

Supplementary Table 1 Differentially expressed genes (top 10 upregulated and downregulated genes) in gastrointestinal stromal tumor with liver metastasis tissues and normal gastric tissues

Gene_id	log2FoldChange	AveExpr	t	P.Value	Basemean
PENK	6.844207887	1.403645673	8.236916415	4.28032E-10	12.94086622
IGF2/INS-IGF2	6.300476152	0.755162112	14.29092821	3.63369E-17	28.94018406
GPR20	5.740239471	-0.922964109	11.50308647	3.6928E-14	22.17497778
CTSL	5.442822821	-0.838877224	12.15601423	6.70036E-15	23.84994806
SCRG1	5.250447404	0.78434894	8.859846416	6.48255E-11	14.8075747
PNMAL1	5.204067547	-0.720925781	14.66836078	1.52598E-17	29.78153732
NKX3-2	5.123814237	0.818542783	7.950114108	1.03555E-09	12.0669669
ANO1	4.896937105	-0.601117657	11.04456762	1.26491E-13	20.96437676
PLAT	4.827423735	-0.10845355	10.33093533	9.0743E-13	19.0233878
BCHE	4.782116125	0.457232378	10.22980781	1.20617E-12	18.74274358
REG1A	-5.230347349	-1.229396875	-12.19099512	6.12414E-15	23.93807885
KCNE2	-5.310700975	2.112785574	-7.22323257	1.00717E-08	9.817446466
TFF1	-5.366578246	0.1977936	-7.730715552	2.04714E-09	11.39288261
TSPAN8	-5.373529599	-1.960674717	-9.718550164	5.18856E-12	17.30289202
SPINK1	-5.420634756	-1.427137747	-9.797991917	4.12695E-12	17.52891222
ATP4A	-5.451008143	1.893608368	-6.795508606	3.91713E-08	8.475461321
GKN2	-5.75735135	0.051301212	-7.609466164	2.98937E-09	11.01843021
MT1G	-5.784347313	-0.497035402	-10.78858616	2.54515E-13	20.27610262
GKN1	-5.958290884	0.233536738	-7.440605803	5.07621E-09	10.49482006
ATP4B	-6.263562611	1.010882993	-7.603713877	3.04365E-09	11.00063308

Supplementary Table 2 Differentially expressed genes including insulin-like growth factor 2 in 7 Imatinib sensitive and 7 Imatinib-resistant gastrointestinal stromal tumor patients

Gene_id	BaseMean	log2FoldChange	lfcSE	stat	P. Value
LIPF	952.7256732	13.35286231	1.024231655	13.03695531	7.54E-39
PGC	734.5419232	10.54146889	0.769557364	13.69809371	1.04E-42

PGA3	1408.04567	10.02822623	0.6100117	16.43939981	9.99E-61
CHL1	3477.365165	9.502394497	1.307189002	7.269334795	3.61E-13
GKN1	127.7879507	8.769353886	0.966963162	9.06896377	1.20E-19
PGA5	243.8576229	8.467030673	0.745825905	11.35255643	7.20E-30
BARX1	1606.334133	8.227721211	1.352980404	6.081182835	1.19E-09
ASTN1	399.3504016	7.82954954	1.196893999	6.541556349	6.09E-11
HMGA2	778.6947972	7.449935897	1.516075754	4.913960189	8.93E-07
GKN2	14.82445352	7.345777519	1.088059748	6.751262998	1.47E-11
CBLIF	32.63131767	7.32263541	1.040920216	7.034771058	2.00E-12
DKK4	721.2503454	7.306582931	1.426067949	5.123586807	3.00E-07
RPSAP52	13.40964974	7.202426064	2.376627433	3.030523827	0.002441299
FERMT1	83.76629233	7.116242256	1.593961368	4.464501084	8.03E-06
ATP4B	14.80024163	6.756208331	1.062189968	6.360640312	2.01E-10
DCAF12L1	35.01190873	6.712320391	2.948714563	2.276354746	0.022824786
GPR88	981.9529821	6.536456322	1.398677837	4.673310857	2.96E-06
LINC02899	15.85949563	6.268220595	1.941431757	3.228658732	0.001243722
SSTR1	406.1744609	6.226394532	2.384678418	2.610999657	0.009027798
PGA4	269.2716344	6.20801204	1.187919121	5.225955143	1.73E-07
CHL1-AS1	6.696874751	6.197253514	2.259163461	2.743162954	0.006085048
CHL1-AS2	8.949331897	6.021451399	1.978305337	3.04374218	0.002336553
BMPR1B-DT	8.487690326	5.948911085	2.451616341	2.426526119	0.015244153
NDST4	2200.782972	5.937272181	1.521915868	3.901182913	9.57E-05
PITX2	114.5507609	5.904611119	1.64861959	3.581548559	0.000341564
CTNNA3	1849.109973	5.895543717	1.118920781	5.268955423	1.37E-07
TFF1	5.311258716	5.863746815	1.134430479	5.168890402	2.35E-07
TMEM229A	23.99374665	5.811470398	2.198089208	2.643873768	0.008196322
RPL7AP51	7.410341018	5.744168717	1.374313469	4.179664136	2.92E-05
HMGA2-AS1	142.7300814	5.667249833	1.568182993	3.613895736	0.00030163
MUC5AC	18.81350947	5.538958534	0.844059319	6.562285859	5.30E-11
SLC44A5	310.9678177	5.510970103	1.313788906	4.194715054	2.73E-05
KCNA4	20.07121277	5.490661932	1.592830441	3.44711012	0.000566618
MYL3	21.42296842	5.457313107	2.046544701	2.666598537	0.007662314
MESTP3	3.965414351	5.448394934	2.182131978	2.496821911	0.012531187
ADCY5	954.249799	5.418573896	1.489512177	3.637817791	0.000274958

DLGAP1	223.6071043	5.292943487	1.50341024	3.520624873	0.000430531
HMX1	3.567941319	5.284606557	2.063613702	2.560850682	0.010441622
NUTM2E	3.342534968	5.196892688	2.218344346	2.342689807	0.019145293
LINC03021	3.196683208	5.140065368	2.01325636	2.55311021	0.010676571
SCT	7.015986424	5.067004727	1.891178477	2.67928426	0.007377973
GREM1	13532.97683	5.032752206	1.548515582	3.250049443	0.001153849
CHIA	13.51211193	5.023032826	0.932349473	5.387500045	7.14E-08
SEMA3D	734.6501493	4.980857082	1.166075317	4.271471156	1.94E-05
SLC9A4	2.690558061	4.883990694	1.279986296	3.815658582	0.00013582
PHF21B	4.108255271	4.880366342	1.990489823	2.451841896	0.014212709
DMKN	29.88494853	4.85022584	1.441550904	3.36458867	0.000766578
CLEC3A	2.612381334	4.837830863	2.4131212	2.004802272	0.04498419
VIT	2.559846791	4.816566217	2.010555598	2.395639406	0.016591404
GMNC	5.856978354	4.810640525	1.691695988	2.843679101	0.004459594
PDCD6IPP1	103.4836786	4.75239306	1.055333556	4.503214205	6.69E-06
BNC1	117.9725079	4.687632946	1.358618315	3.450294239	0.000559976
HOXB-AS3	78.53823452	4.574367623	1.364657662	3.35202575	0.000802226
GREM1-AS1	32.93464199	4.49988442	1.981636915	2.270791579	0.023159598
ODAD2	105.104181	4.453800896	1.554547051	2.865015178	0.004169893
TFF2	4.6480204	4.447751781	1.094185137	4.064898735	4.81E-05
CFAP95	1.967928082	4.43938891	2.061382656	2.153597682	0.031271736
IGF2BP2	130.1255849	4.404741379	1.301895785	3.383328705	0.000716129
PABPC1L2B- AS1	2.895687704	4.362292504	2.028273049	2.150742232	0.031496551
NALCN	191.0233883	4.361912388	1.334238185	3.269215674	0.001078461
LMO3	55.44273672	4.352953802	1.088333909	3.999649157	6.34E-05
FGF13-AS1	37.63669721	4.310914151	1.155316334	3.731371249	0.00019044
TRAV8-4	5.983380617	4.224754075	1.904410313	2.218405376	0.026527205
SMOC2	928.186801	4.208127482	1.369162316	3.073505187	0.0021156
CBLN2	5.518845741	4.20755534	1.479240137	2.844403172	0.004449471
HBD	5.88753846	4.182774395	1.469039801	2.847284595	0.004409392
RGMA	299.9860065	4.131007512	1.155592719	3.574795381	0.000350502
MUC5B	33.82866544	4.128682817	0.671294083	6.150333992	7.73E-10
LOC10254629	8.224337648	4.116227517	1.995715671	2.062532042	0.03915711

BARX1-DT	18.24550551	4.0943236	1.962202238	2.086596132	0.036924657
FGF14-IT1	116.0886767	4.006603306	1.309328549	3.060044257	0.002213043
VTCN1	464.7502974	4.002292403	1.420305165	2.817910195	0.004833733
CLEC18B	43.81806552	3.999304479	1.010467994	3.957873483	7.56E-05
TTC6	6.539101753	3.985046053	1.468873438	2.712994837	0.006667815
KCNK15	3.42324784	3.97643529	1.612434584	2.466106426	0.013659074
CCND1	4270.915141	3.941245706	1.150806209	3.42476924	0.000615322
MAP1LC3C	96.27652072	3.923302853	1.024915203	3.82792922	0.000129226
PLAG1	790.9224645	3.914859111	1.163498739	3.364729999	0.000766186
LRRTM3	130.590002	3.905246084	0.96146049	4.061785299	4.87E-05
IGFL4	28.31234049	3.903841613	1.703752623	2.291319502	0.021944941
OLFML1	493.9620117	3.893498985	1.057909795	3.68036954	0.000232896
LOC10192779	1.346041055	3.879819574	1.919171157	2.021612069	0.043216444
3					
FIGN	239.9793909	3.835209397	1.390758064	2.757639517	0.005822036
SUSD3	141.6609842	3.82044774	1.051628543	3.632887075	0.000280268
CLEC18A	156.8140206	3.817891266	1.047366209	3.645230518	0.000267152
LOC10537864	73.55691629	3.816945101	1.331088302	2.867537109	0.004136803
4					
ACTC1	11.75981743	3.806338995	1.341963182	2.836395996	0.004562584
PCSK9	10.41302671	3.7556145	1.499884856	2.503935209	0.012282052
NPIPA8	44.0676015	3.715275577	1.3668473	2.718135067	0.006565103
HJV	11.41606075	3.697604512	1.287086244	2.872849065	0.004067884
DUX4L27	3.770339543	3.694361832	1.605695217	2.300786471	0.021403704
TBX22	26.97602038	3.672304932	1.85282056	1.98200787	0.04747836
GRM3	9.762173465	3.662983098	1.628897476	2.248749938	0.02452841
CAPN8	1.823024425	3.652395482	1.268160311	2.880073954	0.003975819
NELL1	1512.183035	3.631428019	1.630967907	2.226547809	0.02597751
FAM162B	72.22118034	3.593942109	1.063980988	3.377825496	0.000730614
PROKR1	5.753393336	3.592547384	1.686405035	2.130299251	0.033146915
GDF7	902.5055271	3.589489877	1.410353638	2.545099171	0.010924671
SERPINA6	1.097733206	3.58891585	1.461027812	2.45643226	0.014032425
SCRG1	1604.366835	3.566597696	0.928233559	3.84234944	0.000121862

CCKBR	2292.362168	3.56127937	1.496013076	2.380513531	0.017288526
MUCL3	3.968535193	3.551971908	1.12102671	3.16849891	0.001532283
FGF14	1336.170903	3.544854919	1.151598622	3.078203508	0.002082526
PLCXD3	2771.700203	3.539779365	1.679211821	2.108000504	0.035030946
SLC4A1	12.52333859	3.535361012	1.052510715	3.358978642	0.000782311
LINC01799	1.617736773	3.471496654	1.675621221	2.071766943	0.038287181
TYRP1	2606.560312	3.452194216	1.362410915	2.533886199	0.011280536
ASS1	256.0998133	3.451883261	1.025313847	3.36666014	0.000760844
PTP4A3	7571.311728	3.451606449	0.67647408	5.102348418	3.35E-07
TMDD1	2.38661596	3.431556036	1.497857164	2.290976815	0.021964755
C4orf19	299.1518295	3.410122619	1.492927515	2.28418499	0.022360661
CARMIL1	1057.692029	3.404757169	0.764935763	4.451036722	8.55E-06
COL19A1	1664.288767	3.394352795	1.663962383	2.039921592	0.041358136
SCUBE1	92.4238068	3.358349372	1.459001535	2.30181346	0.021345694
KLHL4	144.2600504	3.342780946	1.135085955	2.944958425	0.003229981
OR5B12	3.383041217	3.341076415	1.387732878	2.407578913	0.016058691
VWDE	618.5903649	3.336117697	1.536758007	2.170880308	0.029940221
RAI2	121.7649529	3.323707895	0.831182882	3.998768461	6.37E-05
SNX31	17.31369964	3.298815888	0.928639341	3.552311154	0.000381863
KLHL33	14.06736092	3.29502293	0.871666485	3.780141816	0.000156739
CHST4	31.7111444	3.294197615	0.943938357	3.489844004	0.000483303
TRD-AS1	30.61279876	3.289151391	1.083907169	3.034532371	0.002409089
LOC442497	3.259050502	3.250918718	1.5460274	2.102756211	0.035487086
RGS5	34601.41761	3.243004909	1.285953068	2.52186879	0.011673324
UNC80	1071.917282	3.239420655	1.436654758	2.254835852	0.024143634
NRCAM	655.0909581	3.230415808	1.031934321	3.130447105	0.001745404
PTGFR	30.10151605	3.228815653	1.001862986	3.2228116	0.00126939
LRRC3B-AS1	2.083773039	3.219511347	1.279465149	2.516294679	0.011859598
CNTN1	4340.783291	3.217119828	1.261885112	2.549455413	0.010789131
MUC6	7.321013697	3.212974788	0.782329065	4.106935217	4.01E-05
DAZ1	9.560137411	3.20802256	0.82986456	3.865718235	0.000110763
AMBP	7.364082067	3.180748284	1.28438223	2.476481073	0.013268466
PAH	4.89512103	3.163017663	0.897442783	3.524478356	0.000424317
GADL1	14.38297837	3.160984165	1.274298976	2.48056714	0.013117356

HOXB6	91.5243621	3.160734543	1.211755461	2.608393067	0.009096843
GSTM5	243.7024618	3.159766965	1.514762081	2.08598235	0.036980222
GRIN3A	316.5183478	3.152272713	1.026255011	3.071627108	0.002128955
ST8SIA3	1.948507754	3.119160741	1.585750044	1.966993949	0.049183908
TNNI2	34.29102722	3.11581956	0.894877239	3.481840216	0.000497981
SPON1	1412.934061	3.11338276	1.332762142	2.336037814	0.019489271
GADD45G	1024.492619	3.099557374	0.678577771	4.56772607	4.93E-06
LINC00672	334.0029268	3.096846162	0.890127893	3.479102484	0.000503096
VSIG2	4.689772302	3.077168911	1.120396748	2.746499325	0.006023501
TNFSF4	1026.415209	3.066346621	1.010583095	3.034235023	0.002411465
CLEC12B	37.83569077	3.064390549	1.205071433	2.542911952	0.010993293
PPP3R2	4.702214943	3.063926373	1.516130426	2.02088575	0.043291593
KLRD1	1074.737567	3.04316544	0.958507186	3.174901018	0.001498876
PSD2	24.09938806	3.005452833	1.203851595	2.496531005	0.01254147
HEPH	1459.009409	2.989503254	0.793832371	3.765912508	0.000165942
CLDN1	79.63613118	2.98794187	1.143831594	2.61222184	0.008995586
RN7SL571P	1.833198096	2.985920875	1.499095919	1.991814424	0.046391423
CCL17	6.009213911	2.981662848	0.988494037	3.016369078	0.002558217
TCEAL5	70.27372212	2.977827926	1.213834334	2.45324081	0.014157553
P2RY14	317.3118468	2.954711342	0.922859073	3.2016929	0.001366226
ELN	3317.227675	2.927784841	0.893784853	3.275715436	0.001053947
SYT8	1.753876587	2.927139829	1.431158872	2.045293424	0.040825939
SYN2	5.816642828	2.92501615	1.23622407	2.36608898	0.017977123
DACT1	2486.234689	2.923168629	0.888905739	3.28850237	0.001007219
CAVIN3	903.3261886	2.92298765	1.214066206	2.407601526	0.016057697
FGF12	179.555243	2.903167175	1.168190028	2.485184006	0.012948449
CLEC18C	11.54014855	2.900246947	1.350938653	2.146838378	0.031806151
GFRA3	14.26366415	2.872720432	1.376903459	2.086363001	0.036945754
KRT86	8.814424871	2.836792603	1.333103056	2.127961968	0.033340237
TBXA2R	76.94739265	2.823136844	1.168442655	2.416153529	0.015685446
COL8A1	19656.61925	2.794736865	0.599147807	4.664519894	3.09E-06
MYPN	216.4868377	2.785272167	1.150608036	2.42069591	0.01549083
C1QTNF7	4468.405845	2.773384745	0.813987712	3.407157999	0.000656431
MECOM	4868.273165	2.760069418	1.173517427	2.351962873	0.018674639

FILIP1	1611.140021	2.736182349	0.970770664	2.818567197	0.004823851
EPDR1	171.1199906	2.736124189	0.980830889	2.789598307	0.005277347
SNCAIP	675.204224	2.733684098	1.364475618	2.003468631	0.045127011
PAR3-DT	2.203856362	2.720439386	1.165203927	2.334732422	0.019557403
C7	104150.0877	2.681665332	1.293579181	2.073058511	0.038166835
UGT2B15	9.676274543	2.668486922	1.013092394	2.634001536	0.008438511
LINC00561	52.88302987	2.66815546	1.145085597	2.330092587	0.019801258
ANKRD35	370.9873214	2.665695035	0.950339479	2.804992421	0.005031776
CLEC1A	1158.532694	2.633692536	1.10448413	2.384545386	0.017100239
SLC13A1	2.175654277	2.631264741	1.23747416	2.126318937	0.033476712
CALHM1	4.227017987	2.628900912	1.198208146	2.194026906	0.028233475
CSDC2	38.67506113	2.624338814	1.104555033	2.375924002	0.017505068
TNN	874.6464139	2.594835383	1.195292051	2.170879812	0.029940259
KHDRBS2	33.42834662	2.594095263	1.258566445	2.061150822	0.039288654
SLC38A3	117.4535965	2.587775907	0.970321756	2.666925575	0.007654862
LINC02593	121.8269312	2.576654443	1.152052901	2.236576499	0.025314032
LOC10272421 9	135.3168693	2.559969662	0.814790914	3.141873107	0.001678708
FAM81B	153.59297	2.555173829	1.06136336	2.40744492	0.016064585
TCN1	4.134472405	2.553350004	1.05893425	2.411245083	0.015898161
PODN	1104.738207	2.537633968	0.894543614	2.836791778	0.004556932
FGL2	120710.4962	2.52343858	0.960879408	2.626176147	0.008635012
LRRC70	621.5713965	2.52006464	0.837398703	3.009396397	0.002617673
LRRN1	148.9981155	2.518029794	1.1661138	2.15933453	0.030824223
MPPED2	357.3317624	2.48208284	1.228775939	2.019963738	0.043387149
C2orf66	6.656641372	2.469820417	1.00355981	2.461059514	0.013852739
C4B	2853.341239	2.467232888	1.11523143	2.212305734	0.026945547
MARK1	145.5010698	2.458340429	1.04339759	2.356091727	0.018468357
CBFA2T3	16.59280697	2.448722966	0.942671742	2.59764121	0.009386652
RYR3	66.80853489	2.441839006	0.982058973	2.486448444	0.012902526
EYA4	922.6051046	2.436947742	1.133611701	2.149719997	0.03157737
MAMDC2	2144.632183	2.430893388	1.03570597	2.347088323	0.018920769
SOX11	131.1933416	2.417573585	1.109944651	2.17810283	0.029398382
HABP2	2.514541166	2.387681001	1.213648343	1.967358184	0.049141932

GASK1B	6216.201754	2.386290163	0.997303893	2.392741249	0.01672303
LRATD1	260.267614	2.38620691	0.853640449	2.795330181	0.005184673
MGC12916	19.97247881	2.376696961	0.975059833	2.437488327	0.014789692
BAAT	3.818658543	2.374463705	1.041710472	2.279389302	0.022643934
MTHFD2P7	4.629499104	2.374200018	1.193668014	1.988995256	0.046701727
NUAK1	1504.700198	2.368647839	1.011098455	2.342648065	0.019147435
NPTXR	30.04925318	2.365585414	1.118346589	2.115252497	0.034408433
CHST6	103.4625589	2.365449765	0.877791867	2.694772935	0.007043661
CRMP1	364.9413209	2.351827793	0.809518271	2.905218916	0.003669963
CTSE	9.795932774	2.330937517	0.907768534	2.567766376	0.010235611
IGF2	32073.7	2.32839797	0.9839	2.36640238	0.018700934