Supplementary Materials and Results

Table S1: Inclusion and exclusion criteria for COPD patients in this study

Stable state	
Inclusion criteria	**Exclusion criteria**
HIV patients on antiviral therapy (ART)	Active tuberculosis infection (receiving treatment)
Over 40 years of age	Receiving immunosuppressants
Able to provide informed consent	Cancer
	Lung surgery within the last six months
	Unable to answer questionnaire (CDQ)
	Antibiotics within last month
Exacerbated state	
Inclusion criteria	**Exclusion criteria**
HIV patients on antiviral therapy (ART)	Active tuberculosis infection (receiving treatment)
Over 40 years of age	Receiving immunosuppressants
Able to provide informed consent	Cancer
Increased/worsening of respiratory symptoms 48 h prior to visit	Lung surgery within the last six months
	Unable to answer questionnaire (CDQ)
	Unable to give informed consent
	Antibiotics therapy 24 h prior to admission
	Antibiotic therapy administered for more than 12 h after admission

FEV1% - The ratio of FEV_1 (forced expiratory volume in 1 second, the amount of air that can be blown out after a second) to FVC (forced vital capacity, the amount of air that can be blown out after a full inspiration)

Table S2: Clinical characteristic of patients

Patient	Disease State	Year	HIV status	Hospital	Smoking status	Weather affect cough	phlegm without a cold	phlegm in morning	wheezing	allergies	Previous TB diagnosis	flu vaccine this year	worked in mine
S1	Stable	2017	Negative	1	Yes	Yes	Yes	Yes	Often	Yes	No	No	No
S2	Stable	2017	Negative	1	Yes		Yes	Yes	Often	Yes	No	Yes	No
S3	Stable	2017	Negative	1	Yes	Yes	Yes	Yes	Never	No	No	Yes	Yes
S4	Stable	2018	Negative	1	Stopped	Yes	Yes	No	Often	Yes	No	No	No
S7	Exacerbation	2018	Negative	1	Yes	Yes	Yes	Yes	Often	No	No	Yes	No
S8	Stable	2018	Negative	1	Yes	Yes	Yes	Yes	Sometimes	No	Yes	No	Yes
S9	Stable	2018	Negative	1	No	Yes	No	Yes	Often	Yes	No	No	Yes
S10	Stable	2018	Negative	1	Yes	No	Yes	Yes	Often	No	No	No	No
S11	Exacerbation	2018	Negative	1	No	Maybe	No	No	Sometimes	No	No	No	No
S13	Exacerbation	2018	Negative	1	Stopped	Maybe	Yes	No	Never	No	No	No	No
S14	Exacerbation	2018	Negative	2	Yes	Yes	Yes	Maybe	Often	No	No	No	No
S15	Stable	2018	Negative	1	Stopped	Yes	Maybe	Maybe	Sometimes	No	No	No	No
S16	Stable	2018	Negative	1	No	Yes	No	No	Often	No	No	Yes	No
S17	Stable	2018	Negative	1	Stopped	Yes	Maybe	Maybe	Sometimes	No	No	No	No
S18	Stable	2018	Negative	1	Stopped	Yes	Yes	Yes	Often	No	No	No	No
S20	Stable	2018	Positive	3	Stopped	No	Yes	No	Sometimes	No	Yes	No	No
S22	Stable	2018	Negative	1	Stopped	Yes	Maybe	Yes	Often	No	No	No	No
S23	Stable	2018	Negative	3	Yes	No	Yes	Yes	Never	No	No	No	No
S24	Exacerbation	2018	Negative	3	Stopped	Yes	Yes	Yes	Often	No	Yes	No	No
S26	Stable	2018	Negative	3	Stopped	Yes	Ys	Yes	Often	Yes	No	No	No
S27	Stable	2018	Negative	3	No	Yes	Yes	Yes	Never	No	No	No	Yes
S28	Stable	2018	Negative	3	Yes	Yes	Yes	Yes	Often	No	No	No	No
S29	Stable	2019	Negative	3	Stopped	No	Yes	Yes	Sometimes	No	No	Yes	No

Table S3: Comparison of the number of amplicons and operational taxonomic units for each sample for the targeted metagenomics and IS-Pro methods

Sample	No of Amplicons: IS-Pro	No of OTUs: IS-Pro	No of Amplicons: Targeted metagenomics	No of OTUs: Targeted metagenomics
S1	100	10	8393	54
S2	101	12	16444	49
S3	101	16	17495	145
S4	100	15	38629	111
S7	102	13	8942	110
S8	100	16	18765	130
S9	101	17	17792	110
S10	101	10	14750	67
S11	99	12	27401	211
S13	99	16	29292	116
S14	101	11	25916	78
S15	101	12	21349	142
S16	100	15	21119	179
S17	102	19	22457	176
S18	100	13	21278	218
S20	99	10	33363	110
S22	99	16	21627	175
S23	102	15	24893	179
S24	100	15	13987	96
S26	102	17	10701	145
S27	102	19	11104	149
S28	101	13	2187	63
S29	98	18	2059	87
Mean	100,48	14,35	18693,17	126,09
Median	101	15	18765	116
Min	98	10	2059	49
Q1	100	12	12545,5	91,5
Q2	101	15	18765	116
Q3	101	16	23675	162
Max	102	19	38629	218
IQR	1	4	11129,5	70,5

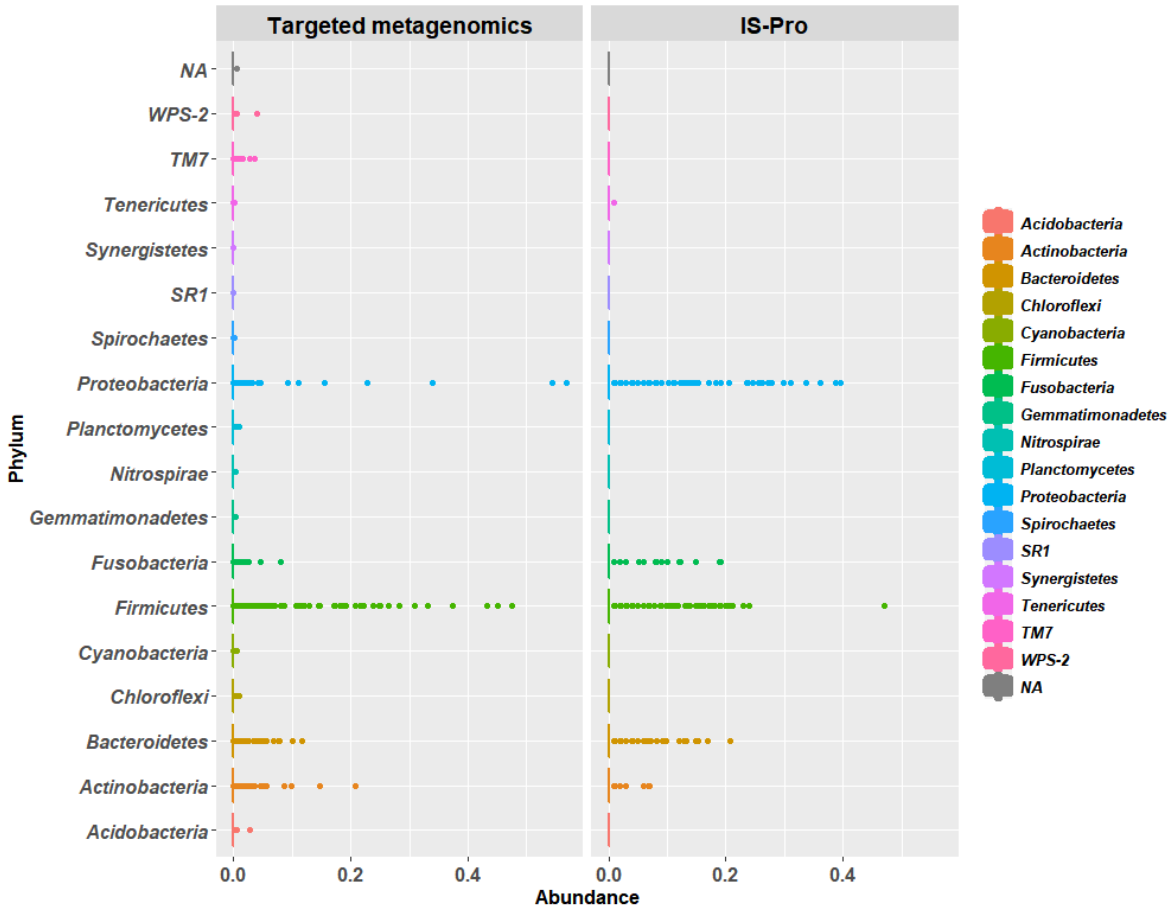

Figure S1: Relative abundance of specific phyla in the sputum microbiome of COPD participants as detected by targeted metagenomics and IS-Pro methods (n=23). The dots represent the different abundances of each sample, according to the different phyla. Phyla that are depicted with a single line on the y-axis were not present in any samples for that method.

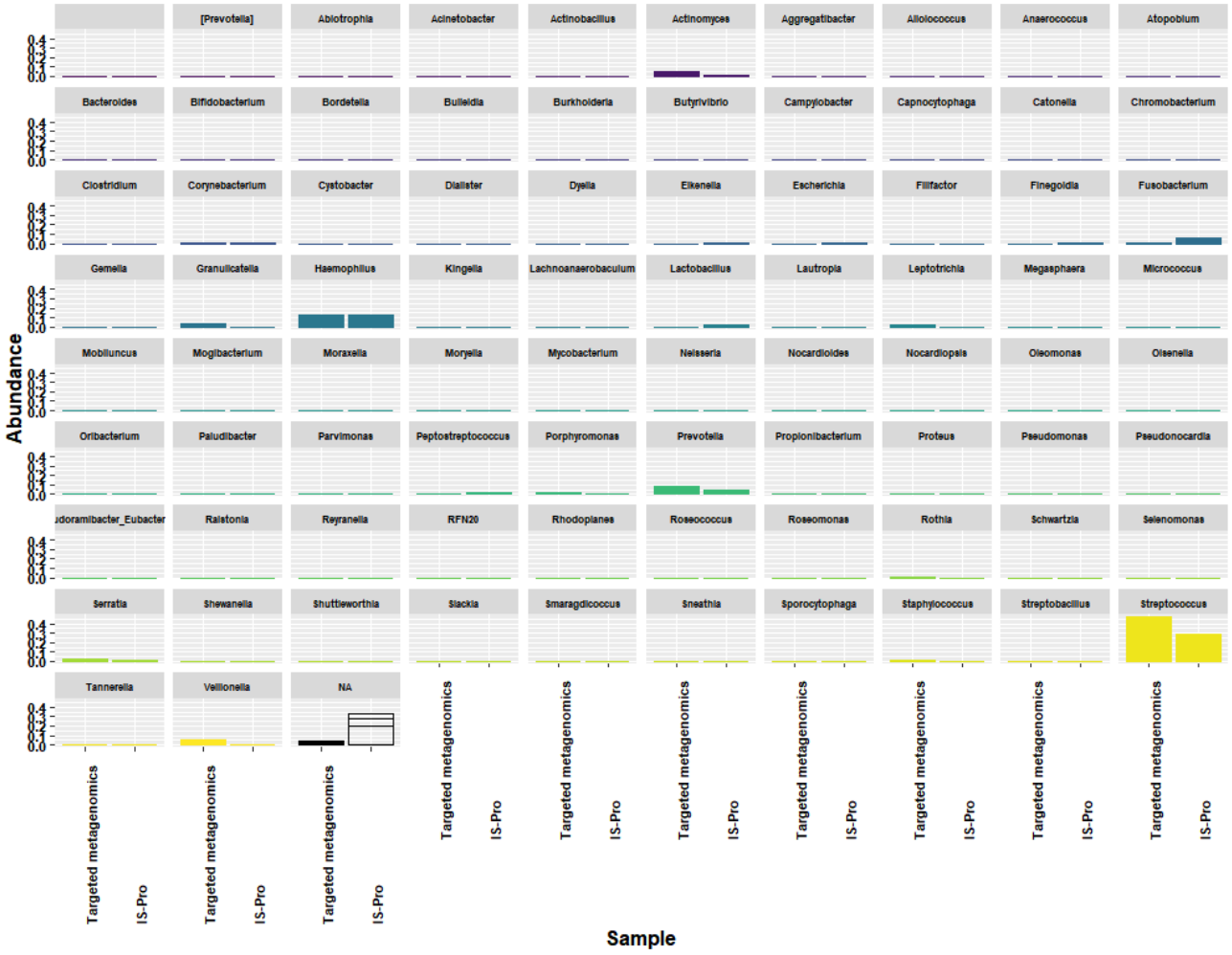

Figure S2: Bar plots showing the relative abundance of genera in the sputum microbiome of COPD participants as characterised by targeted metagenomics and IS-Pro methods (n=23). The operational taxonomic units that could not be classified at a genus level are indicated as NA on the graph.

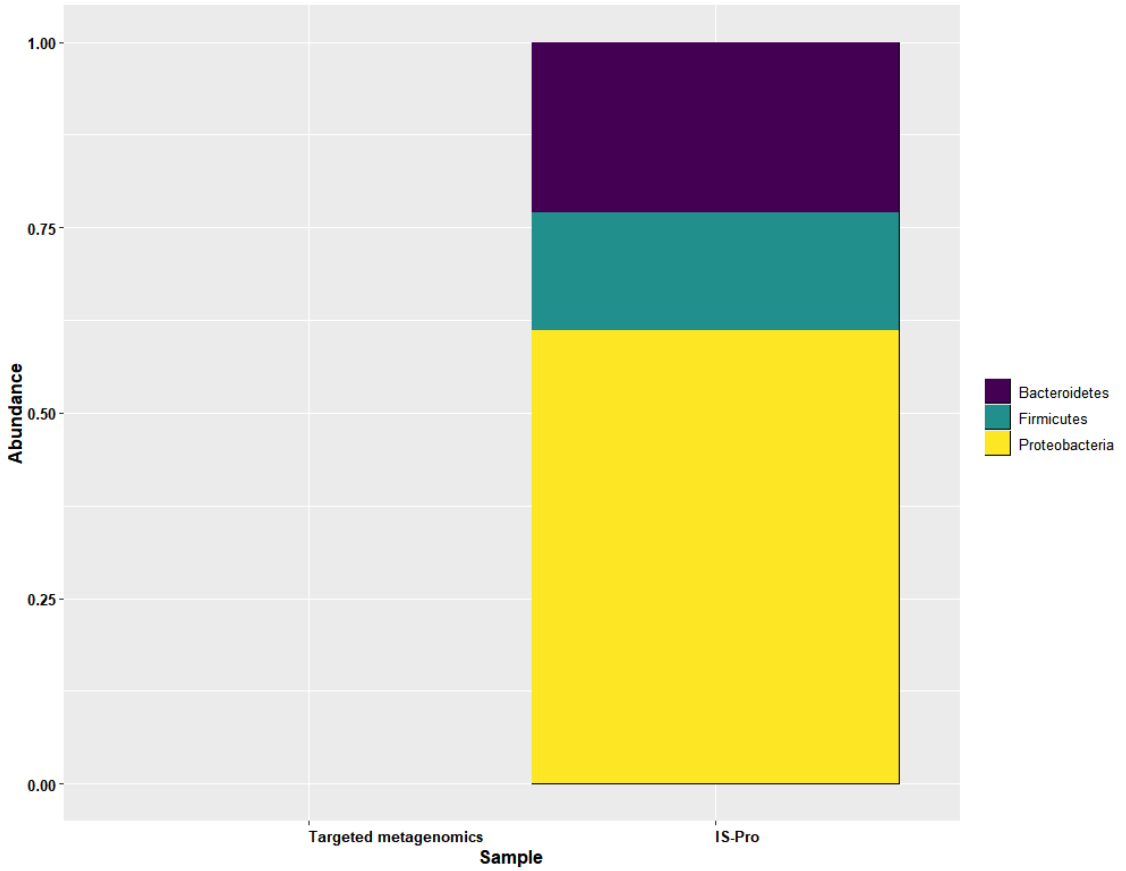

Figure S3: The distribution of the unclassified operational taxonomic units (OTUs) at a class level of the sputum microbiome of COPD participants for targeted metagenomics and IS-Pro methods by phyla. At a class level, all the OTUs from targeted metagenomics could be classified.