Gene Expression Profile based Classification Models of Psoriasis

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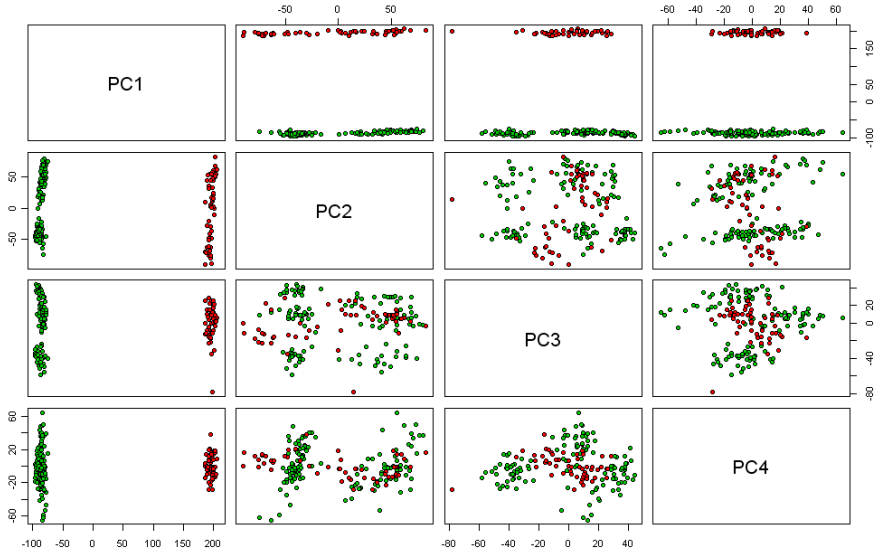
Short title: A Psoriasis Gene Expression Signature

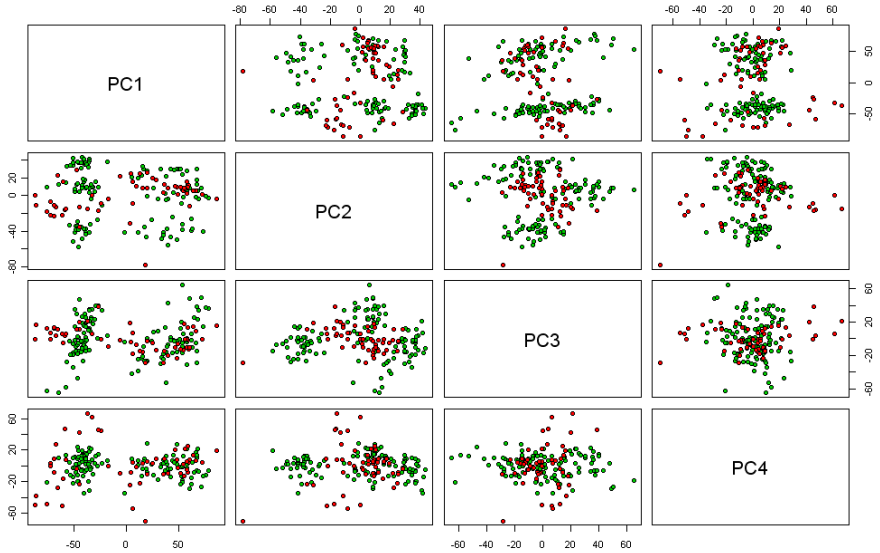
Supporting information

Supplementary Figure S1

Principle components analysis of gene expression data for raw dataset (A) and adjusted dataset (B). Principle component directions show the marked differences between the original and DWD-adjusted samples based on the first four principle components. Red: dataset GSE14905; Green: dataset GSE13355.



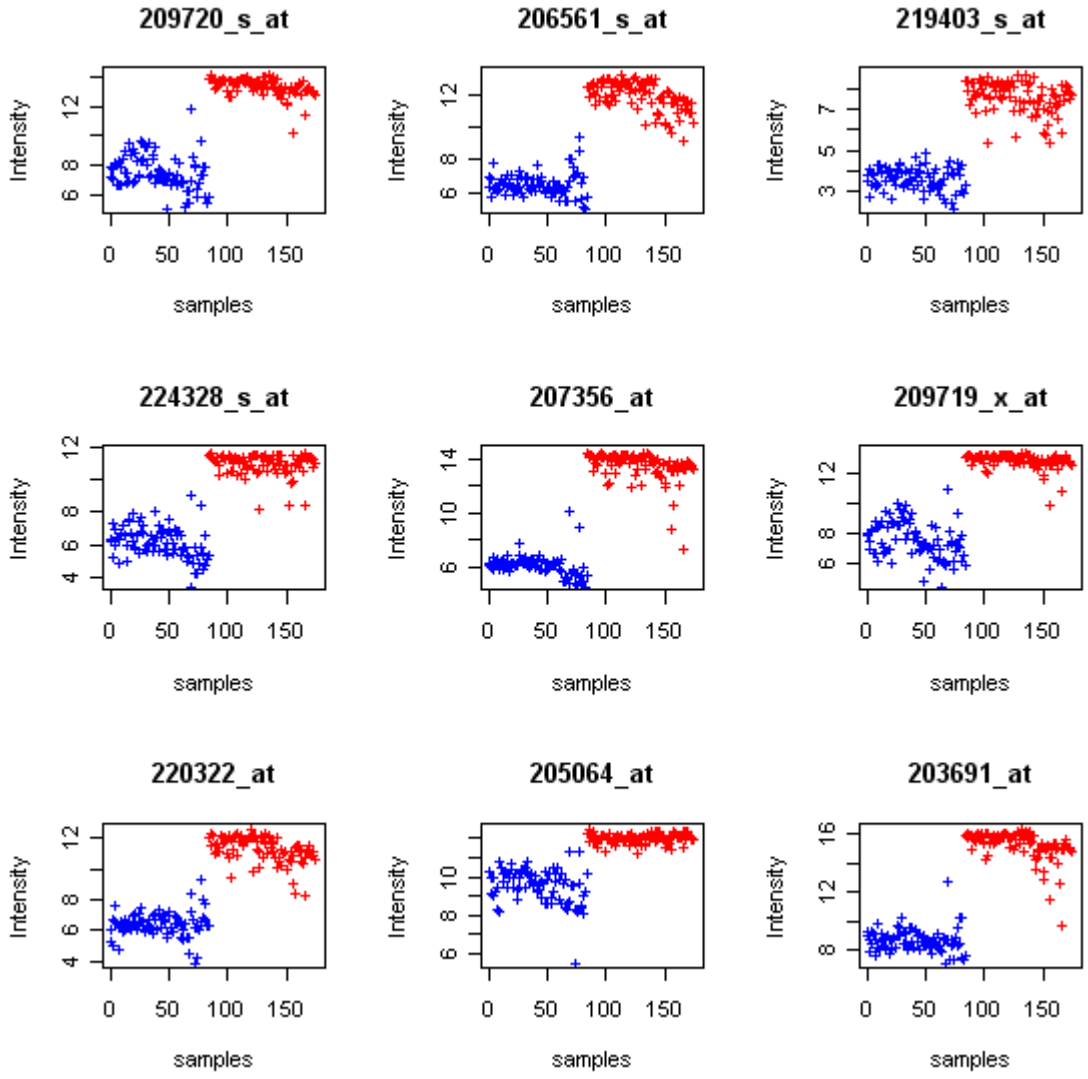
(a)

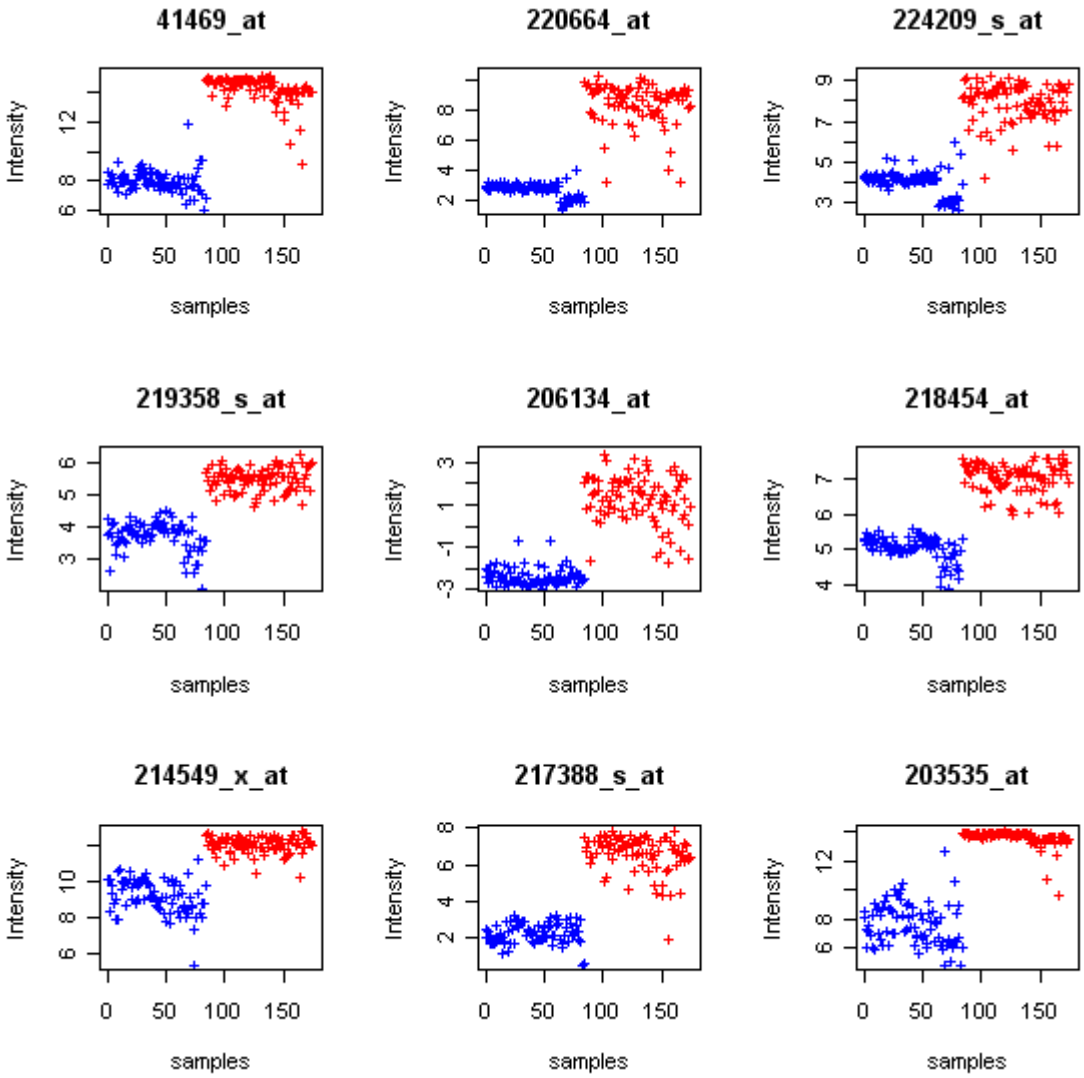


(b)

Supplementary Figure S2

Scatterplot of expression values of the rest of 36 features. Each panel corresponds to one probe set. The y-axis represents the logarithmic expression intensity of each probe set, and the x-axis represents the samples. The red and blue colors respectively correspond to psoriasis and normal group.

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220664_at
224209_s_at
219358_s_at
206134_at
218454_at
214549_x_at
217388_s_at
203535_at
Intensity
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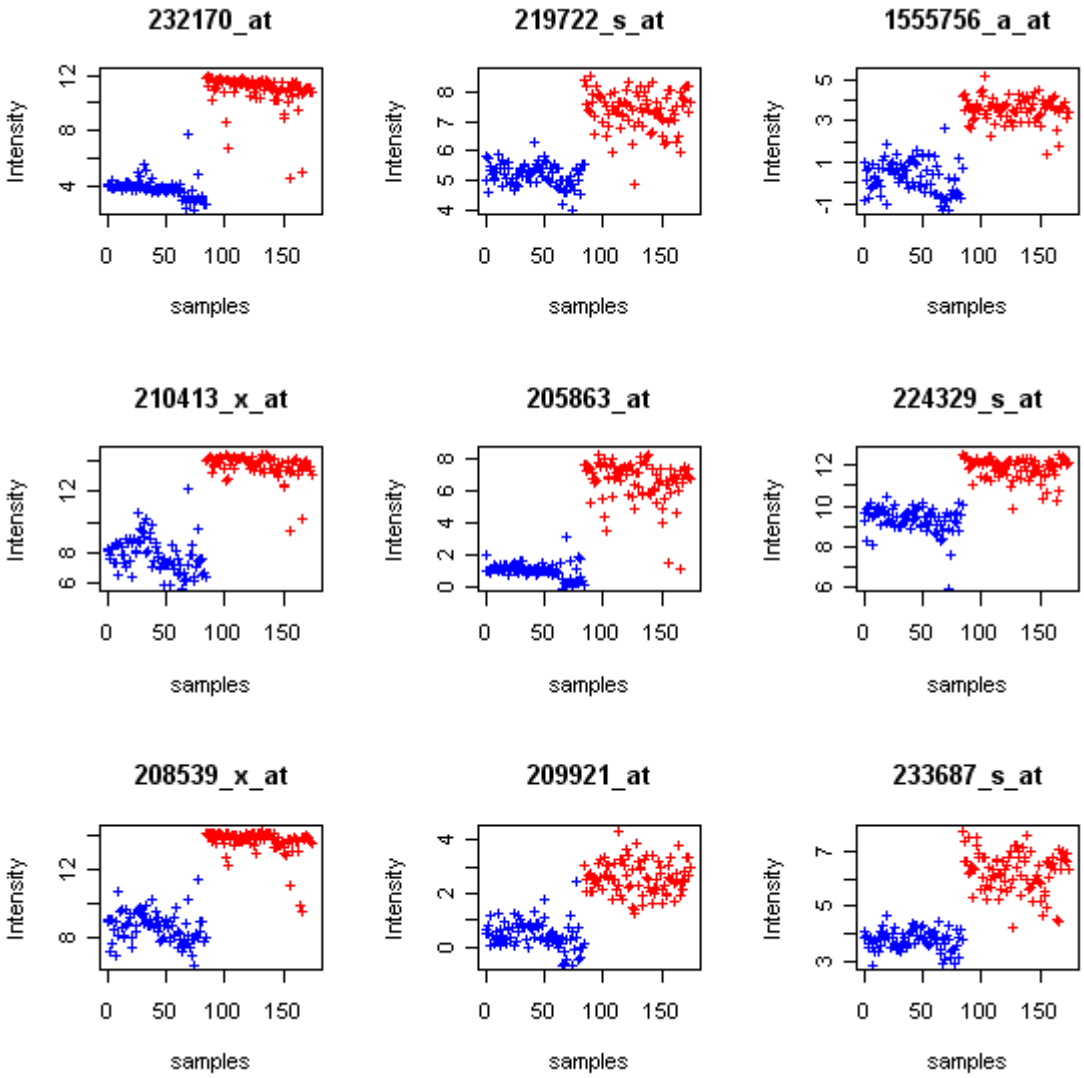
50
100
150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Intensity
samples
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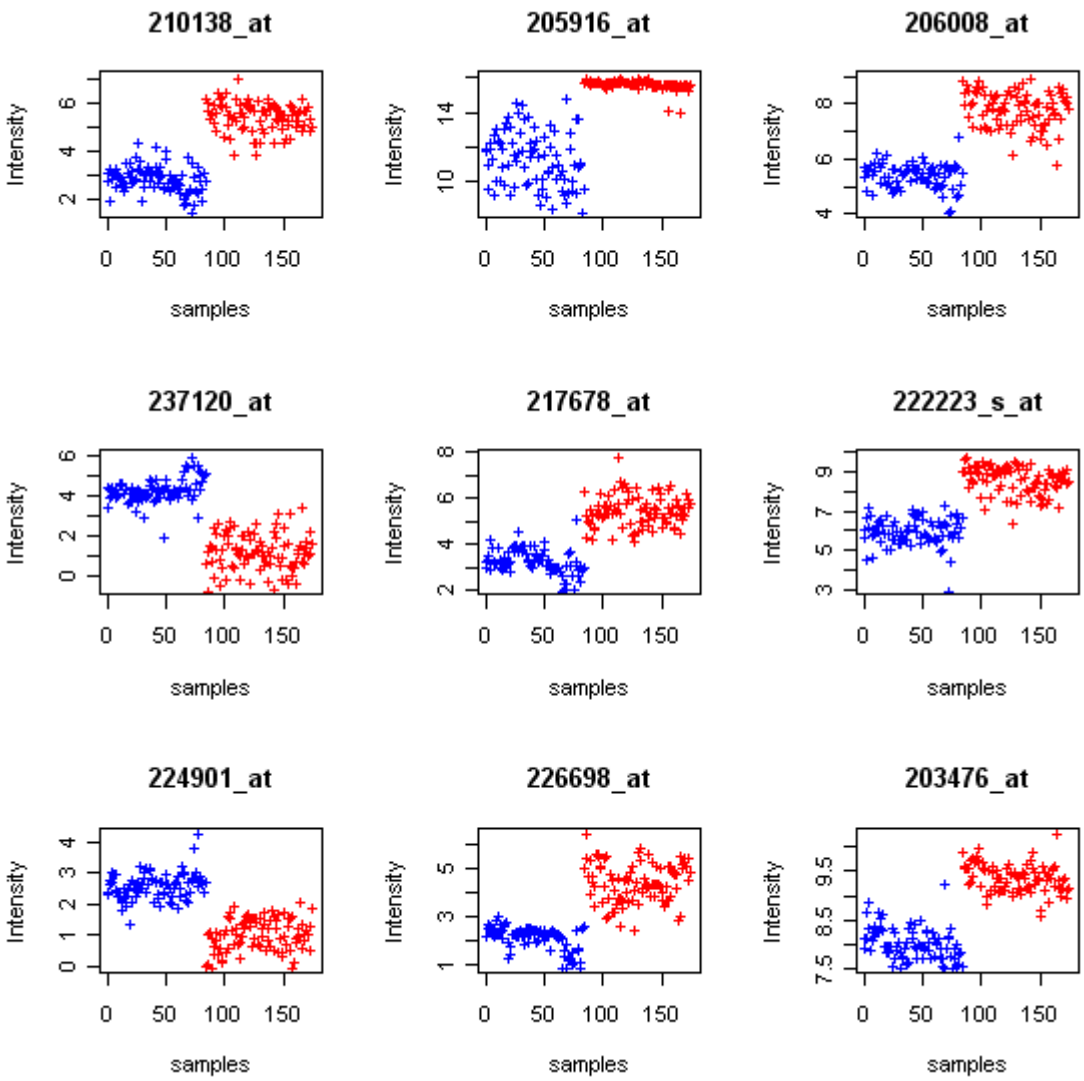
50
100
150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222223_s_at
224901_at
226698_at
203476_at
Intensity
samples
0
50
100
150

Supplementary Table S1

Sample information on the datasets used in the integrated analysis. Total 176 subjects including 91 psoriasis patients and 85 healthy controls for the gene expression profiles from two different resources were recruited for this study.

Dataset ID	Sample ID	Platform	Patient number	Disease status	Institue/Author
GSE14905	GSM372286	HG-U133P2	Normal-1	Normal	Brandon W Higgs et al.
GSE14905	GSM372287	HG-U133P2	Normal-2	Normal	Brandon W Higgs et al.
GSE14905	GSM372288	HG-U133P2	Normal-3	Normal	Brandon W Higgs et al.
GSE14905	GSM372289	HG-U133P2	Normal-4	Normal	Brandon W Higgs et al.
GSE14905	GSM372290	HG-U133P2	Normal-5	Normal	Brandon W Higgs et al.
GSE14905	GSM372291	HG-U133P2	Normal-6	Normal	Brandon W Higgs et al.
GSE14905	GSM372292	HG-U133P2	Normal-7	Normal	Brandon W Higgs et al.
GSE14905	GSM372293	HG-U133P2	Normal-8	Normal	Brandon W Higgs et al.
GSE14905	GSM372294	HG-U133P2	Normal-9	Normal	Brandon W Higgs et al.
GSE14905	GSM372295	HG-U133P2	Normal-10	Normal	Brandon W Higgs et al.
GSE14905	GSM372296	HG-U133P2	Normal-11	Normal	Brandon W Higgs et al.
GSE14905	GSM372297	HG-U133P2	Normal-12	Normal	Brandon W Higgs et al.
GSE14905	GSM372298	HG-U133P2	Normal-13	Normal	Brandon W Higgs et al.
GSE14905	GSM372299	HG-U133P2	Normal-14	Normal	Brandon W Higgs et al.
GSE14905	GSM372300	HG-U133P2	Normal-15	Normal	Brandon W Higgs et al.
GSE14905	GSM372301	HG-U133P2	Normal-16	Normal	Brandon W Higgs et al.
GSE14905	GSM372302	HG-U133P2	Normal-17	Normal	Brandon W Higgs et al.
GSE14905	GSM372303	HG-U133P2	Normal-18	Normal	Brandon W Higgs et al.
GSE14905	GSM372304	HG-U133P2	Normal-19	Normal	Brandon W Higgs et al.
GSE14905	GSM372305	HG-U133P2	Normal-20	Normal	Brandon W Higgs et al.
GSE14905	GSM372306	HG-U133P2	Normal-21	Normal	Brandon W Higgs et al.
GSE14905	GSM372308	HG-U133P2	LS-1	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372310	HG-U133P2	LS-2	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372312	HG-U133P2	LS-3	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372314	HG-U133P2	LS-4	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372316	HG-U133P2	LS-5	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372318	HG-U133P2	LS-6	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372320	HG-U133P2	LS-7	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372322	HG-U133P2	LS-8	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372324	HG-U133P2	LS-9	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372325	HG-U133P2	LS-10	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372327	HG-U133P2	LS-11	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372329	HG-U133P2	LS-12	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372331	HG-U133P2	LS-13	Lesion Skin	Brandon W Higgs et al.
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GSE14905	GSM372336	HG-U133P2	LS-16	Lesion Skin	Brandon W Higgs et al.
GSE14905	GSM372338	HG-U133P2	LS-17	Lesion Skin	Brandon W Higgs et al.

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GSE13355	GSM337367	HG-U133P2	Individual_3992_PP_sample	Lesion Skin	Goncalo Abecasis et al.
GSE13355	GSM337368	HG-U133P2	Individual_4079_PP_sample	Lesion Skin	Goncalo Abecasis et al.
GSE13355	GSM337369	HG-U133P2	Individual_4089_PP_sample	Lesion Skin	Goncalo Abecasis et al.
GSE13355	GSM337370	HG-U133P2	Individual_4093_PP_sample	Lesion Skin	Goncalo Abecasis et al.

GSE13355	GSM337371	HG-U133P2	Individual_4160_PP_sample	Lesion Skin	Goncalo Abecasis et al.
GSE13355	GSM337372	HG-U133P2	Individual_4213_PP_sample	Lesion Skin	Goncalo Abecasis et al.
GSE13355	GSM337373	HG-U133P2	Individual_4344_PP_sample	Lesion Skin	Goncalo Abecasis et al.
GSE13355	GSM337374	HG-U133P2	Individual_4356_PP_sample	Lesion Skin	Goncalo Abecasis et al.
GSE13355	GSM337375	HG-U133P2	Individual_4503_PP_sample	Lesion Skin	Goncalo Abecasis et al.
GSE13355	GSM337376	HG-U133P2	Individual_5849_PP_sample	Lesion Skin	Goncalo Abecasis et al.

Supplementary Table S2

The selection features in this study. Columns "SVM-RFE", "ROC", and "Boruta" list the 80, 80, and 80 features selected by the feature selection algorithms SVM-RFE, ROC, and Boruta, respectively. Column "Overlap" lists the 21 features in the intersection of the three feature lists. Columns "Gene" and "Annotation" are the official gene symbols and functional annotations for the 21 features in the column "Overlap".

SVM-RFE	ROC	Boruta	Overlap	Gene	Annotation
227736_at	218454_at	219403_s_at	**227736_at**	**C10orf99**	**chromosome 10 open reading frame 99**
239430_at	219358_s_at	218454_at	**227735_s_at**	**C10orf99**	**chromosome 10 open reading frame 99**
224328_s_at	219403_s_at	227736_at	**239430_at**	**IGFL1**	**IGF-like family member 1**
206134_at	227736_at	219358_s_at	209720_s_at	Serpinb3	serpin peptidase inhibitor, clade B (ovalbumin), member 3
227735_s_at	206561_s_at	227735_s_at	206561_s_at	Akr1b10	aldo-keto reductase family 1, member B10 (aldose reductase); aldo-keto reductase family 1, member B10-like
209720_s_at	227735_s_at	206561_s_at	219403_s_at	HPSE	heparanase
1552478_a_at	212295_s_at	239430_at	224328_s_at	LCE3D	late cornified envelope 3D
224209_s_at	209720_s_at	212295_s_at	207356_at	DEFB4A	defensin, beta 4
201169_s_at	224204_x_at	224204_x_at	209719_x_at	Serpinb3	serpin peptidase inhibitor, clade B (ovalbumin), member 3
204712_at	239430_at	223032_x_at	220322_at	Il1f9	interleukin 1 family, member 9
207356_at	205064_at	209720_s_at	205064_at	Sprr1b	small proline-rich protein 1B (cornifin)
214146_s_at	209719_x_at	202345_s_at	203691_at	PI3	peptidase inhibitor 3, skin-derived
1564307_a_at	220322_at	210663_s_at	41469_at	PI3	peptidase inhibitor 3, skin-derived
202672_s_at	207356_at	217388_s_at	220664_at	SPRR2C	small proline-rich protein 2C (pseudogene); small proline-rich protein 2G
213796_at	220658_s_at	220658_s_at	224209_s_at	GDA	guanine deaminase
223861_at	220664_at	210652_s_at	206134_at	ADAMDEC1	ADAM-like, decysin 1
203691_at	41469_at	223880_x_at	214549_x_at	Sprr1a	small proline-rich protein 1A
223720_at	224328_s_at	217835_x_at	217388_s_at	Kynu	kynureninase (L-kynurenine hydrolase)
203096_s_at	203691_at	205064_at	203535_at	S100A9	S100 calcium binding protein A9
206561_s_at	205916_at	224329_s_at	232170_at	S100A7A	S100 calcium binding protein A7A
233011_at	203535_at	204385_at	205863_at	S100A12	S100 calcium binding protein A12
1555778_a_at	210138_at	220322_at			
1555019_at	212737_at	209719_x_at			
41469_at	35820_at	232082_x_at			
206177_s_at	210413_x_at	203560_at			
209719_x_at	221896_s_at	219722_s_at			
208078_s_at	225083_at	205660_at			
209189_at	1555756_a_at	224209_s_at			
208719_s_at	233687_s_at	220664_at			
217232_x_at	210652_s_at	221666_s_at			
204760_s_at	232170_at	207602_at			
210387_at	224376_s_at	224328_s_at			
220322_at	214549_x_at	225083_at			
219403_s_at	223586_at	35820_at			
214549_x_at	223880_x_at	210138_at			
203542_s_at	208650_s_at	207356_at			
202218_s_at	208708_x_at	1553589_a_at			
243780_at	224329_s_at	41469_at			
201044_x_at	206134_at	208650_s_at			

209921_at	217835_x_at	212737_at			
209116_x_at	205660_at	203691_at			
220664_at	206008_at	208708_x_at			
205064_at	208539_x_at	233687_s_at			
230193_at	210663_s_at	204478_s_at			
216921_s_at	217388_s_at	210413_x_at			
230746_s_at	217845_x_at	205916_at			
236119_s_at	223032_x_at	223586_at			
229476_s_at	211906_s_at	204527_at			
201195_s_at	226226_at	203535_at			
215779_s_at	204385_at	206008_at			
210809_s_at	223086_x_at	209921_at			
202643_s_at	232082_x_at	214549_x_at			
235117_at	204465_s_at	205863_at			
232090_at	217272_s_at	218719_s_at			
231089_at	224209_s_at	203476_at			
205713_s_at	219722_s_at	206134_at			
213515_x_at	202595_s_at	222223_s_at			
232170_at	222223_s_at	221698_s_at			
206643_at	204478_s_at	224376_s_at			
240951_at	207602_at	1555756_a_at			
243296_at	55081_at	209771_x_at			
205990_s_at	231948_s_at	221896_s_at			
202935_s_at	205863_at	208539_x_at			
203535_at	211075_s_at	211762_s_at			
227548_at	204825_at	208651_x_at			
213425_at	202338_at	206166_s_at			
201465_s_at	237120_at	232170_at			
211696_x_at	221666_s_at	202503_s_at			
214598_at	206653_at	237120_at			
244692_at	209771_x_at	202595_s_at			
217388_s_at	216379_x_at	204825_at			
214375_at	214710_s_at	226698_at			
200730_s_at	203560_at	221779_at			
205225_at	202503_s_at	203964_at			
209800_at	225787_at	217678_at			
228592_at	210638_s_at	216379_x_at			
211699_x_at	205681_at	231771_at			
205863_at	213571_s_at	224901_at			
214240_at	202345_s_at	209772_s_at			
223278_at	208651_x_at	217845_x_at			