

# Analysis for Supplement Table 3

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This is a supplementary document of supplement table 3, in the paper "Chromosomal Instability Determines Taxane Response". This document contains technical details of classification analysis based on expression of intrinsic genes in 44 breast cancer samples.

## 1 Prerequisite for the Analysis

The entire classification analysis is conducted on the R-2.8.1, a language and environment for statistical computing. Several packages are required to process microarray data and generate numerical and graphical output for survival analysis.

```
> library(affy)
```

## 2 Data and Customized Functions

The intrinsic classification is based on Perou et al (Nature, 2000). The centroids were retrieved from the supplement data.

```
> library(affy)
> load("/home/projects/qiyuan/R/Intrinsic/Centroids.RData")
> load("/home/projects/sbge_cancer/data/exprs/habermann.RData")
```

We classified the samples by comparing the profile of the 536 intrinsic genes of each sample to the 5 intrinsic centroids, respectively. The centroid to which the sample profile indicates the highest correlation then determines the subtype of that sample.

```
> IntrinsicTyp <- function(profile, Intrinsic) {
+   profile <- profile[rownames(profile) %in% rownames(Intrinsic),
+   ]
+   profile <- profile[order(apply(profile, 1, function(x) var(x,
+   na.rm = T)), decreasing = T), ]
+   profile <- profile[!duplicated(rownames(profile)), ]
+   indx <- sort(intersect(rownames(profile), rownames(Intrinsic)))
+   profile <- t(apply(profile, 1, function(x) x - mean(x)))
+   C <- colnames(Intrinsic)[apply(profile[indx, ], 2, function(x) which.max(cor(Intrinsic[indx,
+   ], x, use = "pairwise.complete.obs")))]
+   names(C) <- colnames(profile)
+   C
+ }
```

### 3 Determine the Subtypes

```
> profile <- exprs(habermann)[which(fData(habermann)$symb2 != ""),
+ ]
> rownames(profile) <- fData(habermann)$symb2[which(fData(habermann)$symb2 !=
+ "")]
> Habermann.subtype <- IntrinsicTyp(profile[, ], Centroids_centroids)
> S3 <- data.frame(pData(habermann)[, 2:8], Habermann.subtype)
> S3
```

	Ploidie	Age	Size.mm	Grade	Histology	Side	Lymphnode.metastasis
JD01	aGU	54	20	III	ductal	dexter	0/5
JD02_14	dGS	83	30	II	ductal	dexter	0/3
JD03	dGS	71	12	I	lobular	ND	0/0
JD05	aGU	57	8	III	metaplastic	dexter	0/0
JD06	aGU	57	25	III	ductal	sinister	0/2
JD07	aGS	63	30	II	ductal	sinister	0/0
JD08	dGS	86	10	ND	lobular	sinister	0/0
JD09	dGS	61	ND	II	ductal	sinister	0/0
JD10_33	aGU	85	45	III	comedo	dexter	0/3
JD11	aGS	88	20	III	ductal	sinister	0/0
JD12	aGU	55	40	III	ductal	dexter	0/0
JD13	dGS	54	70	III	lobular	sinister	1/12
JD15	aGS	55	60	III	ductal	dexter	9/9
JD16	aGU	62	35	III	comedo	dexter	0/35
JD17	aGU	43	35	III	ductal	sinister	0/0
JD18	dGS	41	18	II	mucin	sinister	0/11
JD19	aGS	62	11	I	ductal	dexter	0/23
JD20	aGS	72	15	II	ductal	sinister	0/5
JD21	aGS	43	20	III	ductal	sinister	0/6
JD22	dGS	34	10	II	ductal	sinister	0/0
JD23	dGS	79	22	II	ductal	sinister	4/16
JD24	aGS	75	13	I	ductal	sinister	0/0
JD25	aGU	46	20	III	ductal	sinister	0/0
JD26	aGU	60	18+9	III	ductal	ND	0/ND
JD27	aGS	58	14	I	ductal	sinister	0/0
JD28	aGU	71	30	III	ductal	sinister	0/0
JD29	aGU	79	16	III	ductal	sinister	4/14
JD30	dGS	62	20	I	ductal	dexter	0/3
JD31	aGS	52	14	II	ductal	dexter	0/6
JD32	aGU	59	20	III	ductal	sinister	1/9
JD34	dGS	51	12	ND	lobular	dexter	0/8
JD35	aGS	71	ND	II	Paget's	dexter	0/0
JD36	aGS	81	26	II	ductal	sinister	1/7
JD37	aGU	62	12	II	ductal	dexter	0/10
JD38	aGS	49	54	III	ductal/lobular	dexter	0/0
JD39	aGU	66	12	III	lobular	sinister	0/0
JD40	dGS	50	ND	II	lobular	dexter	3/9
JD41	dGS	86	26	I	ductal	dexter	4/6
JD42	aGU	54	30	III	medullar	ND	14/15
JD43	dGS	48	25x20	II	lobular	sinister	0/0
JD44	dGS	75	12	I	tubular	dexter	0/0
JD46	aGS	62	60+15	I	lobular	dexter	2/7
JD47	aGS	54	12+9	II	ductal	dexter	0/0

JD48	aGU 74 40 III	ductal sinister	0/17
	Habermann.subtype		
JD01	Basal		
JD02_14	LumA		
JD03	ERBB2		
JD05	Basal		
JD06	ERBB2		
JD07	Norm		
JD08	LumB		
JD09	Norm		
JD10_33	Basal		
JD11	LumA		
JD12	LumB		
JD13	LumA		
JD15	LumA		
JD16	ERBB2		
JD17	Basal		
JD18	LumA		
JD19	LumA		
JD20	LumA		
JD21	LumA		
JD22	LumA		
JD23	LumA		
JD24	LumA		
JD25	Basal		
JD26	Basal		
JD27	LumA		
JD28	LumB		
JD29	ERBB2		
JD30	LumA		
JD31	LumA		
JD32	ERBB2		
JD34	Norm		
JD35	ERBB2		
JD36	LumA		
JD37	Basal		
JD38	Norm		
JD39	Norm		
JD40	Norm		
JD41	LumA		
JD42	Basal		
JD43	LumA		
JD44	LumA		
JD46	LumA		
JD47	LumA		
JD48	Basal		