**Curriculum Vitae**

**Ivana Verona Yang, Ph.D.**

**1. Personal History**

**Primary Appointment:**

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| --- | --- |
| Present Position: | Professor and Vice Chair for Faculty Equity and Advancement  Department of Biomedical Informatics  University of Colorado School of Medicine |
| Address: | University of Colorado Anschutz Medical Campus  12700 East 19th Avenue, 8611  Aurora, CO 80045 |
| Phone: | 303.724.6449 |
| Fax: | 303.724.6463 |
| Email: | <ivana.yang@cuanschutz.edu> |

**Secondary Appointments:**

Professor,Division of Pulmonary Sciences and Critical Care Medicine,Department of Medicine, University of Colorado School of Medicine

Professor, Department of Epidemiology, Colorado School of Public Health

**Graduate School Appointment:**

Training Faculty Member, Human Molecular Genetics and Genomics, Epidemiology, and Biomedical Sciences Graduate Programs, University of Colorado Anschutz Medical Campus

**2. Education**

|  |  |
| --- | --- |
| 1992-1996 | **College of William and Mary, Williamsburg, VA** |
|  | B.S. Chemistry |
|  |  |
| 1996-2000 | **University of North Carolina at Chapel Hill, Chapel Hill, NC** |
|  | Ph.D. Chemistry |
|  |  |
| 2001-2003 | **The Institute for Genomic Research, Rockville, MD**  Postdoctoral Fellow, Functional Genomics |

**Additional Courses:**

|  |  |
| --- | --- |
| 1998 | **Inorganic Biochemistry Summer Workshop**, Center for Metalloenzyme Studies, University of Georgia |
|  |  |
| 2001 | **PERL Programming**, Sun Educational Services, Washington DC |
|  |  |
| 2002 | **Genome Sequence Analysis**, Jackson Laboratories, Bar Harbor ME |
|  |  |
| 2004 | **Classical Readings in Statistical Human Genetics**, Center for Human Genetics, Duke University Medical Center |
|  |  |
| 2005 | **Principles of Quantitative Genetics, QTL Mapping I, and QTL Mapping II**, Summer Institute in Statistical Genetics, North Carolina State University |
|  |  |
| 2008 | **SOLiD Next-Generation Sequencing,** Applied Biosystems, Foster City CA |
|  |  |
| 2012 | **The R Statistical Computing Environment: The Basics and Beyond,** ICPSR Summer Program, Berkeley California |
|  |  |
| 2011-2012  2017-2018 | **CO-Mentor Program,** Colorado Clinical and Translational Sciences Institute (CCTSI), University of Colorado Denver |
| 2017 | **Implicit Bias Workshop,** Department of Medicine, University of Colorado Denver |
| 2014-2015 | **Leadership for Innovative Team Science (LITeS),** Colorado Clinical and Translational Sciences Institute (CCTSI), University of Colorado Denver |
|  |  |
| 2017-2018 | **Concept to Clinic: Commercializing Innovation (C3i) Program,** National Institutes of Health |
|  |  |
| 2018-2019 | **Teaching Certificate Program**, University of Colorado School of Medicine |
|  |  |
| 2019 | **Online Skill Mastery,** University of Colorado Office of Digital Education |

**3. Academic Appointments**

|  |  |  |
| --- | --- | --- |
| 2003-2005 | **Assistant Research Professor**, Department of Medicine, Duke University Medical Center, Durham, NC | |
|  |  |
| 2008-2011 | **Assistant Professor**, Center for Genes, Environment, and Health and Department of Medicine, National Jewish Health, Denver, CO | |
|  | **Deputy Director**, Center for Genes, Environment, and Health, National Jewish Health, Denver, CO | |
|  |  |
| 2009-2011 | **Assistant Professor**, Department of Medicine, University of Colorado Denver | |
|  |  | |
| 2011-2019 | **Associate Professor,** Center for Genes, Environment, and Health, National Jewish Health | |
|  |  | |
| 2011-2012 | **Visiting Associate Professor,** Department of Medicine, University of Colorado Denver | |
|  |  | |
| 2012-2019 | **Associate Professor,** Department of Medicine, University of Colorado Denver and Department of Epidemiology, Colorado School of Public Health | |
|  |  | |
| 2013-present | **Training Faculty Member,** Human Molecular Genetics and Genomics, Epidemiology, and Biomedical Sciences Graduate Programs, University of Colorado Anschutz Medical Campus | |
|  |  | |
| 2019-present | **Professor with Tenure,** Department of Medicine, University of Colorado School of Medicine and Department of Epidemiology, Colorado School of Public Health | |
|  |  | |
| 2021-2022 | **Interim Head,** Division of Biomedical Informatics and Personalized Medicine,Department of Medicine, University of Colorado Anschutz Medical Campus | |
|  |  | |
| 2022-present | **Professor with Tenure,** Departments of Biomedical Informatics andMedicine, University of Colorado School of Medicine and Department of Epidemiology, Colorado School of Public Health  **Vice Chair for Faculty Equity and Advancement,** Department of Biomedical Informatics  **Program Director,** Graduate Certificate in Personalized and Genomic Medicine | |

**4. Hospital, Government or Other Professional Positions**

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| --- | --- |
| 2005-2008 | **Staff Scientist**, Laboratory of Environmental Lung Disease, National Institute of Environmental Health Sciences (NIEHS) and National Heart Lung and Blood Institute (NHLBI), Research Triangle Park, NC |
|  |  |
| 2019-present | **Consultant**, Eleven P15 Start-up |

**5. Honors and Awards**

|  |  |
| --- | --- |
| 1995 | Mortar Board |
|  | Llanso-Sherman Fellowship for Research in Natural Sciences |
| 1996 | American Chemical Society Certification, |
|  | Highest Honors in Chemistry/Magna Cum Laude, College of William and Mary |
|  | American Institute of Chemists Undergraduate Award |
|  | Phi Beta Kappa |
| 2002 | Aspen Cancer Conference Young Investigator |
| 2003 | EU-US Workshop on Molecular Signatures of DNA Damage Induced Stress Response Young Scientist Travel Award |
| 2021 | American Journal of Respiratory and Critical Care Medicine Reviewer Award |

**6. Membership in Professional Organizations**

|  |  |
| --- | --- |
| 1995-2002 | American Chemical Society |
| 2008-present | American Society for Human Genetics |
| 2010-present | American Thoracic Society |

**7. Major Committee and Service Responsibilities**

**Departmental Committees:**

|  |  |
| --- | --- |
| 2012-2013 | Strategic Planning Committee, Research Task Force, Pulmonary and Critical Care Sciences, U of Colorado, Co-Chair |
| 2014-2016 | Fellowship Interview and Match Selection Team, Pulmonary and Critical Care Sciences, U of Colorado |
| 2016-2021 | Assistant to Associate Promotion Committee, Dept of Medicine, U of Colorado |
| 2016-2021 | Executive Committee, Biomedical Informatics and Personalized Medicine, U of Colorado |
| 2017-2018 | Faculty Development Advisory Council, Dept of Medicine, U of Colorado |
| 2018-2018 | Co-Chair, Wellness Initiative, Culture of Wellness sub-committee, Department of Medicine |
| 2022-present | Chair, Department Promotion and Tenure Committee, Department of Biomedical Informatics, U of Colorado |

**Institutional Committees:**

|  |  |
| --- | --- |
| 2007-2008 | Division of Intramural Research (DIR) Committee on Promotions III, National Institute of Environmental Health Sciences (NIEHS) |
| 2008-2011 | Executive Committee, Center for Genes, Environment, and Health, National Jewish Health (ex officio) |
| 2009-2015 | Faculty Development Research Award Committee, Denver Children’s Environmental Health Center (CEHC) |
| 2013-present | Recruitment Interviewer, Graduate School , U of Colorado |
| 2015-2017 | Retreat Committee, Human Medical Genetics and Genomics Program, Graduate School, U of Colorado, Chair |
| 2016 | MPH Admissions Committee, Epidemiology, Colorado School of Public Health |
| 2017-present | Education Committee, Colorado Center for Personalized Medicine (CCPM), U of Colorado, Chair |
| 2018-present | Executive Committee, Human Medical Genetics and Genomics Program, Graduate School, U of Colorado |
| 2018-present | Curriculum Committee, Human Medical Genetics and Genomics Program, Graduate School, U of Colorado |
| 2018-2019 | The Power of Informatics to Advance Health Mini Symposium Organizing Committee, Graduate School and Colorado Center for Personalized Medicine |
| 2018-2019 | Strategic Planning Committee, Colorado Center for Personalized Medicine (CCPM), U of Colorado, Education Strategy Owner |
| 2018-2019 | Anschutz Health Sciences Building Design Working Group, Colorado Center for Personalized Medicine (CCPM), U of Colorado and ZGF & AMID Architecture, Research and Education Representative |
| 2018-2019 | Building Connectivity of Child Health Research Across the Campus Working Group, Children’s Hospital Colorado Research Strategic Planning |
| 2021 | Center for Innovative Design and Analysis (CIDA) Strategic Planning. Committee on Campus Partnerships and New Initiatives |
| 2021-present | Online Education Advisory Group, Associate Vice Chancellor of Strategic Initiatives, CU Anschutz |
| 2021-2022 | Chair, Open Rank Faculty Search Committee, Center for Health Artificial Intelligence, University of Colorado |

**National Committees:**

|  |  |
| --- | --- |
| 2009-2011 | Nucleic Acids Isolation Committee, Lung Genomics Research Consortium (LGRC) |
| 2009-2015 | External Advisory Committee, West Virginia-IDeA Networks of Biomedical Research Excellence (WV-INBRE) |
| 2010 | Program Committee, The 18th International Conference on Intelligent Systems for Molecular Biology (ISMB) |
| 2010 | Bioinformatics Faculty Search Committee, Department of Biochemistry and Microbiology, Marshall University, Huntington WV |
| 2012-2015 | Program Committee, American Thoracic Society Respiratory Cell and Molecular Biology (RCMB) Assembly |
| 2016-2017, 2019-2020 | Nominating and Executive Committee, Section of Genetics and Genomics, American Thoracic Society (ATS) |
| 2017 | Basic Science Committee, American Thoracic Society |
| 2018-present | Epigenetics Working Group, NHLBI Trans-Omics for Precision Medicine (TOPMed), Co-Chair |
| 2021-present | Basic Science Core Working Group and Executive Committee, American Thoracic Society Respiratory Cell and Molecular Biology (RCMB) Assembly |
| 2021-2022 | Section Co-Chair and Executive Committee, Section of Genetics and Genomics, American Thoracic Society (ATS) |
| 2022-present | Section Chair and Executive Committee, Section of Genetics and Genomics, American Thoracic Society (ATS) |

**Expert Panels and Workshops:**

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| --- | --- |
| 2002 | Applications of Bioinformatics in Cancer Detection, NCI, Workshop Participant |
| 2012 | Sleep and Respiratory Neurobiology (SRN) Journal Club, American Thoracic Society, Epigenetics Expert Panelist |
| 2012 | Epigenomic Surrogates for Difficult to Access Tissues, NIH Common Fund, Workshop Participant |
| 2015 | Leveraging Scientific Advancements to Understand Sarcoidosis Variability and Improve Outcomes, NHLBI, Workshop Participant |
| 2017 | High Throughput Sequencing in Respiratory, Critical Care, and Sleep  Medicine Research, American Thoracic Society, Workshop Participant |
| 2018 | Panel on the Use of Genetics in IPF Clinical Trials, IPF Summit, Genetics Expert Panelist |
| 2022 | Section on Genetics and Genomics Journal Club, American Thoracic Society, Genetics Expert Panelist |

**Session Chair at Major Scientific Conferences and Workshops:**

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| --- | --- |
| 2005 | **Pulmonomics** Thematic Poster Session Facilitator, ATS International Conference, San Diego CA |
| 2012 | **Developmental Origins of Asthma** Session Chair, Developmental Origins of Chronic Lung Disease ERS Research Seminar, Spitzing Germany |
| 2012 | **Epigenetic Regulation of Lung Cell Function** Thematic Poster Session Facilitator, ATS International Conference, San Francisco CA  **Mucins: Novel Pathways of Regulation and Previously Unsuspected Function** Thematic Poster Session Facilitator, ATS International Conference, San Francisco CA |
| 2013 | **Epigenetics** Poster Discussion Moderator, ATS International Conference, Philadelphia PA  **Normal and Diseased Lung Methylomes** Mini-Symposium Moderator, ATS International Conference, Philadelphia PA |
| 2014 | **Informing Lung Disease with Bioinformatics** Poster Discussion Moderator, ATS International Conference, San Diego CA |
| 2015 | **ATS Mythbusters: Genomics Will Revolutionize Care of Chronic Lung Disease** Scientific Symposium Chair, ATS International Conference, Denver CO  **Tomorrow’s Technologies for Today’s Diseases** Mini-Symposium Moderator, ATS International Conference, Denver CO  **Epigenetic Regulation of Inflammation** Mini-Symposium Moderator, ATS International Conference, Denver CO |
| 2017 | **Mucociliary Defense and Immunity** Session Chair, Cilia, Mucus and Mucociliary Interactions Gordon Research Conference, Galveston TX |
| 2017 | **Pollution Effects on the Epigenome In the Development of Chronic Lung Disease** Scientific Symposium Chair, ATS International Conference, Washington DC |
| 2018 | **Genetics, Epigenetics, and** **Smoking** Mini-Symposium Moderator, ATS International Conference, San Diego CA |

**8. Licensure and board certification**

Not applicable

**9. Inventions, intellectual property and patents held or pending**

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| --- |
| 1. Method for Electrochemical Detection of Multiple Target Compounds; HH Thorp, **IV Yang**, DH Stewart, JW Groelke; US Patent 7202028, Awarded April 10, 2007; WO 03/089895; Australia, Serial Number 2002367807; Europe, EP1583842. |
| 1. Molecular Phenotyping of Idiopathic Interstitial Pneumonia. **Yang IV**, Coldren CD, Schwartz DA. Provisional US patent application 61/666233. |
| 1. Biomarkers of Preclinical Pulmonary Fibrosis; Schwartz DA, Mathai SK, **Yang IV**, Fingerlin TE, Schwarz MI. Provisional US patent application 62/525,087. |
| 1. Compositions for Treatment of Fibrotic Pulmonary Disease; Schwartz DA, Parion Sciences, Evans CM, **Yang IV**, Schwarz MI. Provisional US patent application 62/525,088. |
| 1. Biomarkers For The Diagnosis and Treatment of Fibrotic Lung Disease (Omnibus Filing includes CU4440H, CU4441H, CU4716H). 2. DNA methylation-based platform and machine learning algorithms to diagnose respiratory pathogens including SARS-CoV-2 and predict COVID-19 related outcomes. Barnes KC, **Yang IV**, Gignoux C, Mathias R, Norman P, Taye A, Porecha R, Barnes B. CU Disclosure |

**10. Review and Referee Work**

**Reviewer for the Following Scientific Journals:**

American Journal of Pathology

American Journal of Physiology - Lung Cellular and Molecular Physiology

American Journal of Respiratory and Critical Care Medicine

American Journal of Respiratory Cell and Molecular Biology

Bioinformatics

British Journal of Pharmacology

Chest

Clinical Epigenetics

Critical Care Medicine

Environmental Health Perspectives

Environmental Research

Epigenetics

Epigenomics

European Respiratory Journal

FEBS Letters

Genes and Immunity

Genomics

Human Molecular Genetics

Innate Immunity

Journal of Allergy and Clinical Immunology

Journal of the American Medical Association (JAMA)

Lancet

Lancet Respiratory Medicine

Mutation Research

Nanotoxicology

Nature Communications

Nature Genetics

Nucleic Acids Research

PLOS One

PLOS Genetics

Proceedings National Academy of Sciences

**Grant Review and Study Section Membership:**

|  |  |
| --- | --- |
| 2013-2017 | Infectious, Reproductive, Asthma and Pulmonary Conditions (IRAP) Study Section, NIH |
| 2011-2017 | WV-INBRE Next-generation Sequencing Pilot Projects |
| 2020-present | Colorado Clinical and Translational Sciences Institute (CCTSI) KTR Mock Study Section Core Reviewer |

***Ad Hoc* Grant Review:**

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| --- | --- |
| 2011 | Wellcome Trust, UK |
| 2011, 2012 | S10 Shared Instrument Special Emphasis Panel (SEP), NIH |
| 2011 | Medical Research Council (MRC), UK |
| 2012 | Population Sciences and Epidemiology: Chronic Disease Epidemiology and Genetics Special Emphasis Panel (SEP), NIH |
| 2012, 2017 | Asthma and Allergic Diseases Cooperative Research Centers Special Emphasis Panel (SEP), NIH |
| 2012 | Infectious, Reproductive, Asthma and Pulmonary Conditions (IRAP) Study Section, NIH |
| 2012 | Health Research Board (HRB), Ireland |
| 2013 | Functional Epigenomics: Developing Tools and Technologies for Cell-type, Temporal, or Locus-specific Manipulation of the Epigenome RFA, NIH, |
| 2013 | French National Research Agency, Evaluation Committee Blanc - SVSE 1 - Physiologie, physiopathologie, santé publique. France |
| 2013 | Population Sciences and Epidemiology: Chronic Disease, Aging and Genetics Special Emphasis Panel (SEP), NIH |
| 2015 | TARGET II Environmental Epigenomic Analysis in Tissue Surrogates RFA, NIEHS |
| 2015, 2017, 2020 | Medical Research Council (MRC), UK |
| 2016 | British Lung Foundation, UK |
| 2016 | Engineered Nanomaterials U01, NIEHS |
| 2017, 2020 | Colorado CTSI, KTR and pre-K mock study sections |
| 2018 | Trans-Omics for Precision Medicine (TOPMed) X01, NHLBI |
| 2018, 2019 | CU Reproduction (CURE) Review Panel, Department of Obstetrics and Gynecology, UC Denver |
| 2019 | NIH FDA Tobacco Regulatory Science Program, NIH |
| 2020 | Asthma UK |
| 2020 | Catalyst Program, NHLBI (two RFA panels) |
| 2020 | Colorado CTSI Co-pilot |
| 2021 | PSI Foundation, Canada |
| 2022 | Outstanding New Environmental Scientist RFA, NIEHS |

**11. Invited Extramural Lectures, Presentations and Visiting Professorships**

**Presentations at National or International Conferences:**

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| --- | --- |
| 2002 | Podium Presentation. Universal Gene Chip-based Human Tumor Classification. NCI Director’s Challenge Meeting, Bethesda MD |
| 2003 | Invited Speaker. Cancer Classification and Survival Analysis Using Gene Expression Profiling. TAUG Meeting, Research Triangle Park NC |
| 2003 | Podium Presentation. Universal Gene Chip-based Human Tumor Classification. Society of Surgical Oncology Annual Meeting, Los Angeles CA |
| 2003 | Podium presentation. Gene Expression Analysis of the Idiopathic Interstitial Pneumonias. NIEHS Toxicogenomics Research Consortium (TRC) Meeting, Seattle WA |
| 2004 | Podium presentation. Identifying Asthma Susceptibility Genes by Gene Expression Profiling of Airway Epithelial Cells Following Subsegmental Airway Challenges. International Congress of Immunology/FOCIS Annual Meeting, Montreal QC, 2004 |
| 2004 | Podium Presentation. Gene Expression Profiling Distinguishes Familial and Non-familial Forms of Pulmonary Fibrosis. NIEHS Toxicogenomics Research Consortium (TRC) Meeting, Chapel Hill NC |
| 2005 | Podium Presentation. Gene Expression Profiling Distinguishes Familial and Non-familial Forms of Pulmonary Fibrosis.American Thoracic Society International Conference, San Diego CA |
| 2006 | Podium Presentation. Genetic Determinants of Inter-Strain Variability Following Systemic LPS Challenge. American Thoracic Society International Conference, San Diego CA |
| 2006 | Podium Presentation. Genetic Determinants of Inter-Strain Variability Following Systemic LPS Challenge. NIEHS Toxicogenomics Research Consortium (TRC) Meeting, Chapel Hill NC |
| 2008 | Podium Presentation. Regulation of Gene Expression in the Liver, Lung, and Spleen of Sensitive and Resistant Strains of Mice In Reponses to Systemic LPS. American Thoracic Society International Conference, Toronto ON |
| 2008 | Invited Speaker. Endotoxin responsiveness candidate genes: rationale for choosing them. PHARE Symposium, Saskatoon Canada |
| 2009 | Invited speaker. The role of *in utero* exposures and epigenetics in the development of asthma and atopy. European Respiratory Society Annual Congress, Vienna Austria |
| 2010 | Podium Presentation. DNA Methylation Patterns in Siblings with and without Asthma. Roadmap Epigenomics Meeting, Bethesda MD |
| 2010 | Invited Speaker. Somatic mutations in the lungs of patients with idiopathic pulmonary fibrosis. Sequencing at the Tipping Point. Life Technologies, San Diego CA |
| 2011 | Invited Speaker. Epigenomic Profiles of IPF. Pittsburgh Lung Conference. Pittsburgh PA |
| 2011 | Podium Presentation. Genome-Wide DNA Methylation Patterns in Interstitial Lung Disease (ILD) and Chronic Obstructive Lung Disease (COPD). American Thoracic Society International Conference, Denver CO |
| 2012 | Invited Speaker. Epigenomics of Lung Disease. ERS Workshop on Developmental Origins of Lung Disease. Spitzing Germany |
| 2013 | Invited Speaker. Epigenetics and prenatal influences on asthma and allergic airways disease. European Respiratory Society Annual Congress, Barcelona, Spain |
| 2013 | Podium Presentation. Methyl-eQTL Analysis In Idiopathic Pulmonary Fibrosis (IPF). American Thoracic Society Meeting, Philadelphia PA |
| 2015 | Invited Speaker. Genetic Variants and Outcome of Idiopathic Pulmonary Fibrosis. Transatlantic Lung Conference. Lucerne, Switzerland |
| 2015 | Invited Speaker. Epigenomic Profiles of Asthma. Genetics and Genomics BioConference Live, Labroots.com |
| 2015 | Invited Speaker. Epigenetic Regulation of the Inflammatory Cascade. American Thoracic Society. Denver CO |
| 2015 | Podium Presentation. DNA Methylation Changes in Nasal Epithelia Associated with Allergic Asthma in the Inner City. American Thoracic Society Meeting, Denver CO |
| 2015 | Podium Presentation. DNA Methylation Changes in Nasal Epithelia Associated with Allergic Asthma in the Inner City. Aspen Lung Conference, Aspen CO |
| 2015 | Invited Speaker. MicroRNAs in the Pathogenesis of Pulmonary Fibrosis. European Respiratory Society Annual Congress, Amsterdam, Netherlands |
| 2015 | Invited Speaker. Epigenetics and Lung Disease. British Thoracic Society Winder Meeting, London, UK |
| 2016 | Invited Speaker. Genetic and Environmental Factors in Idiopathic Pulmonary Fibrosis. European Respiratory Society Annual Congress, London, UK |
| 2017 | Invited Speaker. Cilium Gene Expression in Injury/Repair and Fibrosis. Mucus & Mucociliary Interactions Gordon Research Conference, Galveston, TX |
| 2017 | Invited Speaker. Epigenetics of Idiopathic Pulmonary Fibrosis. Pneumotrieste. Trieste Italy |
| 2017 | Invited Speaker. Methylomics and the Lung. American Thoracic Society. Washington DC |
| 2017 | Podium Presentation. Epigenetic Marks of in utero Exposure to Gestational Diabetes (GDM) and Childhood Adiposity Outcomes: The EPOCH Study. Developmental Origins of Health and Disease (DOHaD) Society International Meeting, Rotterdam Netherlands |
| 2018 | Invited Speaker. Molecular Heterogeneity of IPF, The Lung Epithelium in Health and Disease FASEB Scientific Research Conference, St. Bonaventure NY |
| 2018 | Invited Speaker. Molecular Heterogeneity of IPF, IPF Summit, San Francisco, CA |
| 2022 | Invited Speaker. Epigenetic marks identify asthma susceptibility in African Americans. Experimental Biology/ASBMB Meeting, Philadelphia, PA |

**Seminar Invitations from Other Institutions:**

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| --- | --- |
| 2004 | Invited Speaker. Using spike-in controls and reference RNA in microarray experiments. ERCC Bioinformatics Workshop, NIST Gaithersburg MD |
| 2008 | Invited Speaker. Genetics of Innate Immunity. NIEHS International Women’s Day, Research Triangle Park, NC |
| 2011 | Invited Speaker. DNA Methylation Patterns in Siblings with and without Asthma. City of Hope, Los Angeles CA |
| 2016 | Invited Seminar Speaker. Using Genetics and Genomics to Understand Idiopathic Pulmonary Fibrosis. Division of Pulmonary and Critical Care Medicine, University of California – Davis |
| 2016 | Invited Seminar Speaker. Using Genetics and Genomics to Understand Idiopathic Pulmonary Fibrosis. Division of Pulmonary and Critical Care Medicine, University of Southern California |
| 2018 | Invited Seminar Speaker. Epigenetics of Lung Disease. Department of Pediatrics, University of Pittsburgh Medical Center and Children’s Hospital of Pittsburgh, Pittsburgh PA |

**Seminar Invitations within Current Institution:**

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| --- | --- |
| 2008-present | Annual Research Update. Division of Pulmonary and Critical Care Sciences Research in Progress, University of Colorado and National Jewish Health |
| 2009 | Roles of the E2F1 Transcription Factor and the Hedgehog Signaling Pathway in Innate Immunity. Department of Immunology Research in Progress, University of Colorado and National Jewish Health |
| 2009 | Identification of Hedgehog Signaling and the E2F1 Transcription Factor as Novel Regulators of the Systemic Response to LPS. Division of Environmental & Occupational Health Sciences Seminar Series, National Jewish Health |
| 2009 | Genetics of Innate Immunity, University of Colorado Denver Roundtable |
| 2010 | Epigenetic Control of Gene Expression in the Lung. The Department of Anesthesiology & Mucosal Inflammation Program Seminar Series |
| 2013 | ‘Missing heritability’ in asthma: Contribution of Epigenetic Marks. National Jewish Health Department of Medicine Grand Rounds |
| 2013 | Gene Expression and Epigenetic Profiles of Idiopathic Pulmonary Fibrosis. Human Molecular Genetics and Genomics Program Seminar Series |
| 2013 | Identification of Novel Innate Immunity Genes: New Players in Host Susceptibility to Infection?, Molecular Pathogenesis of Infectious Diseases Mini-Symposium organized by Microbiology Graduate Students |
| 2014 | Cilium Gene Expression in Idiopathic Pulmonary Fibrosis. Department of Medicine Research and Innovation Conference |
| 2015 | Asthma-associated DNA Methylation Changes and Relationship to Gene Expression. Asthma Research Retreat, National Jewish Health |
| 2016 | Epigenetics of Asthma. The Power of Informatics to Advance Health Mini Symposium organized by the Graduate School |
| 2016 | Agilent Technologies Next Generation Sequencing on Tap |
| 2016-2022 | Annual Research Update. Biomedical Informatics and Personalized Medicine Research Conference, Dept of Medicine |
| 2017 | Epigenetic marks of in utero exposure to gestational diabetes and childhood adiposity outcomes: The EPOCH Study. Pediatric Nutrition Seminar Series, Dept of Pediatrics |
| 2017 | Epigenetic marks of in utero exposure to gestational diabetes and childhood adiposity outcomes: The EPOCH Study. LEADS Center Seminar Series, Dept of Epidemiology, Colorado School of Public Health |
| 2017 | Asthma Genetics and Epigenetics. Asthma Research Retreat, National Jewish Health |
| 2017 | Cilium Gene Expression in Injury/Repair and Fibrosis. Fibrosis and Regeneration Mini-Symposium, Division of Pulmonary and Critical Care Sciences |
| 2017 | Epigenetic marks of in utero exposure to gestational diabetes and childhood adiposity outcomes: The EPOCH Study. Reproductive Sciences Seminar, Dept of Obstetrics and Gynecology |
| 2019 | Airway Mucin MUC5B and Enhanced Multiciliogenesis in Pulmonary Fibrosis, Human Molecular Genetics and Genomics Program Annual Retreat |
| 2019 | Epigenomic Profiles of Childhood Asthma, Dept of Otolaryngology T32 Seminar |
| 2019 | Airway Mucin MUC5B and Enhanced Multiciliogenesis in Pulmonary Fibrosis. Human Molecular Genetics and Genomics Program Retreat |
| 2020 | Airway Mucin MUC5B and Enhanced Multiciliogenesis in Pulmonary Fibrosis. Department of Medicine Research and Innovation Conference |
| 2020 | Diagnosis of SARS-CoV-2 infection using machine learning analysis of DNA methylation profiles from whole blood. Human Molecular Genetics and Genomics Program Retreat |

**12. Teaching Record**

**Program Director:**

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| 2022-present | Graduate Certificate in Personalized and Genomic Medicine |

**Course Director:**

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| 2013-2018 | IMMU7603: The immunologic basis of human disease, UC Denver |
| 2019-present | HMGP7600: Graduate Survey of Human Genetics |

**Teaching Assistant:**

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| --- | --- |
| 1995-1996 | General Chemistry Laboratory, College of William and Mary |
| 1996-1997 | Chemistry 11L and 21L Courses, UNC—Chapel Hill |
| 2001 | TIGR Microarray Workshop, ABRF Meeting, San Diego CA |

**Lectures in Courses/Teaching Seminars:**

|  |  |
| --- | --- |
| 2001 | Microarray expression analysis. Bioinformatics; Principles and Applications, FAES Graduate School at the NIH. |
| 2009 | Identification of novel innate immune genes using gene expression profiling and genetic mapping in mice. NHLBI Omics Workshop, UC Denver and National Jewish Health. |
| 2009 | Epigenetics of Asthma and Atopy Post-graduate Course. European Respiratory Society Annual Congress, Vienna Austria |
| 2010 | Technologies for Epigenomic Profiling. NHLBI Omics Workshop, UC Denver and National Jewish Health. |
| 2010 | Technologies for Genetics and Genomics Research at National Jewish Health, Lung Cell Biology Seminar, National Jewish Health |
| 2010 | Sequencing the Lung: Application of Next-generation Sequencing to Pulmonary Research, Basic Science Section Seminar, National Jewish Health |
| 2011-present | The role of epigenetics in the development of asthma. IMMU7603: The immunologic basis of human disease, UC Denver |
| 2012 | Sequencing the Lung: Application of Next-generation Sequencing to Pulmonary Research, NHLBI Omics Workshop, UC Denver and National Jewish Health. |
| 2013 | Human Molecular Genetics and Genomics Program (HMGGP) Student Journal Club, UC Denver, Faculty Host/Advisor |
| 2013 | Epigenetics Post-graduate Course. European Respiratory Society Annual Congress, Barcelona, Spain |
| 2015 | Lung Innate Immunity: The Frontiers of Host Defense Post-graduate Course. American Thoracic Society. Denver CO |
| 2015-present | Asthma epigenetics, GEMS summer program, UC Denver |
| 2015-present | Asthma epigenetics, CUSP and CUREHS summer programs, UC Denver |
| 2015 | Genomics of Idiopathic Pulmonary Fibrosis Post-graduate Course. European Respiratory Society Annual Congress, Amsterdam, Netherlands |
| 2016 | Environmental Epigenetics, EHOH Environmental Epidemiology course, Colorado School of Public Health |
| 2017 | How to Use –Omics to Study Lung Disease Post-graduate Course. American Thoracic Society. Washington DC |
| 2018 | Epigenetics, EPID Public Health Genetics course, Colorado School of Public Health |
| 2018-present | Biomedical Science Program (BSP) Journal Club, UC Denver, Faculty Host/Advisor |
| 2019 | A Researcher’s Guide How to Integrate Pulmonary ‘Omicsverse Post-graduate Course. Post-graduate Course. American Thoracic Society. Dallas TX |
| 2021 | A Practical, Hands-on Introduction to Genomic Analysis in Pulmonary Medicine, Post-graduate Course. American Thoracic Society. Virtual Platform |

**Lectures to Lay Audiences:**

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| --- | --- |
| 2009 | Genomic Expression in Personalized Medicine. National Jewish Health Council of National Trustees and Board of Directors Annual Meeting, Denver CO |
| 2009 | The Role of Epigenetics in the Development of Asthma. Boulder Torch Club, Boulder CO |
| 2010 | Environmental Determinants of Airway Disease in Children. Children’s Environmental Health Center (CEHC) Community Advisory Board (CAB) Meeting, Denver CO |
| 2013 | Primer on Epigenetics, Environment, and Disease. Children’s Environmental Health Center (CEHC) Community Advisory Board (CAB) Meeting, Denver CO |
| 2018 | 31st Annual Medicine & Science Symposium: Beyond the Bed & Bench, The Graduate School, Denver CO |

**Undergraduate/Medical/High School Student Mentor:**

|  |  |
| --- | --- |
| 1998-2000 | Melissa Singer, UNC - Chapel Hill |
| 2002-2003 | Alana Genderson, The Institute for Genomic Research |
| 2004-2005 | Sarah Weinke, Duke University Medical Center |
| 2009-2010 | Jenni Adams, National Jewish Health |
| Summer 2010 | Megan Bonney, National Jewish Health |
| Summer 2010 | Rachel Burton, National Jewish Health |
| 2010-2012 | Rachel Freedman, University of Colorado Denver |
| Summer 2012 | Lucy Hui, Yale University |
| 2012-2014 | Jay Patel, University of Colorado |
| Summer 2013 | Laura Tucker, Yale University |
| 2014-2016 | Makenna Bishop, University of Colorado Denver |
| Summer 2014, 2016 | Nicholas Rosen, Grandview High School and University of Southern California |
| Summer 2015 | Alani Estrella, University of Oregon |
| Summer 2015 | Soraya Morales Nunez, Princeton University |
| 2015-2016 | Amelia Sanchez, University of Colorado Denver |
| 2015-2016 | Jenny Romero, University of Colorado Denver |
| 2016 | Andrew Current, University of Colorado Denver |
| 2016-2018 | Marc Yacoub, University of Colorado Denver |
| Summer 2016 | Jennifer Ream, Texas State University |
| Summer 2016 | Anh Thu Ly, University of Colorado Denver |
| Summer 2016 | Jamie Solimano, Harvard University |
| 2017-2018 | Misha Solok, Grandview High School |
| 2017-2018 | Emma Estrada, University of Colorado Denver |
| Summer 2018 | Yvonne Cui, Williams College |
| 2018-2020 | Katrina Parker, University of Colorado Denver |
| Summer 2018-2020 | Ashley Hernandez, Brown University |
| 2020-present | Anastasia Malyshkina, Grandview High School and Case Western Reserve University |
| Summer 2021 | Emilette Marrero-Torres, University of Puerto Rico Medical School |
| Summer 2021 | Jessica Becerra, University of Notre Dame |
| 2021-present | Alexandria Smith, Regis University |
| 2022-present | Saiida El Dursi, University of Colorado Denver |
| Summer 2022 | Cora Martin, Georgetown University |

**PhD and Medical School Student Mentor:**

|  |  |  |
| --- | --- | --- |
| 2009-2015 | Ken Eyring PhD, University of Colorado | Biotechnology (Co-mentor) |
| 2012-2016 | Britney Helling PhD, University of Colorado | Postdoctoral Fellow, University of Chicago (Co-mentor) |
| 2013-2014 | Thien-An Nguyen MD, University of Colorado School of Medicine | Family Medicine Residency, U Texas Med Branch-Galveston (Primary Mentor) |
| 2013-2017 | Laura Warg MD PhD, University of Colorado | Emergency Medicine Residency, University of Washington (Co-mentor) |
| 2017-2021 | Iain Konigsberg PhD, University of Colorado | Instructor, Colorado Center for Personalized Medicine |

**Postdoctoral Fellow Mentor:**

|  |  |  |
| --- | --- | --- |
| 2005-2006 | Terri Eliss PhD, NIEHS | Associate Professor, University of North Florida (Co-mentor) |
| 2009-2010 | Leah Luna PhD, National Jewish Health | Senior Scientist, Dow Chemicals (Co-mentor) |
| 2009-2011 | Judy Oakes PhD, National Jewish Health and University of Colorado | Research Associate, University of North Carolina (Primary Mentor) |
| 2009-2011 | Huai-cong Long MD PhD, National Jewish Health | Associate Professor, Sichuan Academy of Medical Sciences (Co-mentor) |
| 2010-2013 | Jian Jing PhD, University of Colorado | Pathology Residency, Mount Sinai School of Medicine (Co-mentor) |
| 2011-2013 | Anne Agler PhD, University of Colorado | Technology Manager, General Mills (Primary Mentor) |
| 2011-2013 | Andres Henao Martinez MD, University of Colorado | Assistant Professor, University of Colorado School of Medicine (Primary Mentor) |
| 2011-2014 | Alan Watson PhD, University of Colorado | Scientist, BD Bioscience (Co-mentor) |
| 2012-2015 | Yasushi Nakano MD, University of Colorado | Assistant Professor, Keio University, Tokyo, Japan (Co-mentor) |
| 2012-2019 | Jonathan Huber PhD, University of Colorado | Research Associate, University of Colorado (Co-mentor) |
| 2013-2016 | Susan Mathai MD, University of Colorado | Assistant Professor, Baylor University Medical Center, Dallas TX (Co-mentor) |
| 2014-2015 | Hao Sun MD, University of Colorado | Assistant Professor, Nanjing Medical University, China (Co-mentor) |
| 2015-2019 | Tsusaka Okamoto MD, University of Colorado | Assistant Professor, Tokyo Medical and Dental University, Tokyo, Japan (Co-mentor) |
| 2018-2021 | Haruhiko Furusawa MD, University of Colorado | Assistant Professor, Tokyo Medical and Dental University, Tokyo, Japan (Co-mentor) |
| 2018-present | Nancy Lin MD, University of Colorado | Assistant Professor, National Jewish Health (Co-mentor) |
| 2018-present | Eunjoo Kim PhD, University of Colorado | Primary Mentor |

**Junior Faculty Mentor:**

|  |  |  |
| --- | --- | --- |
| 2011-2016 | Colleen Julian, University of Colorado | K12 co-mentor |
| 2015-2018 | Kristen Boyle, University of Colorado | K01 co-mentor |
| 2016-2018 | Susan Mathai MD, University of Colorado | K23 co-mentor |
| 2015-2018 | Sarah Borengasser, University of Colorado | K01 co-mentor |
| 2015-2017 | Natalia Grindler MD, University of Colorado | K12 co-mentor |
| 2017-2019 | Michael Rudolph, Assistant Professor, University of Colorado | K01 co-mentor |
| 2019 | Elizabeth Kudron, Assistant Professor, University of Colorado | Program for Academic Clinician Educators co-mentor |

**Research Committees:**

|  |  |  |
| --- | --- | --- |
| 2013 | Elisabeth Orth, Biostatistics and Bioinformatics | MS thesis committee |
| 2011-2014 | Li Li PhD, Assistant Professor, National Jewish Health | K01 mentored grant committee |
| 2014-2015 | Kristen Boyle, Assistant Professor, Pediatrics, University of Colorado | K12 mentored grant committee |
| 2015-2018 | Mary Sweet, Human Medical Genetics and Genomics | PhD thesis committee chair |
| 2015 | Nick Walter, Epidemiology | PhD thesis committee chair |
| 2015-2017 | Michael Rudolph, Assistant Professor, Pediatrics, University of Colorado | K12 mentored grant committee |
| 2016 | Matt Gracey, Epidemiology | MS thesis committee |
| 2016 | Stephanie Garcia, Human Medical Genetics and Genomics | PhD comprehensive exam committee |
| 2016-2021 | Heather Clancy, Cell Biology Stem Cells and Development | PhD thesis committee |
| 2017-2019 | Tanzira Zaman MD, Pulmonary and Critical Care | T32 fellowship committee |
| 2018-2021 | Patrick Carry, Epidemiology | PhD thesis committee |
| 2018-2019 | Breanna Symmes PhD, Pulmonary and Critical Care | T32 fellowship committee |
| 2018-2019 | Ashley Pacheco, Human Medical Genetics and Genomics | PhD thesis committee |
| 2018-2021 | Joyce Lee MD, Pulmonary and Critical Care | K23 mentored grant committee |
| 2018-2020 | Nancy Lin MD, Pulmonary and Critical Care | T32 fellowship committee chair |
| 2019-2020 | Mindy Szeto, Human Medical Genetics and Genomics | PhD thesis committee |
| 2020-present | Christina Elling, Human Medical Genetics and Genomics | PhD thesis committee chair |
| 2021-present | Nickolas Pollock, Human Medical Genetics and Genomics | PhD thesis committee chair |
| 2022-present | Hayley Stoneman, Human Medical Genetics and Genomics | PhD thesis committee chair |
| 2022-present | Laurel Haines, Combined DVM/PhD, Colorado State University | PhD thesis committee |

**Rotation Students:**

|  |  |  |
| --- | --- | --- |
| 2015 | Amanda Richer, Biomedical Sciences Program | Second rotation 2015-2016 |
| 2016 | Iain Konigsberg, Human Medical Genetics and Genomics | First rotation 2016-2017 |
| 2018 | Christina Elling, Human Medical Genetics and Genomics | First rotation 2018-2019 |
| 2020-21 | Hayley Stoneman, Human Medical Genetics and Genomics | Second rotation 2020-2021 |
| 2021 | Lauren Dunn, Human Medical Genetics and Genomics | Third rotation 2020-2021 |
| 2022 | Yingping Wang, Human Medical Genetics and Genomics | First rotation 2022-2023 |

**Other Teaching Activities:**

|  |  |
| --- | --- |
| 2011-2016 | Postdoctoral Research Day, University of Colorado Denver, Poster Judge |
| 2013-present | Mentor, American Thoracic Society Mentoring Program |
| 2014-present | Expedition Health Exhibit Guide (Volunteer Position), Denver Museum of Nature and Science |
| 2015 | CCTSI Research Studio for Christopher Martens, PhD, Integrative Physiology, CU Boulder), expert panelist |
| 2015 | CCTSI SUMMiT-Career Development Lunch, faculty participant |
| 2016 | Epigenetics Expert for AP Biology Project, Cayley Hundt, Rock Canyon High School |
| 2017 | Epigenetics Expert for AP Biology Project, Rhyan Myers, Ponderosa High School |
| 2018 | Genome Editing Expert for AP Biology Project, Osiris Nolasco, Denver North High School |
| 2018 | SACNAS Summer Academy Lunch with Professionals, faculty participant |

**13. Grant Support**

|  |  |  |
| --- | --- | --- |
| **Title** | **Period** | **Total Direct Funding** |
| **Active:** |  |  |
|  |  |  |
| CCTSI Colorado Mentored Faculty Pilot Grant Award  The influence of primary cilia and Hedgehog signaling in airway epithelia on fibroproliferation  Principal Investigator: Kim  Mentor: **Yang** | 05/01/22-04/30/23 | $30,000 |
|  |  |  |
| NIH-NHLBI: R01HL158668 | 04/19/22 – 03/31/27 | $2,500,000 |
| Molecular Determinants of Usual Interstitial Pneumonia  Principal Investigator: Schwartz, **Yang** |  |  |
|  |  |  |
| NIH-NIEHS: R01ES033678  Using Multi-Omics to Define Regulators and Drivers of Granulomatous Inflammation and Chronic Beryllium Disease  Principal Investigator: Maier, **Yang** | 02/01/22-11/30/26 | $2,500,000 |
|  |  |  |
| NIH-NIDCD: R01DC019642  Genetic and epigenomic determinants of hearing loss in Hispanic populations  Principal Investigator: Santos-Cortez, **Yang** | 09/10/21-05/31/26 | $2,490,642 |
|  |  |  |
| NIH-NHLBI: F32HL154666  The role of multiciliated cell dysfunction in pathogenesis of IPF  Principal Investigator: Kim  Mentor: **Yang** | 01/01/21-06/30/23 | $175,000 |
|  |  |  |
| NIH-NHLBI: UG3HL151865  Preclinical Pulmonary Fibrosis, an Opportune Rare Disease Cohort  Principal Investigator: Schwartz  Co-investigator: **Yang** | 08/01/20-07/31/26 | $3,977,000 |
|  |  |  |
| NIH-NHLBI: R01-HL149836  Genes and Transcripts that Interact with MUC5B in Pulmonary Fibrosis  Principal Investigators: Clouthier, Schwartz, **Yang** | 06/01/20-05/31/24 | $2,000,000 |
|  |  |  |
| NIH-NHLBI: R38-HL143511 | 03/01/20-02/29/24 | $650,000 |
| Colorado StARR Program in Medicine and Pediatrics (CSPMP)  Principal Investigators: Abman, Buttrick, Schwartz  Mentor: **Yang** |  |  |
|  |  |  |
| University of Colorado Department of Medicine  Program for Academic Clinician Educators  Graduate Certificate in Personalized Medicine  Principal Investigator: Kudron  Mentors: Barnes, **Yang** | 08/01/19-07/31/22 | Salary support for Dr. Elizabeth Kudron MD |
|  |  |  |
| NIH-NIEHS: T32-ES029074  Training in Molecular and Systems Toxicology  Principal Investigator: Brown  Deputy Director and Mentor: **Yang** | 07/01/19-06/20/24 | $800,000 |
|  |  |  |
| NIH-NHLBI: R25-HL146166  Academy: Impact of Ancestry and Gender on Omics of Lung Disease  Principal Investigators: Barnes, Eickelberg, Flores  Curriculum Director: **Yang** | 01/07/19-12/31/23 | $434,999 |
|  |  |  |
| NIH-NHLBI: R01-HL140357  Epigenetic Regulation of Immune Pathways in Sarcoidosis  Principal Investigators: Maier, **Yang** | 07/01/18-06/30/23 | $2,441,680 |
|  |  |  |
| NIH-NHLBI: R01-HL138181  Epigenetic and Fetal Origins of Hypoxia-induced Pulmonary Hypertension  Principal Investigator: Julian  Co-investigator: **Yang** | 04/01/18 – 3/31/22 | $1,000,000 |
|  |  |  |
| NIH-NIAID R01-AI132476  Multi-omic Studies of Asthma Severity in an African Ancestry Population  Principal Investigator: Barnes  Co-investigator: **Yang** | 02/01/18 – 1/31/23 | $2,281,059 |
|  |  |  |
| NIH-NHLBI: R01-HL104608  New Approaches for Empowering Studies of Asthma in Populations of African Descent  Principal Investigator: Barnes, Kenny, Mathias  Co-investigator: **Yang** | 01/01/18 – 11/30/22 | $7,436,654 |
|  |  |  |
| Department of Defense W81XWH-16-PRMRP-FPA  Idiopathic Pulmonary Fibrosis, a Disease Initiated by Mucociliary Dysfunction  Principal Investigator: Schwartz  Project 4 Leader: **Yang** | 09/30/17-09/29/22 | $7,500,000  (Project 4 $1,695,987) |
|  |  |  |
| NIH-OD: UH3OD023248  The Early Life Exposome and Childhood Health – The Healthy Start 3 Cohort Study  Principal Investigator: Dabelea  Co-investigator: **Yang** | 09/01/16 – 08/31/23 | $5,000,000 |
|  |  |  |
| NIH-OD: K12HD057022  The Colorado Building Interdisciplinary Research Careers in Women’s Health Programs  Principal Investigator: Regensteiner  Mentor: **Yang** | 09/24/07-07/31/22 |  |
|  |  |  |
| NIH-NHLBI: T32HL007085  Multidisciplinary Research and Training in Respiratory Disease  Principal Investigator: Schwarz  Mentor: **Yang** | 07/01/75-06/30/25 |  |
|  |  |  |
| **Completed:** |  |  |
| University of Colorado Office of Digital Education (ODE)  Online Programs of Excellence (ONE)  Graduate Certificate in Personalized Medicine  Principal Investigators: Barnes, **Yang** | 08/01/19-07/31/21 | $30,000 |
|  |  |  |
| NIH-NHLBI: UH3HL123442  MUC5B, a novel therapeutic target for Idiopathic Pulmonary Fibrosis (IPF)  Principal Investigator: Schwartz  Co-investigator: **Yang** | 09/22/14-06/30/21 | $2,281,864 |
|  |  |  |
| CCTSI TOTTS TL1 Pre-doctoral Award | 07/01/19-06/30/20 | $41,646 |
| Multi-omics of Chronic Beryllium Disease  Principal Investigator: Konigsberg  Mentor: **Yang** |  |  |
|  |  |  |
| NIH-NIEHS: R01ES023826  Exposure in epigenetic regulation of immune response in CBD  Principal Investigators: Maier, **Yang** | 04/01/15-12/31/20 | $1,926,421 |
|  |  |  |
| University of Colorado RNA Biosciences Institute  Characterization of Bronchoalveolar Lavage Cell Populations from Patients with Sarcoidosis  Principal Investigators: Maier, **Yang** | 08/01/18-07/31/19 | Single cell RNA-seq and analysis costs |
|  |  |  |
| NIH-NHLBI: K23HL136785  Genomic Profiling of Early Pulmonary Fibrosis  Principal Investigator: Mathai  Co-mentor: **Yang** | 09/01/17-08/31/18 | $172,720 |
|  |  |  |
| NIH-NIEHS: R00ES025817  A Mechanistic Study of Prenatal Air Pollution Exposure and Offspring Obesity Risk  Principal Investigator: Starling  Consultant: **Yang** | 07/01/17-05/31/20 | $450,000 |
|  |  |  |
| CCTSI Child and Maternal Health Mentored Pilot  Role of maternal obesity and preconception micronutrient supplementation on DNA methylation in umbilical cord blood and infant outcomes.  Principal Investigator: Borengasser  Mentor: **Yang** | 06/01/16-05/31/17 | $20,000 |
|  |  |  |
| NIH-NIDDK: K01DK109077  Maternal Obesity, Micronutrient Supplementation, and Epigenetic Programming  Principal Investigator: Borengasser  Co-mentor: **Yang** | 04/01/16-03/30/19 | $403,494 |
|  |  |  |
| NIH-NHLBI: R01HL122711  Systems-level Transcriptomic Analyses to Identify Mouse Models of Asthma  Principal Investigator: Kelada  Co-investigator: **Yang** | 08/15/15-05/31/19 | $1,298,549 |
|  |  |  |
| NIH-NIDDK: K01DK106347  Human Mesenchymal Stem Cells and the Epigenetic Programming of Obesity  Principal Investigator: Boyle  Co-mentor: **Yang** | 07/15/15-04/30/18 | $375,000 |
|  |  |  |
| NIH-NIEHS: R01ES022934  Environmental chemicals and childhood obesity  Principal Investigators: Adgate, Dabelea, Hamman  Co-investigator: **Yang** | 09/19/15-08/13/19 | $1,500,000 |
|  |  |  |
| NIH-NIEHS: R25ES025476  Colorado Undergraduate Research in Environmental Health Sciences  Principal Investigators: Brown, Repine, Schwartz  Mentor: **Yang** | 04/01/15 – 03/31/20 | $540,000 |
|  |  |  |
| NIH-NIDDK R01DK104351  Nutrigenetics & -genomics of vitamin D and omega-3 fatty acids in type 1 diabetes  Principal Investigator: Norris  Co-investigator: **Yang** | 09/15/14-8/31/19 | $2,578,635 |
|  |  |  |
| NIH-NHLBI R33HL120770  Functional Genetics in Idiopathic Pulmonary Fibrosis  Principal Investigator: Schwartz  Co-investigator: **Yang** | 08/08/14-06/30/19 | $1,275,266 |
|  |  |  |
| NIH-NIDDK: K01DK109079  Early Life Fatty Acid Exposures Dictate Obesity Predisposition  Principal Investigator: Rudolph  Co-mentor: **Yang** | 07/15/17-07/14/20 | $500,000 |
|  |  |  |
| NIH-NIDDK: R01DK100340  Epigenetic marks of *in utero* exposure to gestational diabetes  Principal Investigators: Dabelea, Kechris, **Yang** | 07/01/14-06/30/19 | $1,358,129 |
|  |  |  |
| NIH-NHLBI: R21HL121572  Regulation of mRNA and miRNA expression in IPF by DNA methylation  Principal Investigator: **Yang** | 07/01/14-04/30/17 | $150,000 |
|  |  |  |
| NIH-NIEHS: R21ES023384  Fungal Exposure and the Respiratory Tract Microbiome  Principal Investigator: Evans  Co-investigator: **Yang** | 01/15/14-12/31/16 | $600,000 |
|  |  |  |
| NIH-NHLBI: R21HL106112  Air/liquid Interface Cultures for Alveolar Type II Cell Differentiation  Principal Investigator: Mason  Consultant: **Yang** | 07/01/11-06/30/13 | $275,000 |
|  |  |  |
| NIH-NCRR: S10RR031832  Supercomputer Linux Cluster for Genomics  and Proteomics  Principal Investigator: Schwartz  Major User: **Yang** | 06/15/11-06/14/13 | $598,964 |
|  |  |  |
| NIH-NIEHS: P01ES18181  Determinants of Environmental Airway Disease  Principal Investigator: Schwartz  Project 3 Co-Leader: **Yang** | 09/01/09—08/31/15 | $4,997,747  (Project 3: $1,227,506) |
|  |  |  |
| NIH-NHLBI: R01HL101251  Asthma: An Epidemic Caused by Epigenetics?  Principal Investigators: Schwartz, **Yang** | 07/01/09—06/30/15 | $3,331,177 |
|  |  |  |
| NIH-NIAID: N01AI90052  Inner-City Asthma Consortium 2  The Role of Epigenetics in Inner City Asthma  Principal Investigator: Busse  Project Leader: Schwartz  Co-investigator: **Yang** | 12/01/09—09/30/14 | $2,465,777 |
|  |  |  |
| NIH-NHLBI: RC1HL099571  Peripheral Blood Biomarkers for Idiopathic Interstitial Pneumonia  Principal Investigators: Schwartz, Steele, **Yang** | 09/30/09—09/29/12 | $916,770 |
|  |  |  |
| NIH-NHLBI: RC2HL101715  Lung Genomics Research Consortium  Multi-Principal Investigator: Schwartz  Co-investigator: **Yang** | 09/30/09—08/31/12 | $11,401,677 |
|  |  |  |
| NIH-NHLBI: R01HL095393  Genomic Signatures for Idiopathic Interstitial Pneumonia  Principal Investigator: Schwartz  Co-investigator: **Yang** | 09/24/08—07/31/13 | $2,000,000 |
|  |  |  |
| NIH-NHLBI: P50HL084917  Host Defense Mechanisms in Chronic Lung Disease  Principal Investigator: Wright  Project 3 Director: Palmer  Consultant:  **Yang** | 09/16/06—07/31/11 |  |
|  |  |  |
| NIH-NIEHS: Z01ES101946  The Genetic Determinants of Innate Immunity and Host Defense  Principal Investigator: Schwartz  Staff Scientist:  **Yang** | 05/23/05—06/07/08 |  |
|  |  |  |
| NIH-NCRR: P20RR020180  Transcription Factors in Cancer  Principal Investigator: Niles  Genetics Core Director: Primerano  Consultant: **Yang** | 09/23/04—07/31/09 |  |
|  |  |  |
|  |  |  |

**14. Bibliography**

**Original Manuscripts:**

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2. **Yang IV**, Thorp HH. [Ru(bpy)3]2+-mediated guanine oxidation in DNA polymers and in oligonucleotides containing trinucleotide repeat sequences. *Inorg. Chem.* 39, 4969-4976 (2000).
3. Weatherly SC, **Yang IV**, Thorp HH. Proton-coupled electron transfer in duplex DNA: driving force dependence and isotope effects on electrocatalytic oxidation of guanine. *J. Am. Chem. Soc.* 123, 1236-1237(2001).
4. **Yang IV**, Thorp HH. Oxidation of 7-deazaguanine: mismatch-dependent electrochemistry and selective strand scission. *Inorg. Chem*. 40, 1690-1697 (2001).
5. Baik M-H, Silverman JS, **Yang IV**, Szalai VA, Ropp PA, Yang W, Thorp HH. Using density functional theory to develop a complete set of oxidizable nucleobases. *J. Phys. Chem. B* 105, 6437-6444 (2001).
6. **Yang IV**, Thorp, HH. Modification of indium tin oxide electrodes with repeat polynucleotides: electrochemical detection of trinucleotide repeat expansion. *Anal. Chem.* 73, 5316-5322 (2001).
7. **Yang IV**, Thorp HH. Toward electrochemical resolution of two genes on one electrode: using 7-deaza analogs of guanine and adenine to prepare PCR products with differential redox activity. *Anal. Chem*. 74, 347-354 (2002).
8. **Yang IV**, Chen E, Hasseman JP, Liang W, Frank BC, Wang S, Sharov V, Saeed AI, White J, Li J, Lee NH, Yeatman TJ, Quackenbush J. Within the fold: assessing differential expression measures and reproducibility of microarray assays. *Genome Biol*. 3, research0062 (2002).
9. The FANTOM Consortium and the RIKEN Genome Exploration Research Group Phase I and II Team. Analysis of the mouse transcriptome based on functional annotation of 60,770 full-length cDNAs. *Nature* 420, 563-573 (2002).
10. Weatherly SC, **Yang IV**, Armistead PM, Thorp HH. Proton-coupled electron transfer in guanine oxidation: effects of isotope, solvent, and chemical modification. *J. Phys. Chem.* B. 107, 372 (2003*).*
11. Chen T, **Yang I**, Irby R, Shain KH, Wang HG, Quackenbush J, Coppola, D, Yeatman TJ. Regulation of caspase expression and apoptosis by adenomatous polyposis coli. *Cancer Res.* 63, 4368-4374 (2003).
12. Gore MR, Szalai VA, Ropp PA, **Yang IV**, Silverman JS, Thorp HH. Detection of attomole quantities of DNA targets on gold microelectrodes by electrocatalytic nucleobase oxidation. *Anal. Chem.* 75*,* 6586-92 (2003).
13. Bloom G\*, **Yang IV**\*, Boulware D, Kwong KY, Coppola D, Eschrich S, Quackenbush J, Yeatman TJ. Multi-platform, multi-site, microarray-based human tumor classification. *Am. J. Pathol.* 164, 9-16 (2004) (\*authors contributed equally).
14. Sharov V, Kwong KY, Frank BC, Chen E, Hasseman JP, Gaspard, R, Yu Y, **Yang I**, Quackenbush J. The limits of log-ratios.  *BMC Biotechnol.* 4*,* 3 (2004).
15. Bloomston M, Durkin A, **Yang I**, Rojiani M, Rosemurgy AS, Enkmann S, Yeatman TJ, Zervos EE. Identification of molecular markers specific for pancreatic neuroendocrine tumors by genetic profiling of core biopsies.  *Ann. Surg. Oncol*. 11, 413-9 (2004).
16. Qin L-X, Kerr KF, and Contributing Members of the Toxicogenomics Research Consortium. Empirical evaluation of data transformations and ranking statistics for microarray analysis. *Nucleic Acids Res.* 32, 5471-79 (2004).
17. Eschrich S, **Yang I,** Bloom G, Kwong KY, Boulware D, Cantor A, Coppola D, Kruhøffer M, Aaltonen L, Orntoft TF, Quackenbush J, Yeatman TJ. Molecular staging for survival prediction of colorectal cancer patients. *J. Clin. Oncol* 23, 3526-35 (2005).
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19. Burch, LH, **Yang, IV**, Whitehead GS, Berman KG, Chao FG, Schwartz DA. Transcriptional response to endotoxin reveals role for interferon gamma in lung neutrophil recruitment*. Am. J. Physiol. Lung Cell. Mol. Physiol.* 291, L677-82 (2006).
20. **Yang IV**, Burch LH, Steele MP, Savov JD, Hollingsworth JW, Berman KG, Speer MC, Brown KK, Schwarz MI, Schwartz DA. Gene expression profiling of familial and sporadic interstitial pneumonia. *Am. J. Resp. Crit. Care Med.* 175, 45-54 (2007). **(with accompanying editorial)**
21. Brass DM\*, **Yang IV\*,** Kennedy MP, Whitehead GS, Rutledge H, Burch LH, Schwartz DA. LPS-induced airway remodeling is a fibroproliferative process**.**  *Immunogenetics* 60, 353-69 (2008).(\*authors contributed equally).
22. HuangYC, LiZ, CarterJD, Soukup JM, SchwartzDA, Yang IV. Fine ambient particles induce oxidative stress and metal binding genes in human alveolar macrophages. *Am J Respir Cell Mol Biol.*  41: 544-52 (2009).
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24. **Yang IV,** Alper S, Lackford B, Rutledge H, Warg LA, Burch LH, Schwartz DA. Novel regulators of the systemic response to lipopolysaccharide (LPS). *Am J Respir Cell Mol Biol.* **45**: 393-402 (2011).
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27. Aylor DL, Valdar W, Foulds-Mathes W, Buus RJ, Verdugo RA, Baric RS, Ferris MT, Frelinger JA, Heise M, Frieman MB, Gralinski LE, Bell TA, Didion JD, Hua K, Nehrenberg DL, Powell CL, Steigerwalt J, Xie Y, Kelada SNP, Collins F, **Yang IV**, Schwartz DA, Branstetter LA, Chesler EJ, Miller DR, Spence J, Liu EY., McMillan L, Sarkar A, Wang J, Wang W, Zhang Q, Broman KW, Korstanje R, Durrant C, Mott R, Iraqi FA, Pomp D, Threadgill D, Pardo-Manuel de Villena F, Churchill GA. Genetic Analysis of Complex Traits in the Emerging Collaborative Cross. *Genome Res.* 2011; 21:1213-22.
28. Yang IV, Jiang W, Rutledge HR, Lackford B, Alper S, Schwartz DA, Pisetsky DS. Molecular Pathways and Transcriptional Networks Induced in RAW264.7 Macrophage Cells by Stimulation with TLR Ligands. *Molecular Immunology* 2011;48:1886-95.
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**Invited Editorials:**

1. **Yang IV.** Sleep, Immunology, and Epigenetics: Tip of an Iceberg. *Am. J. Resp. Crit. Care Med.* 2012; **185**: 243-5.
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**Invited Review Articles:**

1. Brass DM, Tomfohr J, **Yang IV**, Schwartz DA. Using mouse genomics to understand idiopathic interstitial fibrosis. *Proc. Am. Thorac. Soc.***4**, 92-100 (2007).
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13. Konigsberg IR, Maier LA, **Yang IV**. Epigenetics and sarcoidosis. Eur Respir Rev. 2021;30:210076.
14. Sharma S, **Yang IV**, Schwartz DA. Epigenetic regulation of immune function in asthma. J Allergy Clin Immunol. 2022 Jun 15:S0091-6749(22)00763-1. Online ahead of print.

**Invited Book Chapters:**

1. **Yang IV** “Creating and hybridizing spotted DNA arrays”, In Encyclopedia of Genetics, Genomics, Proteomics, and Bioinformatics, (Dunn MJ, Jorde LB, Little PFR, and Subramaniam S, Eds.), Wiley, New York 2005.
2. **Yang IV** “The use of spike-in controls in microarray experiments”, in Methods in Enzymology, Kimmel AR and Oliver D, Eds, Elsevier, 411, 50-63 (2006).
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4. Yang IV “Genetic and Genomic Approached to Acute Lung Injury” in Atlas of Allergy (Schnapp LM, Feghali-Bostwitz Eds.), Humana Press, 2017: 133.

Conference Reports and White Papers:

1. Chadwick LH, Sawa A, Yang IV, Baccarelli A, Breakefield XO, Deng H-W, Dolinoy DC, Fallin MD, Holland NT, Houseman EA, Lomvardas S, Rao M, Satterlee JS, Tyson FL, Vijayanand P, Greally JM. New insights and updated guidelines for epigenome-wide association studies *Neuroepigenetics.* 2015;1:14-19.
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3. Breton CV, Marsit CJ, Faustman E, Nadeau K, Goodrich JM, Dolinoy DC, HerbstmanJ, Holland N, LaSalle JM, Schmidt R, Yousefi P, Perera F, Joubert BR, Wiemels J, Taylor M, Yang IV, Chen R, Hew KM, Hussey Freeland DM, Miller R, and Murphy SK. Small Magnitude Effect Sizes in Epigenetic Endpoints are Important in Children’s Environmental Health Studies. *Environ Health Perspect.* 2017;125:511-526.
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**Abstracts (limited to first or senior author only):**

1. **Verona I**, Thorp HH. Detection and mechanism of trinuceotide repeat expansion. Inorganic Biochemistry Summer Workshop, Athens GA, 1998 *poster presentation*
2. **Verona I**, Thorp HH. Role of slipped DNA structures in trinucleotide repeat disorders studied using an electron-transfer metallonuclease. American Chemical Society Meeting, Anaheim CA, 1999 *poster presentation*
3. **Yang IV,** Armistead PM, Thorp HH. Detection of subfemtomole quantities of amplicons of HER-2 mRNA immobilized on metal oxide electrodes. Era of Hope Department of Defense Breast Cancer Research Meeting, Atlanta GA, 2000 *poster presentation*
4. **Yang IV**, Thorp HH. Electron transfer from 7-deazaguanine to ruthenium polypyridyl complexes. American Chemical Society Meeting, Washington DC, 2000 *poster presentation*
5. **Yang IV**, Chen E., Gaspard RM., Hasseman JP, Yu Y, Lee, NH, Lazaridis E, Yeatman TJ, Quackenbush J. Towards a statatistical foundation for differential expression in microarrays. Genome Sequencing and Biology Meeting, Cold Spring Harbor NY, 2001 *poster presentation*
6. **Yang IV**, Chen E, Hasseman JP, Coppola D, Yeatman TJ, Quackenbush J. Gene expression fingerprints for molecular classification of cancer. New Frontiers in Cancer Detection and Diagnosis Gordon Research Conference, Ventura CA, 2002 *poster presentation*
7. **Yang IV**, Chen E, Hasseman JP, Coppolla D, Yeatman TJ, Quackenbush J. Gene expression fingerprints for molecular classification of cancer. Oncogenomics 2002 *poster presentation*
8. **Yang IV**, Kwong KY, Chen E, Hasseman JP, Coppola D, Yeatman TJ, Quackenbush J. Gene expression fingerprints for molecular classification of cancer. Genome Sequencing and Biology Meeting, Cold Spring Harbor NY, 2002 *poster presentation*
9. **Yang IV**, Bloom GC, Kwong KY, Chen E., Hasseman JP, Coppola D, Yeatman, TJ, Quackenbush J. Gene expression fingerprints for molecular classification of cancer. Aspen Cancer Conference, Aspen CO, 2002 *poster presentation*
10. **Yang IV,** Bloom GC, Kwong KY, Chen E, Hasseman JP, Coppola D, Yeatman TJ, Quackenbush J. Universal gene chip based human tumor classification. NCI Director’s Challenge PI Meeting, Bethesda MD, 2002 *oral presentation*
11. **Yang IV,** Bloom GC, Kwong KY, Chen E, Hasseman JP, Coppola D, Yeatman TJ, Quackenbush J. Universal gene chip based human tumor classification. Society of Surgical Oncology Annual Meeting, Los Angeles CA, 2003 *oral presentation*
12. **Yang IV**, Burch LH, Dressman HK, Whitehead GS, Berman KG, Schwartz DA. Lypopolysaccharide(LPS)-mediated immune and stress responses. EU-US Workshop on Molecular Signatures of DNA Damage Induced Stress Response, Cortona Italy, 2003 *poster presentation*
13. **Yang IV**, Burch LH, Savov JD, Hollingsworth JW, Berman KG, Galvin JA, Steele MP, Schwartz DA. Gene Expression Analysis of the Idiopathic Interstitial Pneumonias. NIEHS Toxicogenomics Reseach Consortium (TRC) Meeting, Seattle WA, 2003 *oral presentation*
14. **Yang IV**, Yu Y, Sundy JS, Foss CM, Berman KG, McElvania-Tekkipe E, Quackenbush J, Schwartz DA. Identifying asthma susceptibility genes by gene expression profiling of airway epithelial cells following subsegmental airway challenges. International Congress of Immunology/FOCIS Annual Meeting, Montreal QC, 2004 *oral presentation*
15. **Yang IV**, Burch LH, Steele MP, Savov JD, Hollingsworth JW, Berman KG, Speer MC, Brown KK, Schwarz MI, Schwartz DA. Gene expression profiling distinguishes familial and non-familial forms of pulmonary fibrosis. NIEHS Toxicogenomics Reseach Consortium (TRC) Meeting, Chapel Hill NC, 2004 *oral presentation*
16. **Yang IV**, Burch LH, Steele MP, Savov JD, Hollingsworth JW, Berman KG, Speer MC, Brown KK, Schwarz MI, Schwartz DA. Gene expression profiling distinguishes familial and non-familial forms of pulmonary fibrosis. American Thoracic Society International Conference, San Diego CA, 2005 *oral presentation*

**\*Selected as one of the 24 abstracts best representing focus and quality of research presented at the conference**

1. Huang YCT, Li Z, Carter JD, Schwartz DA, Yang IV. Differential gene expression induced by Chapel Hill fine particles in human alveolar macrophages. American Thoracic Society International Conference, San Diego CA, 2005 *poster discussion*
2. **Yang IV**, Burch LH, Vinogradova T, Rutledge HR, Schwartz DA. Genetic determinants of inter-strain variability following systemic LPS challenge. Gene Expression and Signaling in the Immune System Meeting, Cold Spring Harbor NY, 2006 *poster presentation*
3. **Yang IV**, Burch LH, Vinogradova T, Rutledge HR, Schwartz DA. Genetic determinants of inter-Strain variability following systemic LPS challenge. American Thoracic Society International Conference, San Diego CA, 2006 *oral presentation*
4. **Yang IV**, Burch LH, Vinogradova T, Rutledge HR, Schwartz DA. Genetic determinants of inter-strain variability following systemic LPS challenge. NIEHS Toxicogenomics Reseach Consortium (TRC) Meeting, Chapel Hill NC, 2006 *oral presentation*
5. **Yang IV**, Rutledge H, Yang J, Ramsberger J, Schwartz DA. A novel locus on murine Chromosome 9 is associated with the systemic response to LPS. NIEHS Toxicogenomics Reseach Consortium (TRC) Meeting, Chapel Hill NC, 2006 *poster presentation*
6. **Yang IV**, Wade CM, Kang HM, Alper S, Rutledge HR, Lackford B, Eskin E, Daly MJ, Schwartz DA. Identification of Novel Innate Immunity Genes in Mice In response to Systemic LPS. NIH Intramural Research Festival, Bethesda MD, 2007 *poster presentation*
7. **Yang IV**, Wade CM, Kang HM, Alper S, Rutledge HR, Lackford B, Eskin E, Daly MJ, Schwartz DA. Identification of Novel Innate Immunity Genes in Mice In response to Systemic LPS. Keystone Innate Immunity Meeting, Keystone CO 2008 *poster presentation*
8. **Yang IV**, Wade CM, Kang HM, Alper S, Rutledge HR, Lackford B, Eskin E, Daly MJ, Schwartz DA. Identification of Novel Innate Immunity Genes in Mice In response to Systemic LPS. American Thoracic Society International Conference, Toronto ON, 2008 *poster presentation*
9. **Yang IV**, Alper S, Lackford B, Rutledge HR, Burch LH, Schwartz DA. Regulation of Gene Expression in the Liver, Lung, and Spleen of Sensitive and Resistant Strains of Mice In Reponses to Systemic LPS. American Thoracic Society International Conference, Toronto ON, 2008 *oral presentation*
10. **Yang IV,** Rutledge HR, Yang J, Schwartz DA. Study of Positional Candidates within the Locus on Chromosome 9 Associated with Response to Systemic LPS. American Thoracic Society International Conference, Toronto ON, 2008 *poster presentation*
11. **Yang IV**, Jiang W, Rutledge HR, Lackford B, Pisetsky DS, Schwartz DA. Identification of Novel Innate Immune Gene Expression Profiling of RAW264.7 Macrophages Stimulated with LPS, Poly(I:C) and CpG DNA. American Thoracic Society International Conference, Toronto ON, 2008 *poster presentation*
12. Rutledge HR, Jiang W, Yang J, Pisetsky DS, Schwartz DA, **Yang IV.** Gene Expression Profiles of RAW264.7 Macrophages Stimulated with two Commonly Used Preparations of LPS. American Thoracic Society International Conference, Toronto ON, 2008 *poster presentation*
13. **Yang IV**, Warg LA, Davidson EJ, Kelada SNP, Kubalanza K, Collins, FC, Miller D, Chesler E, Churchill G, Aylor D, Pardo-Manuel de Villena F, Schwartz DA. Innate Immune Gene Discovery Using Macrophage Response to Pathogen-Associated Molecular Patterns (PAMPS). Aspen Lung Conference, Aspen CO, 2009 *poster presentation*
14. **Yang IV**, Warg LA, Davidson EJ, Kelada SNP, Kubalanza K, Collins FC, Miller D, Chesler E, Churchill G, Aylor D, Pardo-Manuel de Villena F, Schwartz DA. Innate Immune Gene Discovery Using Macrophage Response to Pathogen-Associated Molecular Patterns (PAMPS). International Mammalian Genome Society, La Jolla CA, 2009 *poster presentation*
15. **Yang IV**, Warg LA, Davidson EJ, Kelada SNP, Kubalanza K, Collins FC, Miller D, Chesler E, Churchill G, Aylor D, Pardo-Manuel de Villena F, Schwartz DA. Innate Immune Gene Discovery Using Macrophage Response to Pathogen-Associated Molecular Patterns (PAMPS). American Thoracic Society International Conference, New Orleans LA, 2010 *poster presentation*
16. **Yang IV**, Warg LA, Groshong S, Schwartz DA. The Role of the E2F1 Transcription Factor in Innate Immunity in Mice. American Thoracic Society International Conference, New Orleans LA, 2010 *poster presentation*
17. **Yang IV**, Warg LA, Alper S, Schwartz DA. Association of Polymorphisms in Known and Novel Innate Immune Genes with Gram Negative Bacteremia. American Society of Human Genetics, Washington DC, 2010 *poster presentation*
18. **Yang IV**, Cosgrove GP, Davidson EJ, Hennessy C, Brown J, Turner J, Leach S, Willis-Owen SA, von Mutius E, Moffatt MF, Cookson WO, and Schwartz DA. DNA Methylation Patterns in Siblings with and without Asthma. Roadmap Epigenomics PI Meeting, Bethesda MD, 2010 *oral presentation*
19. Warg LA, Schwartz DA, **Yang IV**. miRNA Regulation of Innate Immune Response in E2F1-deficient Mice. Keystone MicroRNAs and Human Disease Conference, Banff Canada, 2011 *poster presentation*
20. **Yang IV**, Warg LA, Alper S, Schwartz DA. Association of Polymorphisms in Known and Novel Innate Immune Genes with Gram Negative Bacteremia. American Thoracic Society International Conference, Denver CO, 2011 *poster discussion*
21. **Yang IV**, Leach S, Turner J, Kummer N, Brown J, Murphy E, Farias-Hesson E, Sisneros N, Wang Z, Coldren C, Correll M, Geraci M, Kaminski N, Quackenbush J, Sciurba F, Spira A, Schwartz DA. Somatic Mutations in the Lungs of Patients with Idiopathic Pulmonary Fibrosis. American Thoracic Society International Conference, Denver CO, 2011 *poster discussion*
22. **Yang IV**, Luna LG, Coldren CD, Fingerlin TE, Leach S, Murphy E, Lin J, Cosgrove GP, Lynch D, Groshong SD, Brown KK, Schwarz MI, Schwartz DA. Genes and miRNAs Associated with Severity of Lung Function Impairment in Idiopathic Interstitial Pneumonias (IIPs). American Thoracic Society International Conference, Denver CO, 2011 *poster presentation*
23. **Yang IV**, Hennessy C, Davidson E, Bonney M, Leach S, Brown J, Turner J, Juan Guardela B, Tedrow J, Correll M, Geraci M, Kaminski N, Quackenbush J, Sciurba F, Spira A, Schwartz DA. Genome-Wide DNA Methylation Patterns in Interstitial Lung Disease (ILD) and Chronic Obstructive Lung Disease (COPD). American Thoracic Society International Conference, Denver CO, 2011 *oral presentation*
24. **Yang IV**, Cosgrove GP, Pedersen B, Davidson EJ, Hennessy C, Brown J, Turner J, Leach S, Willis-Owen SA, von Mutius E, Moffatt MF2, Cookson WO, and Schwartz DA. DNA Methylation Patterns in Siblings with and without Asthma. Keystone Epigenomics Meeting, Keystone CO 2012 *poster presentation*
25. **Yang IV**, Pedersen B, Hennessy C, Davidson E, Bonney M, Leach S , Brown J, Turner J, Juan Guardela B, Tedrow J, Correll M, Geraci M, Kaminski N, Quackenbush J, Sciurba F, Spira A, Schwartz DA. Genome-Wide DNA Methylation Patterns in Interstitial Lung Disease (ILD) and Chronic Obstructive Lung Disease (COPD). American Thoracic Society Meeting, San Francisco CA 2012 *poster discussion*
26. **Yang IV**, Cosgrove GP, Pedersen B, Davidson EJ, Hennessy C, Brown J, Turner J, Leach S, Liang L, Willis-Owen SA, von Mutius E, Moffatt MF, Cookson WO, and Schwartz DA. DNA Methylation Patterns in Siblings with and without Asthma. American Thoracic Society Meeting, San Francisco CA 2012 *poster presentation*
27. Oakes JL, O’Connor BP, Warg LA, Burton R, Hock A, Loader, J, LaFlamme D, Schwartz DA, and **Yang IV**. Pulmonary innate immune response to ozone and TLR2 agonist Pam3CSK4 in C57BL/6 mice. American Thoracic Society Meeting, San Francisco CA 2012 *poster presentation*
28. Agler AH, Pedersen BS, Warg LA, Schwartz DA, **Yang IV**. Whole Genome Association Mapping To Identify Novel Innate Immunity Genes Using Macrophage Cytokine Response To Pathogen-Associated Molecular Patterns (PAMP). American Thoracic Society Meeting, San Francisco CA 2012 *poster discussion*
29. Henao-Martinez AF, Schwartz DA, **Yang IV**. A Polymorphism in the SUFU gene (rs12414407) is Associated with Acute Lung Injury and ARDS Protection in Patients with Gram Negative sepsis. Infectious Disease Society of America. San Diego CA 2012 *poster presentation*

**\*Received a trainee travel award**

1. Agler AH, Pedersen BS, Warg LA, Schwartz DA, **Yang IV**. Novel Innate Immune Response Genes Involved In The Response To Gram Positive Bacteria. American Thoracic Society Meeting, Philadelphia PA 2013 *poster presentation*
2. Agler AH, Pedersen BS, Hennessy C, Davidson E, Juan-Giardel B, Tedrow JR, Correll M, Geraci MW, Kaminski N, Quackenbush J, Sciurba FC, Spira A, Schwartz DA, **Yang IV**. Chronic Obstructive Pulmonary Disease And Genome-Wide DNA Methylation Patterns In Lung Tissue. American Thoracic Society Meeting, Philadelphia PA 2013 *oral presentation*

**\*Received a trainee travel award**

1. **Yang IV**, Pedesen B, Hennessy C, Davidson E, Juan Guardela B, Tedrow JR, COrrell M, Geraci MW, Quckenbush J, Sciurba FC, Spira A, Kaminski N, Schwartz DA. Methyl-eQTL Analysis In Idiopathic Pulmonary Fibrosis (IPF). American Thoracic Society Meeting, Philadelphia PA 2013 *oral presentation*
2. **Yang IV**, Fingerlin T, Coldren C, Leach S, Murphy E, Groshong SD, Cool C, Cosgrove GP, Brown KK, Schwarz MI, Schwartz DA. Differential Regulation Of Novel Anti-Fibrotic miRNAs Is Associated With Molecular Subtypes Of IPF/UIP. American Thoracic Society Meeting, Philadelphia PA 2013 *poster presentation*
3. **Yang IV**, Pedersen BS, Liu A, O’Connor GT, Teach SJ, Katan M, Tawil Misiak R, Gruchalla R, Steinbach SF , Szefler SJ, Gill MA, Calatroni A, David G, Hennessy CE, Davidson EJ, Gergen P, Togias A, Busse WW, Schwartz DA. Nasal Epithelial DNA Methylation and Gene Expression Profiles of Allergic Asthma in the Inner City. American Thoracic Society Meeting, Can Diego CA 2014 *poster presentation*
4. Reynolds SJ, Clark ML, Davidson ME, Keefe T, Mehaffy J, Bradford M, Poole J, Mitloehner FM, Schenker MB, **Yang I**. Candidate Innate Immunity Genes and Cross Shift Pulmonary Function Changes Among Western US Dairy Workers. Nordic Meeting on Agricultural Occupational Health & Safety. Finland 2014 *oral presentation*
5. Reynolds SJ, Clark ML, Davidson ME, Keefe T, Mehaffy J, Bradford M, Poole J, Mitloehner FM, Schenker MB, **Yang I**. Candidate Innate Immunity Genes and Cross Shift Pulmonary Function Changes Among Western US Dairy Workers. 7th International Symposium: Safety & Health in Agricultural & Rural Populations (SHARP). Saskatoon Canada 2014 *oral presentation*
6. **Yang IV**, Coldren CD, Leach SM, Seibold MA, Murphy E, Lin J, Rosen R, Neidermyer AJ, McKean DF, Groshong SD, Cool C, Cosgrove GP, Lynch DA, Brown KK, Schwarz MI, Fingerlin TE, Schwartz DA. Expression of cilium-associated genes defines novel molecular subtypes of idiopathic pulmonary fibrosis. Cilia, Mucus & Mucociliary Interactions Gordon Research Conference, Galveston TX 2015 *poster presentation*
7. **Yang IV**, Pedersen BS, Liu AH, O’Connor GT, Pillai D, Kattan M, Misiak RT, Gruchalla R, Szefler SF, Hershey GKK, Kercsmar C, Makhija M, Sorkness CA, Zabel R, Visness C, Davidson EJ, Hennessy CE, Togias A, Busse WW, Schwartz DA. DNA Methylation Changes in Nasal Epithelia Associated with Allergic Asthma in the Inner City. American Thoracic Society Meeting, Denver CO 2015 *oral presentation*
8. **Yang IV**, Pedersen BS, Liu AH, O’Connor GT, Pillai D, Kattan M, Misiak RT, Gruchalla R, Szefler SF, Hershey GKK, Kercsmar C, Makhija M, Sorkness CA, Zabel R, Visness C, Davidson EJ, Hennessy CE, Togias A, Busse WW, Schwartz DA. DNA Methylation Changes in Nasal Epithelia Associated with Allergic Asthma in the Inner City. Aspen Lung Conference, Aspen CO 2015 *oral presentation*
9. Davidson EJ, Hancock LA, Hennessy CE, Kurche J, Evans CM, Schwartz DA, **Yang IV**. Localization of cilium markers in lung fibrosis. Keystone Injury, Inflammation and Fibrosis. Snowbird UT 2017 *poster presentation*
10. **Yang IV**, Zhang W, Davidson EJ, Fingerlin TE, Kechris K, Dabalea D. Epigenetic marks of in utero exposure to gestational diabetes (GDM) and childhood adiposity outcomes: The EPOCH Study. Developmental Origins of Health and Disease (DOHaD) Society International Meeting, Rotterdam Netherlands 2017 *oral presentation*
11. Konigsberg IR, MacPhail K, Davidson EJ, Maier LA, **Yang IV**. DNA Methylation Changes in Bronchoalveolar Lavage Associated with Chronic Beryllium Disease, American Thoracic Society Meeting, San Diego CA 2018 *poster presentation*

**\*Received a trainee travel award**

1. Mathai SK, Huber J, Cardwell J, Yacoub M, Gaydos J, Burnham EL, Zhang Y, Fingelin TE, Schwartz DA, **Yang IV.** Transcriptomic alterations in lung tissue and proximal airway cells associated with MUC5B gene expression are associated with cilia. International Colloquium on Lung and Airway Fibrosis, Pacific Grove CA 2018 *poster presentation*
2. Kim EJ, Davidson EJ, Hennessy CE, Stancil IT, Vladar EK, Schwartz DA, and **Yang IV**. Role of Cilium Gene Expression in Idiopathic Pulmonary Fibrosis, Cilia, Mucus & Mucociliary Interactions Gordon Research Conference, Lucca Italy 2019 *poster presentation*
3. **Yang IV**, Konigsberg IR, Li L, MacPhail K, Elliott J, Mroz P, Andersen KC, Fingerlin TE, Maier MA. Epigenetic Signatures of Sensitization and Disease in Beryllium-Exposed Individuals. Keystone Epigenetics in Human Disease Conference, Banff Canada 2019 *poster presentation*
4. Konigsberg IR, MacPhail K, Li L, MacPhail K, Elliott J, Mroz P, Fingerlin TE, Maier LA, **Yang IV**. Transcriptome Signatures of Sensitization and Disease in Beryllium-Exposed Individuals, American Thoracic Society Meeting, Dallas TX 2019 *poster presentation*
5. Konigsberg IR, Borie R, Walts A, Cardwell J, Rojas M, Metzger F, Hauck S, Fingerlin TE, Schwartz DA\*, **Yang IV\***. Molecular Signatures of Idiopathic Pulmonary Fibrosis., American Thoracic Society Meeting, Virtual 2020 *oral and poster presentation*
6. Kim E, Dobrinskikh E, Davidson EJ, Soh AWJ, Hennessy CE, Pearson CG, Schwartz DA, **Yang IV**. Mucociliary clearance dysfunction in idiopathic pulmonary fibrosis. EMBL Symposium “Organoids: Modelling Organ Development and Disease in 3D Culture”, Virtual 2020 *poster presentation*
7. Kim EJ, **Yang IV**. Mucociliary clearance dysfunction in idiopathic pulmonary fibrosis. International Society for Stem Cell Research (ISSCR), Virtual 2021 *oral presentation*
8. Konigsberg IR, Lin NW, Liao S-Y, Liu C, MacPhail K, Mroz MM, Davidson E, Li L, Maier LA\*, **Yang IV\*.** Multi-omic Signatures of Sarcoidosis in Bronchoalveolar Lavage Cells. American Thoracic Society Meeting, San Francisco, CA 2022 *poster discussion presentation*