

Supplementary Table 1. Model parameters.

Parameter	Meaning	Value	Unit	Ref.
Δt	simulation time step	1	h	
p_p	cancer cell proliferation probability	2.31×10^{-2}	h^{-1}	[1]
p_a	cancer apoptosis rate	4.17×10^{-3}	h^{-1}	[2]
p_m	cancer motility rate	4.17×10^{-1}	h^{-1}	[3]
h_r	immune cell motility probability	0.37	min^{-1}	[4-6]
p_E	probability of cancer cell kill by effector cell	0.03	h^{-1}	
p_R	probability of effector cell kill by suppressor cell	0.01	h^{-1}	
α_C	cancer cell radiosensitivity	0.3	Gy^{-1}	[7]
β_C	cancer cell radiosensitivity	0.03	Gy^{-2}	[7]
ξ	quiescence radioresistance	1/3		[8]
$SF_E(1.8 \text{ Gy})$	effector cell radiosurvival	0.63		[9]
$SF_E(2.0 \text{ Gy})$	effector cell radiosurvival	0.61		[9]
$SF_S(1.8 \text{ Gy})$	suppressor cell radiosurvival	0.81		[9]
$SF_S(2.0 \text{ Gy})$	suppressor cell radiosurvival	0.79		[9]
δ_E	radiation-induced effector cell recruitment	0.05	h^{-1}	
δ_E	radiation-induced suppressor cell recruitment	0.01	h^{-1}	
γ	decay of radiation-induced immune stimulation	0.05	h^{-1}	

Supplementary Table 2. Nomenclature of immune cell type abbreviations

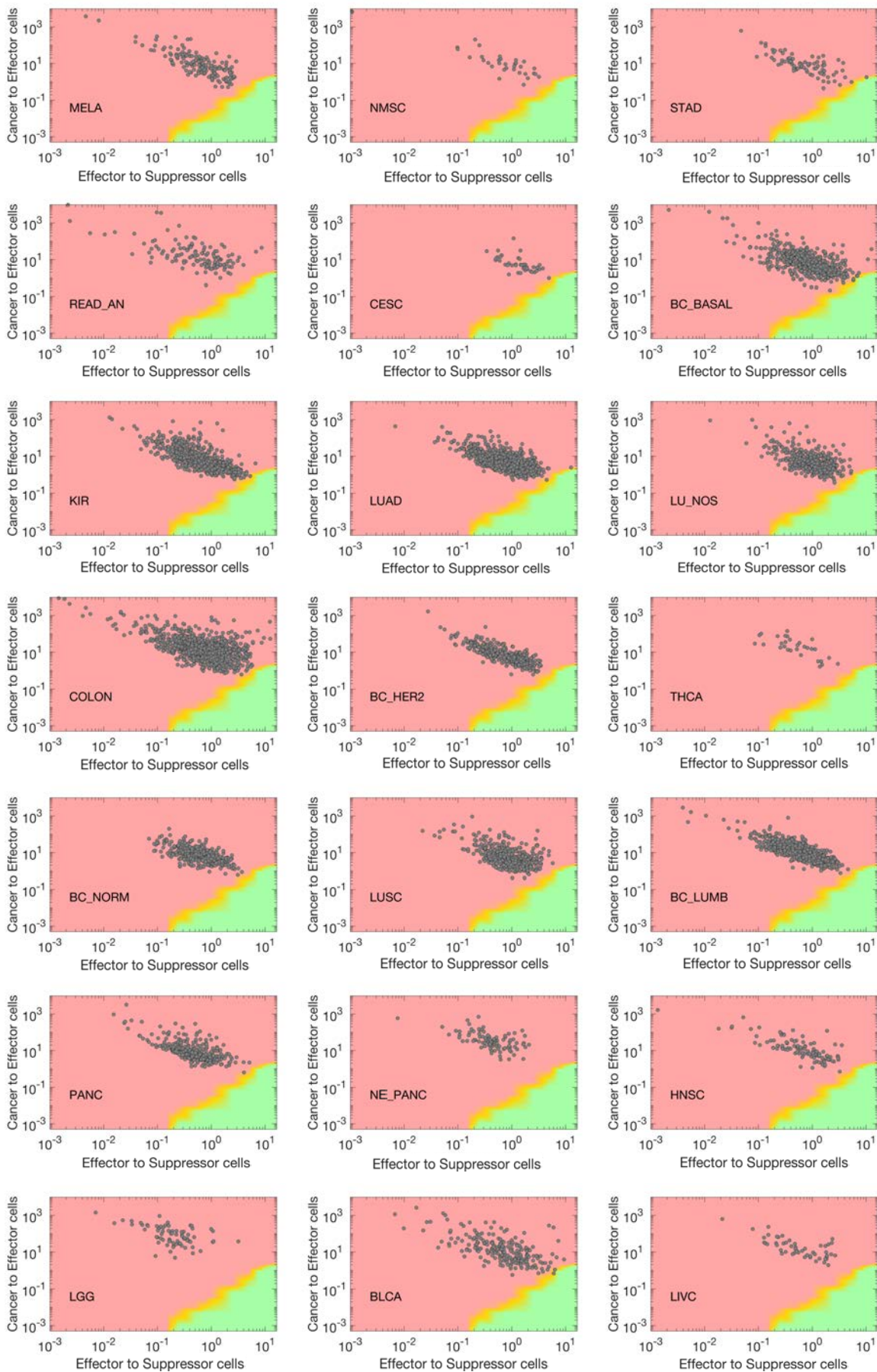
Abbreviation	Tumor-Infiltrating Leukocytes
CD8 T	CD8+ T cell
DC-	Resting Dendritic cell
DC+	Activated Dendritic cell
Eos	Eosinophil
M0	Non-polarized Macrophage
M1	M1-polarized Macrophage
M2	M2-polarized Macrophage
MC-	Resting Mast cell
MC+	Activated Mast cell
Mem B	Memory B cell
Mem CD4 T-	Resting CD4+ Memory T cell
Mem CD4 T+	Activated CD4+ Memory T cell
Mono	Monocyte
Naïve B	Naïve B cell
Naïve CD4 T	Naïve CD4+ T cell
NK-	Resting Natural Killer cell
NK+	Activated Natural Killer cell
PC	Plasma cell
PMN	Neutrophil
Tfh	T cell follicular helper cell
Treg	T regulatory cell
$\gamma\delta$ T	Gamma-delta T cell

Supplementary Table 3. Nomenclature of tumor type abbreviations

Abbreviation	Tumor Type
BC_BASAL	PAM50 Basal
BC_HER2	PAM50 Her2
BC_LUMA	PAM50 LumA
BC_LUMB	PAM50 LumB
BC_NORM	PAM50 Normal
BLCA	Bladder
CESC	Cervix
COLON	Large Bowel
ESCA	Esophagus
HGG	High-grade glioma
HNSC	Head - Neck
KIR	Kidney
KIR_PEL	Renal Pelvis
LGG	Low-grade glioma
LIVC	Liver
LU_NOS	Lung NOS
LUAD	Lung adenocarcinoma
LUSC	Lung squamous cell
MELA	Melanoma
NE	Neuroendocrine
NE_LUNG	Neuroendocrine Lung
NE_PANC	Neuroendocrine Pancreas
NMSC	Non-melanoma skin cancer
OVCA	Ovary
PANC	Pancreas
PRAD	Prostate
READ_AN	Rectum-Anus
SARC	Sarcoma
STAD	Stomach
THCA	Thyroid
UCEC	Endometrium/Uterus

Supplementary Figures

Figure S1. TIES for 31 tumor types. Mapping of TIES composition for each of the 31 tumor types, highlighting that all clinically observed tumors have an immune-evasion phenotype.



Supplementary Figure 1

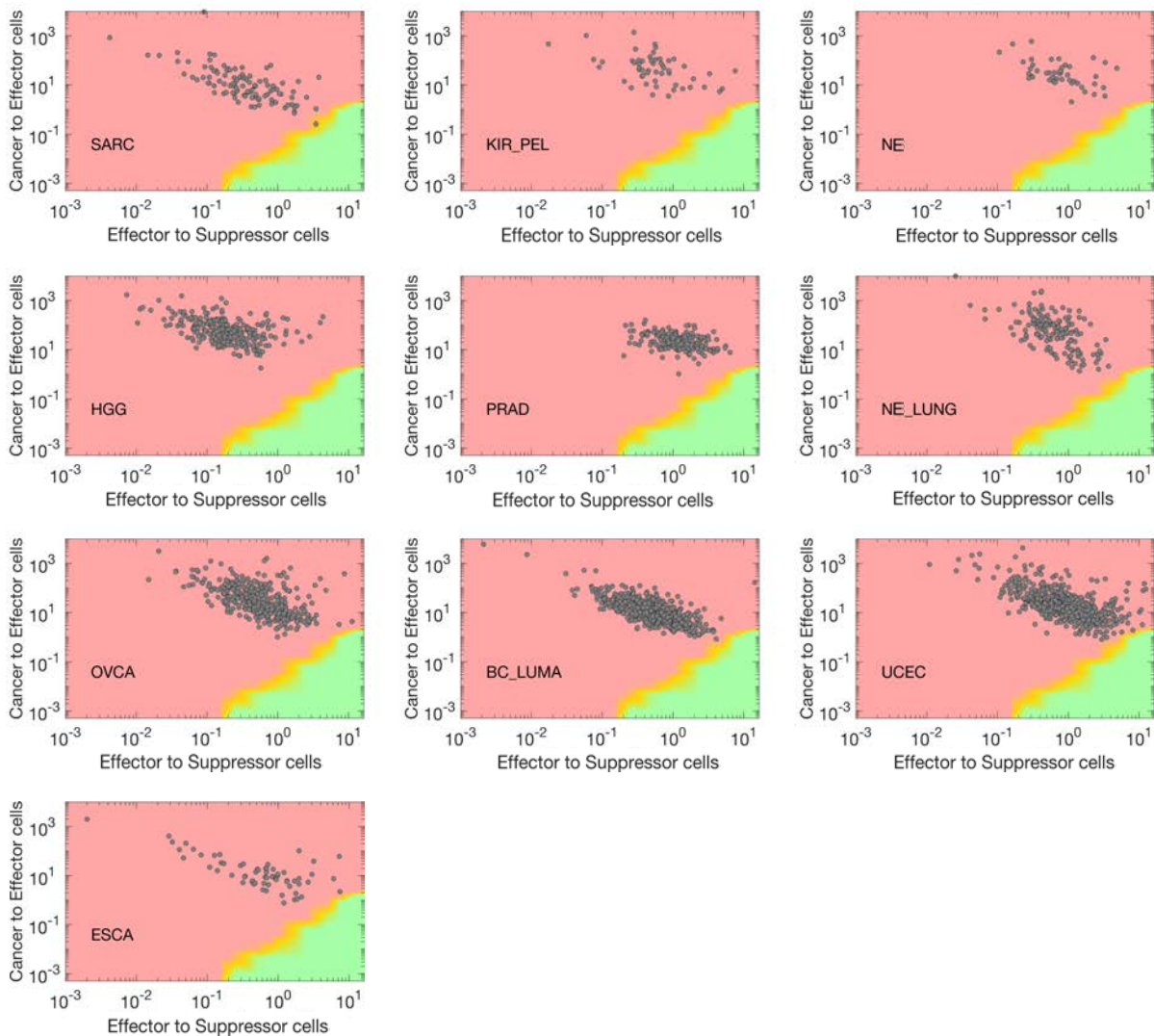
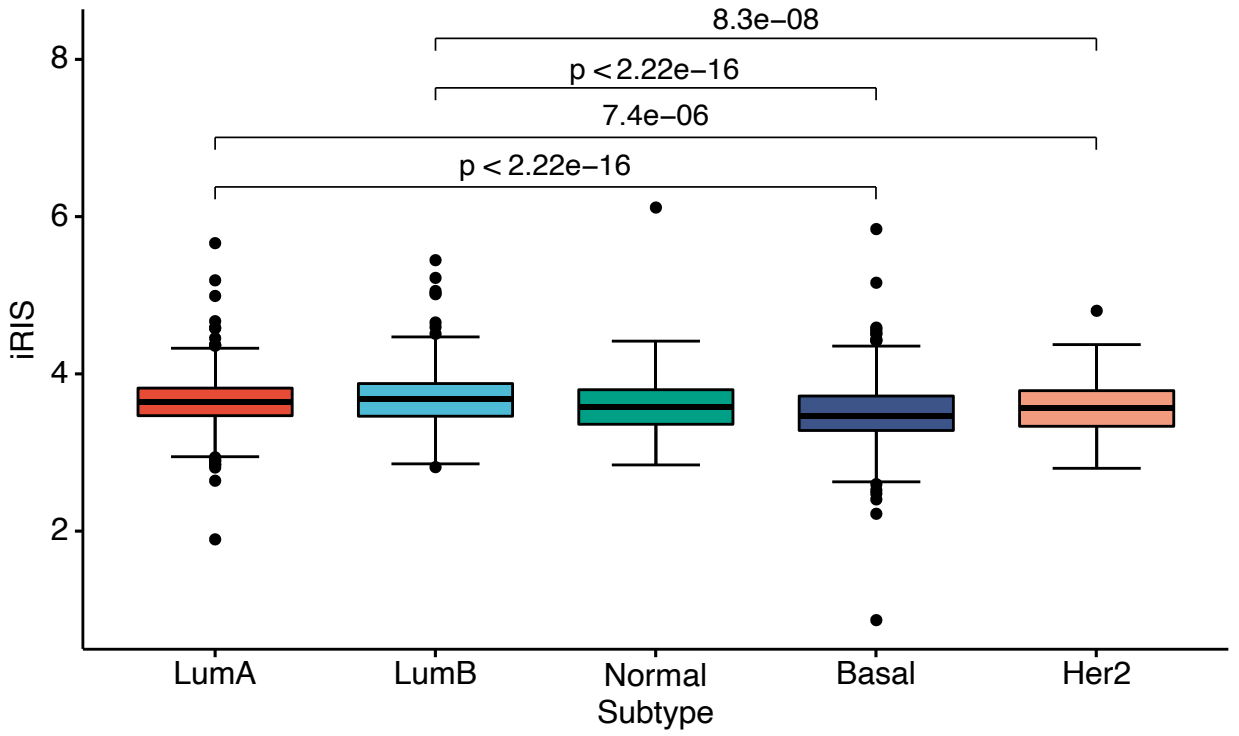


Figure S2. Comparison of iRIS among PAM50 breast subtypes. Boxplots demonstrating distribution of iRIS among PAM50 molecular breast subtypes. Significant differences within subtypes are noted. Kruskal-Wallis test was used to compare groups.

Subtype LumA LumB Normal Basal Her2



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