APPENDIX

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Appendix Figure S2. Immunofluorescence staining of RAD51 nuclear foci in PDXs. Cells in the S/G2-phase (geminin-positive, green) with or without RAD51 nuclear foci (red) are shown for four PDXs models from cohort-1: two PARPi-resistant PDXs (PDX098 and PDX060) and two PARPi-sensitive PDXs (PDX197 and PDX093). Scale bars: 10 µm.

Appendix Figure S3. Restoration of BRCA1 foci formation in PARPi acquired-resistant PDXs. Immunofluorescence staining of BRCA1 foci in PARPi-treated tumors from STG201, PDX302 and the corresponding PARPi acquired-resistant models (STG201OR and PDX302OR). Cells in S/G2-phase (green) with or without BRCA1 foci (red) are shown. Nuclei were visualized with DAPI (blue). Scale bars: 10 µm.

Appendix Figure S4. Restoration of RAD51 foci formation in PARPi acquired-resistant PDXs. Immunofluorescence staining of RAD51 foci in PARPi-treated tumors from STG201, PDX302 and the corresponding PARPi acquired-resistant models (STG201OR and PDX302OR). Cells in S/G2-phase (green) with or without RAD51 foci (red) are shown. Nuclei were visualized with DAPI (blue). Scale bars: 10 µm.

Appendix Figure S5. Analysis of RAD51 foci cut-off. Scatter plots showing the number of RAD51 foci in each individual geminin-positive cell (100 cells for each model) in **A**) vehicle- or **B**) olaparib-treated samples from six PARPi-resistant and three PARPi-sensitive PDXs models from cohort-1. The dashed line indicates the cut-off of 5 RAD51 foci-per-nucleus. **C**) Forest plots and Odd's ratio analysis and **D**) accuracy and specificity of the RAD51 score using different cut-offs from 1 to 10 foci per nucleus.

Appendix Table S1: Initial and end tumor volumes of vehicle- and olaparib-treated tumors for PDXs cohort-1.

Sample ID	Vehicle							Olaparib							p value Vi	p value TVC
	Days	Mean Vi	SEM Vi	Mean Vf	SEM Vf	N	TVC (%)	Days	Mean Vi	SEM Vi	Mean Vf	SEM Vf	N	TVC (%)		
PDX302OR	22	81.37	2.99	360.35	22.94	3	343	21	90.61	8.21	487.45	133.32	3	438	0.35	0.64
STG201OR	21	89.4	22.89	409.59	99.56	5	358	21	86.60	15.18	389.09	92.96	4	349	0.93	0.55
PDX98	21	241.17	52.90	913.26	208.25	5	279	21	190.33	32.37	698.20	65.85	7	267	0.41	0.80
STG139	21	205.67	34.26	642.34	100.58	7	212	21	212.98	29.31	772.58	139.57	8	263	0.87	0.52
PDX137	20	148.35	18.47	818.76	108.30	5	452	20	204.70	27.24	739.60	102.69	8	261	0.16	<0.0001
PDX93OR	22	152.09	56.37	446.11	133.37	6	193	21	130.45	23.59	446.22	123.24	6	242	0.73	0.48
PDX102	20	252.71	70.01	962.57	226.44	7	281	20	233.38	22.52	515.47	72.96	12	121	0.75	0.10
PDX44	20	206.20	42.35	554.29	135.56	7	169	20	211.79	39.28	499.54	92.52	7	136	0.92	0.34
PDX156	20	112.76	18.07	515.25	181.89	6	357	20	160.52	26.12	283.44	80.27	4	77	0.16	0.13
PDX291	21	150.67	53.51	208.67	44.56	3	38	21	182.15	56.34	337.07	123.98	3	85	0.71	0.48
PDX94	21	273.23	66.72	910.23	232.84	11	233	21	218.95	54.49	463.76	97.02	7	112	0.57	0.67
PDX60	22	198.75	22.07	874.50	266.26	4	340	22	248.14	41.95	430.12	126.03	6	73	0.40	0.06
PDX288	19	178.6	51.70	401.00	128.34	5	125	19	236.69	13.27	379.61	62.02	9	60	0.19	0.18
PDX270	21	205.53	73.94	458.05	221.39	4	123	20	243.19	18.74	432.25	105.89	5	78	0.58	0.19
PDX302	12	163.00	23.03	770.25	177.03	4	373	64	148.21	25.02	17.12	17.12	7	-88	0.70	<0.0001
STG201	21	230.80	51.78	561.80	158.26	5	143	39	232.10	30.66	77.19	61.98	9	-67	0.98	<0.0001
PDX197	21	277.46	35.32	1917.76	516.71	6	591	20	302.36	66.36	0.00	0.00	6	-100	0.29	0.03
PDX93	22	120.97	25.66	338.36	38.04	10	180	68	179.07	24.51	0.00	0.00	6	-100	0.15	0.01

Vi: Initial Volume
Vf: Final Volume
TVC: Tumor Volume Change
Statistical tests were performed using unpaired two-tailed t-test for Vi and TVC (%) comparison between vehicle- and olaparib-treated tumors in each PDX model.

	PDX098	PDX060	PDX197	PDX093
Geminin				
BRCA1				
MERGE				

Appendix Figure S1

| | PDX098 | PDX060 | PDX197 | PDX093 |

Geminin

RAD51

MERGE

Appendix Figure S2

Columns (left to right): DAPI, Geminin, BRCA1, MERGE

Rows (top to bottom): STG201, STG201OR, PDX302, PDX302OR

Appendix Figure S3

Column headers: DAPI | Geminin | RAD51 | MERGE

Row labels: STG201 | STG201OR | PDX302 | PDX302OR

Appendix Figure S4

A

Number of RAD51 foci-per-nucleus

PDX098   PDX060   PDX094   PDX044   PDX102   PDX270   PDX197   STG201   PDX302

PARPi-resistant   PARPi-sensitive

B

Number of RAD51 foci-per-nucleus

PDX098   PDX060   PDX094   PDX044   PDX102   PDX270   PDX197   STG201   PDX302

PARPi-resistant   PARPi-sensitive

C

	OR	95% CI	p value	
> 10 foci-per-nucleus	3.889	0.1374 to 110.1	0.5000	
> 9 foci-per-nucleus	3.889	0.1374 to 110.1	0.5000	
> 8 foci-per-nucleus	25.67	0.7981 to 825.4	0.0476	
> 7 foci-per-nucleus	25.67	0.7981 to 825.4	0.0476	
> 6 foci-per-nucleus	25.67	0.7981 to 825.4	0.0476	
> 5 foci-per-nucleus	91.00	1.462 to 5662	0.0119	
> 4 foci-per-nucleus	91.00	1.462 to 5662	0.0119	
> 3 foci-per-nucleus	91.00	1.462 to 5662	0.0119	
> 2 foci-per-nucleus	91.00	1.462 to 5662	0.0119	
> 1 foci-per-nucleus	91.00	1.462 to 5662	0.0119	

10^{-1} 10^0 10^1 10^2 10^3 10^4

Odds ratio

D

Number of RAD51 foci-per-nucleus cut-off

- Accuracy
- Specificity

Appendix Figure S5