

A **Filtered RA. median AUROC sig. ASVs**

0.7	0.76	0.63	0.64	0.6	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.56	0.62	Soil – Fires
0.62	0.7	0.62	0.62	0.6	0.61	0.6	0.6	0.61	0.61	0.62	0.62	0.59	0.61	Freshwater – Arctic
0.68	0.76	0.65	0.65	0.62	0.64	0.62	0.63	0.63	0.65	0.64	0.65	0.64	0.65	Soil – Arctic
		0.65	0.61	0.58	0.66	0.59		0.76	0.79	0.72				Human – RA
		0.52		0.53	0.58									Human – ASD
	0.76		0.59	0.6	0.65	0.72	0.64							Human – CD (1)
	0.76	0.74	0.74	0.64	0.65	0.7	0.68	0.72	0.73	0.7			0.73	Soil – Blueberry
0.7	0.69	0.61	0.64	0.63	0.61	0.67	0.58	0.6	0.61	0.59	0.61	0.58	0.61	Human – C. diff (1)
	0.84	0.64	0.69	0.59	0.65		0.6			0.68				Human – C. diff (2)
0.83	0.95	0.7	0.72	0.7	0.7	0.75	0.67	0.7	0.73	0.7	0.7	0.72	0.71	Mouse Facilities
	0.62	0.54	0.58	0.53	0.56	0.56	0.59	0.6	0.6	0.6		0.63	0.61	Human – CC (1)
	0.67	0.59	0.62	0.57	0.59	0.57	0.61	0.7		0.65		0.74	0.66	Human – CC (2)
0.73	0.77	0.67	0.68	0.63	0.64	0.67	0.58	0.66	0.66	0.69	0.76	0.57	0.65	Human – Inf.
	0.72			0.59	0.63				0.72					Mouse – Exercised
0.94	0.96	0.91	0.91	0.68	0.73	0.87	0.61	0.82	0.83	0.75		0.99	0.88	Marine – Plastic (4)
0.62	0.71	0.59	0.6	0.59	0.59	0.58	0.59	0.59	0.59	0.59	0.59	0.56	0.59	WWSR – Continents
0.61	0.66	0.57	0.58	0.56	0.57	0.57	0.54	0.57	0.57	0.57	0.57	0.56	0.57	WWSR – Temp.
		0.68		0.62	0.7									Human – HIV (1)
	1	0.62	0.83	0.62	0.79	0.83	0.89	0.98	1			0.88		Human – HIV (2)
	0.68	0.56	0.59	0.57	0.59	0.65	0.53	0.64	0.68			0.61		Human – HIV (3)
	0.74	0.68	0.72	0.66	0.65	0.68	0.59	0.69	0.67	0.72	0.55		0.7	Human – CD (2)
		0.8		0.77	0.79		0.71	0.9	0.9	0.9				Human – IBD
0.81	0.95	0.78	0.76	0.7	0.73	0.73	0.73	0.74	0.74	0.74	0.79	0.68	0.74	Freshwater – Treat.
0.88	0.88	0.67	0.68	0.62	0.68	0.63	0.69	0.88		0.73		0.88		Human – ALL
0.61	0.59	0.55	0.56	0.54	0.54	0.54	0.55	0.56	0.58	0.56	0.56	0.58	0.58	Human – OB (1)
				0.59	0.62		0.62							Human – OB (2)
	0.79	0.67	0.69	0.63	0.66	0.69	0.58					0.66		Human – OB (3)
0.87	0.83	0.73	0.78	0.68	0.7	0.83	0.57	0.74	0.81			0.62	0.82	Human – OB (4)
0.57	0.57	0.53	0.54	0.52	0.54	0.54	0.54	0.55	0.54	0.55	0.55	0.56	0.55	Built – Office
		0.65		0.61	0.68									Human – Par.
0.91	0.85	0.7	0.76	0.68	0.72	0.83	0.65	0.8	0.82	0.74		0.63		Marine – Plastic (2)
0.88	0.96	0.82	0.81	0.74	0.81	0.65	0.77	0.81	0.86	0.74	0.88	0.75	0.85	Marine – Plastic (5)
0.8	0.8	0.67	0.69	0.63	0.67	0.67	0.56	0.68	0.77	0.6	0.77	0.57	0.76	River – Plastic
0.89	0.89	0.76	0.7	0.66	0.85	0.79	0.83	0.87	0.96	0.83	0.85	0.59	0.95	Marine – Plastic (1)
0.81	0.91	0.73	0.78	0.74	0.76	0.74	0.75	0.75	0.76	0.75	0.81	0.75	0.77	Marine – Sediment
		0.88			0.82									Human – T1D (1)
0.92	0.92	0.79	0.85	0.74	0.79	0.76	0.85	0.84	0.83	0.84	0.92		0.84	Human – T1D (2)
0.79	0.89	0.73	0.74	0.64	0.69	0.74	0.72	0.71	0.76	0.74	0.81	0.53	0.78	Marine – Plastic (3)
ALDEx2	ANCOM-II	comcob	DESeq2	edgeR	LEfSe	limma voom (TMM)	limma voom (TMMwsp)	MaAsLin2	MaAsLin2 (rare)	metagenomeSeq	t-test (rare)	Wilcoxon (CLR)	Wilcoxon (rare)	

B **Filtered CLR median AUROC sig. ASVs**

0.74	0.78	0.63	0.6	0.62	0.61	0.61	0.71	0.61	0.61	0.7	0.6	0.69	0.61	Soil – Fires
0.64	0.74	0.63	0.62	0.61	0.61	0.59	0.62	0.61	0.62	0.65	0.64	0.62	0.61	Freshwater – Arctic
0.69	0.76	0.66	0.66	0.64	0.65	0.64	0.64	0.65	0.66	0.65	0.66	0.65	0.66	Soil – Arctic
		0.63	0.6	0.6	0.66	0.58		0.75	0.81	0.7				Human – RA
		0.57		0.55	0.55									Human – ASD
	0.77		0.66	0.63	0.68	0.73	0.68							Human – CD (1)
	0.75	0.75	0.75	0.64	0.65	0.71	0.69	0.73	0.73	0.72			0.74	Soil – Blueberry
0.77	0.85	0.76	0.67	0.72	0.74	0.72	0.77	0.75	0.74	0.8	0.75	0.78	0.74	Human – C. diff (1)
	0.8	0.61	0.65	0.61	0.62		0.63			0.65				Human – C. diff (2)
0.84	0.96	0.72	0.74	0.71	0.73	0.78	0.7	0.72	0.75	0.72	0.72	0.74	0.74	Mouse Facilities
	0.62	0.54	0.59	0.53	0.56	0.57	0.6	0.62	0.61	0.62		0.66	0.62	Human – CC (1)
	0.68	0.6	0.64	0.59	0.6	0.57	0.63	0.69		0.67		0.76	0.69	Human – CC (2)
0.75	0.82	0.65	0.64	0.66	0.64	0.68	0.76	0.63	0.63	0.72	0.75	0.71	0.63	Human – Inf.
	0.71			0.6	0.64				0.71					Mouse – Exercised
0.93	0.95	0.88	0.88	0.66	0.66	0.88	0.78	0.76	0.79	0.68		0.99	0.81	Marine – Plastic (4)
0.68	0.72	0.65	0.66	0.65	0.65	0.66	0.64	0.66	0.66	0.66	0.66	0.65	0.66	WWSR – Continents
0.63	0.67	0.57	0.57	0.57	0.58	0.55	0.58	0.58	0.58	0.59	0.56	0.6	0.59	WWSR – Temp.
		0.79		0.61	0.8									Human – HIV (1)
	0.97	0.89	0.79	0.79	0.87	0.79	0.87	0.97	0.97		0.86			Human – HIV (2)
	0.67	0.6	0.64	0.59	0.57	0.69	0.62	0.59	0.61		0.64		0.62	Human – HIV (3)
	0.73	0.65	0.75	0.63	0.59	0.6	0.72	0.64	0.62	0.68	0.66		0.64	Human – CD (2)
		0.83		0.72	0.75		0.78	0.88	0.88	0.85				Human – IBD
0.86	0.95	0.86	0.74	0.73	0.71	0.72	0.79	0.74	0.74	0.73	0.8	0.84	0.73	Freshwater – Treat.
0.92	0.92	0.73	0.71	0.62	0.73	0.57	0.74	0.92		0.76		0.92		Human – ALL
0.61	0.59	0.55	0.56	0.54	0.54	0.54	0.56	0.57	0.59	0.58	0.56	0.6	0.59	Human – OB (1)
				0.61	0.62		0.61							Human – OB (2)
	0.77	0.7	0.76	0.62	0.6	0.82	0.73					0.83		Human – OB (3)
0.85	0.85	0.69	0.8	0.7	0.65	0.88	0.74	0.67	0.77			0.8	0.79	Human – OB (4)
0.58	0.59	0.54	0.55	0.53	0.55	0.55	0.55	0.55	0.55	0.56	0.56	0.56	0.56	Built – Office
		0.64		0.56	0.68									Human – Par.
0.95	0.91	0.77	0.84	0.7	0.67	0.95	0.85	0.71	0.72	0.71		0.84		Marine – Plastic (2)
0.9	0.96	0.83	0.87	0.81	0.83	0.78	0.83	0.83	0.85	0.82	0.9	0.82	0.85	Marine – Plastic (5)
0.77	0.82	0.65	0.62	0.67	0.63	0.64	0.78	0.61	0.67	0.75	0.64	0.74	0.64	River – Plastic
0.97	0.97	0.74	0.63	0.69	0.91	0.78	0.87	0.95	0.99	0.91	0.74	0.78	0.99	Marine – Plastic (1)
0.84	0.93	0.64	0.82	0.77	0.71	0.81	0.8	0.72	0.71	0.8	0.84	0.81	0.71	Marine – Sediment
		0.86			0.82									Human – T1D (1)
0.95	0.95	0.8	0.9	0.79	0.8	0.79	0.85	0.88	0.84	0.86	0.95		0.87	Human – T1D (2)
0.78	0.88	0.73	0.78	0.64	0.66	0.78	0.78	0.68	0.76	0.74	0.84	0.72	0.77	Marine – Plastic (3)
ALDEx2	ANCOM-II	comcoba	DESeq2	edgeR	LEfSe	limma voom (TMM)	limma voom (TMMwsp)	MaAsLin2	MaAsLin2 (rare)	metagenomeSeq	t-test (rare)	Wilcoxon (CLR)	Wilcoxon (rare)	