

August 30, 2018



CTS INSPIRATIONS

CTS NEWS

President's Message

The **CTS Southern California Educational Conference** is only 3 weeks away! We hope you will join us at the Hilton Irvine on September 21-22, 2018. There is still time to register, which can be done at the following link:

<https://calthoracic.org/events/2018-fall-annual-educational-conference/>

The two-day conference is an ideal opportunity to meet and interact with experts from around the state of California in a collegial setting. The American Thoracic Society has accredited the conference for 14.25 CME credits.

Day 1 will target a multidisciplinary audience and will feature ***Advancing Multidisciplinary Care in COPD and Interstitial Lung Disease***. Highlights will include updates on COPD and ILD by Drs. William Stringer and Joseph Lynch, respectively. Dr. Tisha Wang will discuss rare lung diseases, and Drs. Ni-Cheng Liang, Robert Suh and Bernie Sunwoo will present case studies in severe COPD and IPF.

Day 2 will feature a deep dive into two important topics: ***Pulmonary Hypertension*** and ***Asthma***. Not too miss is the approach to PH therapy by Dr. Victor Tapson, and case presentations with an expert panel discussion led by Dr. Tim Fernandes. Highlights of the afternoon session include asthma phenotypes by Dr. Richard Barbers, and biologics for asthma in 2018 by Dr. Jonathan Corren.

We are looking forward to a fantastic conference and hope to see you in Orange County!

A handwritten signature in black ink, appearing to read "Philippe Montgrain".

Philippe Montgrain, MD
President, California Thoracic Society

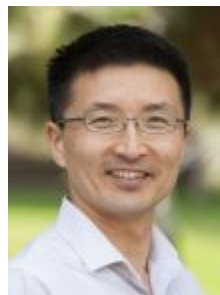




Angel Mak, PhD



Marquitta White, MS, PhD



Sam S. Oh, PhD, MPH



Esteban G. Burchard, MD, MPH

Whole genome sequencing of pharmacogenetic drug response in racially diverse children with asthma – by Angel Mak PhD, Marquitta J White MSc PhD, Sam Oh, PhD, MPH, Esteban Burchard, MD, MPH.

- **Asthma racial/ethnic disparity:** Puerto Ricans have higher asthma prevalence and mortality but lower drug response compared to Whites.
- **Minority underrepresentation:** Over 95% of NIH-funded pulmonary research since 1993 has been performed in Whites.
- **The largest whole genome sequencing pharmacogenetic study:** Our study expands the genetic understanding of racial/ethnic differences in bronchodilator drug response.
- **Precision medicine in minority populations.** Our study provides a scientific foundation for improving asthma treatment and control in at-risk and understudied populations.

Asthma is the most common chronic disease among children. Albuterol, a bronchodilator medication, is the first-line therapy for asthma treatment worldwide. Although over 95% of NIH-funded lung research since 1993 has been performed in Whites (1), there are drastic racial/ethnic differences in asthma prevalence, mortality and drug response. In the U.S., asthma prevalence is the highest among Puerto Ricans, intermediate among African Americans and Whites, and lowest in Mexicans (2). Understanding the racial/ethnic differences in asthma drug response is important for providing targeted medications for effective asthma treatment and control.

We conducted the largest pharmacogenetic study to date using whole genome sequencing data from 1,441 minority children (Puerto Rican, African American and Mexican) with asthma who had extremely high or low albuterol bronchodilator drug response (BDR) (3). We identified population-specific and shared genetic variants associated with BDR. Many of these variants are located near genes previously associated with lung capacity, immunity and signaling pathways related to albuterol response.

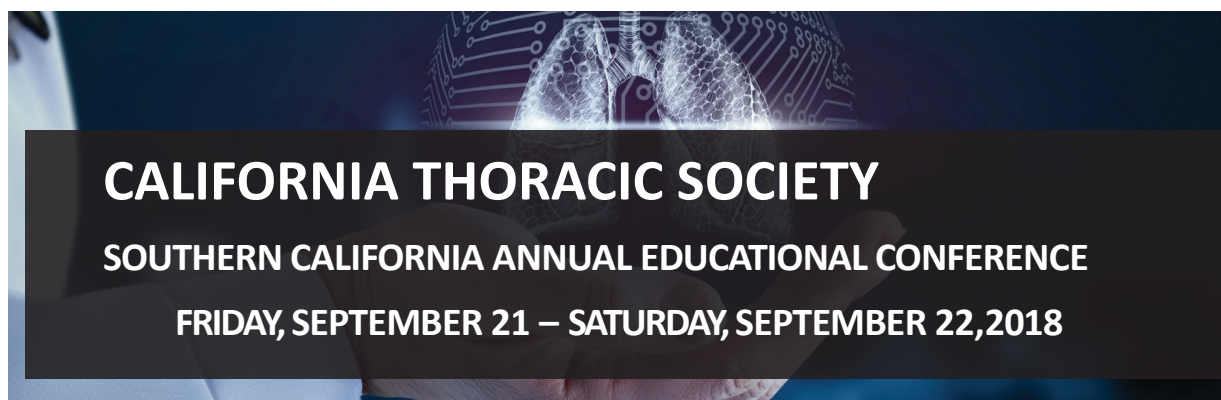
Among the top genetic variants associated with BDR, we demonstrated that variants in the *NFKB1* gene may have potential regulatory function on *SLC39A8*, which is involved in cytokine treatment in airway epithelial cells, allergic airway inflammation and protection against cytotoxicity. The low-BDR associated *NFKB1* allele is more commonly found in populations of African descent and may explain why Puerto Ricans and African Americans, who have higher proportions of African ancestry, have lower drug response. Further functional research is necessary to find out how the *NFKB1* variants contribute to albuterol drug response.

Despite a collaboration of 8 universities and 13 individual laboratories, one of our biggest challenges was the lack of minority data to replicate our results. This highlights the urgent need for a dedicated national effort to prioritize diversity in research. NIH is gradually making progress to increase data diversity. For example, the National Heart, Lung and Blood Institute is leading whole genome

sequencing efforts like the Trans-Omics for Precision Medicine (TOPMed) program, which includes 50% minority participants.

This study will advance our understanding of genetic analysis in racially and ethnically diverse populations. Our findings provide clues for asthma drug research and lay the foundation for providing precision medicine to understudied and racially and ethnically diverse populations.

1. World Health Organization. Asthma. 2017. [online] Available at: <http://www.who.int/mediacentre/factsheets/fs307/en/> [Accessed 9/12 2017].
2. Barr RG, Aviles-Santa L, Davis SM, Aldrich TK, Gonzalez F, 2nd, Henderson AG, Kaplan RC, LaVange L, Liu K, Loredó JS, Mendes ES, Ni A, Ries A, Salathe M, Smith LJ. Pulmonary Disease and Age at Immigration among Hispanics. Results from the Hispanic Community Health Study/Study of Latinos. *Am J Respir Crit Care Med* 2016;193:386-395.
3. Mak AC, White MJ, Eckalbar WL, Szpiech ZA, Oh SS, Pino-Yanes M, Hu D, Goddard P, Huntsman S, Galanter J, Wu AC, Himes BE, Germer S, Vogel JM, Bunting KL, Eng C, Salazar S, Keys KL, Liberto J, Nuckton TJ, Nguyen TA, Torgerson DG, Kwok PY, Levin AM, Celedon JC, Forno E, Hakonarson H, Sleiman PM, Dahlin A, Tantisira KG, Weiss ST, Serebrisky D, Brigino-Buenaventura E, Farber HJ, Meade K, Lenoir MA, Avila PC, Sen S, Thyne SM, Rodriguez-Cintron W, Winkler CA, Moreno-Estrada A, Sandoval K, Rodriguez-Santana JR, Kumar R, Williams LK, Ahituv N, Ziv E, Seibold MA, Darnell RB, Zaitlen N, Hernandez RD, Burchard EG, NHLBI Trans-Omics for Precision Medicine (TOPMed) Consortium. Whole Genome Sequencing of Pharmacogenetic Drug Response in Racially Diverse Children with Asthma. *Am J Respir Crit Care Med* 2018. In press.



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To review the brochure click on the following link:

<https://calthoracic.org/wp-content/uploads/2018/06/CTS-FALL-2018-BROCHURE.pdf>

Southwestern Journal of Pulmonary and Critical Care Medicine

Volume 17, Issue 1							
Title (Click on title to open the manuscript, CME in bold)	Journal Section	First Author	Year	Vol	Issue	Pages	Date Posted
Keep Your Politics Out of My Practice	Editorial	Robbins RA	2018	17	1	42-4	7/27/18
July 2018 Arizona Thoracic Society Notes	Proceedings	Robbins RA	2018	17	1	41	7/26/18
Medical Image of the Week: Plastic Bronchitis in an Adult Lung Transplant Patient	Imaging	Savajiyani S	2018	17	1	39-40	7/25/18
Ultrasound for Critical Care Physicians: Caught in the Act	Critical Care	Ogbonnah U	2018	17	1	36-8	7/20/18
Medical Image of the Week: Medical Administrative Growth	Imaging	Robbins RA	2018	17	1	35	7/18/18
The Highest Paid Clerk	Editorial	Robbins RA	2018	17	1	32-4	7/15/18
Medical Image of the Week: Malposition of Central Venous Catheter	Imaging	Muhailan M	2018	17	1	30-1	7/11/18
Medical Image of the Week: Fournier's Gangrene with a Twist	Imaging	Akella P	2018	17	1	28-9	7/4/18
July 2018 Imaging Case of the Month	Imaging	Gotway MB	2018	17	1	15-27	7/3/18
July 2018 Critical Care Case of the Month	Critical Care	Fountain S	2018	17	1	7-14	7/2/18
July 2018 Pulmonary Case of the Month	Pulmonary	Brighton AM	2018	17	1	1-6	7/1/18

California Thoracic Society

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