

## The Supplemental Materials Inventory

The Supplemental Materials contained 1 figures and 1 tables.

### Supplemental Figures

**Figure S1.** PPDPF and BABAM2 led to radioresistance.

(A) PI-Annexin V staining was performed to examine the apoptosis of A549 cells with PPDPF knockdown. Cells were treated with radiation at a dose of 4 Gy. Twenty-four hours later, the cells were collected, and PI-Annexin V staining and FACS analysis was performed.

(B) PI-Annexin V staining was performed to examine the apoptosis of A549 cells overexpressing PPDPF. Cells were treated with radiation at a dose of 4 Gy. Twenty-four hours later, the cells were collected, and PI-Annexin V staining and FACS analysis was performed.

(C) PI-Annexin staining was performed to examine the rescue effects of BABAM2 overexpression on apoptosis induced by PPDPF knockdown. Cells were treated with radiation. Twenty-four hours later, PI-Annexin V staining and FACS analysis was performed.

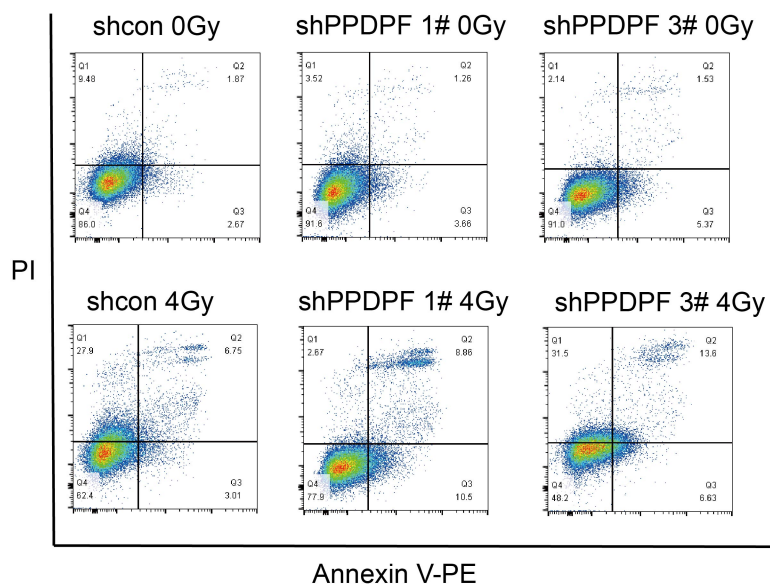
### Supplemental Table

**Table S1** The information of patients tissues in Figure 1D.

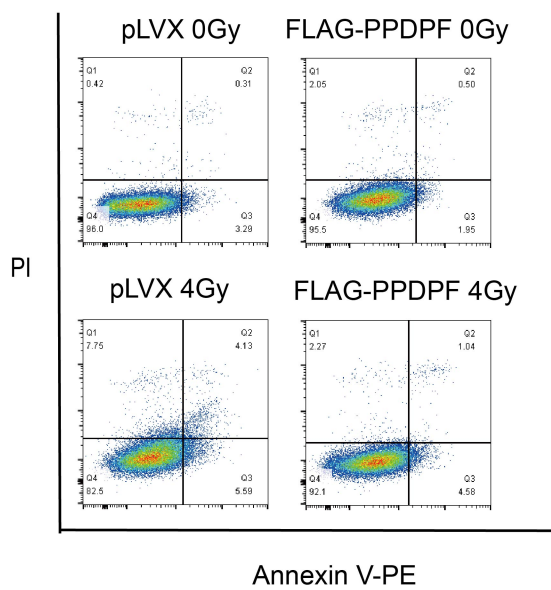
**Table S2** The information of patients in lung cancer tissue array.

**Table S3** The Candidate E3 ligases.

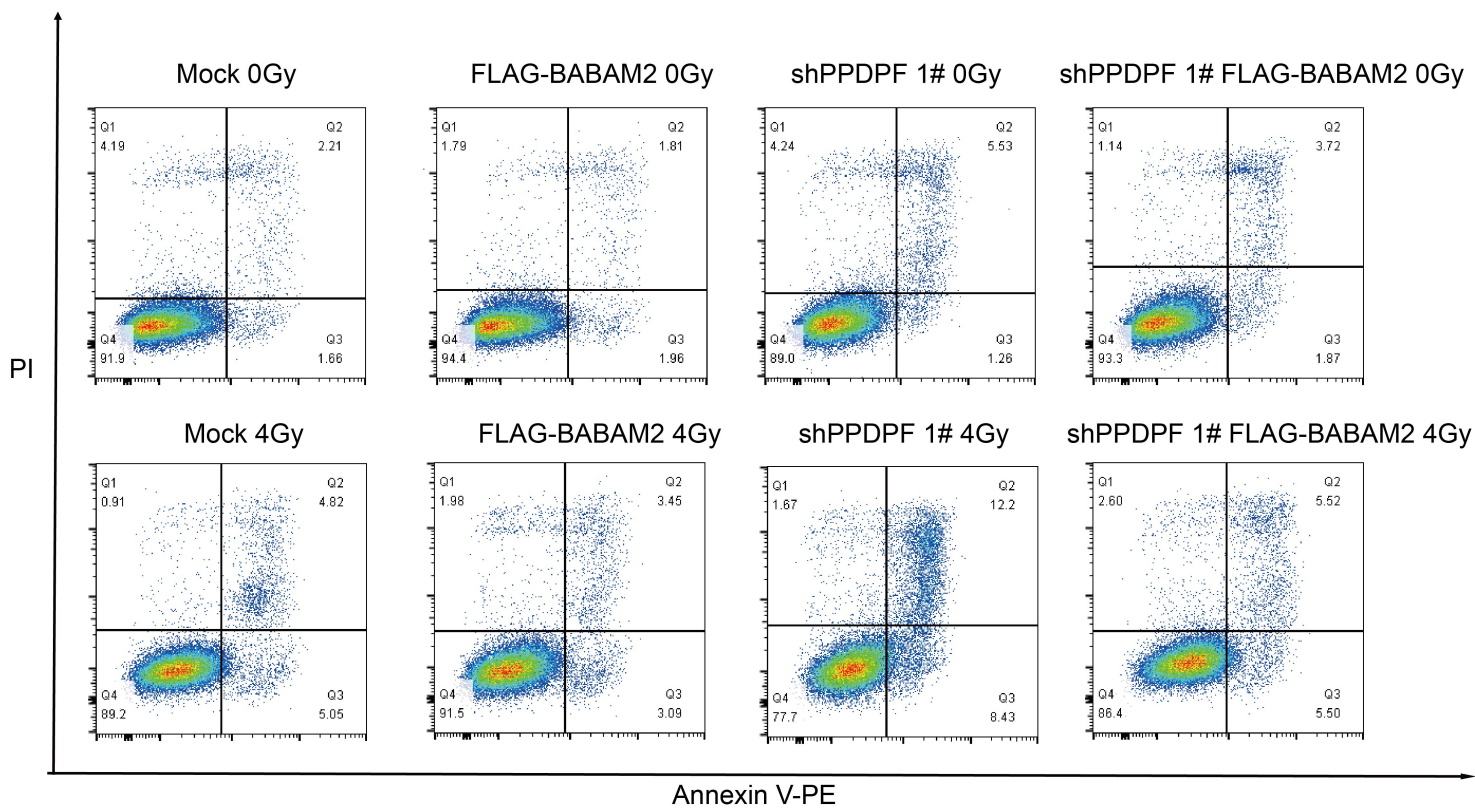
A



B



C



**Table S1. The information of patients tissues in Figure 1D.**

	Age	Gender	Surgery date	Vital Status	Tobacco Smoking History	Family History of Lung Cancer	ECOG Score	Tumor Site	Tumor Size _in_cm	Histologic Type	Histologic Grade
Case 1	62	Female	2018/3/12	Alive	No	No	0	Lower Lobe	2.4	Adenocarcinoma	Middle Differentiation
Case 2	70	Male	2018/5/21	Alive	Yes	No	0	Upper Lobe	5.2	Squamous Cell Carcinoma	High Differentiation
Case 3	58	Male	2018/5/25	Alive	Yes	Father	0	Upper Lobe	4.1	Adenocarcinoma	Middle Differentiation
Case 4	79	Female	2018/5/28	Alive	No	No	0	Upper Lobe	3.3	Adenocarcinoma	High-Middle Differentiation
Case 5	72	Female	2018/5/31	Alive	No	No	0	Lower Lobe	2.4	Adenocarcinoma	Middle Differentiation
Case 6	67	Male	2018/6/4	Alive	No	No	0	Lower Lobe	3.4	Adenocarcinoma	High-Middle Differentiation
Case 7	64	Female	2018/6/4	Alive	No	No	0	Upper Lobe	3.1	Adenocarcinoma	High-Middle Differentiation
Case 8	35	Female	2018/6/21	Alive	No	Brother	0	Upper Lobe	2.4	Adenocarcinoma	Middle Differentiation
Case 9	80	Male	2018/7/30	Alive	Yes	No	0	Upper Lobe	4	Adenocarcinoma	Middle Differentiation
Case 10	61	Male	2018/8/1	Alive	Yes	NO	0	Lower Lobe	3.7	Adenocarcinoma	Medium-Low Differentiation

Case 11	71	Male	2018/9/5	Alive	No	NO	0	Upper Lobe	2.8	Adenocarcinoma	Medium-Low Differentiation
Case 12	66	Male	2018/9/5	Alive	Yes	NO	0	Lower Lobe	5.5	Squamous Cell Carcinoma	Keratinizing

**Table S2. The information of patients in lung cancer tissue array**

	Surgery date	Vital Status	Overall survival(up to 2016.6)	Tissue code	Gender	Age	Distant Metastasis Site	Primary Tumor	Histologic Type	Tumor_Stage_Pathological
Tumor/Adjacent	2008/1/15	living	50	E05A3073	Male	35	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2008/2/26	living	24	E05A3146	Male	65	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2008/4/7	living	55	E05A2666	Female	62	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2008/7/14	dead	16	E05A1973	Male	49	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2008/7/15	dead	42	E05A2597	Female	50	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2009/4/14	dead	22	E05A2605	Male	74	No	Yes	Adenocarcinoma	III
Tumor/Adjacent	2009/6/17	living	54	E05A2707	Male	62	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2009/6/19	dead	20	E05A1303	Male	70	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2009/7/13	dead	9	E05A1104	Male	53	No	Yes	Adenocarcinoma	III
Tumor/Adjacent	2009/7/14	dead	15	E05A3066	Female	69	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2009/7/31	dead	8	E05A1974	Male	60	No	Yes	Adenocarcinoma	III
Tumor/Adjacent	2009/7/30	living	56	E05A2660	Female	51	No	Yes	Adenocarcinoma, partial squamous cell carcinoma	II-III
Tumor/Adjacent	2009/9/28	living	73	E05A1118	Male	54	No	Yes	Adenocarcinoma, partial squamous cell carcinoma	I-II
Tumor/Adjacent	2009/10/29	dead	23	E05A3074	Male	60	Nodules of chest wall carcinoma	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2009/10/5	dead	5	E05A1031	Male	69	No	Yes	Adenocarcinoma	III
Tumor/Adjacent	2009/10/26	dead	9	E05A2132	Male	70	No	Yes	Adenocarcinoma	II

Tumor/Adjacent	2009/11/3	living	73	E05A1120	Female	68	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2009/12/5	living	24	E05A3144	Female	60	No	Yes	Papillary Adenocarcinoma	I-III
Tumor/Adjacent	2009/12/15	dead	11	E05A0749	Female	56	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2009/12/15	living	62	E05A2143	Male	61	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2009/12/25	dead	32	E05A1811	Female	62	No	Yes	Adenocarcinoma, partial bronchioloalveolar carcinoma	II
Tumor/Adjacent	2010/1/5	dead	41	E05A3172	Male	69	No	Yes	Adenocarcinoma, partial papillary	II
Tumor/Adjacent	2010/1/14	living	62	E05A2142	Male	59	No	Yes	Adenocarcinoma	III
Tumor/Adjacent	2010/4/26	dead	46	E05A3071	Female	68	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2010/5/11	living	28	E05A3129	Male	75	No	Yes	Mixed Adenocarcinoma	I-III
Tumor/Adjacent	2010/5/25	dead	39	E05A1028	Male	52	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2010/6/9	dead	13	E05A3079	Female	63	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2010/6/11	dead	25	E05A1051	Female	71	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2010/7/15	dead	12	E05A1132	Male	57	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2010/7/21	living	46	E05A3114	Female	80	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2010/7/30	dead	31	E05A2825	Female	75	No	Yes	Adenocarcinoma	II
tumor	2010/8/23	dead	38	E05A2138	Male	65	No	Yes	Adenocarcinoma, partial Large cell neuroendocrine carcinoma	II
Tumor/Adjacent	2010/9/13	dead	83	E05A0777	Male	76	No	Yes	Adenocarcinoma	I-II
Tumor/Adjacent	2010/9/13	living	57	E05A2657	Male	62	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2010/10/28	living	43	E05A3125	Female	44	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2010/11/2	dead	21	E05A3117	Female	57	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2010/11/25	living	83	E05A0772	Female	60	No	Yes	Adenocarcinoma, partial Signet-ring cell carcinoma	III

Tumor/Adjacent	2010/12/9	dead	42	E05A1810	Male	54	No	Yes	Adenocarcinoma, partial mucinous Adenocarcinoma	II-III
Tumor/Adjacent	2010/12/16	living	49	E05A3077	Female	64	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2010/12/21	dead	7	E05A2668	Male	79	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2010/12/31	dead	39	E05A2263	Female	66	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2011/1/12	dead	33	E05A0997	Male	57	Brain	Yes	Adenocarcinoma	II
Tumor/Adjacent	2011/1/13	dead	17	E05A3392	Male	63	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2011/1/19	dead	28	E05A3099	Female	78	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2011/2/1	dead	46	E05A1937	Male	63	No	Yes	Adenocarcinoma	I-II
Tumor/Adjacent	2011/3/16	dead	9	E05A3393	Male	65	No	Yes	Adenocarcinoma, partial large cell carcinoma	II-III
Tumor/Adjacent	2011/4/21	living	71	E05A1795	Male	73	No	Yes	Adenocarcinoma	I-II
Tumor/Adjacent	2011/4/22	dead	27	E05A1931	Male	52	No	Yes	Adenocarcinoma, partial mucinous Adenocarcinoma	II-III
Tumor/Adjacent	2011/6/17	living	67	E05A1823	Female	73	No	Yes	Adenocarcinoma, partial bronchioloalveolar carcinoma	II-III
Tumor/Adjacent	2011/8/5	dead	47	E05A1808	Female	56	No	Yes	Adenocarcinoma, partial mucinous Adenocarcinoma	II
Tumor/Adjacent	2011/8/9	dead	12	E05A2702	Female	83	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2011/8/9	dead	9	E05A1046	Male	76	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2011/8/24	dead	40	E05A0773	Female	68	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2011/9/15	living	66	E05A1933	Female	55	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2011/10/11	dead	34	E05A3063	Male	76	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2011/10/13	living	72	E05A1134	Female	61	No	Yes	Adenocarcinoma	II
Tumor	2011/11/1	living	27	E05A3140	Male	75	No	Yes	Adenocarcinoma	I

Tumor/Adjacent	2011/11/9	dead	16	E05A0809	Male	72	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2011/11/18	dead	21	E05A3058	Female	54	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2011/11/28	living	42	E05A3168	Female	40	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2011/12/1	living	48	E05A3094	Female	52	No	Yes	Adenocarcinoma	I-III
Tumor/Adjacent	2011/12/21	living	58	E05A2598	Male	44	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2011/12/20	dead	22	E05A1930	Male	73	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/1/19	living	70	E05A1800	Female	69	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/3/8	dead	27	E05A2704	Male	63	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/3/14	living	64	E05A1977	Male	54	No	Yes	Adenocarcinoma	I-II
Tumor/Adjacent	2012/3/22	dead	47	E05A3085	Male	53	No	Yes	Adenocarcinoma, partial Signet-ring cell Adenocarcinoma	III
Tumor/Adjacent	2012/3/27	living	48	E05A3088	Female	65	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/3/31	living	48	E05A3087	Male	59	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/4/9	dead	4	E05A2599	Female	52	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/5/3	dead	43	E05A0779	Male	65	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/5/7	living	65	E05A2528	Male	53	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/5/17	dead	14	E05A2658	Male	60	No	Yes	Adenocarcinoma, with Neuroendocrine change	II
Tumor/Adjacent	2012/5/28	living	43	E05A3173	Female	55	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/6/6	dead	46	E05A0951	Female	53	No	Yes	Adenocarcinoma	I-III
Tumor/Adjacent	2012/6/13	living	54	E05A2827	Female	66	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/6/13	living	42	E05A3179	Male	67	No	Yes	Adenocarcinoma, with sarcomatous change	II-III



Tumor/Adjacent	2012/6/26	dead	4	E05A1027	Male	77	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2012/7/20	dead	5	E05A1301	Male	86	No	Yes	Adenocarcinoma, partial squamous cell carcinoma	II
Tumor	2012/8/31	dead	14	E05A1746	Male	78	No	Yes	Adenocarcinoma, partial adenosquamous carcinoma	II-III
Tumor/Adjacent	2012/9/14	living	8	E05A1738	Female	76	No	Yes	bronchioloalveolar carcinoma	II
Tumor/Adjacent	2012/11/2	living	59	E05A1708	Female	73	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/11/12	living	57	E05A1722	Female	73	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/11/16	living	53	E05A1740	Male	66	No	Yes	Adenocarcinoma, partial sarcomatoid carcinoma	II
Tumor	2012/12/4	living	69	E05A1650	Male	64	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2012/12/31	dead	33	E05A1766	Female	64	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2013/7/18	dead	35	E05A1700	Female	63	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2013/7/23	living	51	E05A1750	Male	59	No	Yes	Adenocarcinoma	II-III
Tumor/Adjacent	2008/6/18	living	74	E05A1605	Female	57	No	Yes	bronchioloalveolar carcinoma	I-II
Tumor/Adjacent	2009/11/19	dead	20	E05A1659	Female	55	No	Yes	Adenocarcinoma	II
Tumor/Adjacent	2011/4/6	living	68	E05A1662	Male	53	No	Yes	bronchioloalveolar carcinoma	II
Tumor/Adjacent	2011/12/29	living	71	E05A1636	Male	51	No	Yes	bronchioloalveolar carcinoma	II

**Table S1. The Candidate E3 ligases.**

E3	E3GENE	SUBGENE	HOMO	PFAM	GO	NET	MOTIF	SCORE
P46934	NEDD4	BRE	1	1	2.88	1.29	8.67	0.819
Q96J02	ITCH	BRE	1	1	1.24	1.29	8.67	0.758
Q969H0	FBXW7	BRE	1	1	1.13	1.29	8.67	0.751
Q00987	MDM2	BRE	1	1	2.88	1.44	2.8	0.744
Q86TM6	SYVN1	BRE	1	1	1.25	1	8.67	0.738
O43164	PJA2	BRE	1	1	1.51	1	6.61	0.731
Q86YT6	MIB1	BRE	1	1	1.51	1	6.61	0.731
Q96AX9	MIB2	BRE	1	1	1.13	1	6.61	0.705
Q13309	SKP2	BRE	1	1	2.33	1	2.12	0.667
Q9UNE7	STUB1	BRE	1	1	3.77	1.29	1	0.665
Q9HCE7	SMURF1	BRE	1	1	4.05	1	1.06	0.653
P22681	CBL	BRE	1	1	2.88	1.29	1.06	0.645
Q5T0T0	MARCH8	BRE	1	1	1.13	1	3.41	0.642
P38398	BRCA1	BRE	1	1	2.93	1.68	1	0.641
Q9NXR7	BRE	BRE	1	1	2.93	1.3	1	0.641
P35226	BMI1	BRE	1	1	2.93	1.29	1	0.64
P46736	BRCC3	BRE	1	1	2.93	1.29	1	0.64
O76064	RNF8	BRE	1	1	2.93	1.29	1	0.64
P29590	PML	BRE	1	1	2.88	1.29	1	0.639
Q86Y01	DTX1	BRE	1	1	2.88	1.29	1	0.639
Q9UKV5	AMFR	BRE	1	1	1.25	1	2.8	0.633
Q96Q27	ASB2	BRE	1	1	1	1	3.41	0.63
Q09472	EP300	BRE	1	1	2.33	1.44	1	0.628
Q9UM11	FZR1	BRE	1	1	1.51	1	2.12	0.624
Q9UH77	KLHL3	BRE	1	1	1.13	1	2.8	0.623
Q8TCQ1	MARCH1	BRE	1	1	1.13	1	2.8	0.623
Q86YJ5	MARCH9	BRE	1	1	1.13	1	2.8	0.623
P02511	CRYAB	BRE	1	1	2.33	1.29	1	0.617
P51948	MNAT1	BRE	1	1	2.33	1.29	1	0.617
Q99728	BARD1	BRE	1	1	2.33	1.29	1	0.617
Q9ULJ6	ZMIZ1	BRE	1	1	2.93	1	1	0.615
Q9UDY8	MALT1	BRE	1	1	2.93	1	1	0.615
Q9UPN9	TRIM33	BRE	1	1	2.93	1	1	0.615
Q969V5	MUL1	BRE	1	1	2.93	1	1	0.615
P78406	RAE1	BRE	1	1	2.93	1	1	0.615
Q8IYW5	RNF168	BRE	1	1	2.93	1	1	0.615
O14512	SOCS7	BRE	1	1	2.88	1	1	0.613
O60315	ZEB2	BRE	1	1	2.88	1	1	0.613
Q9ULV8	CBLC	BRE	1	1	2.88	1	1	0.613
Q13216	ERCC8	BRE	1	1	2.88	1	1	0.613
Q8WWQ0	PHIP	BRE	1	1	2.88	1	1	0.613

P62873	GNB1	BRE	1	1	2.88	1	1	0.613
Q9P1Y6	PHRF1	BRE	1	1	2.88	1	1	0.613
P43034	PAFAH1B1	BRE	1	1	2.88	1	1	0.613
Q15386	UBE3C	BRE	1	1	1.25	1	2.12	0.604