

Developmental Expression of the Cytosolic Sulfotransferases in Human Liver. Sarah Dubaisi, Joseph A. Caruso, Roger Gaedigk, Carrie A. Vyhlidal, Philip C. Smith, Ronald N. Hines, Thomas A. Kocarek, and Melissa Runge-Morris. Drug Metabolism and Disposition.

Supplemental Table 1: Donor information for samples analyzed by RT-qPCR

Developmental Stage	Sample ID	Sex	Prenatal Age	Postnatal Age	Postmortem Interval (hours)
Prenatal	34	Female	18 weeks		1
	40	Female	18 weeks		1
	42	Female	18 weeks		1
	235	Female	19 weeks		1
	246	Male	19 weeks		1
	276	Male	18 weeks		1
	317	Male	19 weeks		1
	893	Female	19 weeks		2
	1330	Female	18 weeks		2
	1390	Female	18 weeks		1
Infant	75	Male		96 days	36
	82	Male		137 days	37
	83	Male		69 days	27
	326	Female		66 days	19
	1102	Male		119 days	22
	1472	Female		118 days	19
	1490	Female		70 days	23
Adult	289	Male		24 years, 362 days	5
	602	Male		27 years, 42 days	15
	819	Male		18 years, 217 days	28
	1021	Male		19 years, 242 days	14
	1028	Male		39 years, 11 days	14
	1539	Female		33 years, 177 days	23
	5611	Female		50 years, 183 days	15

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Supplemental Table 2: Donor information for samples analyzed by RNA-seq

Developmental Stage	Sample ID	Sex	Prenatal Age	Postnatal Age	Postmortem Interval (hours)
Prenatal	20636	Male	14.7 weeks		<2
	21248	Female	14.7 weeks		<2
	21251	Male	14.7 weeks		<2
	21432	Male	16.1 weeks		<2
	21601	Male	16.4 weeks		<2
	21605	Male	14.7 weeks		<2
	21806	Female	16.4 weeks		<2
	21883	Male	16.4 weeks		<2
	21949	Female	16.1 weeks		<2
	21978	Female	15.6 weeks		<2
Infant	86	Male		56 days	11
	432	Male		4 days	2
	435	Male		274 days	10
	569	Male		133 days	16
	759	Male		35 days	7
	774	Male		273 days	10
	780	Male		0 days	13
	825	Male		334 days	11
	1055	Male		96 days	12
	1157	Female		20 days	14
	1281	Male		206 days	6
	1296	Male		98 days	16
	1325	Female		182 days	18
	1547	Male		259 days	10
Child	64	Male		15 years	13
	346	Male		3 years	11.17
	617	Female		1 year, 347 days	9
	677	Male		1 year, 353 days	13
	689	Female		5 years	19.5
	792	Male		4 years	14.5
	872	Male		2 years	14.5
	885	Male		17 years	12.5
	1860	Male		8 years, 2 days	5
	8902	Male		7 years	Surgical specimen
	8906	Male		12 years	Surgical specimen
	8910	Male		14 years	Surgical specimen
	8917	Female		6 years	Surgical specimen
	8920	Male		11 years	Surgical specimen
	8924	Female		9 years	Surgical specimen
	8925	Male		8 years	Surgical specimen
	8926	Female		1 year, 304 days	Surgical specimen
	8935	Male		17 years	Surgical specimen
	9003	Female		7 years	Surgical specimen
	9006	Male		10 years	Surgical specimen
9011	Female		3 years, 183 days	Surgical specimen	
9013	Male		11 years	Surgical specimen	

9023	Female	2 years, 213 days	Surgical specimen
9027	Male	12 years	Surgical specimen
9032	Male	14 years	Surgical specimen
9036	Female	5 years	Surgical specimen
9101	Male	2 years	Surgical specimen
9127	Male	15 years	Surgical specimen
9608	Male	4 years	Surgical specimen
9609	Male	4 years	Surgical specimen
9611	Male	9 years	Surgical specimen
9612	Male	3 years	Surgical specimen
70898	Male	7 years	Not recorded
70994	Male	16 years	24
71000	Male	6 years	12
71008	Male	13 years	24
71058	Female	10 years	15
71281	Male	16 years	15

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Supplemental Table 3: TaqMan Gene Expression Assays used for qRT-PCR

Gene	TaqMan Assay ID
CYP3A4	Hs00604506_m1
CYP3A7	Hs00426361_m1
SULT1A1- TV1	APFVK4A ¹
SULT1A1- TV5	Hs00738644_m1
SULT1B1	Hs00234899_m1
SULT1C2	Hs00602560_m1
SULT1C3	Hs01371045_m1
SULT1C4	Hs00923769_m1
SULT1E1	Hs00193690_m1
SULT2A1	Hs00234219_m1
SULT2B1	Hs00190268_m1
18S	4319413E

¹ Custom-designed assay

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Supplemental Table 4: Multiple reaction monitoring (MRM) settings for SULT proteins

Protein	Peptide	Collision Energy (%)	Parent			Transition		
			Label	m/z	z	Fragment	m/z	z
SULT1A1	VHPEPGTWDSFLEK	23	light	547.935	3	b2	237.135	1
SULT1A1	VHPEPGTWDSFLEK	16	light	547.935	3	y6	738.367	1
SULT1A1	VHPEPGTWDSFLEK	23	heavy	550.606	3	b2	237.135	1
SULT1A1	VHPEPGTWDSFLEK	16	heavy	550.606	3	y6	746.381	1
SULT1A1	VHPEPGTWDSFLEK	35	light	821.399	2	b2	237.135	1
SULT1A1	VHPEPGTWDSFLEK	35	heavy	825.406	2	b2	237.135	1
SULT1A2	VYPHPGTWESFLEK	19	light	563.947	3	y5	623.340	1
SULT1A2	VYPHPGTWESFLEK	12	light	563.947	3	y12	714.351	1
SULT1A2	VYPHPGTWESFLEK	19	light	563.947	3	y10	1193.584	1
SULT1A2	VYPHPGTWESFLEK	19	heavy	566.619	3	y5	631.354	1
SULT1A2	VYPHPGTWESFLEK	12	heavy	566.619	3	y12	718.358	1
SULT1A2	VYPHPGTWESFLEK	19	heavy	566.619	3	y10	1201.598	1
SULT1A3	AHPEPGTWDSFLEK	24	light	538.591	3	b2	209.103	1
SULT1A3	AHPEPGTWDSFLEK	15	light	538.591	3	y5	623.340	1
SULT1A3	AHPEPGTWDSFLEK	15	light	538.591	3	b7	690.321	1
SULT1A3	AHPEPGTWDSFLEK	15	light	538.591	3	y6	738.367	1
SULT1A3	AHPEPGTWDSFLEK	24	heavy	541.263	3	b2	209.103	1
SULT1A3	AHPEPGTWDSFLEK	15	heavy	541.263	3	y5	631.354	1
SULT1A3	AHPEPGTWDSFLEK	15	heavy	541.263	3	b7	690.321	1
SULT1A3	AHPEPGTWDSFLEK	15	heavy	541.263	3	y6	746.381	1
SULT1B1	NLNDEILDR	19	light	551.280	2	b2	228.134	1
SULT1B1	NLNDEILDR	21	light	551.280	2	y3	403.230	1
SULT1B1	NLNDEILDR	19	light	551.280	2	y7	874.426	1
SULT1B1	NLNDEILDR	19	heavy	556.285	2	b2	228.134	1
SULT1B1	NLNDEILDR	21	heavy	556.285	2	y3	413.238	1
SULT1B1	NLNDEILDR	19	heavy	556.285	2	y7	884.435	1
SULT1C2	IVQETSFEK	18	light	540.782	2	y5	611.304	1
SULT1C2	IVQETSFEK	16	light	540.782	2	y6	740.346	1
SULT1C2	IVQETSFEK	14	light	540.782	2	y7	868.405	1
SULT1C2	IVQETSFEK	18	heavy	544.789	2	y5	619.318	1
SULT1C2	IVQETSFEK	16	heavy	544.789	2	y6	748.360	1
SULT1C2	IVQETSFEK	14	heavy	544.789	2	y7	876.419	1

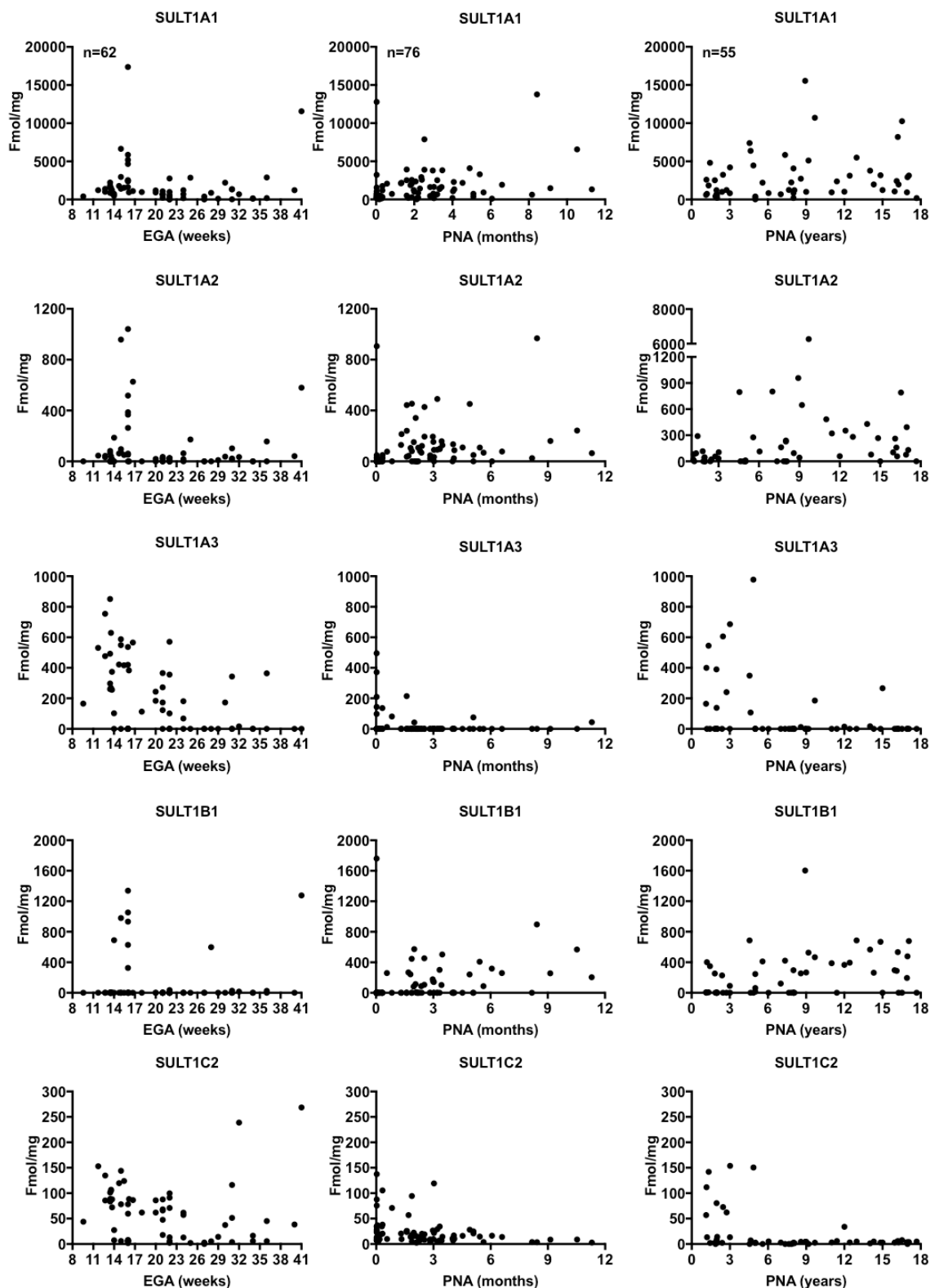
SULT1C4	IVHYTSFDVMK	20	light	447.229	3	y2	278.153	1
SULT1C4	IVHYTSFDVMK	23	light	447.229	3	b3	350.219	1
SULT1C4	IVHYTSFDVMK	13	light	447.229	3	y4	492.249	1
SULT1C4	IVHYTSFDVMK	20	heavy	449.900	3	y2	286.167	1
SULT1C4	IVHYTSFDVMK	23	heavy	449.900	3	b3	350.219	1
SULT1C4	IVHYTSFDVMK	13	heavy	449.900	3	y4	500.263	1
SULT1E1	KPSEELVDR	22	light	536.785	2	y8	472.738	2
SULT1E1	KPSEELVDR	26	light	536.785	2	y7	847.416	1
SULT1E1	KPSEELVDR	26	light	536.785	2	y8	944.468	1
SULT1E1	KPSEELVDR	22	heavy	541.789	2	y8	477.742	2
SULT1E1	KPSEELVDR	26	heavy	541.789	2	y7	857.424	1
SULT1E1	KPSEELVDR	26	heavy	541.789	2	y8	954.477	1
SULT2A1	DEDVIILTYPK	19	light	653.350	2	y6	734.445	1
SULT2A1	DEDVIILTYPK	18	light	653.350	2	y7	847.529	1
SULT2A1	DEDVIILTYPK	19	light	653.350	2	y8	946.597	1
SULT2A1	DEDVIILTYPK	19	heavy	657.358	2	y6	742.459	1
SULT2A1	DEDVIILTYPK	18	heavy	657.358	2	y7	855.543	1
SULT2A1	DEDVIILTYPK	19	heavy	657.358	2	y8	954.611	1

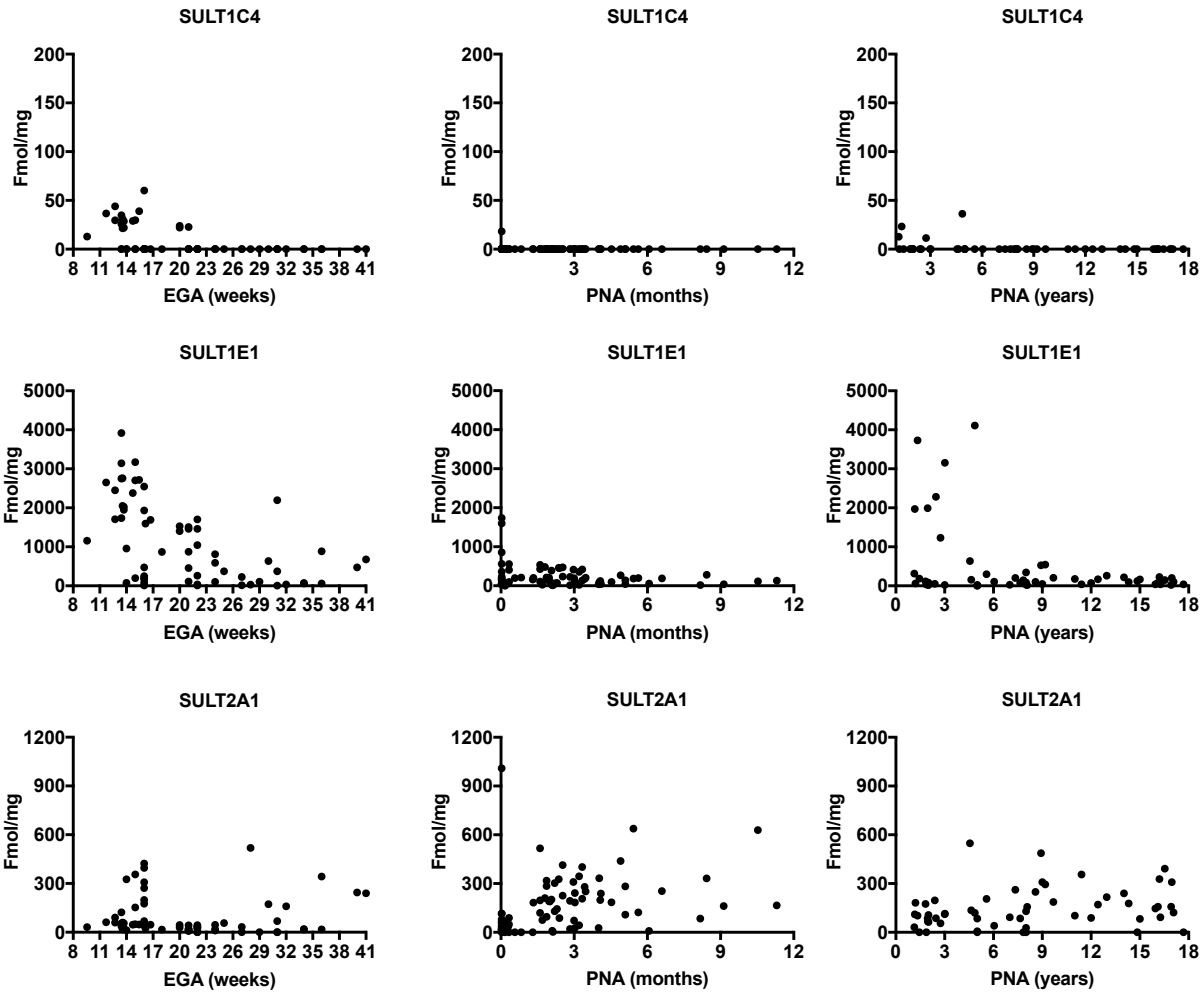
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Supplemental Table 5: Median Transcript per Million (TPM) values for *SULTs* analyzed by RNA-seq

<i>SULT</i> Transcript	Prenatal	Infant	1-2 years	2-5 years	6-11 years	12-18 years
<i>SULT1A1 (TV1/2)</i>	11.01	14.41	4.44	9.80	10.98	17.87
<i>SULT1A1 (TV3/4)</i>	0.62	0.59	0.38	0.41	0.86	1.44
<i>SULT1A1 (TV5)</i>	0.06	0	0	0.13	0	0.22
<i>SULT1A2</i>	1.66	4.11	2.88	4.65	4.81	2.03
<i>SULT1A3</i>	5.40	2.91	4.15	2.30	1.44	2.18
<i>SULT1B1</i>	24.07	17.23	17.94	11.30	13.13	16.61
<i>SULT1C2</i>	8.58	2.63	0.15	0.43	0.13	0.21
<i>SULT1C3</i>	0.05	0	0	0	0	0
<i>SULT1C4</i>	4.44	0.83	0.22	0.35	0.22	0.21
<i>SULT1E1</i>	34.63	3.63	1.35	0.54	0.60	1.31
<i>SULT2A1</i>	10.03	68.42	21.36	92.25	40.07	150.80
<i>SULT2B1</i>	0.05	0.02	0	0	0	0.02

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Supplemental Figure 1. Developmental expression of SULT protein in human liver cytosols analyzed by targeted quantitative proteomics. SULT protein contents (fmol/mg) are shown as scatter plots against age of the donor. Age was divided into three groups: prenatal [estimated gestational age (EGA) in weeks (left)], infant [postnatal age (PNA) in months (middle)], and 1-18 years-old (PNA in years, right).