

# NHLBI-supported ESP

## LungGO Project Group

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**LHS (COPD)**

Exomes: 375

Exome chip: 2,848

Status: awaiting  
validation sequencing,  
exome chip

**ALI**

Exomes: 100

Status: 2  
manuscripts in  
progress

**COPDGene**

Exomes: 275

Exome chip: 2,623

Status: awaiting  
exome chip

**LUNG GO**

**ASTHMA (SARP)**

Exomes: 200

Exome chip: 2,100

Status: data  
analysis

**CF (EPIC/UNC)**

Exomes: 450

Exome chip: 4,810

Status: 1<sup>st</sup> manuscript  
submitted

**SSc-PAH**

Exomes: 100

Status: data  
analysis on SSc  
vs. ESP5500

## LungGO Manuscript Proposals

“Exome sequencing of extreme phenotypes identifies variants in *DCTN4* associated with age of onset of chronic *Pseudomonas aeruginosa* infection in cystic fibrosis” Emond et al. (submitted *Nat Gen*)

“Optimal unified approach for rare variant association testing with application to small sample case-control whole-exome sequencing studies” Lin et al. (P&P approval for submission to *AJHG* 3/26/12)

“Exome sequencing analysis in acute lung injury: A case-control analysis for rare risk variants in acute lung injury” O’Mahony et al. (manuscript proposal approved 3/26/12)

“Novel genetic variants associated with rate of decline of lung function in COPD are identified by whole exome sequencing in the NHLBI Exome Sequencing Project” Mathias et al. (manuscript proposal approved 2011)

“The Personal Genome”: Analysis of Known Clinically Relevant Results and Unique and Novel Variants in Human Protein Coding Genes” Tabor et al. (manuscript proposal approved 2011)

“Exome Sequencing in Severe COPD Cases and Resistant Smoking Controls in *COPDGene*” Cho et al (manuscript proposal approved 2011)”

“Whole exome sequencing analysis in systemic scleroderma” Gao et al. (manuscript proposal approval pending)

# Future Directions

- Data analysis exome chip data (CF, LHS, COPDGene, SARP)
- Formalize lung function WG (includes HeartGO, WHISP)
- Asthma manuscript proposal (pending exome chip data)
- Targeted resequencing (4 genes) in LHS (N=1,612)



# Available Lung Project Replication Samples

COHORT	# exomes	# additional samples available for replication	% with GWAS data	% African American
Asthma (SARP)	200	3,400 (moderate-severe)** 1,600 (mild-moderate)	100%	25%
COPD (LHS)	375	4,287	100%	0%
COPD (COPDGene)	275	7,600	100%	33%
PAH (NHLBI SCCOR)	100	900	0%	33%
ALI-1 (iSPAAR)	100	2,400	100%	0%
CF (EPIC/UNC)	450	PFTs: 4,500 PA: 3,276	81%	<2%
	<b>1,500</b>	<b>27,963**</b>	<b>~25,500</b>	<b>~4,000</b>

\*\* ~11,000 additional samples for asthma (African ancestry, 12% GWAS)