 week old rabbits. **Pediatr. Res.** 20:1107-1111, 1986. PMID:3797104
8. **Raj JU**, Chen P. Microvascular pressures measured by micropuncture in isolated perfused lamb lungs. **J. Appl. Physiol.** 61:2194-2201, 1986. PMID:3804926
9. **Raj JU**, Chen P. Micropuncture measurement of microvascular pressures in lamb lungs during hypoxia. **Circ. Res.** 59:398-404, 1986. PMID:3791581
10. **Raj JU**, Chen P, Navazo L. Effect of inflation on microvascular pressures in lungs of young rabbits. **Am. J. Physiol.** 252:H80-H84, 1987. PMID:3812720
11. **Raj JU**, Conhaim RL, Bhattacharya J. Micropuncture measurement of alveolar liquid pressure in excised dog lung lobes. **J. Appl. Physiol.** 62:781-784, 1987. PMID:3558237
12. **Raj JU**. Alveolar liquid pressure measured by micropuncture in isolated lungs of mature and immature fetal rabbits. **J. Clin. Invest.** 79:1579-1588, 1987. PMID:3584460
13. **Raj JU**, Chen P. Effect of edema on segmental vascular resistance in isolated lamb lungs determined by micropuncture. **Circ. Res.** 61:236-243, 1987. PMID:3621489
14. **Raj JU**, Chen P. Role of eicosanoids in hypoxic vasoconstriction in isolated perfused lamb lungs. **Am. J. Physiol.** 253:H626-H633, 1987. PMID:2820247

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15. Teague WG Jr, **Raj JU**, Braun D, Berner ME, Clyman RI, Bland RD. Lung vascular effects of lipid infusion in normal lambs. **Pediatr. Res.** 22:714-719, 1987. PMID:3431956
16. **Raj JU**, Hazinski TA, Bland RD. Effect of hypoxia on lung lymph flow in newborn lambs with left atrial hypertension. **Am. J. Physiol.** 254:H487-H493, 1988. PMID:3348427
17. **Raj JU**, Ramanathan R, Chen P, Anderson J. Effect of hematocrit on microvascular pressures in 3-5 week old rabbit lungs. **Am. J. Physiol.** 256:H766-H771, 1989. PMID:2923236
18. Ramanathan R, Mason GR, **Raj JU**. Effect of mechanical ventilation and barotrauma on pulmonary clearance of ^{99m} technetium diethylenetriamine pentaacetate in lambs. **Pediatr. Res.** 27:70-74, 1990. PMID:2404254
19. **Raj JU**, Anderson J. Pulmonary venous responses to thromboxane A₂ analogue and atrial natriuretic peptide in lambs. **Circ. Res.** 66:496-502, 1990. PMID:2137039
20. Seear MD, Hannam VL, Kaapa P, **Raj JU**, O'Brodivich HM. Effect of pentoxifylline on hemodynamics, alveolar fluid reabsorption, and pulmonary edema in a model of acute lung injury. **Am. Rev. Respir. Dis.** 142: 1083-1087, 1990. PMID:2240831
21. **Raj JU**, Hillyard R, Kaapa P, Gropper M, Anderson J. Pulmonary arterial and venous constriction during hypoxia in 3-5 week old and adult ferrets. **J. Appl. Physiol.** 69: 2183-2189, 1990. PMID:2077015
22. **Raj JU**, Hillyard R, Kaapa P, Anderson J, Gropper M. Pulmonary vascular pressure profile in 2-3 week old, 5-6 week old and adult ferrets. **Respir. Physiol.** 82:307-316, 1990.
23. Hillyard R, Anderson J, **Raj JU**. Effect of edema on segmental vascular resistance in isolated perfused rat lungs. **Lung.** 169:97-108, 1991. PMID:2062125
24. **Raj JU**, Anderson J. Erythrocyte deformability and lung segmental vascular resistance: effect of hematocrit. **J. Appl. Physiol.** 70:1386-1392, 1991. PMID:2033008
25. **Raj JU**, Anderson J. Comparison of dextran and hematocrit effects in the pulmonary microcirculation. **Circ. Res.** 68:1108-1116, 1991. PMID:1706965
26. Hillyard R, Anderson J, **Raj JU**. Segmental vascular resistance in isolated perfused rat lungs: influence of vasomotor tone and cyclo- and lipooxygenase inhibition. **Circ. Res.** 68:1020-1026, 1991. PMID:1901254

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27. Ibe BO, Isenberg W, **Raj JU**. Endogenous arachidonic acid metabolism by neonatal lamb lungs stimulated with calcium ionophore A23187: Effect of hypoxia. **Am. J. Respir. Cell Mol. Biology**. 4:379-385, 1991. PMID:1901720
28. **Raj JU**, Kaapa P, Hillyard R, Anderson J. Pulmonary vascular pressure profile in adult ferrets: Measurements in vivo and in isolated lungs. **Acta Physiologica Scandinavica**. 142:41-48, 1991. PMID:1877364
29. Toga H, **Usha Raj J**, Hillyard R, Ku B, Anderson J. Endothelin effects in isolated perfused lamb lungs: Role of cyclooxygenase inhibition and vasomotor tone. **Am. J. Physiol**. 261: H443-H450, 1991. PMID:1908640
30. Kaapa P, **Usha Raj J**, Hillyard R, Anderson J. Segmental vascular resistance during pulsatile and steady flow perfusion in 3-to-5 week old rabbit lungs. **Am. J. Physiol**. 261: H506-H513, 1991. PMID:1877677
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