

# ATS 2021 Highlights

## Respiratory Structure and Function Early Career Professionals

### *Get to know members of the RSF Assembly*



### **Rachel L Eddy, BEng, PhD**

*Postdoctoral Fellow, Centre for Heart Lung Innovation  
University of British Columbia, Vancouver BC, Canada*

 @RachelEddy20

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#### *Is your research clinical, basic science or translational?*

Translational and clinical

#### *Tell us about your research?*

My research is focused on the development and application of medical imaging tools to better understand lung disease. Most recently, my focus has been developing machine and deep learning approaches to generate imaging phenotypes and to link imaging with 'omics' measurements in patients with airways disease.

#### *Where do you see yourself in 5 years?*

I aim to lead a multi-disciplinary and translational pulmonary imaging research program, where innovative engineering bridges clinical research and continues to foster the next generation of researchers.

#### *What do you find is the major benefit of RSF Assembly*

#### *Membership?*

The RSF Assembly uniquely elevates trainees and early career researchers in a collaborative space, making it possible to get to know world experts in respiratory research and develop international collaborations.



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University of British Columbia, Vancouver BC, Canada

### Structure-function Imaging Phenotypes of Asthma Using CT and <sup>129</sup>Xe MRI

**Objective:** Imaging phenotypes of asthma have previously been evaluated using computed tomography (CT) measurements of airway structure and air trapping. Hyperpolarized <sup>129</sup>Xe magnetic resonance imaging (MRI) provides measurements of lung function. We aimed to evaluate CT and MRI measurements in cluster analyses to generate structure-function imaging phenotypes of asthma

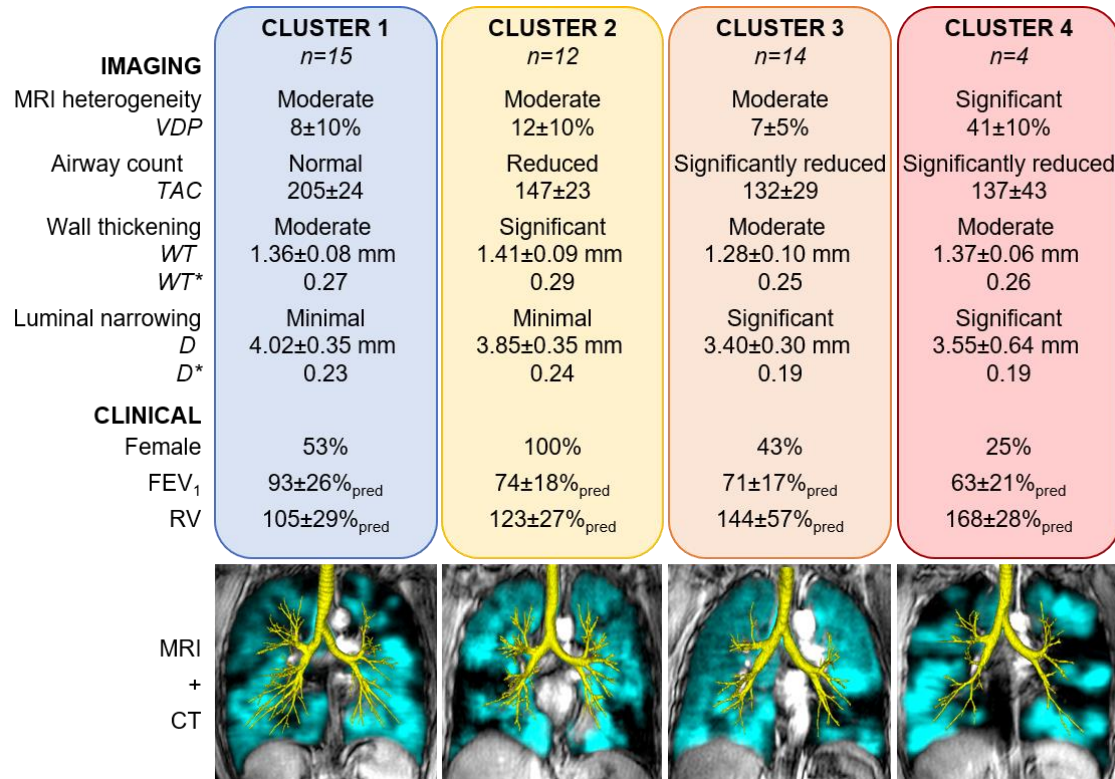
**Methods:** We evaluated CT airway and MRI ventilation heterogeneity measurements in 45 participants with asthma using k-means cluster analysis. Imaging and clinical measurements were compared across clusters.

**Results:** Four imaging-based clusters with distinct lung structural and functional characteristics are summarized in the Figure. Participant sex and lung function (measured using pulmonary function tests) were different across the clusters.

**Conclusion:** Imaging phenotypes of asthma were related to clinical measurements and may provide new opportunities for treatment decisions and personalized medicine.

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Supervised by Dr. Grace Parraga (UWO), Drs. Don Sin and Jonathon Leipsic (UBC)



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