

**Table S5. Detailed information on ICI response analysis in different MRG subgroups**

ID	Age	Sex	Immunotherapy drug	PFS event	PFS(years)	MRG score	MRG	Response
GSM2445691	44	Female	Nivolumab	Dead	0.96666667	0.190427049	high	Non-responder
GSM2445692	53	Male	Nivolumab	Alive	12.1	0.182545713	high	Responder
GSM2445699	61	Male	Pembrolizumab	Dead	6.86666667	0.110747342	high	Responder
GSM3589675	47	Male	Nivolumab	/	/	0.100025146	high	Responder
GSM2445701	70	Male	Pembrolizumab	Alive	4.9	0.099949091	high	Responder
GSM2445700	42	Male	Pembrolizumab	Dead	3.46666667	0.097634361	high	Responder
GSM3589680	64	Male	Nivolumab	/	/	0.09642655	high	Non-responder
GSM3589686	72	Male	Nivolumab	/	/	0.089002044	high	Non-responder
GSM3589682	75	Male	Nivolumab	/	/	0.07459559	high	Non-responder
GSM2445695	46	Female	Nivolumab	Dead	20.7	0.063246578	high	Responder
GSM3589677	58	Male	Nivolumab	/	/	0.062349636	high	Responder
GSM3589676	65	Male	Nivolumab	/	/	0.019919146	high	Responder
GSM3589678	55	Female	Nivolumab	/	/	0.018237011	high	Non-responder
GSM2445696	61	Male	Pembrolizumab	Dead	18.7	0.015464987	high	Responder
GSM2445702	61	Female	Nivolumab	Dead	2.8	-0.010517452	low	Non-responder
GSM3589688	34	Female	Nivolumab	/	/	-0.054191376	low	Responder
GSM2445694	52	Male	Nivolumab	Dead	6.3	-0.054310341	low	Responder
GSM3589684	67	Male	Nivolumab	/	/	-0.061575523	low	Non-responder
GSM2445697	66	Male	Pembrolizumab	Dead	0.7	-0.079043605	low	Non-responder
GSM3589683	54	Male	Nivolumab	/	/	-0.08253213	low	Responder
GSM3589679	56	Male	Nivolumab	/	/	-0.087495488	low	Non-responder
GSM2445693	51	Male	Pembrolizumab	Dead	1.4	-0.092421248	low	Non-responder
GSM3589681	65	Male	Nivolumab	/	/	-0.101236124	low	Non-responder
GSM3589674	76	Male	Nivolumab	/	/	-0.146002015	low	Non-responder
GSM2445698	47	Female	Pembrolizumab	Dead	0.7	-0.146799107	low	Non-responder
GSM3589687	66	Male	Nivolumab	/	/	-0.147966044	low	Non-responder
GSM3589685	61	Male	Nivolumab	/	/	-0.215875455	low	Non-responder
GSM3589673	72	Male	Nivolumab	/	/	-0.216036899	low	Non-responder