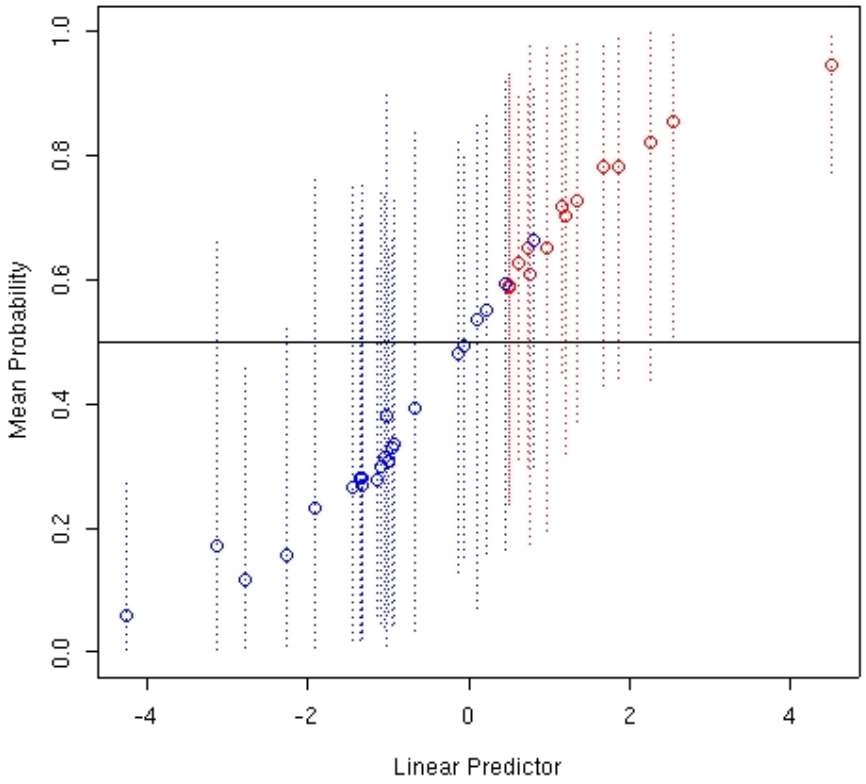
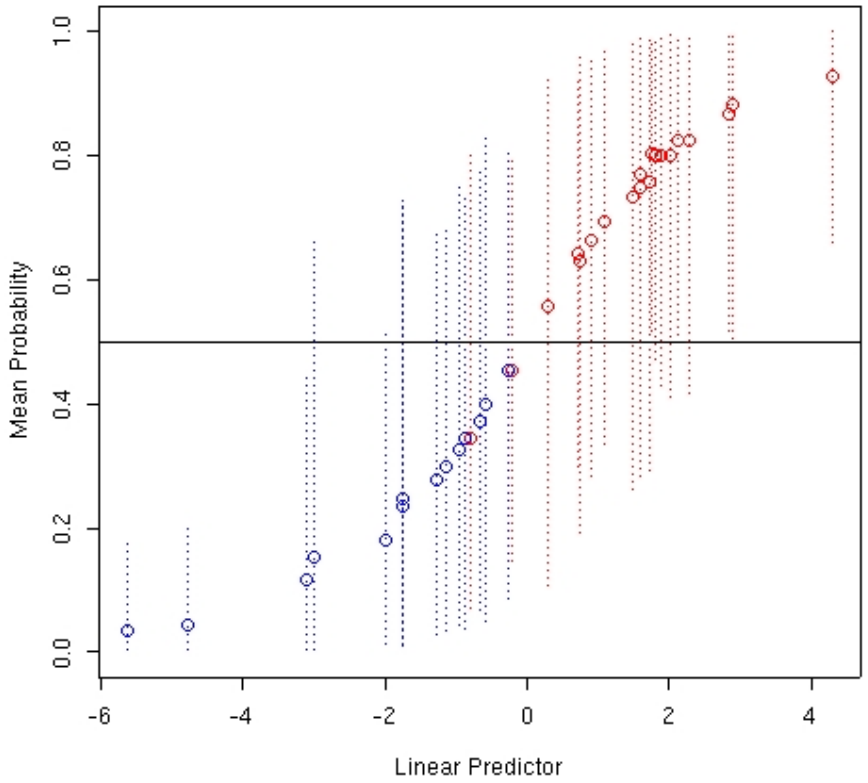
Supplementary Figure 1



Supplementary Figure 2



Supplementary Figure 3

IBC

	# Genes	False Disc. Rate	p-value	Bayes Factor
1. GO:0030205 [8]: dermatan sulfate metabolism	1 [show]	$1.91e^{-2}$	$1.11e^{-8}$	4
2. GO:0030208 [9]: dermatan sulfate biosynthesis	1 [show]	$1.91e^{-2}$	$1.11e^{-8}$	4
3. GO:0030206 [8]: chondroitin sulfate biosynthesis	1 [show]	$2.44e^{-2}$	$1.64e^{-7}$	3
4. GO:0050651 [8]: dermatan sulfate proteoglycan biosynthesis	1 [show]	$2.44e^{-2}$	$1.64e^{-7}$	3
5. GO:0030204 [7]: chondroitin sulfate metabolism	1 [show]	$2.44e^{-2}$	$1.64e^{-7}$	3
6. GO:0050650 [7]: chondroitin sulfate proteoglycan biosynthesis	1 [show]	$2.44e^{-2}$	$3.49e^{-7}$	2
7. GO:0050655 [7]: dermatan sulfate proteoglycan metabolism	1 [show]	$2.44e^{-2}$	$3.49e^{-7}$	2
8. GO:0050654 [6]: chondroitin sulfate proteoglycan metabolism	1 [show]	$2.68e^{-2}$	$5.90e^{-7}$	2
9. GO:0007516 [5]: hemocyte development	1 [show]	$3.66e^{-2}$	$1.85e^{-6}$	2
10. GO:0008202 [6]: steroid metabolism	2 [show]	$3.66e^{-2}$	$2.36e^{-6}$	2
11. GO:0042386 [4]: hemocyte differentiation (sensu Arthropoda)	1 [show]	$3.66e^{-2}$	$2.50e^{-6}$	2
12. GO:0006024 [8]: glycosaminoglycan biosynthesis	1 [show]	$3.79e^{-2}$	$4.07e^{-6}$	1
13. GO:0006023 [7]: aminoglycan biosynthesis	1 [show]	$3.79e^{-2}$	$5.17e^{-6}$	1
14. GO:0046209 [5]: nitric oxide metabolism	1 [show]	$3.79e^{-2}$	$6.43e^{-6}$	1
15. GO:0006809 [5]: nitric oxide biosynthesis	1 [show]	$3.79e^{-2}$	$6.43e^{-6}$	1
16. GO:0030166 [7]: proteoglycan biosynthesis	1 [show]	$3.79e^{-2}$	$6.43e^{-6}$	1
17. GO:0042133 [5]: neurotransmitter metabolism	1 [show]	$5.29e^{-2}$	$1.59e^{-5}$	1
18. GO:0006029 [7]: proteoglycan metabolism	1 [show]	$5.80e^{-2}$	$2.25e^{-5}$	1
19. GO:0044272 [6]: sulfur compound biosynthesis	1 [show]	$6.57e^{-2}$	$3.39e^{-5}$	1
20. GO:0030203 [7]: glycosaminoglycan metabolism	1 [show]	$7.16e^{-2}$	$4.75e^{-5}$	0

Hypoxia

	# Genes	False Disc. Rate	p-value	Bayes Factor
1. GO:0006263 [7]: DNA-dependent DNA replication	2 [show]	$4.05e^{-3}$	$1.47e^{-9}$	5
2. GO:0006262 [7]: DNA-dependent DNA replication	2 [show]	$4.05e^{-3}$	$1.47e^{-9}$	5
3. GO:0006261 [7]: DNA-dependent DNA replication	2 [show]	$4.05e^{-3}$	$2.79e^{-9}$	4
4. GO:0006968 [4]: cellular defense response	2 [show]	$4.14e^{-3}$	$5.69e^{-9}$	4
5. GO:0051085 [9]: chaperone cofactor dependent protein folding	1 [show]	$6.30e^{-3}$	$3.81e^{-8}$	3
6. GO:0051084 [8]: posttranslational protein folding	1 [show]	$6.30e^{-3}$	$3.81e^{-8}$	3
7. GO:0006260 [6]: DNA replication	2 [show]	$6.69e^{-3}$	$6.25e^{-8}$	3
8. GO:0006268 [8]: DNA unwinding	1 [show]	$7.88e^{-3}$	$1.63e^{-7}$	3
9. GO:0006265 [6]: DNA topological change	1 [show]	$7.88e^{-3}$	$1.63e^{-7}$	3
10. GO:0000067 [6]: DNA replication and chromosome cycle	2 [show]	$8.00e^{-3}$	$2.15e^{-7}$	3
11. GO:0006955 [4]: immune response	3 [show]	$1.32e^{-2}$	$8.70e^{-7}$	2
12. GO:0006270 [8]: DNA replication initiation	1 [show]	$1.32e^{-2}$	$1.04e^{-6}$	2
13. GO:0009611 [5]: response to wounding	2 [show]	$1.35e^{-2}$	$1.60e^{-6}$	2
14. GO:0016066 [5]: cellular defense response (sensu Vertebrata)	1 [show]	$1.35e^{-2}$	$1.67e^{-6}$	2
15. GO:0006952 [5]: defense response	3 [show]	$1.35e^{-2}$	$1.83e^{-6}$	2
16. GO:0009607 [4]: response to biotic stimulus	3 [show]	$1.81e^{-2}$	$4.17e^{-6}$	1
17. GO:0009613 [5]: response to pest, pathogen or parasite	2 [show]	$2.83e^{-2}$	$1.51e^{-5}$	1
18. GO:0000082 [7]: G1/S transition of mitotic cell cycle	1 [show]	$2.83e^{-2}$	$1.52e^{-5}$	1
19. GO:0043207 [5]: response to external biotic stimulus	2 [show]	$2.99e^{-2}$	$1.96e^{-5}$	1
20. GO:0006259 [5]: DNA metabolism	2 [show]	$3.19e^{-2}$	$2.55e^{-5}$	1

Lymph Node Persistence

	# Genes	False Disc. Rate	p-value	Bayes Factor
1. GO:0050789 [2]: regulation of biological process	11 [show]	$7.78e^{-3}$	$2.74e^{-10}$	5
2. GO:0019222 [4]: regulation of metabolism	9 [show]	$7.78e^{-3}$	$1.44e^{-9}$	5
3. GO:0050791 [3]: regulation of physiological process	10 [show]	$7.78e^{-3}$	$1.63e^{-9}$	5
4. GO:0030155 [4]: regulation of cell adhesion	2 [show]	$8.42e^{-3}$	$3.92e^{-9}$	4
5. GO:0009892 [5]: negative regulation of metabolism	3 [show]	$8.42e^{-3}$	$9.33e^{-9}$	4
6. GO:0007275 [2]: development	8 [show]	$8.42e^{-3}$	$1.02e^{-8}$	4
7. GO:0016322 [6]: neuronal remodeling	1 [show]	$8.42e^{-3}$	$1.52e^{-8}$	4
8. GO:0045449 [6]: regulation of transcription	8 [show]	$8.42e^{-3}$	$2.20e^{-8}$	4
9. GO:0019219 [5]: regulation of nucleobase, nucleoside, nucleotide and nucleic acid metabolism	8 [show]	$8.42e^{-3}$	$2.61e^{-8}$	3
10. GO:0006139 [5]: nucleobase, nucleoside, nucleotide and nucleic acid metabolism	10 [show]	$8.42e^{-3}$	$3.13e^{-8}$	3
11. GO:0006350 [6]: transcription	8 [show]	$9.09e^{-3}$	$4.64e^{-8}$	3
12. GO:0006345 [5]: loss of chromatin silencing	1 [show]	$1.02e^{-2}$	$8.21e^{-8}$	3
13. GO:0009790 [3]: embryonic development	2 [show]	$1.02e^{-2}$	$8.99e^{-8}$	3
14. GO:0006357 [8]: regulation of transcription from Pol II promoter	3 [show]	$1.16e^{-2}$	$1.41e^{-7}$	3
15. GO:0000578 [5]: embryonic axis specification	1 [show]	$1.36e^{-2}$	$4.63e^{-7}$	2
16. GO:0009952 [4]: anterior/posterior pattern formation	1 [show]	$1.36e^{-2}$	$4.63e^{-7}$	2
17. GO:0007350 [4]: blastoderm segmentation	1 [show]	$1.36e^{-2}$	$4.63e^{-7}$	2
18. GO:0007351 [5]: regional subdivision	1 [show]	$1.36e^{-2}$	$4.63e^{-7}$	2
19. GO:0009948 [5]: anterior/posterior axis specification	1 [show]	$1.36e^{-2}$	$4.63e^{-7}$	2
20. GO:0008595 [6]: determination of anterior/posterior axis, embryo	1 [show]	$1.36e^{-2}$	$4.63e^{-7}$	2

Supplementary Table 1. Summary of clinical properties of KF-SYSCC breast cancer samples.

Clinical Variable	No. Samples
Age	
< 40	47
> 40	111
Path Stage	
1A	28
2A	29
2B	48
3A	44
3B	9
Tumor Size	
< 2 cm	55
2 – 5 cm	93
> 5 cm	10
Lymph Nodes	
0	41
1 – 3	71
> 4	46
Survival	
Relapse (avg 24.2 mo)	69
No relapse (avg. 60.0 mo)	89
ER	
Positive	110
Negative	48
Treatment	
None	7
Hormone only	31
Chemo only	45
Hormone & Chemo	75

Supplementary Table 2. Summary of clinical properties of Duke breast cancer samples.

Clinical Variable	No. Samples
Age	
< 40	10
> 40	91
Path Stage	
1	30
2A	40
2B	27
3A	2
4	1
unk	1
Tumor Size	
< 2 cm	36
2 – 5 cm	62
> 5 cm	3
Lymph Nodes	
0	56
1 – 3	28
> 4	17
Recurrence	
Relapse (avg 42.7 mo)	26
No relapse (avg. 92.5 mo)	75
ER	
Positive	37
Negative	64
Treatment	
None	16
Hormone only	30
Chemo only	36
Hormone & Chemo	19