

Table S3. Metabolites most associated with *Il-15ra* mutations

Brain Region	Metabolite	PubChem ID	KEGG ID	VIP ^a	Fold Change ^b	Adjusted <i>p</i> -value ^c	
cortex	Threonic acid	151152	C01620	1.833	1.525	<0.001	
	picolinic acid	1018	C10164	2.049	1.484	<0.001	
	Dithioerythritol	439352	C00950	1.779	1.56	0.003	
	glycolic acid	757	C03547	1.782	1.379	0.004	
	myo-inositol	892	C00137	1.641	1.234	0.004	
	4-aminobutyric acid	223130	C00334	1.644	1.255	0.006	
	Phosphoglycolic acid	529	C00988	1.578	4.11	0.004	
	1-Methylhydantoin	69217	C02565	1.659	1.262	0.017	
	ascorbate	3372	C00072	1.595	1.357	0.019	
	pyrogallol	1057	C01108	1.298	1.609	0.003	
	Mono(2-ethylhexyl)phthalate	20393	C03343	1.559	1.853	0.015	
	2,2-Dimethylsuccinic Acid	11701	C04067	1.656	0.356	0.012	
	1,2,4-Benzenetriol	10787	C02814	1.343	0.122	0.011	
	3-Aminoisobutyric acid	64956	C05145	2.074	0.524	0.068	
	Dodecanol	8193	C02277	2.038	0.401	0.003	
	thymine	1135	C00178	2.087	0.328	0.006	
	5-hydroxytryptophan	439280	C00643	1.859	0.148	0.004	
	stearic acid	5281	C01530	2.306	0.541	0.039	
	N-Methyl-L-glutamic acid	439377	C01046	1.973	0.354	0.007	
	N-Oleoyldopamine	5282106	C12272	1.855	0.18	0.012	
	D-galacturonic acid	84740	C08348	1.972	0.082	0.001	
	Pyruvic acid	1060	C00022	1.982	0.053	0.001	
	Arachidic acid	10467	C06425	2.249	0.025	<0.001	
	methyl hexadecanoate	8181	C16995	2.403	0.135	<0.001	
	Anandamide	5281969	C11695	2.393	0.039	<0.001	
	Hippocampus	O-Phosphorylethanolamine	1015	C00346	1.961	1.476	<0.001
		glucose-6-phosphate	5958	C00092	1.834	1.896	0.006
		cycloleucine	2901	C03969	1.670	0.595	0.014
		alpha-D-glucosamine 1-phosphate	188960	C06156	1.346	0.500	0.014
		cholesterol	5997	C00187	1.833	0.792	0.010
		Myristic Acid	11005	C06424	1.677	0.676	0.013
		Acetol	8299	C05235	1.751	0.350	0.027
palmitic acid		985	C00249	1.948	0.789	0.015	
proline		145742	C00148	1.544	0.761	0.004	
Gallic acid		370	C01424	1.544	0.665	0.015	
O-Phosphoserine		68841	C01005	2.159	0.456	0.032	
3-Aminoisobutyric acid		64956	C05145	2.078	0.473	0.027	
3-(1-Pyrazolyl)-L-alanine		151491	C01162	1.602	0.244	0.018	
thymine		1135	C00178	1.990	0.374	0.019	
2-Butyne-1,4-diol		8066	C02497	1.952	0.335	0.004	
Dodecanol		8193	C02277	1.974	0.458	0.008	
Erythrose		5460672	C01796	1.733	0.724	0.001	
Orotic acid		967	C00295	1.594	0.343	0.001	
palmitoleic acid		5312427	C08362	1.773	0.636	<0.001	
lactulose		11333	C07064	1.808	0.074	<0.001	
Arachidic acid		10467	C06425	2.031	0.134	<0.001	
1,2,4-Benzenetriol		10787	C02814	1.925	0.101	<0.001	
stearic acid		5281	C01530	2.144	0.564	0.012	
L-Allothreonine		99289	C05519	1.825	0.372	<0.001	
trehalose-6-phosphate		122336	C00689	2.106	0.502	<0.001	

^{a, b, c} VIP, fold change and adjusted *p*-value are extracted from *Il-15ra*^{-/-} vs wildtype set.

^a VIP indicates the weight of each metabolite in the OPLS-DA model.

^b Fold change is calculated as the expression ratio of *Il15ra*^{-/-} mice to wildtype mice.

^c Adjusted *p*-value is calculated through Kruskal-Wallis test and all-pairwise multiple comparisons.