Table S1. Prostate microRNA expression profiling in Zn-deficient middle-aged (11-mo-old) vs Zn-deficient young-adult (2.5-mo-old) rats (Sprague-Dawley strain) using the nanoString™ nCounter rat miRNA expression assay kit (cut off: *P* < 0.05, fold-change ≥ 1.4; n = 6 rats/group)

miRNA name	Lateral prostate (Average counts ± standard deviation)		Fold-change	*P*-value	**Similarly up- or downregulated in human PCa*	*References*
	Zn-deficient middle-aged	Zn-deficient young-adult				
36 upregulated						
miR-290 (human ortholog *miR-373)	968 ± 229	99 ± 112	**9.79**	0.000008	upregulated	(1)
miR-29b	2697 ± 717	835 ± 362	**3.23**	0.000204		
*miR-200c	1687 ± 373	622 ± 192	**2.71**	0.000099	upregulated	(2, 3)
*miR-21	6173 ± 3255	2317 ± 718	**2.66**	0.032911	upregulated	(4)
*miR-22	2135 ± 312	882 ± 184	**2.42**	0.000007	upregulated	(5)
*miR-141	1258 ± 85	523 ± 150	**2.41**	0.000001	upregulated	(6)
***# miR-96**	942 ± 173	396 ± 173	**2.38**	0.000278	upregulated	(7, 8)
*miR-375	540 ± 179	230 ± 38	**2.35**	0.007368	upregulated	(2, 7, 8)
*miR-200b	3859 ± 484	1704 ± 475	**2.26**	0.000015	upregulated	(3)
miR-29c	4043 ± 860	1793 ± 441	**2.25**	0.000198	-	
*miR-200a	11819 ± 3004	5265 ± 2025	**2.24**	0.001272	upregulated	(9)
miR-672	48 ± 12	21 ± 7	**2.24**	0.00101	-	
miR-741-3p	61 ± 23	29 ± 11	**2.12**	0.010257	-	
miR-148b-3p	273 ± 61	133 ± 53	**2.05**	0.001756	-	
miR-30b-5p	1065 ± 251	535 ± 282	**1.99**	0.006358	-	
miR-146a	313 ± 59	162 ± 41	**1.93**	0.000466	-	
miR-429	3335 ± 410	1794 ± 364	**1.86**	0.000043	-	
miR-1224	53 ± 12	29 ± 7	**1.85**	0.001685	-	
***# miR-182**	34 ±1 2	20 ± 8	**1.73**	0.029198	upregulated	(2, 7, 8)
miR-34a	48 ± 11	28 ± 6	**1.72**	0.003222	-	
*miR-30d	1214 ± 183	705 ± 172	**1.72**	0.000561	upregulated	(10)
miR-653	11 ± 3	7 ± 2	**1.63**	0.019231	-	
miR-142-3p	401 ± 106	247 ± 40	**1.62**	0.007488	-	
miR-29a	8494 ± 1324	5236 ± 1059	**1.62**	0.000834	-	
miR-101a	208 ± 29	130 ± 23	**1.6**	0.000415	-	
miR-448	31 ± 3	20 ± 9	**1.58**	0.0287	-	
*miR-222	49 ± 15	31 ± 6	**1.57**	0.021055	upregulated	(11)

miR-365	259 ± 64	166 ± 54	**1.56**	0.020649	-	
miR-152	726 ± 182	465 ± 99	**1.56**	0.011547	-	
miR-425	58 ± 5	39 ± 13	**1.51**	0.00643	-	
let-7b	5125 ±334	3536 ± 497	**1.45**	0.000069	-	
let-7a	3446 ±332	2383 ± 449	**1.45**	0.000885	-	
miR-511	46 ±7	32 ± 7	**1.42**	0.006396	-	
miR-223	46 ±10	32 ± 6	**1.41**	0.015748	-	
*miR-32	88 ±2	63 ± 10	**1.41**	0.001042	upregulated	(2)
***# miR-183**	96 ±11	68 ± 16	**1.41**	0.005506	upregulated	(7, 8)
29 downregulated						
miR-127	33 ± 19	168 ± 119	**-5**	0.038745	-	
*miR-495	17 ± 8	56 ± 33	**-3.23**	0.032971	downregulated	(12)
miR-433	13 ± 2	36 ± 18	**-2.86**	0.025546	-	
miR-181c	22 ± 4	52 ± 15	**-2.38**	0.004144	-	
miR-411	17 ± 5	39 ± 10	**-2.27**	0.000658	-	
miR-431	13 ± 3	29 ± 11	**-2.22**	0.015275	-	
miR-134	19 ± 7	35 ± 7	**-1.89**	0.002102	-	
miR-369-5p	14 ± 3	26 ± 6	**-1.85**	0.001239	-	
miR-300-3p	11 ± 5	20 ± 6	**-1.82**	0.023012	-	
*miR-199a-3p	874 ± 310	1603 ± 571	**-1.82**	0.020597	downregulated	(13)
*miR-132	24 ±4	43 ± 14	**-1.79**	0.0186	downregulated	(14)
miR-199a-5p	513 ±166	901 ± 233	**-1.75**	0.007737	-	
*miR-376c	27 ± 9	47 ± 16	**-1.72**	0.025688	downregulated	(12)
*miR-100	219 ± 60	363 ± 55	**-1.67**	0.001511	downregulated	(15)
miR-326	32 ±10	53 ± 9	**-1.67**	0.003441		
miR-873	8 ±2	13 ± 3	**-1.59**	0.012127	-	
miR-181a	539 ± 228	852 ± 133	**-1.59**	0.01573	-	
miR-25	424 ± 47	673 ± 166	**-1.59**	0.013094		
miR-539	37 ± 7	59 ± 16	**-1.59**	0.014177	-	
miR-328a	38 ± 7	59 ± 15	**-1.56**	0.011051	-	
*miR-17-5p	108 ± 24	168 ± 45	**-1.56**	0.015873	downregulated	(4)
*miR-130a	343 ± 99	526 ± 70	**-1.54**	0.004178	downregulated	(16)
miR-379	15 ± 4	23 ± 6	**-1.54**	0.024061	-	
miR-874	10 ± 3	15 ± 3	**-1.47**	0.015069	-	
miR-301a	45 ± 10	66 ± 15	**-1.45**	0.021539	-	
miR-153	19 ± 6	28 ± 5	**-1.45**	0.023759		
*miR-409-3p	15 ± 2	21 ± 4	**-1.45**	0.002277	downregulated	(17)
*miR-27b	1852 ± 461	2630 ± 478	**-1.43**	0.016723	downregulated	(18)
miR-342-3p	53 ± 14	74 ± 11	**-1.41**	0.016961	-	

***#** denotes the entire miR-183-96-182 cluster that is overexpressed in human prostate cancer and regulates Zn-homeostasis is upregulated in Zn-deficient vs Zn-sufficient middle-aged rat prostate*

Table S2. Prostate microRNA expression profiling in Zn-sufficient middle-aged (11-mo-old) vs Zn-sufficient young adult (2.5-mo-old) rats (Sprague-Dawley strain) using the nanoString™ nCounter rat miRNA expression assay kit (cut off: *P* < 0.05, fold-change ≥1.4; n = 6 rats/group)

miRNA name	Lateral prostate (Average counts ± standard deviation)		Fold-change	*P*-value	**Similarly up- or downregulated in human PCa*	*References*
	Zn-Sufficient middle-aged	Zn-Sufficient young-adult				
38 upregulated						
miR-290 (human ortholog *miR-373)	638 ± 226	103 ± 75	**6.17**	0.001455	upregulated	(1)
*miR-200a	11573 ± 1820	3928 ± 1071	**2.95**	0.000005	upregulated	(9)
*miR-200c	1590 ± 226	584 ± 120	**2.72**	0.000002	upregulated	(2, 3)
miR-29b	2142 ± 314	869 ± 94	**2.46**	0.000087	-	
*miR-141	1118 ± 187	485 ± 45	**2.31**	0.000279	upregulated	(6)
*miR-375	562 ± 98	245 ± 58	**2.3**	0.000045	upregulated	(2, 7, 8)
*miR-200b	3798 ± 504	1786 ± 388	**2.13**	0.000016	upregulated	(3)
miR-672	54 ± 15	26 ± 4	**2.10**	0.00506	-	
miR-3564	20 ± 3	10 ± 4	**2.00**	0.000496	-	
miR-29c	3406 ± 559	1725 ± 245	**1.97**	0.000051	-	
miR-30b-5p	889 ± 188	460 ± 94	**1.93**	0.000539	-	
*miR-144	70 ± 26	39 ± 10	**1.82**	0.018764	upregulated	(1)
miR-291b	15 ± 6	8 ± 3	**1.81**	0.029774	-	
***miR-96**	792 ± 93	443 ± 122	**1.79**	0.000239	upregulated	(7)
*miR-30d	1094 ± 241	617 ± 70	**1.77**	0.003763	upregulated	(10)
miR-148b-3p	256 ± 39	150 ± 32	**1.70**	0.000398	-	
miR-292-3p	18 ± 6	11 ± 4	**1.59**	0.035223	-	
miR-30e	206 ± 50	129 ± 21	**1.59**	0.005951	-	
miR-34a	41 ± 4	26 ± 4	**1.57**	0.000092		
miR-511	48 ± 10	31 ± 2	**1.56**	0.007412	-	
miR-207	13 ± 3	8 ± 2	**1.54**	0.007199	-	
miR-298	21 ± 3	14 ± 2	**1.54**	0.000971	-	
miR-3578	58 ± 18	38 ± 9	**1.53**	0.030298	-	
miR-190b	24 ± 8	16 ± 5	**1.51**	0.044389	-	
miR-201	33 ± 5	22 ± 5	**1.49**	0.005412	-	
*miR-31	28 ± 7	19 ± 3	**1.48**	0.014426	upregulated	(2)
*miR-21	3763 ± 369	2554 ± 181	**1.47**	0.000029	upregulated	(4)
miR-3589	55 ± 10	37 ± 7	**1.47**	0.004552	-	
*miR-222	39 ± 4	27 ± 4	**1.47**	0.000349	upregulated	(11)
*miR-32	80 ± 13	55 ± 11	**1.46**	0.00448	upregulated	(2)
miR-29a	6956 ± 1253	4775 ± 485	**1.46**	0.002617	-	
miR-2964	14 ± 3	10 ± 1	**1.45**	0.005915	-	
miR-3592	30 ± 8	21 ± 4	**1.43**	0.030332	-	
miR-883	15 ± 3	10 ± 3	**1.43**	0.041527	-	
miR-429	2820 ± 443	1977 ± 289	**1.43**	0.002927	-	
miR-3594-3p	74 ± 6	52 ± 9	**1.42**	0.000467	-	
miR-628	86 ± 17	61 ± 8	**1.41**	0.008299	-	
miR-101a	182 ± 38	130 ± 32	**1.4**	0.0298	-	

46 downregulated						
miR-376b-3p	25 ± 10	94 ± 50	**-3.71**	0.01991	-	
miR-127	41 ± 22	137 ± 81	**-3.38**	0.03212	-	
miR-218a	86 ± 45	285 ± 173	**-3.31**	0.03651	-	
miR-369-3p	21 ± 9	66 ± 29	**-3.09**	0.01077	-	
miR-434	44 ± 14	130 ± 58	**-2.97**	0.01356	-	
*miR-487b	13 ± 5	37 ± 20	**-2.88**	0.02826	downregulated	(12)
*miR-124	27 ± 18	72 ± 39	**-2.63**	0.02984	downregulated	(19)
miR-410	24 ± 5	57 ± 25	**-2.42**	0.02096	-	
*miR-199a-3p	829 ± 133	1983 ± 314	**-2.39**	0.00001	downregulated	(13)
miR-382	23 ± 10	50 ± 26	**-2.18**	0.04019	-	
*miR-130a	298 ± 63	638 ± 105	**-2.14**	0.00005	downregulated	(16)
miR-196a	32 ± 7	65 ± 25	**-2.03**	0.02259	-	
*miR-100	210 ± 40	416 ± 90	**-1.98**	0.00045	downregulated	(20)
miR-181a	431 ± 95	848 ± 163	**-1.97**	0.00030	-	
miR-411	19 ± 6	37 ± 12	**-1.90**	0.00948	-	
miR-15b	210 ± 27	394 ± 121	**-1.88**	0.01224	-	
miR-136	28 ± 7	52 ± 21	**-1.87**	0.03728	-	
miR-199a-5p	466 ± 117	857 ± 96	**-1.84**	0.00008	-	
miR-450a	68 ± 11	123 ± 15	**-1.81**	0.00003	-	
miR-1949	22 ± 8	40 ± 13	**-1.79**	0.02032	-	
miR-340-5p	45 ± 9	80 ± 13	**-1.78**	0.00031	-	
*miR-495	22 ± 7	38 ± 15	**-1.77**	0.03376	downregulated	(12)
miR-323	29 ± 8	51 ± 13	**-1.77**	0.00521	-	
*miR-27b	1648 ± 509	2907 ± 681	**-1.76**	0.00464	downregulated	(18)
miR-667	11 ± 5	19 ± 4	**-1.73**	0.01195	-	
*miR-376c	27 ± 5	47 ± 13	**-1.70**	0.00705	downregulated	(12)
*miR-133a	59 ± 7	100 ± 22	**-1.69**	0.00488	downregulated	(21)
miR-872	45 ± 7	74 ± 10	**-1.66**	0.00015	-	
miR-299	8 ± 2	13 ± 1	**-1.65**	0.00012	-	
*miR-99a	1833 ± 303	2984 ± 368	**-1.63**	0.00015	downregulated	(22)
miR-301a	47 ± 10	77 ± 12	**-1.63**	0.00093	-	
miR-196c	70 ± 16	113 ± 35	**-1.61**	0.02193	-	
miR-181c	28 ± 6	44 ± 8	**-1.59**	0.00320	-	
miR-326	31 ± 9	50 ± 10	**-1.59**	0.00540	-	
*miR-181b+miR-181d	18 ± 5	28 ± 6	**-1.56**	0.01147	downregulated	(7)
miR-342-3p	48 ± 11	75 ± 14	**-1.56**	0.00404	-	
miR-25	370 ± 46	577 ± 100	**-1.56**	0.00097		
miR-539	37 ± 6	57 ± 14	**-1.52**	0.01234	-	
miR-337	17 ± 6	25 ± 3	**-1.52**	0.00938	-	
miR-125a-5p	603 ± 61	917 ± 181	**-1.52**	0.00661	-	
let-7e	319 ± 57	466 ± 81	**-1.46**	0.00451	-	
*miR-17-5p	106 ± 18	154 ± 22	**-1.46**	0.00215	downregulated	(4)
miR-322	83 ± 13	118 ± 19	**-1.43**	0.00319	-	
miR-27a	447 ± 82	632 ± 107	**-1.41**	0.00723	-	
miR-9	81 ± 12	115 ± 11	**-1.41**	0.00058	-	
miR-431	20 ± 3	28 ± 7	**-1.41**	0.03986	-	

Table S3. Prostate microRNA expression profiling in Zn-deficient adult (5-mo-old) vs Zn-deficient young-adult (2.5-mo-old) rats (Sprague-Dawley strain) using the nanoString™ nCounter rat miRNA expression assay kit (cut off: *P* < 0.05, fold-change ≥1.4; n = 6 rats/group)

miRNA name	Lateral prostate (Average counts ± standard deviation)		Fold-change	*P*-value	**Similarly up- or downregulated in human PCa*	*References*
	Zn-deficient adult	Zn-deficient young adult				
25 upregulated						
miR-290 (human ortholog *miR-373)	329 ± 123	99 ± 112	3.33	0.006899	upregulated	(1)
miR-29b	2000 ± 496	835 ± 362	2.39	0.000913	-	
miR-741-3p	55 ± 11	29 ± 11	1.90	0.001919	-	
miR-196c	130 ± 34	70 ± 12	1.85	0.005661	-	
***miR-96**	727 ± 111	396 ±173	1.84	0.002734	upregulated	(7)
*miR-22	1607± 240	882 ± 184	1.82	0.000154	upregulated	(5)
miR-148b-3p	241 ± 36	133 ± 54	1.81	0.002247	-	
miR-7b	42 ± 8	24 ± 5	1.73	0.000953	-	
miR-543	131 ± 16	76 ± 28	1.73	0.001996	-	
miR-101a	218 ± 38	130 ± 23	1.68	0.000637	-	
*miR-200c	1038± 215	622 ± 192	1.67	0.005359	upregulated	(2, 3)
miR-29c	2952 ± 747	1793 ± 441	1.65	0.008375	-	
miR-142-3p	406 ± 96	247 ± 40	1.64	0.003893	-	
miR-146a	261 ± 39	161 ± 42	1.61	0.001631		
miR-295	33 ± 7	22 ± 7	1.56	0.022132	-	
***miR-21	3491 ± 778	2317 ± 718	1.51	0.021716	upregulated	(4)
miR-30c	286 ± 45	192 ± 64	1.49	0.014592	-	
miR-29a	7743 ± 1195	5236 ± 1059	1.48	0.003236		(23)
miR-33	46 ± 6	31 ± 4	1.46	0.000706	-	
***miR-183**	99 ± 15	68 ± 16	1.45	0.006368	upregulated	(7, 8)
miR-98	369 ± 54	254 ± 87	1.45	0.020334	-	
miR-3552	29 ± 5	20 ± 4	1.44	0.008956	-	
***miR-26a	333 ± 60	233 ± 45	1.43	0.008592	upregulated	(2)
miR-340-5p	86 ± 20	61 ± 15	1.42	0.033099	-	
let-7a	3339 ± 497	2383 ± 449	1.40	0.005742	-	
9 downregulated						
miR-134	20 ± 4	35 ± 7	-1.75	0.001072	-	
miR-219-5p	12 ± 3	21 ± 5	-1.67	0.006543	-	
miR-3577	14 ± 3	23 ± 7	-1.67	0.010419	-	
miR-541	14 ± 3	22 ± 7	-1.59	0.018707	-	
miR-539	38 ± 12	59 ± 17	-1.56	0.029863	-	
miR-181c	34 ± 10	52 ± 15	-1.54	0.034197	-	
***miR-409-3p	14 ± 5	21 ± 4	-1.52	0.013357	downregulated	(17)
miR-3561-3p	32 ± 7	45 ± 11	-1.43	0.032973	-	
miR-411	27 ± 5	39 ± 10	-1.43	0.026387	-	

Table S4. Prostate microRNA expression profiling in Zn-sufficient adult (5-mo-old) and Zn-sufficient young-adult (2.5-mo-old) rats (Sprague-Dawley strain) using the nanoString™ nCounter rat miRNA expression assay kit (cut off: *P* < 0.05, fold-change ≥1.4; n = 6 rats/group)

miRNA name	Lateral prostate (Average counts ± standard deviation)		Fold-change	*P*-value	**Similarly up- or downregulated in human PCa*	*References*
	Zn-sufficient adult	Zn-sufficient young-adult				
19 upregulated						
miR-301b	23 ± 5	13 ± 3	1.73	0.001840	-	
miR-139-3p	21 ± 6	12 ± 5	1.69	0.027444	-	
miR-29b	1460 ± 199	869 ± 94	1.68	0.000062	-	
*miR-200c	963 ± 196	584 ± 120	1.65	0.002391	upregulated	(2, 3)
miR-449c-5p	19 ± 3	12 ± 2	1.64	0.000285	-	
miR-3577	33 ± 5	20 ±7	1.64	0.005812	-	
miR-327	27 ± 7	17 ±3	1.62	0.007680	-	
miR-29c	2741 ± 424	1725 ± 245	1.59	0.000478	-	
miR-207	13 ± 4	9 ± 2	1.59	0.014644	-	
miR-3563-3p	26 ± 5	16 ± 4	1.58	0.003346	-	
miR-347	30 ± 8	19 ± 9	1.58	0.039193	-	
*miR-375	384 ± 67	245 ± 58	1.57	0.003205	upregulated	(2, 7, 8)
miR-3562	17 ± 4	11 ± 1	1.55	0.006761	-	
miR-328b-3p	28 ± 4	19 ± 7	1.48	0.016967	-	
miR-3585-3p	27 ± 5	18 ± 4	1.47	0.010414	-	
miR-298	19 ± 3	14 ± 2	1.44	0.002294	-	
miR-876	25 ± 7	18 ± 4	1.44	0.036926	-	
*miR-187	38 ± 7	26 ± 8	1.43	0.024827	upregulated	(24)
miR-3575	18 ± 3	13 ± 3	1.41	0.009606	-	
20 downregulated						
miR-127	37 ± 15	137 ± 81	-3.70	0.028938	-	
miR-376b-3p	30 ± 9	94 ± 50	-3.13	0.026127	-	
*miR-124	25 ± 26	72 ± 39	-2.86	0.035348	downregulated	(19)
miR-434	55 ± 30	130 ± 58	-2.38	0.017522	-	
*miR-487b	17 ± 8	37 ± 20	-2.22	0.039431	downregulated	(12)
miR-410	27 ± 6	57 ± 25	-2.13	0.029732	-	
miR-369-3p	34 ± 13	66 ± 29	-1.92	0.032283	-	
*miR-376a	18 ± 4	33 ± 11	-1.82	0.021664	downregulated	(12)
miR-26a	140 ± 60	238 ± 62	-1.69	0.019105		
miR-324-5p	35 ± 6	58 ± 12	-1.67	0.001608	-	
miR-337	15 ± 4	25 ± 3	-1.67	0.000416	-	
miR-98	189 ± 52	301 ± 106	-1.59	0.042288	-	
miR-543	54 ± 13	85 ± 29	-1.56	0.037008	-	

*miR-376c	31 ± 7	47 ± 13	-1.52	0.025441	downregulated	(12)
miR-323	34 ± 7	51 ± 13	-1.52	0.017184	-	
miR-129	13 ± 2	20 ± 6	-1.52	0.030992	-	
miR-99b	185 ± 42	281 ± 58	-1.52	0.008515	-	
miR-539	37 ± 3	57 ± 14	-1.52	0.020555	-	
miR-7b	21 ± 5	30 ± 4	-1.43	0.006742	-	
miR-326	35 ± 5	50 ± 10	-1.43	0.006966	-	

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Table S5. Metabolomic signature in Zn-deficient young-adult rat prostate

Metabolites	Median fold-change (Zn-deficient vs sufficient)	*P* value	Biological process
Downregulated (n = 2)			
Pipecolinic acid	-1.79	0.0230	---
Adenine	-1.69	0.0241	Purine metabolism
Upregulated (n = 3)			
3,6-Anhydro-D-galatose	2.27	0.0000	---
Myo-inositol	1.61	0.0047	Galactose/lipid metabolism
*Uracil	1.47	0.0178	Pyrimidine metabolism

Untargeted metabolomic profiling was by gas chromatography time-of-flight mass spectrometry (n = 8 rats/group). Five significantly dysregulated metabolites ($P < 0.05$) were identified in lateral prostates of Zn-deficient vs sufficient young-adult rat (2.5-mo-old)(Sprague-Dawley strain).
*Uracil is similarly upregulated in human prostate cancer.

Table S6. Compound_ChemRICH in Zn-deficient vs Zn-sufficient middle-aged rat prostates (Wistar-Unilever strain)

Compound.Name	InChiKeys	Pubchem.ID	SMILES	pvalue	foldchange	CID	ClusterNumber	xlogp	ClusterLabel	TreeLabel	FDR
xylose	SRBFZHDQGSBBOR-IOVATXLUSA-N	135191	C1[C@H]([C@@H]([C@H](C(O1)O)O	0.16	1.2	135191	11	-1.454	Pentoses	a	1
xylonolactone NIST	XXBSUZSONOQQGK-FLRLBIABSA-N	439692	C1[C@H]([C@@H]([C@H](C(=O)O1)(	1	1.2	439692	16	-0.96	Dicarboxylic Acids		1
xylitol	HEBKCHPVOIAQTA-NGQZWQHPSA-N	6912	C([C@H](C([C@H](CO)O)O)O)O	0.73	0.95	6912	3	-3.224	Sugar Alcohols		1
xanthine	LRFVTYWOQMYALW-UHFFFAOYSA-N	1188	C1=NC2=C(N1)C(=O)NC(=O)N2	0.16	1.1	1188	7	-0.654	Purinones		1
valine	KZSNJWFQEVHDMF-BYPYZUCNSA-N	6287	CC(C)[C@@H](C(=O)O)N	0.094	1.4	6287	15	-2.169	Amino Acids, Branched-C		1
uridine	DRTQHJPVMGBUCF-XVFCMESISA-N	6029	C1=CN(C(=O)NC1=O)[C@H]2[C@@H	0.86	0.84	6029	9	-2.117	Pyrimidine Nucleosides		1
uric acid	LEHOTFFKMJEONL-UHFFFAOYSA-N	1175	C12=C(NC(=O)N1)NC(=O)NC2=O	0.55	0.85	1175	7	-1.191	Purinones		1
urea	XSQUKJJJFZCRTK-UHFFFAOYSA-N	1176	C(=O)(N)N	0.16	0.65	1176	35	-1.686	Organic Chemicals		1
uracil	ISAKRJDGNUQOIC-UHFFFAOYSA-N	1174	C1=CNC(=O)NC1=O	0.04	1.2	1174	7	-0.875	Pyrimidinones		1
UDP-N-acetylglucosamine	LFTYTUAZOPRMMI-CFRASDGPSA-N	445675	CC(=O)N[C@@H]1[C@H]([C@@H]([(	0.6	0.83	445675	9	-5.903	Uridine Diphosphate Sug		1
tyrosine	OUYCCCASQSFEME-QMMMGPOBSA-N	6057	C1=CC(=CC=C1C[C@@H](C(=O)O)N)(	0.0078	1.6	6057	28	-2.711	Amino Acids, Aromatic		1
tryptophan	QIVBCDIJIAJPQS-VIFPVBQESA-N	6305	C1=CC=C2C(=C1)C(=CN2)C[C@@H](C	1	1	6305	10	-2.023	Amino Acids, Aromatic		1
tocopherol alpha-	NCYCYZXNIZJOKI-OVSJKPMPSA-N	638015	CC1=C(C(CCC1)(C)C)/C=C/C(=C/C=C/(	0.34	0.8	638015	49	6.335	Retinoids		1
thymidine	IQFYYKKMVGJFEH-XLPZGREQSA-N	5789	CC1=CN(C(=O)NC1=O)[C@H]2C[C@@	0.44	1.1	5789	9	-1.335	Pyrimidine Nucleosides		1
threonine	AYFVYJQAPQTCCC-GBXIJSLDSA-N	6288	C[C@H]([C@@H](C(=O)O)N)O	0.93	1.1	6288	27	-3.496	Amino Acids		1
terephthalic acid	KKEYFWRCBNTPAC-UHFFFAOYSA-N	7489	C1=CC(=CC=C1C(=O)O)C(=O)O	0.63	1.1	7489	8	-0.118	Phthalic Acids		1
taurine	XOAAWQZATWQOTB-UHFFFAOYSA-N	1123	C(CS(=O)(=O)O)N	0.93	0.7	1123	34	-1.678	Alkanesulfonic Acids		1
succinic acid	KDYFGRWQOYBRFD-UHFFFAOYSA-N	1110	C(CC(=O)O)C(=O)O	0.39	0.85	1110	29	-0.71	Dicarboxylic Acids		1
stearic acid	QIQXTHQIDYTFRH-UHFFFAOYSA-N	5281	CCCCCCCCCCCCCCCCCC(=O)O	0.22	1.2	5281	1	8.708	Saturated FA	b	1
squalene	YYGNTYWPHWGJRM-AAJYLUCBSA-N	638072	CC(=CCC/C(=C/CC/C(=C/CC/C=C(/CC/	0.04	0.66	638072	49	11.482	Polyenes		1
spermine	PFNFFQXMRSDOHW-UHFFFAOYSA-N	1103	C(CCNCCCN)CNCCCN	0.8	1.1	1103	33	-0.682	Spermidine		1
sorbitol	FBPFZTCFMRRESA-JGWLITMVSA-N	5780	C([C@H]([C@H]([C@@H]([C@H](CO	0.44	1.4	5780	21	-3.896	Sugar Alcohols		1
serine	MTCFGRXMJLQNBG-REOHCLBHSA-N	5951	C([C@@H](C(=O)O)N)O	0.86	1.1	5951	27	-3.956	Amino Acids		1
salicylaldehyde	SMQUZDBALVYZAC-UHFFFAOYSA-N	6998	C1=CC=C(C(=C1)C=O)O	0.011	1.9	6998	8	0.989	Aldehydes		1
ribulose-5-phosphate	FNZLKVNUWIIPSJ-UHNVWZDZSA-N	439184	C([C@H]([C@H](C(=O)CO)O)O)OP(=C	0.14	1.2	439184	14	-4.396	Ribulosephosphates		1
ribose-5-phosphate	KTVPXOYAKDPRHY-SOOFDHNKSA-N	439167	C([C@@H]1[C@H]([C@H](C(O1)O)O	0.22	1.4	439167	22	-3.112	Hexosephosphates		1
ribose	HMFHBZSHGGEWLO-SOOFDHNKSA-N	5779	C([C@@H]1[C@H]([C@H](C(O1)O)O	0.019	1.5	5779	42	-1.454	Pentoses		1
ribonic acid	QXKAIJAYHKCRRA-BXXZVTAOSA-N	5460677	C([C@H]([C@H]([C@H](C(=O)O)O)O)	0.39	1.4	5460677	16	-3.067	Dicarboxylic Acids		1
ribitol	HEBKCHPVOIAQTA-ZXFHETKHSA-N	827	C(C(C(C(CO)O)O)O)O	0.67	0.56	827	3	-3.224	Sugar Alcohols		1
pyruvic acid	LCTONWCANYUPML-UHFFFAOYSA-N	1060	CC(=O)C(=O)O	1	1.1	1060	18	-0.426	Pyruvates		1
pyrophosphate	XPPKVPWEQAFLFU-UHFFFAOYSA-N	1023	OP(=O)(O)OP(=O)(O)O	0.077	0.61	1023	26	-3.476	Diphosphonates		1
putrescine	KIDHWZJUCRJVML-UHFFFAOYSA-N	1045	C(CCN)CN	0.11	0.44	1045	33	-0.626	Biogenic Polyamines		1
p-tolyl glucuronide	JPAUCQAJHLSMQW-XPORZQOISA-N	154035	CC1=CC=C(C=C1)O[C@H]2[C@@H]([	0.39	0.61	154035	19	0.189	Phenols		1
pseudo uridine	PTJWIQPHWPFNBW-GBNDHIKLSA-N	15047	C1=C(C(=O)NC(=O)N1)[C@H]2[C@@	0.22	0.63	15047	9	-2.477	Pyrimidine Nucleosides		1
propane-1,3-diol NIST	YPFDHNVEDLHUCE-UHFFFAOYSA-N	10442	C(CO)CO	0.44	1.4	10442	30	-0.85	Propylene Glycols		1
pimelic acid	WLJVNTCWHIRURA-UHFFFAOYSA-N	385	C(CCC(=O)O)CCC(=O)O	0.44	0.83	385	1	0.575	Dicarboxylic Acids	b	1
phosphoethanolamine	SUHOOTKUPISOBE-UHFFFAOYSA-N	1015	C(COP(=O)(O)O)N	0.44	0.79	1015	34	-2.504	Ethanolamines		1
phosphate	NBIIXXVUZAFLBC-UHFFFAOYSA-N	1004	OP(=O)(O)O	0.49	0.79	1004	26	-2.247	Polymers		1
phenylalanine	COLNVLDHVKWLRT-QMMMGPOBSA-N	6140	C1=CC=C(C=C1)C[C@@H](C(=O)O)N	0.3	1.1	6140	28	-1.575	Amino Acids, Aromatic		1
phenaceturic acid	UTYVDVLMYQPLQB-UHFFFAOYSA-N	68144	C1=CC=C(C=C1)CC(=O)NCC(=O)O	0.86	0.83	68144	28	0.425	Dipeptides		1
pentadecanoic acid	WQEPLUUGTLDZJY-UHFFFAOYSA-N	13849	CCCCCCCCCCCCCCC(=O)O	0.49	1.3	13849	1	7.001	Saturated FA	b	1
pelargonic acid	FBUKVWPVBMHYJY-UHFFFAOYSA-N	8158	CCCCCCCCC(=O)O	0.14	1.3	8158	1	3.587	Saturated FA	b	1
parabanic acid NIST	ZFLIKDUSUDBGCD-UHFFFAOYSA-N	67126	C1(=O)C(=O)NC(=O)N1	1	0.97	67126	48	-0.58	Hydantoins		1
pantothenic acid	GHOKWGTUZJEAQD-ZETCQYMHSA-N	6613	CC(C)(CO)[C@H](C(=O)NCCC(=O)O)O	0.093	0.58	6613	47	-1.343	beta-Alanine		1
palmitoleic acid	SECPZKHBENQXJG-FPLPWBNLSA-N	445638	CCCCCC/C=C\CCCCCCCC(=O)O	0.66	1.6	445638	12	7.054	UnSaturated FA		1
palmitic acid	IPCSVZSSVZVIGE-UHFFFAOYSA-N	985	CCCCCCCCCCCCCCCC(=O)O	0.19	1.1	985	1	7.57	Saturated FA	b	1
palatinitol	SERLAGPUMNYUCK-DCUALPFSSA-N	88735	C([C@@H]1[C@H]([C@@H]([C@H]([	0.86	0.97	88735	5	-5.004	Disaccharides		1
oxoproline	ODHCTXKNWHHXJC-VKHMYHEASA-N	7405	C1CC(=O)N[C@@H]1C(=O)O	0.6	1.2	7405	46	-0.827	Pyrrolidinones		1
oxalic acid	MUBZPKHOEPUJKR-UHFFFAOYSA-N	971	C(=O)(C(=O)O)O	0.8	1.2	971	18	-0.688	Dicarboxylic Acids		1
ornithine	AHLPHDHHMVZTML-BYPYZUCNSA-N	6262	C(C[C@@H](C(=O)O)N)CN	0.16	1.4	6262	17	-3.307	Amino Acids, Basic		1
oleic acid	ZQPPMHVWECSIRJ-KTKRTIGZSA-N	445639	CCCCCCCC/C=C\CCCCCCCC(=O)O	0.34	1.2	445639	12	8.192	UnSaturated FA		1
oleamide NIST	FATBGEAMYMYZAF-KTKRTIGZSA-N	5283387	CCCCCCCC/C=C\CCCCCCCC(=O)N	1	1.1	5283387	50	7.464	Oleic Acids		1
octanol NIST	KBPLFHHGFOOTCA-UHFFFAOYSA-N	957	CCCCCCCCO	0.86	0.74	957	36	3.127	Fatty Alcohols		1
octadecanol	GLDOVTGHNKAZLK-UHFFFAOYSA-N	8221	CCCCCCCCCCCCCCCCCCO	0.8	1	8221	37	8.817	Fatty Alcohols		1
noradrenaline	SFLSHLFXELFNJZ-QMMMGPOBSA-N	439260	C1=CC(=C(C=C1[C@H](CN)O)O)O	0.55	1.2	439260	19	-0.446	Catecholamines		1
nicotinamide	DFPAKSUCGFBDDF-UHFFFAOYSA-N	936	C1=CC(=CN=C1)C(=O)N	0.44	0.76	936	10	-1.236	Nicotinic Acids		1
n-acetyl-d-hexosamine	OVRNDRQMDRJTHS-FMDGEEDCSA-N	24139	CC(=O)N[C@@H]1[C@H]([C@@H]([(	0.16	0.82	24139	47	-1.488	Glucosamine		1

Compound.Name	InChiKeys	Pubchem.ID	SMILES	pvalue	foldchange	CID	ClusterNumber	xlogp	ClusterLabel	TreeLabel	FDR
N-acetylaspartic acid	OTCCIMWXFLJLIA-BYPYZUCNSA-N	65065	CC(=O)N[C@@H](CC(=O)O)C(=O)O	0.49	1.1	65065	31	-1.265	Amino Acids, Acidic		1
myristic acid	TUNFSRHWOTWDNC-UHFFFAOYSA-N	11005	CCCCCCCCCCCCCC(=O)O	1	1.1	11005	1	6.432	Saturated FA	b	1
methylmalonic acid	ZIYVHBGGAOATLY-UHFFFAOYSA-N	487	CC(C(=O)O)C(=O)O	0.11	1.2	487	29	-0.085	Dicarboxylic Acids		1
methionine sulfoxide	QEFRNWWLZKMPFJ-YGVKFDHGSA-N	158980	CS(=O)CC[C@@H](C(=O)O)N	0.55	1	158980	25	-3.882	Amino Acids, Sulfur		1
methionine	FFEARJCKVFRZRR-BYPYZUCNSA-N	6137	CSCC[C@@H](C(=O)O)N	0.16	1.5	6137	25	-1.853	Amino Acids, Sulfur		1
methanolphosphate	CAAULPUQFIIOTL-UHFFFAOYSA-N	13130	COP(=O)(O)O	1	1.1	13130	26	-1.728	Organophosphates		1
mannose	WQZGKKKJIJFFOK-QTVWNMPRSA-N	18950	C([C@@H]1[C@H]([C@@H]([C@@H	0.16	0.4	18950	4	-1.697	Hexoses		1
mannitol	FBPFZTCFMRRESA-KVTDHHQDSA-N	6251	C([C@H]([C@H]([C@@H]([C@@H](C	0.39	0.74	6251	21	-3.896	Sugar Alcohols		1
maltotriose	FYGDTMLNYKFZSV-DZOUCCHMSA-N	439586	C([C@@H]1[C@H]([C@@H]([C@H]([	0.96	1	439586	5	-5.629	Trisaccharides		1
maltose	GUBGYTABKSRVRQ-PICCSMPSSA-N	439186	C([C@@H]1[C@H]([C@@H]([C@H]([	0.019	0.73	439186	5	-3.663	Disaccharides		1
malic acid	BJEPYKJPYRNKOW-UHFFFAOYSA-N	525	C(C(C(=O)O)O)C(=O)O	0.8	1.1	525	2	-1.474	Dicarboxylic Acids		1
lyxose	SRBFZHDQGSBBOR-AGQMPKSLSA-N	439240	C1[C@H]([C@@H]([C@@H](C(O1)O)	1	1	439240	11	-1.454	Pentoses	a	1
lyxitol	HEBKCHPVOIAQTA-IMJSIDKUSA-N	439255	C([C@@H](C([C@H](CO)O)O)O)O	0.6	0.47	439255	3	-3.224	Sugar Alcohols		1
lysine	KDXKERNSBIXSRK-YFKPBYRVSA-N	5962	C(CCN)C[C@@H](C(=O)O)N	0.14	1.6	5962	17	-2.949	Amino Acids, Basic		1
linoleic acid	OYHQOLUKZRVURQ-HZJYTTRNSA-N	5280450	CCCCC/C=C\C/C=C\CCCCCCCC(=O)O	0.86	1.1	5280450	12	7.865	UnSaturated FA		1
lignoceric acid	QZZGJDVWLFXDLK-UHFFFAOYSA-N	11197	CCCCCCCCCCCCCCCCCCCCCCCC(=O)C	0.22	1.2	11197	1	12.122	Saturated FA	b	1
levoglucosan	TWNIBLMWSKIRAT-VFUOTHLCSA-N	2724705	C1[C@@H]2[C@H]([C@@H]([C@H](	0.44	0.94	2724705	39	-1.537	Hexoses		1
leucine	ROHFNLRQFUQHCH-YFKPBYRVSA-N	6106	CC(C)C[C@@H](C(=O)O)N	0.34	1.3	6106	40	-1.389	Amino Acids, Branched-C		1
lauric acid	POULHZVOKOAJMA-UHFFFAOYSA-N	3893	CCCCCCCCCCCC(=O)O	0.024	1.3	3893	1	5.294	Saturated FA	b	1
lactulose	JCQLYHFGKNRPGE-FCVZTGTOSA-N	11333	C([C@@H]1[C@@H]([C@@H]([C@H	0.19	0.88	11333	39	-3.706	Disaccharides		1
lactic acid	JVTAAEKCZFNVCJ-UHFFFAOYSA-N	612	CC(C(=O)O)O	0.86	0.98	612	18	-0.591	Lactates		1
isothreonic acid	JPIJQSOTBSSVTP-GBXIJSLDSA-N	151152	C([C@H]([C@@H](C(=O)O)O)O)O	0.3	0.84	151152	2	-2.395	Butyrates		1
isothreitol	UNXHWFMMPAWVPI-QWWZWVQMSA-N	169019	C([C@H]([C@@H](CO)O)O)O	0.26	1.2	169019	3	-2.552	Sugar Alcohols		1
isoribose	SRBFZHDQGSBBOR-SOOFDHNKSA-N	10975657	C1[C@H]([C@H]([C@H](C(O1)O)O)O	0.14	1.3	10975657	11	-1.454	Pentoses	a	1
isoleucine	AGPKZVBTJJNPAG-WHFBIAKZSA-N	6306	CC[C@H](C)[C@@H](C(=O)O)N	0.077	1.3	6306	40	-1.6	Amino Acids, Branched-C		1
isocitric acid	ODBLHEXUDAPZAU-ZAFYKAAXSA-N	5318532	C([C@@H]([C@H](C(=O)O)O)C(=O)O	0.0012	0.22	5318532	43	-2.064	Tricarboxylic Acids		0.21
inositol-4-monophosphate	INAPMGSXUVUWAF-GFWFORPUSA-N	440043	[C@H]1([C@H](C([C@H]([C@H](C1O	0.014	1.4	440043	23	-3.545	Inositol Phosphates		1
inosine 5'-monophosphate	GRSZFWQUAKGDAV-KQYNXXCUSA-N	8582	C1=NC(=O)C2=C(N1)N(C=N2)[C@H]3	1	0.82	8582	6	-2.291	Purine Nucleosides		1
inosine	UGQMRVRMYYASKQ-KQYNXXCUSA-N	6021	C1=NC(=O)C2=C(N1)N(C=N2)[C@H]3	0.024	0.68	6021	6	-0.633	Purine Nucleosides		1
indoxyl sulfate	BXFFHSIDQOFMLE-UHFFFAOYSA-N	10258	C1=CC=C2C(=C1)C(=CN2)OS(=O)(=O)	0.3	0.74	10258	10	-0.075	Indoles		1
hypoxanthine	FDGQSTZJBFJUBT-UHFFFAOYSA-N	790	C1=NC2=C(N1)C(=O)N=CN2	0.19	1.2	790	7	0.556	Purinones		1
hydroxylamine	AVXURJPOCDRRFD-UHFFFAOYSA-N	787	NO	0.39	1.5	787	35	-1.604			1
hydroxycarbamate NIST	DRAJWRKLRBNJRQ-UHFFFAOYSA-M	16639161	C(=O)(NO)O	0.26	0.86	16639161	35	-0.878			1
histidine	HNDVDQJCIGZPNO-YFKPBYRVSA-N	6274	C1=C(NC=N1)C[C@@H](C(=O)O)N	0.077	1.9	6274	6	-3.429	Amino Acids, Cyclic		1
hexose-6-phosphate	NBSCHQHZLSJFNQ-UHFFFAOYSA-N	208	C(C1C(C(C(C(O1)O)O)O)O)OP(=O)(O)	0.67	1.3	208	13	-3.355	Hexosephosphates		1
hexitol	FBPFZTCFMRRESA-UHFFFAOYSA-N	453	C(C(C(C(C(CO)O)O)O)O)O	0.22	0.71	453	21	-3.896	Sugar Alcohols		1
heptadecanoic acid	KEMQGTRYUADPNZ-UHFFFAOYSA-N	10465	CCCCCCCCCCCCCCCCC(=O)O	0.26	1.3	10465	1	8.139	Saturated FA	b	1
guanosine	NYHBQMYGNKIUIF-UUOKFMHZSA-N	6802	C1=NC2=C(N1[C@H]3[C@@H]([C@@	0.019	0.49	6802	6	-0.958	Purine Nucleosides		1
glycolic acid	AEMRFAOFKBGASW-UHFFFAOYSA-N	757	C(C(=O)O)O	0.35	1.5	757	18	-1.117	Glycolates		1
glycocyamine	BPMFZUMJYQTVII-UHFFFAOYSA-N	763	C(C(=O)O)N=C(N)N	0.44	1.2	763	32	-3.974			1
glycine	DHMQDGOQFOQNFH-UHFFFAOYSA-N	750	C(C(=O)O)N	0.11	0.71	750	32	-3.35	Amino Acids		1
glycerol-alpha-phosphate	AWUCVROLDVIAJX-UHFFFAOYSA-N	754	C(C(COP(=O)(O)O)O)O	0.019	0.48	754	14	-3.109	Glycerophosphates		1
glycerol	PEDCQBHIVMGVHV-UHFFFAOYSA-N	753	C(C(CO)O)O	0.26	0.68	753	30	-1.88	Sugar Alcohols		1
glyceric acid	RBNPOMFGQQGHHO-UWTATZPHSA-N	439194	C([C@H](C(=O)O)O)O	0.094	2.2	439194	2	-1.723	Sugar Acids		1
glutamine	ZDXPYRJPNDTMRX-VKHMYHEASA-N	5961	C(CC(=O)N)[C@@H](C(=O)O)N	0.44	1.3	5961	17	-4.077	Amino Acids, Basic		1
glutamic acid	WHUUTDBJXJRKMK-VKHMYHEASA-N	33032	C(CC(=O)O)[C@@H](C(=O)O)N	0.86	0.99	33032	17	-3.349	Amino Acids, Acidic		1
glucose-6-phosphate	NBSCHQHZLSJFNQ-GASJEMHNSA-N	5958	C([C@@H]1[C@H]([C@@H]([C@H]((	0.73	1.3	5958	13	-3.355	Hexosephosphates		1
glucose-1-phosphate	HXXFSFRBOHSIMQ-VFUOTHLCSA-N	65533	C([C@@H]1[C@H]([C@@H]([C@H]([	0.0012	0.55	65533	13	-3.355	Hexosephosphates		0.21
glucose	WQZGKKKJIJFFOK-VFUOTHLCSA-N	64689	C([C@@H]1[C@H]([C@@H]([C@H]([	0.34	0.9	64689	4	-1.697	Hexoses		1
gluconic acid	RGHNJXZEOKUKBD-QTBDOELSSA-N	6857417	C([C@@H]([C@H]([C@@H]([C@@H	0.89	0.96	6857417	16	-3.739	Sugar Acids		1
galacturonic acid	AEMOLEFTQBMNLQ-DTEWXJGMSA-N	441476	[C@@H]1([C@H]([C@H](O[C@H]([C	0.19	0.52	441476	44	-1.54	Hexuronic Acids		1
galactose-6-phosphate	NBSCHQHZLSJFNQ-SVZMEOIVSA-N	439404	C([C@@H]1[C@@H]([C@@H]([C@H	0.48	1.4	439404	13	-3.355	Hexosephosphates		1
galactose	WQZGKKKJIJFFOK-PHYPRBDBSA-N	439357	C([C@@H]1[C@@H]([C@@H]([C@H	0.8	1.1	439357	4	-1.697	Hexoses		1
galactinol	VCWMRQDBPZKXKG-ZNVDUFQESA-N	11727586	C([C@@H]1[C@@H]([C@@H]([C@H	0.3	1.2	11727586	5	-3.424	Disaccharides		1
fumaric acid	VZCYOOQTPOCHFL-OWOJBTEDSA-N	444972	C(=C/C(=O)O)\C(=O)O	0.73	1.1	444972	20	-0.416	Dicarboxylic Acids		1
fucose	SHZGCJCMOBCMKK-FPRJBGLDSA-N	439650	C[C@@H]1[C@@H]([C@@H]([C@H]	0.67	1	439650	4	-0.994	Hexoses		1
fructose-6-phosphate	BGWGXPAPYGQALX-ARQDHWQXSA-N	440641	C([C@@H]1[C@H]([C@@H]([C@](O	0.49	1.6	440641	22	-3.398	Hexosephosphates		1
fructose-1-phosphate	RHKKZBWRNHGJEZ-VRPWFDPXSA-N	439394	C([C@@H]1[C@H]([C@@H](C(O1)(C	0.0028	1.8	439394	22	-3.398	Hexosephosphates		0.47
fructose	RFSUNEUAIZKAJO-ARQDHWQXSA-N	439709	C([C@@H]1[C@H]([C@@H]([C@](O	0.3	1.4	439709	42	-1.74	Hexoses		1

Compound.Name	InChiKeys	Pubchem.ID	SMILES	pvalue	foldchange	CID	ClusterNumber	xlogp	ClusterLabel	TreeLabel	FDR
ethanolamine	HZAXFHJVJLSVMW-UHFFFAOYSA-N	700	C(CO)N	0.6	0.95	700	34	-1.275	Ethanolamines		1
erythronic acid lactone	SGMJBNSHAZVGMC-PWNYCUMCSA-N	5325915	C1[C@H]([C@H](C(=O)O1)O)O	0.35	0.97	5325915	2	-0.717	Butyrates		1
epsilon-caprolactam	JBKVHLHDHHXQEQ-UHFFFAOYSA-N	7768	C1CCC(=O)NCC1	0.44	1.6	7768	50	0.404	Lactams		1
enolpyruvate NIST	DTBNBXWJWCWCIK-UHFFFAOYSA-N	1005	C=C(C(=O)O)OP(=O)(O)O	0.55	1.2	1005	20	-1.296	Hydroxy Acids		1
dodecanol	LQZZUXJYWNFBMV-UHFFFAOYSA-N	8193	CCCCCCCCCCCCO	0.094	1.8	8193	36	5.403	Fatty Alcohols		1
dihydroxyacetone	RXKJFZQQPQGTFL-UHFFFAOYSA-N	670	C(C(=O)CO)O	0.39	0.94	670	30	-1.889	Ketoses		1
dihydrocholesterol	QYIXCDOBOSTCEI-FBVYSKEZSA-N	66066	C[C@H](CCCC(C)C)[C@H]1CC[C@@H	0.51	1.3	66066	45	11.783	Cholestanes	c	1
deoxycholic acid	KXGVEGMKQFWNSR-LLQZFEROSA-N	222528	C[C@H](CCC(=O)O)[C@H]1CC[C@@I	0.34	0.68	222528	45	5.756	Cholic Acids	c	1
dehydroascorbic acid	SBJKKFFYIZUCET-JLAZNSOCSA-N	440667	C([C@@H]([C@@H]1C(=O)C(=O)C(=(	0.19	0.74	440667	44	-1.878	Sugar Acids		1
dehydroabietic acid	NFWKVWVWBFBAOV-MISYRCLQSA-N	94391	CC(C)C1=CC2=C(C=C1)[C@]3(CCC[C@	0.86	1.2	94391	8	5.656	Diterpenes, Abietane		1
cytidine-5-monophosphate	IERHLVCPSMICTF-XVFCMESISA-N	6131	C1=CN(C(=O)N=C1N)[C@H]2[C@@H	0.11	0.093	6131	9	-3.851	Cytosine Nucleotides		1
cysteine	XUJNEKJLAYXESH-REOHCLBHSA-N	5862	C([C@@H](C(=O)O)N)S	0.077	2.4	5862	25	-2.575	Amino Acids, Sulfur		1
cyclohexylamine	PAFZNILMFXTMIY-UHFFFAOYSA-N	7965	C1CCC(CC1)N	0.14	1.6	7965	33	1.262	Cycloparaffins		1
creatinine	DDRJAANPRJIHGJ-UHFFFAOYSA-N	588	CN1CC(=O)N=C1N	0.6	0.67	588	48	-0.126	Imidazoles		1
conduritol-beta-epoxide	ZHMWOVGZCINIHW-SPHYCDKFSA-N	9989541	[C@@H]1([C@@H]([C@H](C2C([C@	0.064	1.7	9989541	23	-1.727	Cycloparaffins		1
citrulline	RHGKLRLOHDJJDR-BYPYZUCNSA-N	9750	C(C[C@@H](C(=O)O)N)CNC(=O)N	0.3	1.4	9750	46	-3.909	Amino Acids		1
citric acid	KRKNYBCHXYNGOX-UHFFFAOYSA-N	311	C(C(=O)O)C(CC(=O)O)(C(=O)O)O	0.00029	0.099	311	43	-2.247	Tricarboxylic Acids		0.05
cholesterol	HVYWMOMLDIMFJA-DPAQBDIFSA-N	5997	C[C@H](CCCC(C)C)[C@H]1CC[C@@H	0.26	0.84	5997	38	10.518	Cholestanes		1
cellobiose	GUBGYTABKSRVRQ-QUYVBRFLSA-N	6255	C([C@@H]1[C@H]([C@@H]([C@H]([	0.094	0.56	6255	5	-3.663	Disaccharides		1
capric acid	GHVNFZFCNZKVNT-UHFFFAOYSA-N	2969	CCCCCCCCCC(=O)O	0.024	1.4	2969	1	4.156	Saturated FA	b	1
beta-sitosterol	KZJWDPNRJALLNS-VJSFXXLFSA-N	222284	CC[C@H](CC[C@@H](C)[C@H]1CC[C	0.34	0.78	222284	38	11.595	Cholestanes		1
beta-glycerolphosphate	DHCLVCXQIBBOPH-UHFFFAOYSA-N	2526	C(C(CO)OP(=O)(O)O)O	0.26	0.84	2526	14	-3.109	Glycerophosphates		1
beta-alanine	UCMIRNVEIXFBKS-UHFFFAOYSA-N	239	C(CN)C(=O)O	0.73	1.2	239	41	-1.026	Amino Acids		1
benzylalcohol	WVDDGKGOMKODPV-UHFFFAOYSA-N	2879	CC1=CC=C(C=C1)O	0.16	1.5	2879	19	1.338	Phenols		1
benzoic acid	WPYMKLBDIGXBTP-UHFFFAOYSA-N	243	C1=CC=C(C=C1)C(=O)O	0.44	1.7	243	8	0.982	Benzoates		1
aspartic acid	CKLJMWTZIZZHCS-REOHCLBHSA-N	5960	C([C@@H](C(=O)O)N)C(=O)O	0.077	1.4	5960	31	-3.707	Amino Acids, Acidic		1
asparagine	DCXYFEDJOCDNAF-REOHCLBHSA-N	6267	C([C@@H](C(=O)O)N)C(=O)N	0.26	1.2	6267	31	-4.435	Amino Acids, Basic		1
ascorbic acid	CIWBSHSKHKDKBQ-JLAZNSOCSA-N	54670067	C([C@@H]([C@@H]1C(=C(C(=O)O1)(	0.34	0.43	54670067	20	-0.178	Sugar Acids		1
arachidonic acid	YZXBAPSDXZZRGB-DOFZRALJSA-N	444899	CCCCC/C=C\C/C=C\C/C=C\C/C=C\CC(	0.26	1	444899	12	8.349	UnSaturated FA		1
arachidic acid	VKOBVWXKNCXXDE-UHFFFAOYSA-N	10467	CCCCCCCCCCCCCCCCCCCC(=O)O	0.67	1.4	10467	1	9.846	Saturated FA	b	1
arabitol	HEBKCHPVOIAQTA-QWWZWVQMSA-N	94154	C([C@H](C([C@@H](CO)O)O)O)O	0.22	0.62	94154	3	-3.224	Sugar Alcohols		1
arabinose	SRBFZHDQGSBBOR-ZRMNMSDTSA-N	6902	C1[C@H]([C@H]([C@@H](C(O1)O)O	0.0078	1.6	6902	11	-1.454	Pentoses	a	1
aminomalonate	JINBYESILADKFW-UHFFFAOYSA-N	100714	C(C(=O)O)(C(=O)O)N	0.063	0.36	100714	27	-3.523	Dicarboxylic Acids		1
allantoic acid	NUCLJNSWZCHRKL-UHFFFAOYSA-N	203	C(C(=O)O)(NC(=O)N)NC(=O)N	0.45	0.55	203	32	-2.924			1
alanine	QNAYBMKLOCPYGJ-REOHCLBHSA-N	5950	C[C@@H](C(=O)O)N	0.86	0.81	5950	15	-2.824	Amino Acids		1
adenosine-5-monophosphate	UDMBCSSLTHHNCD-KQYNXXCUSA-N	6083	C1=NC2=C(C(=N1)N)N=CN2[C@H]3[C	0.39	0.63	6083	24	-4.025	Purine Nucleosides		1
adenosine	OIRDTQYFTABQOQ-KQYNXXCUSA-N	60961	C1=NC2=C(C(=N1)N)N=CN2[C@H]3[C	0.44	0.88	60961	24	-2.367	Purine Nucleosides		1
adenine	GFFGJBXGBJISGV-UHFFFAOYSA-N	190	C1=NC2=C(N1)C(=NC=N2)N	0.077	0.71	190	7	-1.287	Purines		1
aconitic acid	GTZCVFVGUGFEME-IWQZZHSRSA-N	643757	C(/C(=C/C(=O)O)/C(=O)O)C(=O)O	0.00029	0.39	643757	20	-1.034	Tricarboxylic Acids		0.05
acetophenone NIST	KWOLFJPFCHCOCG-UHFFFAOYSA-N	7410	CC(=O)C1=CC=CC=C1	0.44	1.3	7410	8	1.244	Acetophenones		1
5-methoxytryptamine	JTEJPPKMYBDEMY-UHFFFAOYSA-N	1833	COC1=CC2=C(C=C1)NC=C2CCN	1	1.4	1833	10	0.687	Serotonin		1
5-hydroxy-3-indoleacetic acid	DUUGKQCEGZLZNO-UHFFFAOYSA-N	1826	C1=CC2=C(C=C1O)C(=CN2)CC(=O)O	0.14	1.2	1826	10	0.513	Indoleacetic Acids		1
5'-deoxy-5'-methylthioadenosi	WUUGFSXJNOTRMR-IOSLPCCCSA-N	439176	CSC[C@@H]1[C@H]([C@H]([C@@H]	0.55	0.87	439176	24	-1.051	Purine Nucleosides		1
4-hydroxybutyric acid	SJZRECIVHVDYJC-UHFFFAOYSA-N	10413	C(CC(=O)O)CO	1	0.86	10413	29	-0.601	Butyrates		1
3-phosphoglycerate	OSJPPGNTCRNQQC-UHFFFAOYSA-N	724	C(C(C(=O)O)O)OP(=O)(O)O	0.11	1.2	724	14	-2.952	Sugar Acids		1
3-hydroxybutyric acid	WHBMMWSBFZVSSR-GSVOUGTGSA-N	92135	C[C@H](CC(=O)O)O	0.73	0.87	92135	2	-0.499	Butyrates		1
3-aminoisobutyric acid	QCHPKSFMDHPSNR-UHFFFAOYSA-N	64956	CC(CN)C(=O)O	0.73	0.74	64956	41	-0.733	Amino Acids		1
2-monopalmitin	BBNYCLAREVXOSG-UHFFFAOYSA-N	123409	CCCCCCCCCCCCCCCC(=O)OC(CO)CO	0.39	0.64	123409	1	6.51	Glycerides	b	1
2-hydroxypyrazinyl-2-propeno	WFZVBCSNPDDHDI-FNORWQNLSA-N	5371086	CCOC(=O)C(=O)/C=C/1\C=NC=CN1	0.34	1.5	5371086	15	0.649			1
2-hydroxyglutaric acid	HWXBTNAVRSUOJR-UHFFFAOYSA-N	43	C(CC(=O)O)C(C(=O)O)O	0.12	1.6	43	16	-1.116	Dicarboxylic Acids		1
2-aminobutyric acid	QWCKQJZIFLGMSD-UHFFFAOYSA-N	6657	CCC(C(=O)O)N	0.22	1.4	6657	15	-2.466	Butyrates		1
2,3-dihydroxybutanoic acid NI	LOUGYXZSURQALL-UHFFFAOYSA-N	250402	CC(C(C(=O)O)O)O	0.27	1.2	250402	2	-1.263	Sugar Acids		1
1-methylinosine	WJNGQIYEQLPJMN-IOSLPCCCSA-N	65095	CN1C=NC2=C(C1=O)N=CN2[C@H]3[C	0.6	0.86	65095	6	-1.805	Purine Nucleosides		1
1-hexadecanol	BXWNKGSJHAJOGX-UHFFFAOYSA-N	2682	CCCCCCCCCCCCCCCCO	0.55	0.85	2682	37	7.679	Fatty Alcohols		1
1,5-anhydroglucitol	MPCAJMNYNOGXPB-SLPGGIOYSA-N	64960	C1[C@@H]([C@H]([C@@H]([C@H]((	0.31	0.6	64960	4	-1.591	Hexoses		1
1,2-anhydro-myo-inositol NIST	ZHMWOVGZCINIHW-FTYOSCRSSA-N	119054	[C@@H]1([C@@H]([C@H]([C@H]2[(	0.55	0.79	119054	23	-1.727	Cycloparaffins		1
1,2,4-benzenetriol	GGNQRNBDZQJCCN-UHFFFAOYSA-N	10787	C1=CC(=C(C=C1O)O)O	0.11	1.9	10787	19	1.002	Phenols		1

Table S7. Results of the ChemRICH enrichment analysis for the altered metabolites in Zn-deficient vs Zn-sufficient middle-aged rat prostates (Wistar-Unilever strain)

Cluster name	Cluster size	p-values	FDR	Key compound	Altered metabolites	Increased	Decreased
Tricarboxylic Acids	3	0.0025	0.06	citric acid	3	0	3
Pentoses	5	0.0083	0.1	arabinose	2	2	0
Saturated FA	10	0.02	0.16	lauric acid	2	2	0
Hexosephosphates	7	0.27	1	glucose-1-phosphate	2	1	1
Purine Nucleosides	7	0.33	1	guanosine	2	0	2
Amino Acids	7	1	1	glycine	0	0	0
Amino Acids, Acidic	3	1	1	aspartic acid	0	0	0
Amino Acids, Aromatic	3	1	1	tyrosine	1	1	0
Amino Acids, Basic	4	1	1	lysine	0	0	0
Amino Acids, Branched-Chai	3	1	1	isoleucine	0	0	0
Amino Acids, Sulfur	3	1	1	cysteine	0	0	0
Butyrates	5	1	1	2-aminobutyric acid	0	0	0
Cholestanes	3	1	1	cholesterol	0	0	0
Cycloparaffins	3	1	1	conduritol-beta-epoxide	0	0	0
Dicarboxylic Acids	10	1	1	aminomalonate	0	0	0
Disaccharides	5	1	1	maltose	1	0	1
Fatty Alcohols	4	1	1	dodecanol	0	0	0
Hexoses	7	1	1	mannose	0	0	0
Phenols	3	1	1	1,2,4-benzenetriol	0	0	0
Purinones	3	1	1	xanthine	0	0	0
Pyrimidine Nucleosides	3	1	1	pseudo uridine	0	0	0
Sugar Acids	6	1	1	glyceric acid	0	0	0
Sugar Alcohols	9	1	1	hexitol	0	0	0
UnSaturated FA	4	1	1	arachidonic acid	0	0	0