

Microbial, inflammatory and clinical determinants of Acute Exacerbations of Chronic obstructive pulmonary disease



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Alda Marques

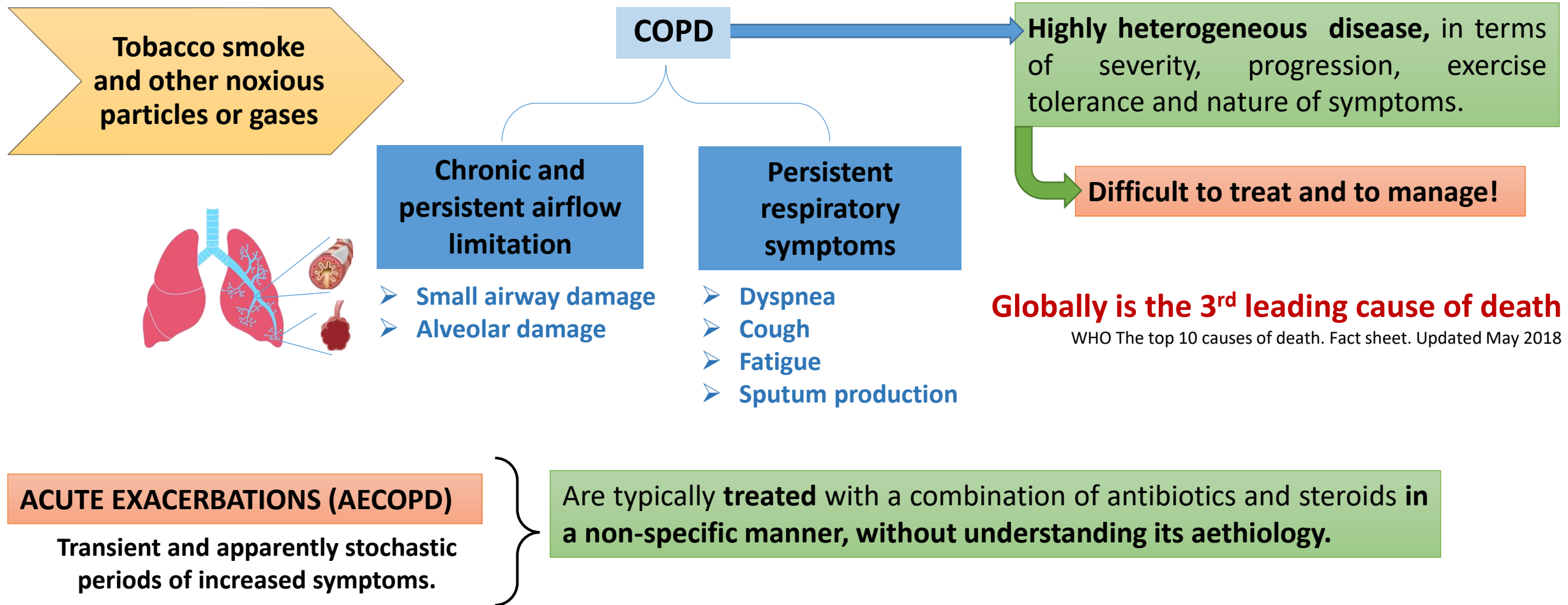


Ana Sousa



Laboratório de Investigação
e Reabilitação Respiratória

Background:

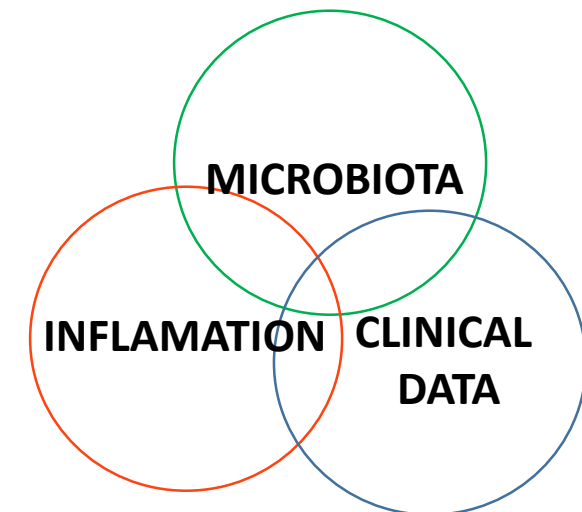


Research challenges:

What is the role of lung microbiota in the onset of AECOPD?

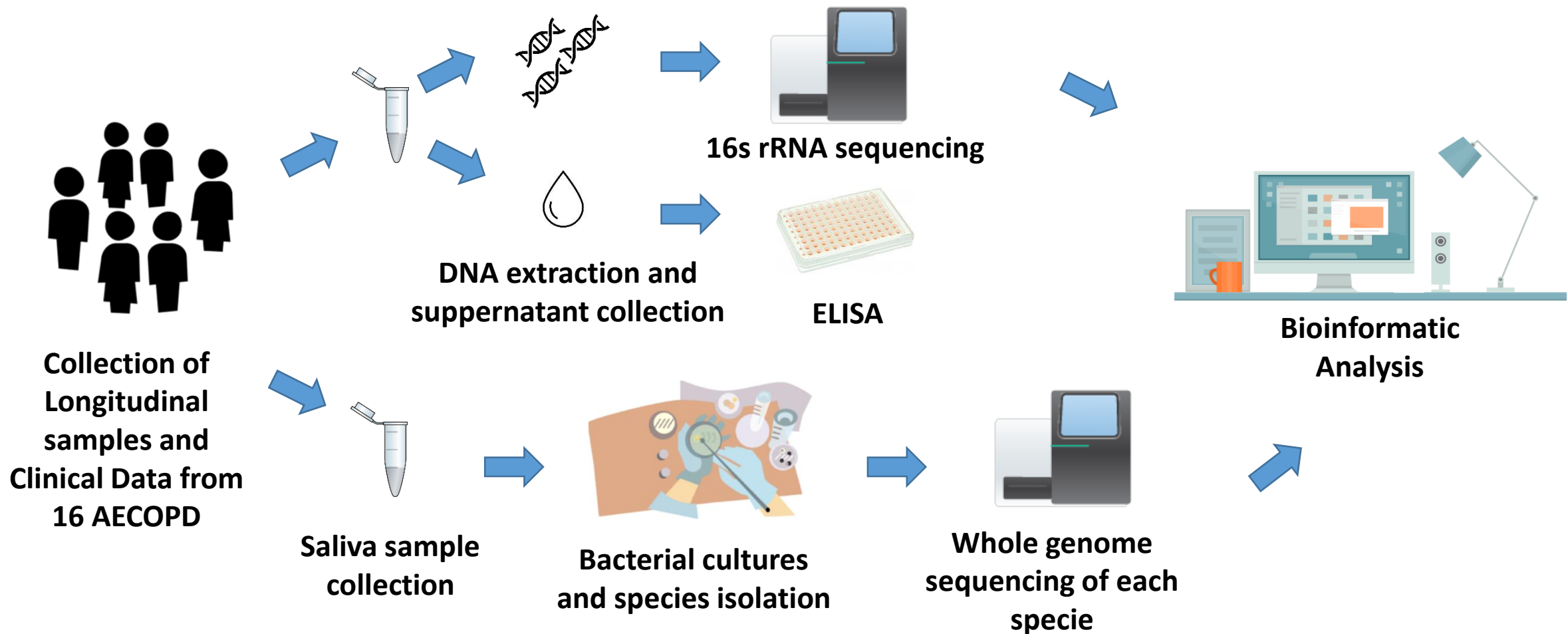
Is the pathoadaptation of the resident microbiota an essential trigger of AECOPD?

What is the advantage of combining multi-type data (microbial, inflammatory and clinical) to predict AECOPD?



Hypothesis: DYSBIOSIS of the commensal airway/lung microbiota PRECEDES THE ONSET OF AECOPD

Research method and techniques:

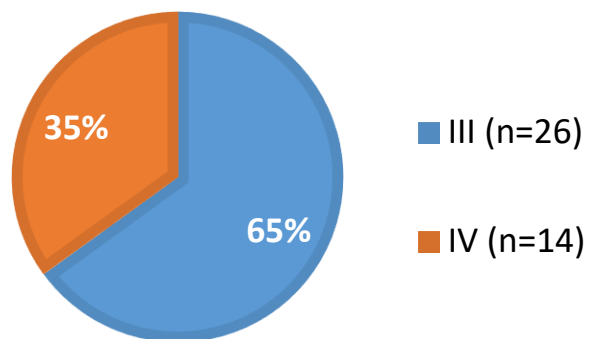




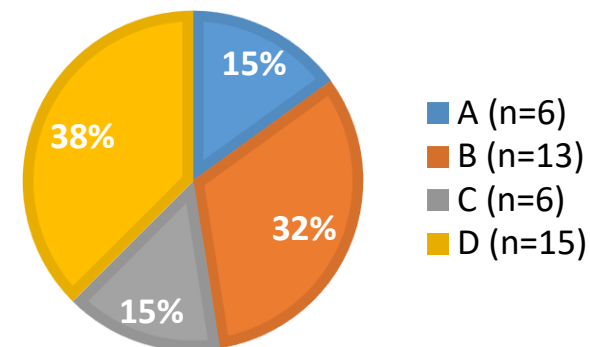
Results:

OUR SAMPLE (n=40)

GOLD OBSTRUCTION



GOLD CLASSIFICATION



GOLD Obstruction

(Airflow limitation)



I-Mild
FEV₁ ≥ 80%



II-Moderate
50% ≤ FEV₁ < 79%



III-Severe
30% ≤ FEV₁ < 49%



IV-Very severe
FEV₁ < 30%

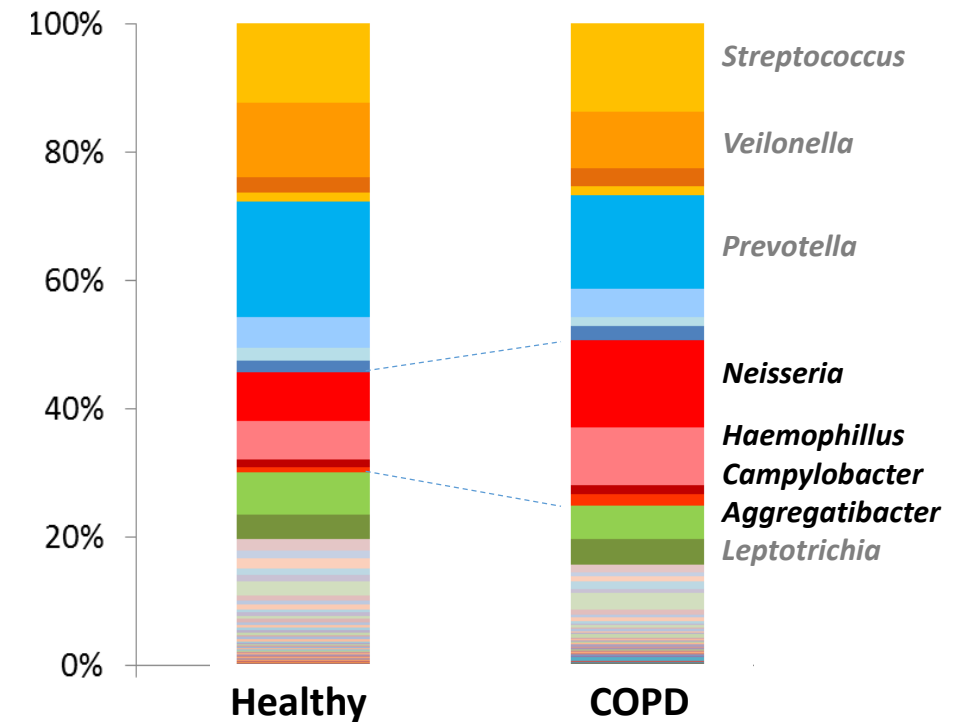
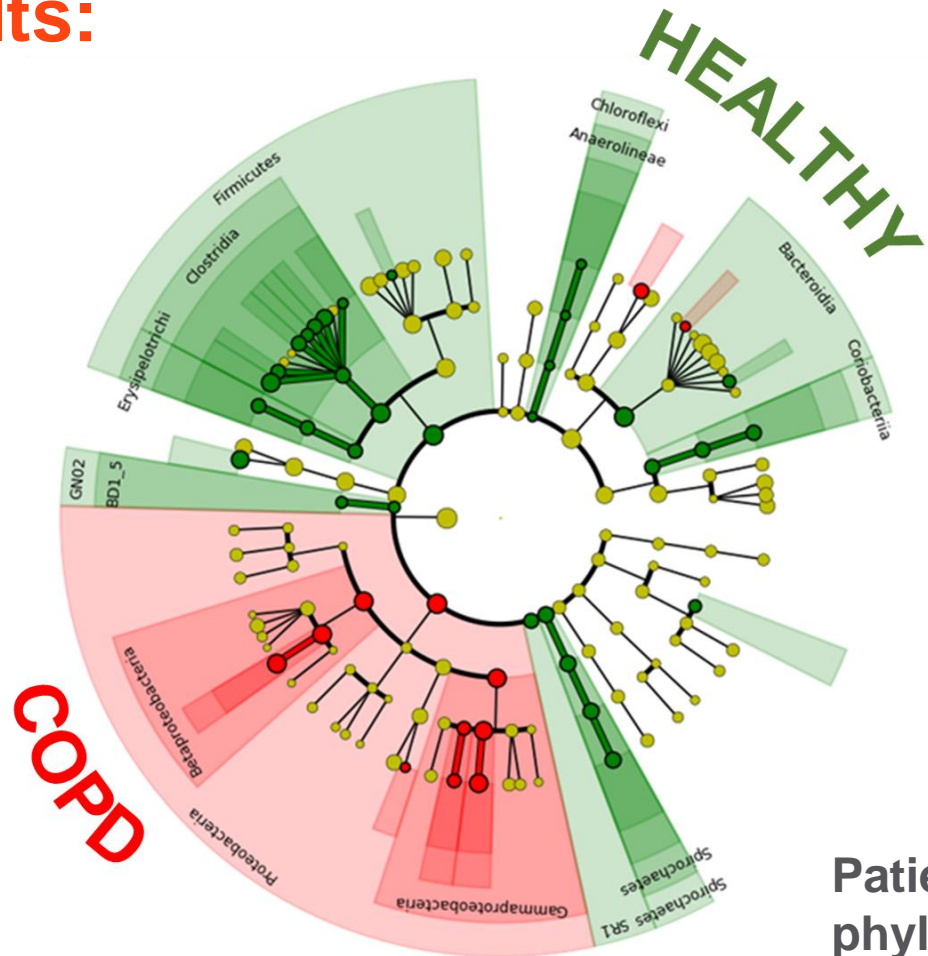
GOLD Classification

(Exacerbation history/symptoms)

≥2 or ≥1 leading to hospital admission	C	D
0-1 not leading to hospital admission	A	B
	mMRC 0-1 CAT < 10	mMRC ≥ 2 CAT ≥ 10

Results:

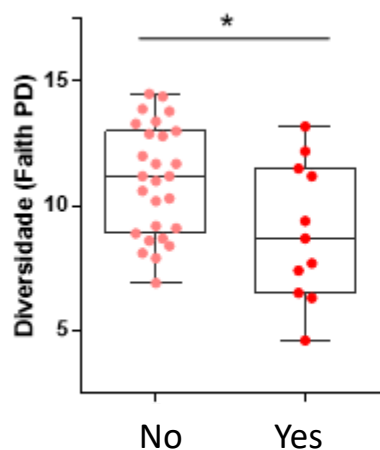
Microbiota diversity and composition is different among patients and healthy controls



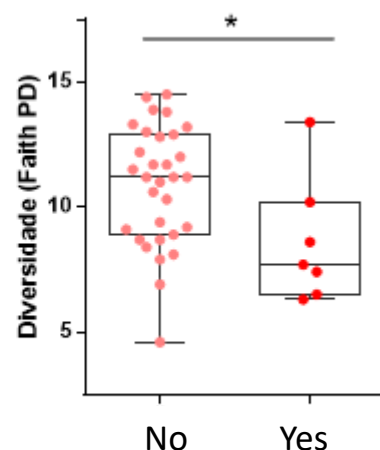
Patients with COPD have an enrichment of *Proteobacteria* phylum, specifically of *Neisseria*, *Haemophilus*, *Campylobacter* and *Aggregatibacter* genera.

Results:

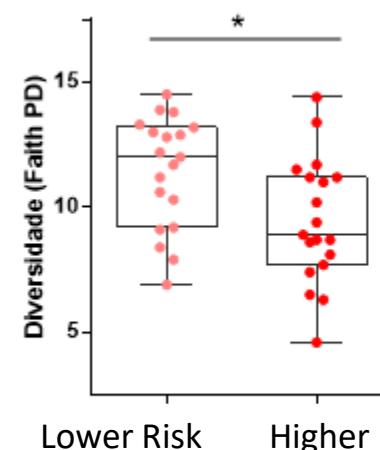
It was also possible to stratify patients according to several clinical parameters:



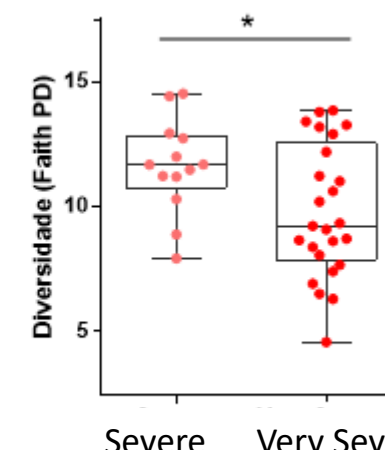
Long term oxygen therapy (>16h)



Hospital admission due to exacerbation



Number of exacerbations



FEV1pp

**Severe COPD
MICROBIOME**

≠

**Very severe
COPD
MICROBIOME**

Patients with poorer respiratory health have less diverse airway microbiotas!

Current impact:



Sara Dias, Filipa Machado, Carla Valente, Lilia Andrade, Alda Marques, Ana Sousa 2018, “**Airway microbiota diversity and composition correlates with severity of Chronic Obstructive Pulmonary Disease (COPD)**” (submitted Abstract for Mechanisms of Acute Exacerbation of Respiratory Disease, *17th Lung Science Conference Science Lung Conference 2018*)



Ana Sousa, Sara Dias, Filipa Machado, Carla Valente, Lilia Andrade and Alda Marques 2018, “**Airway Microbiota diversity and composition correlates with the severity of Chronic Obstructive Pulmonary Disease**” (Oral Communication in *XXXIV Congresso Nacional de Pneumologia 2018*)



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