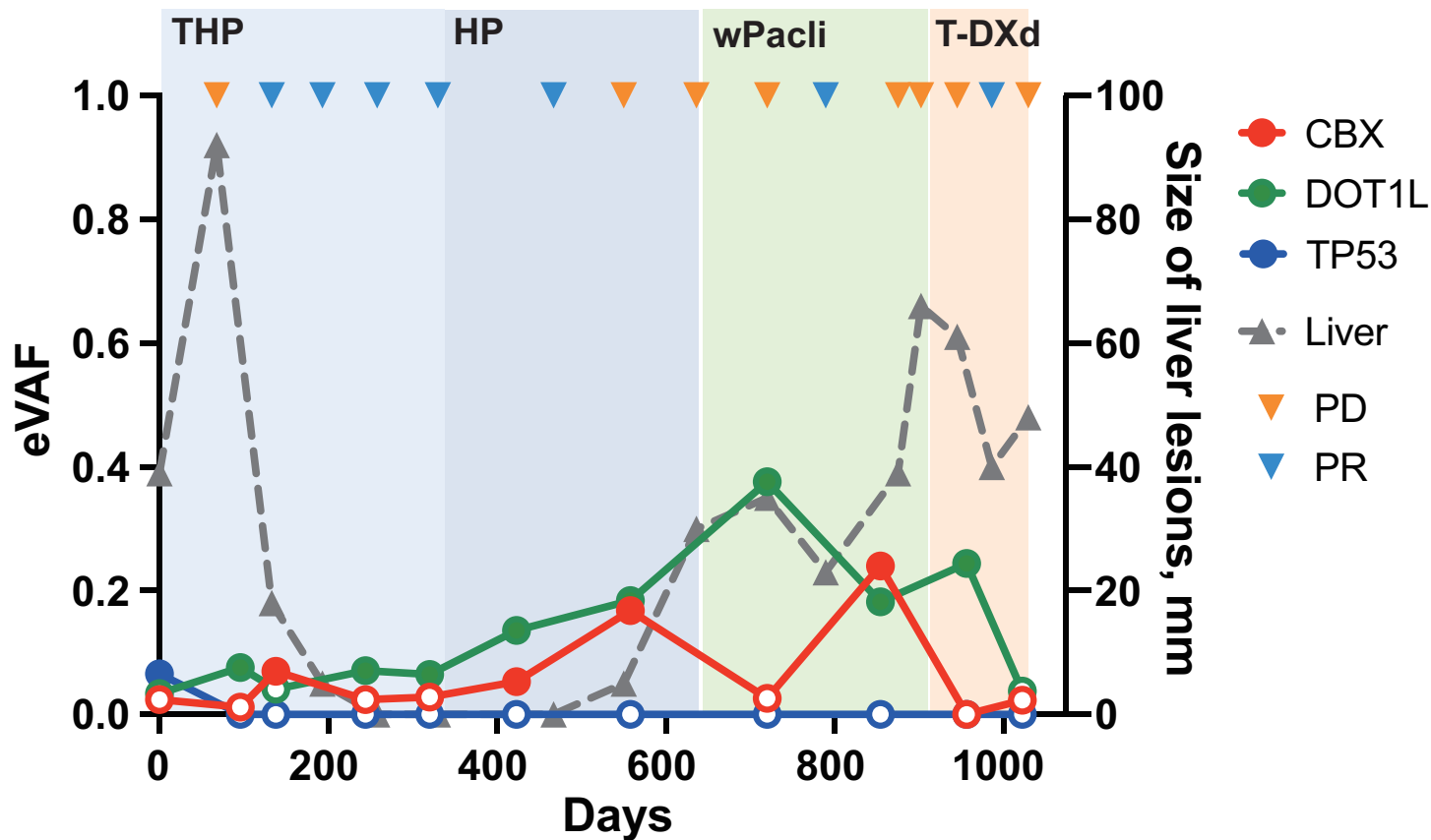


Supplementary figure 4

Time course and longitudinal dynamics of ctDNA in 22 patients

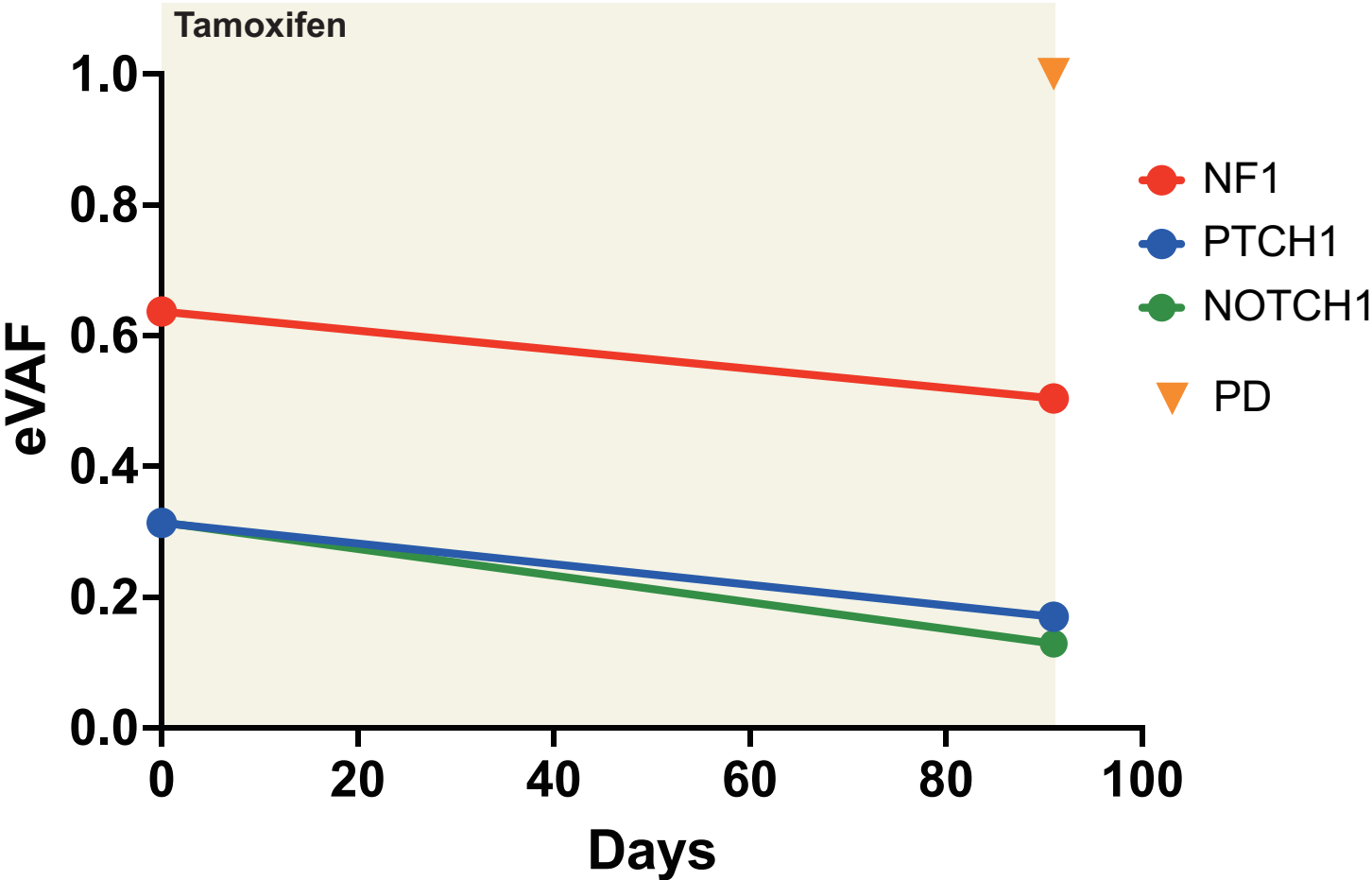
M001 HR+HER2+, Distant metastasis (liver, bone)

	Primary tissue		Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)	NGS VAF (%)	UHS eVAF (%)
<i>CBX4</i> c.844G>A p.G282S	0	0	1.1	39.6
<i>DOT1L</i> c.2002G>A p.A668T	0	0	2.9	47.2
<i>TP53</i> c.578A>C p.H193P	35.2	48.4	26.8	45.1



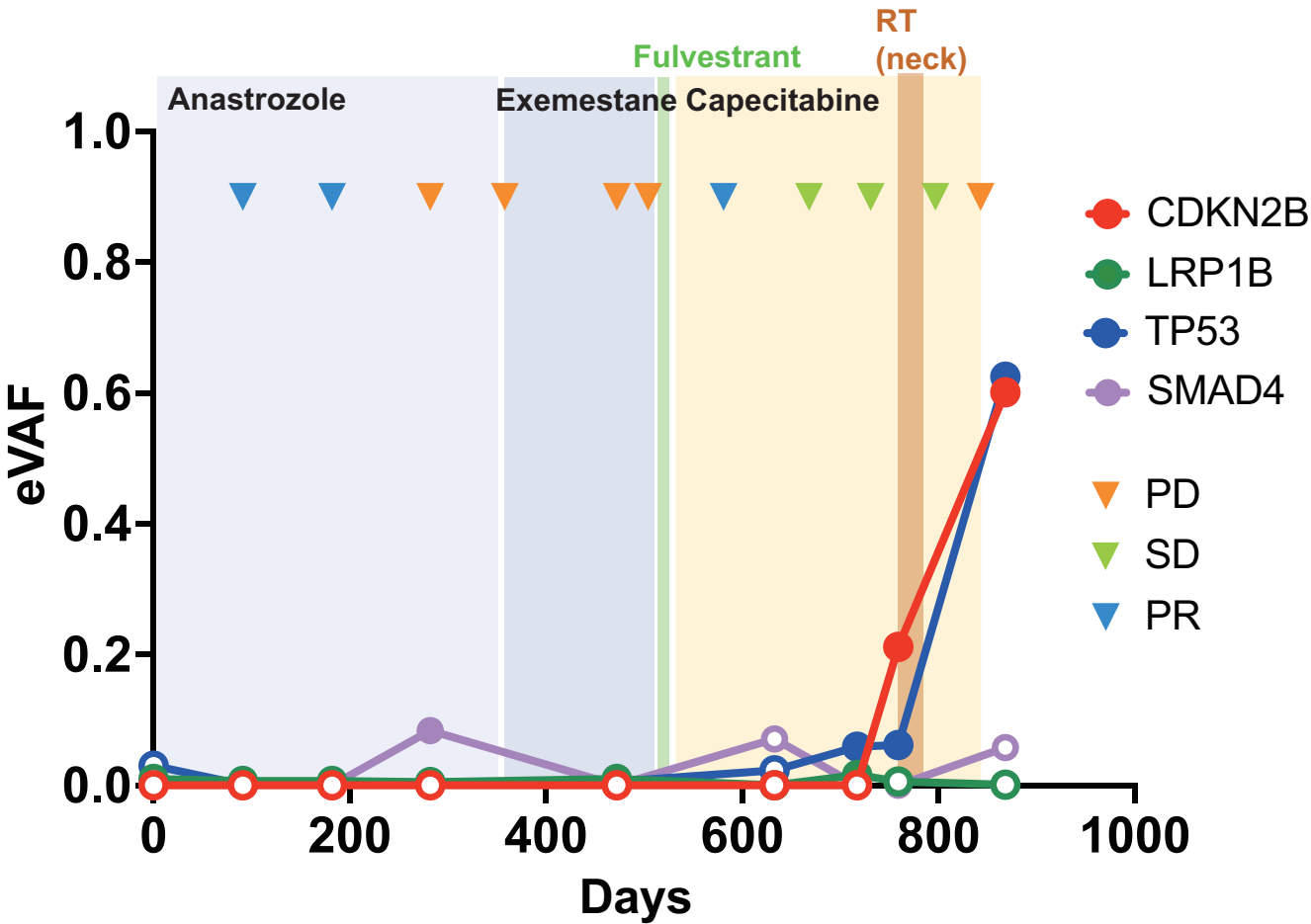
M002 HR+HER2-, Distant metastasis (lung, bone)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
<i>PTCH1</i> c.202-27C>G	29.3	67.1
<i>NOTCH1</i> c.7437C>T p.A2479=	17.2	44.7



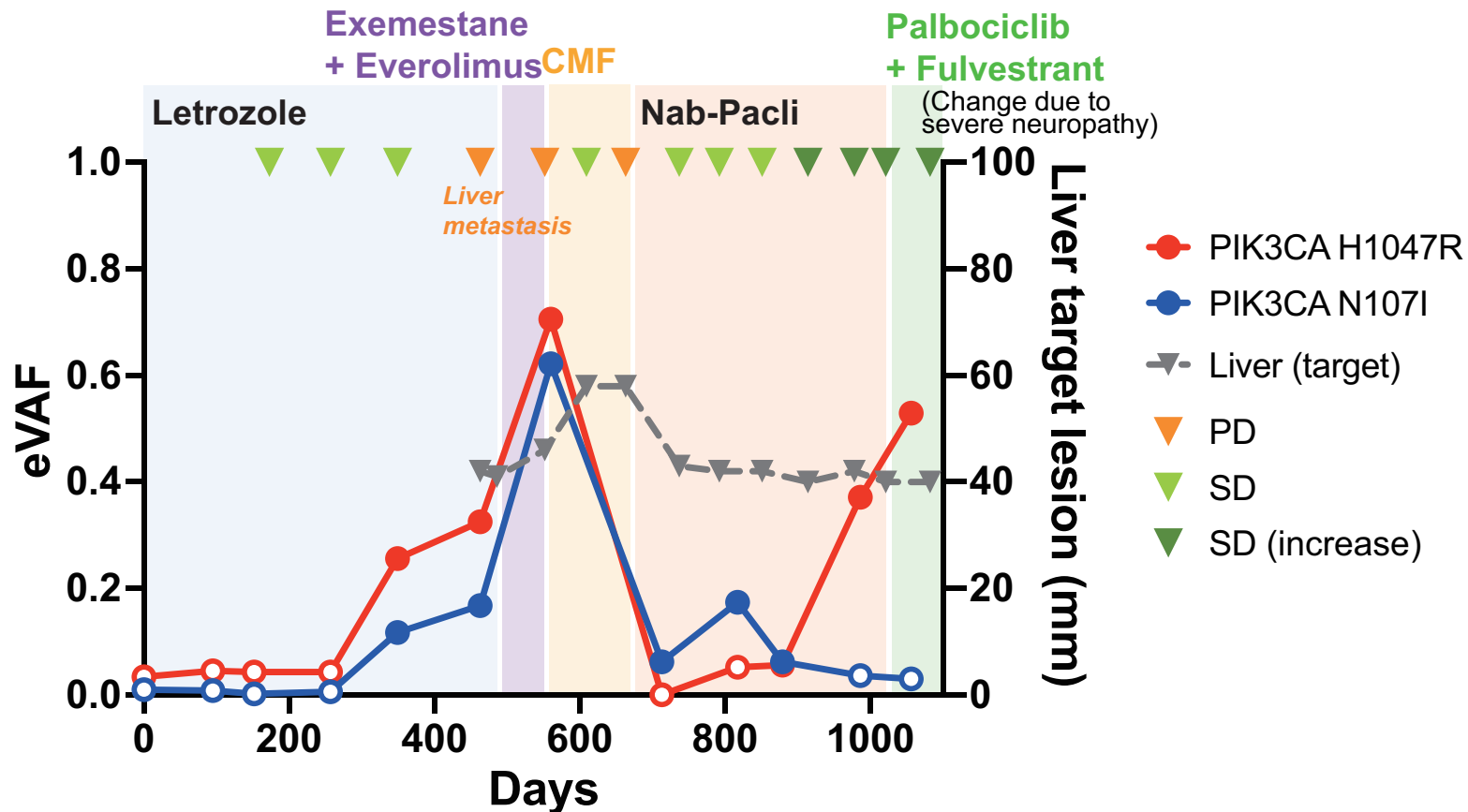
M003 HR+HER2-, Distant metastasis (neck LN)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
CDKN2B c.368G>C p.R123P	69.9	77.9
LRP1B c.6054GC>AG p.MP2018IA	24.1	84.5
TP53 c.722C>T p.S241F	70.3	74.3
SMAD4 c.1264_1285del p.P422Sfs*7	39.7	76.8



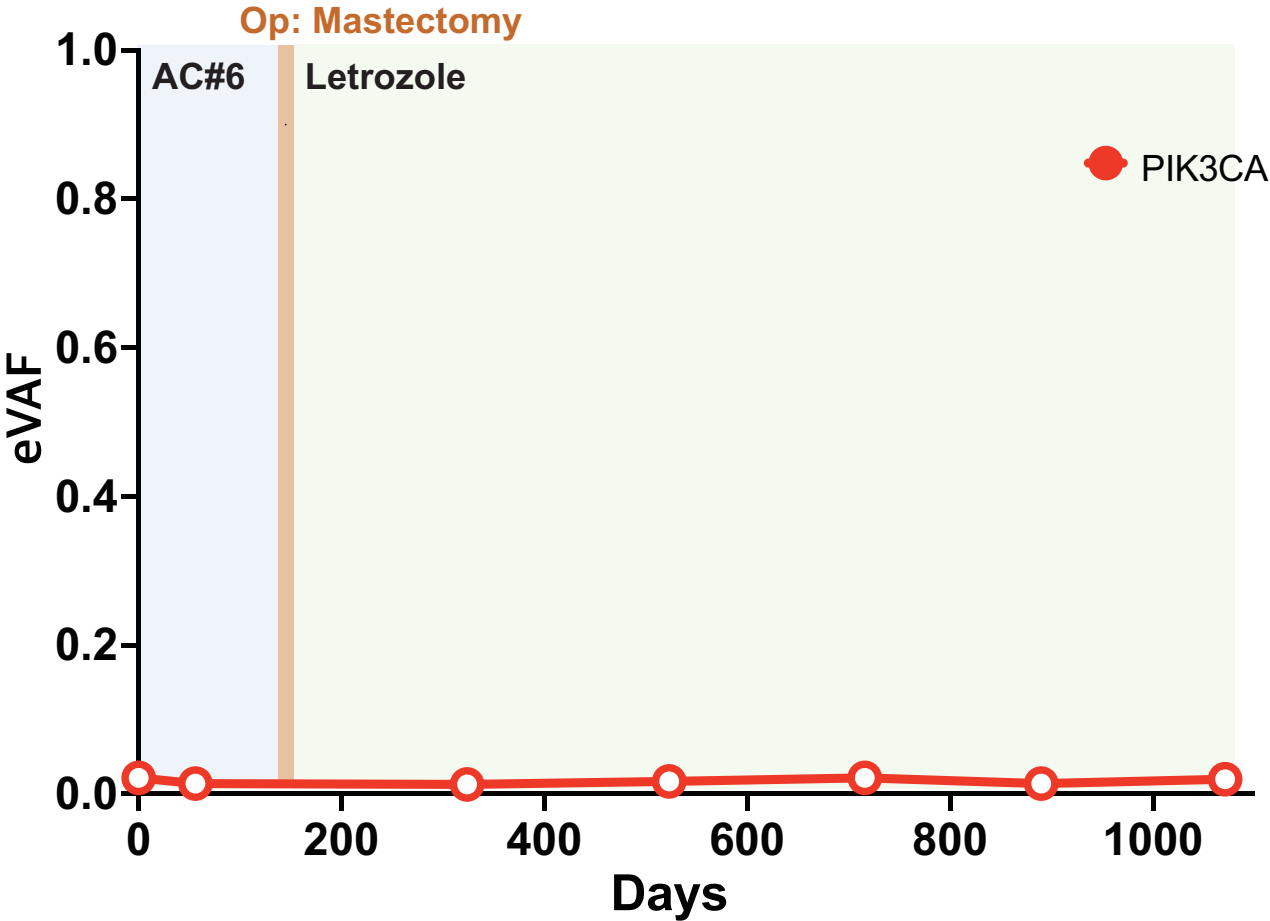
M005 HR+HER2-, Distant metastasis (liver, bone)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
<i>PIK3CA</i> c.3140A>G p.H1047R	54.3	84.4
<i>PIK3CA</i> c.320A>T p.N107I	54.2	87.8



M010 HR+HER2-, Local recurrence

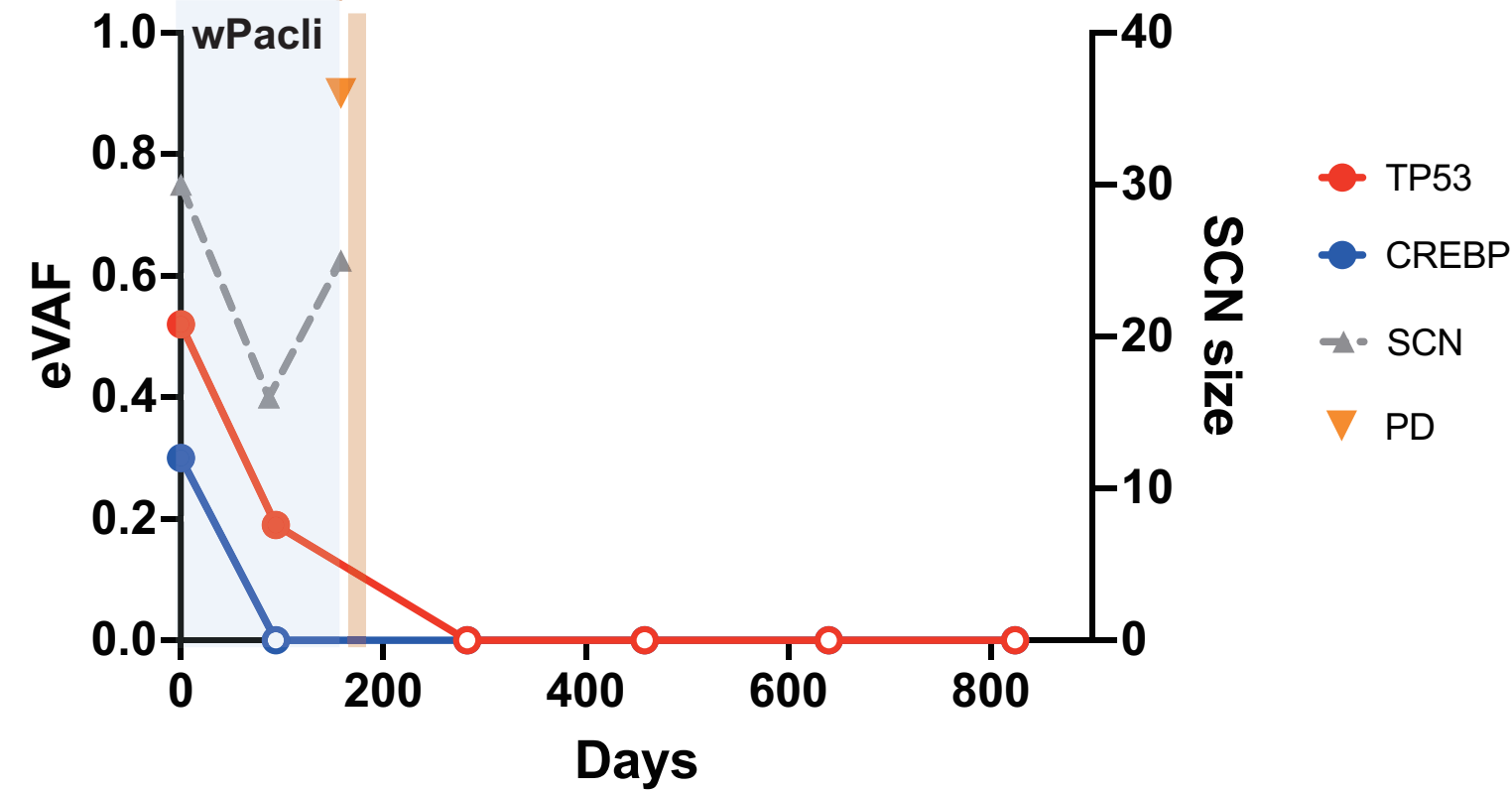
	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
PIK3CA c.3140A>T p.H1047L	38.9	91.1



M013 TNBC, Regional recurrence (IMN, SCN)

	Primary tissue		Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)	NGS VAF (%)	UHS eVAF (%)
TP53 c.375+1G>A p. X125_splice	53.2	75.0	58.6	79.2
CREBBP c.3836+20_3836+31 del	21.0	64.1	27.0	52.5

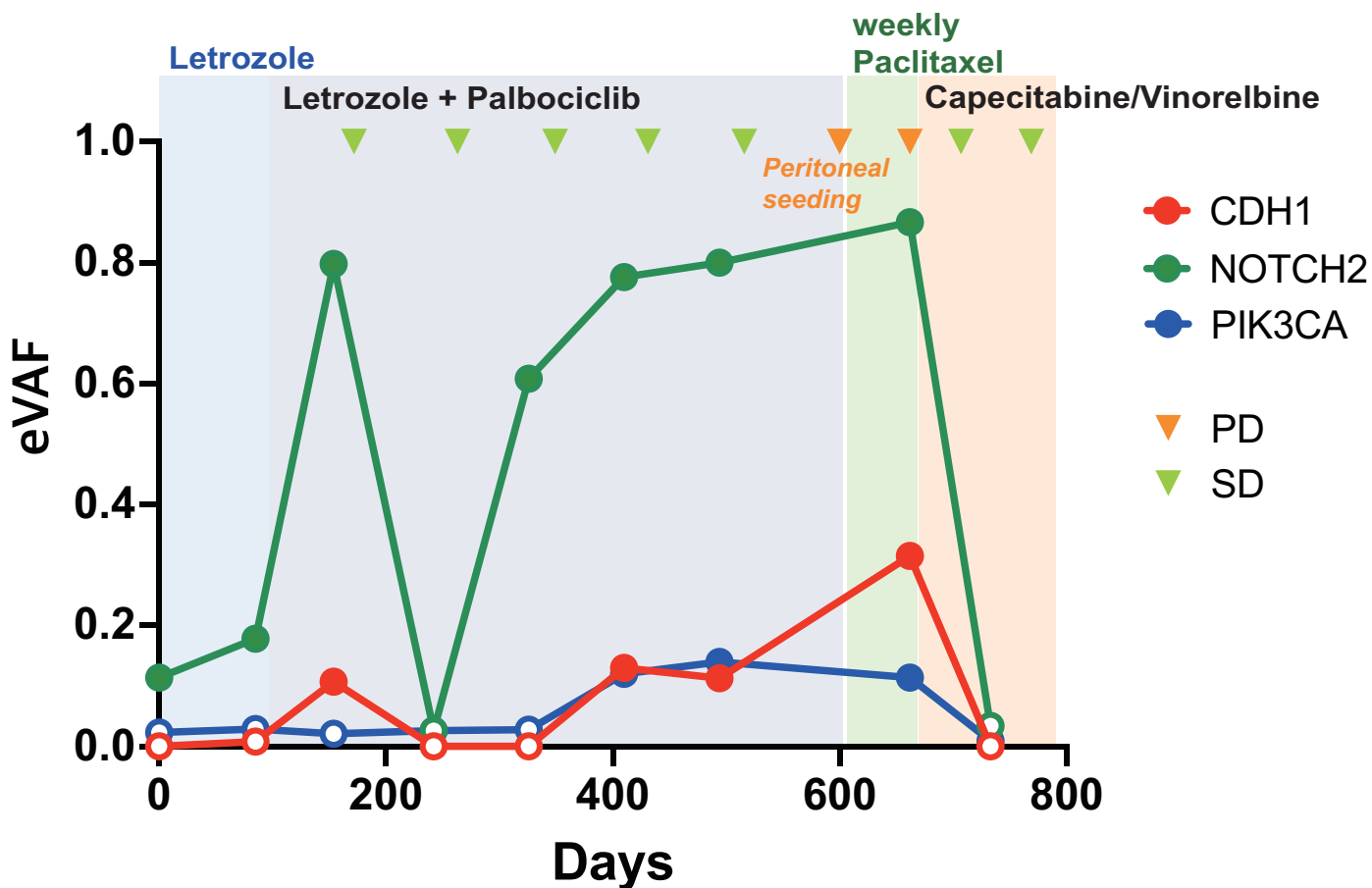
Op: SCN dissection



M015 HR+HER2-

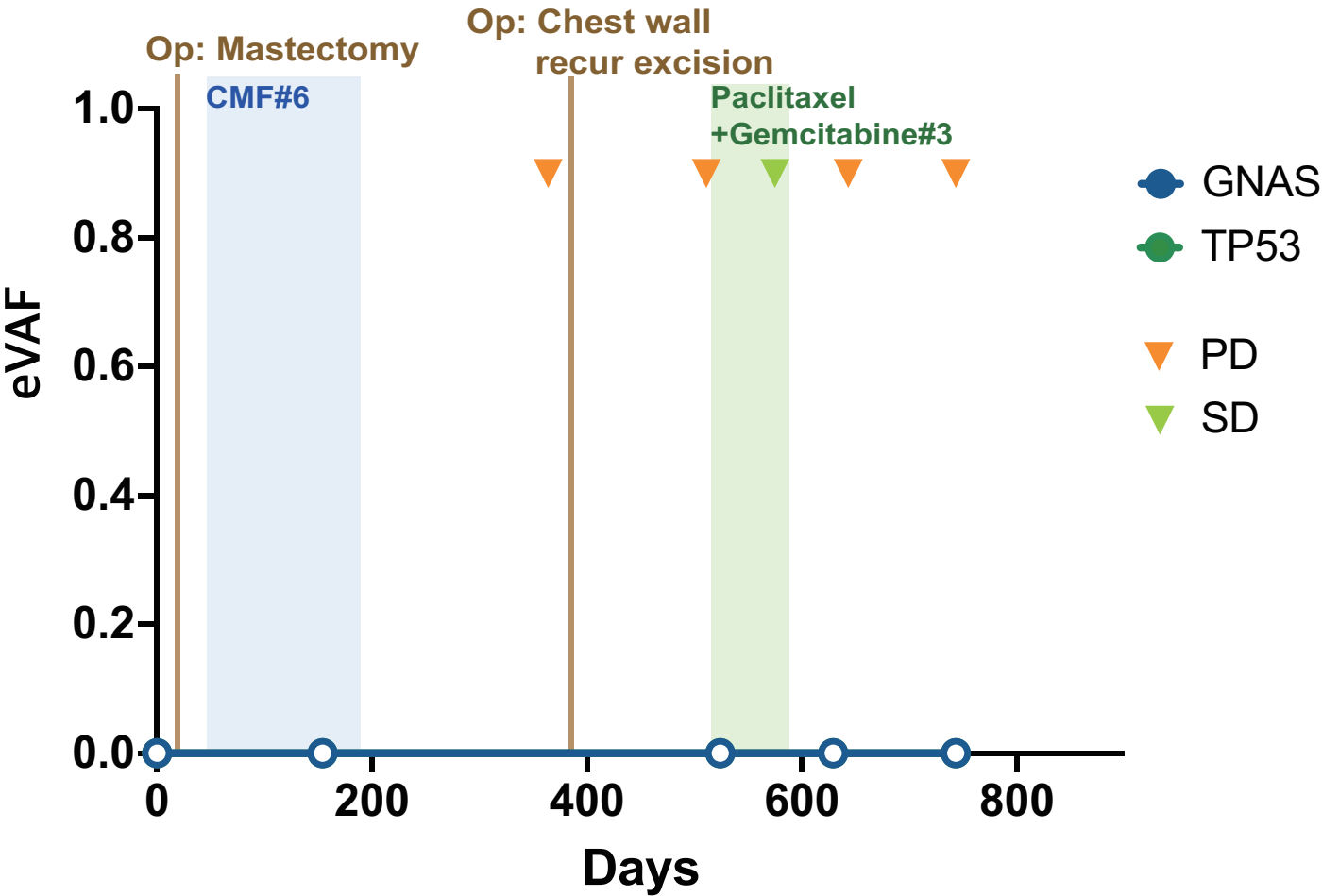
Locoregional recurrence & Distant metastasis (bone → peritoneum)

	Primary tissue		Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)	NGS VAF (%)	UHS eVAF (%)
<i>CDH1</i> c.1569T>A p.Y523*	25.8	56.2	23.3	28.2
<i>NOTCH2</i> c.6716G>A p.G2239E	6	77.8	19.2	34.8
<i>PIK3CA</i> c.1633G>A p.E545K	Only detected in ctDNA		0	28.3



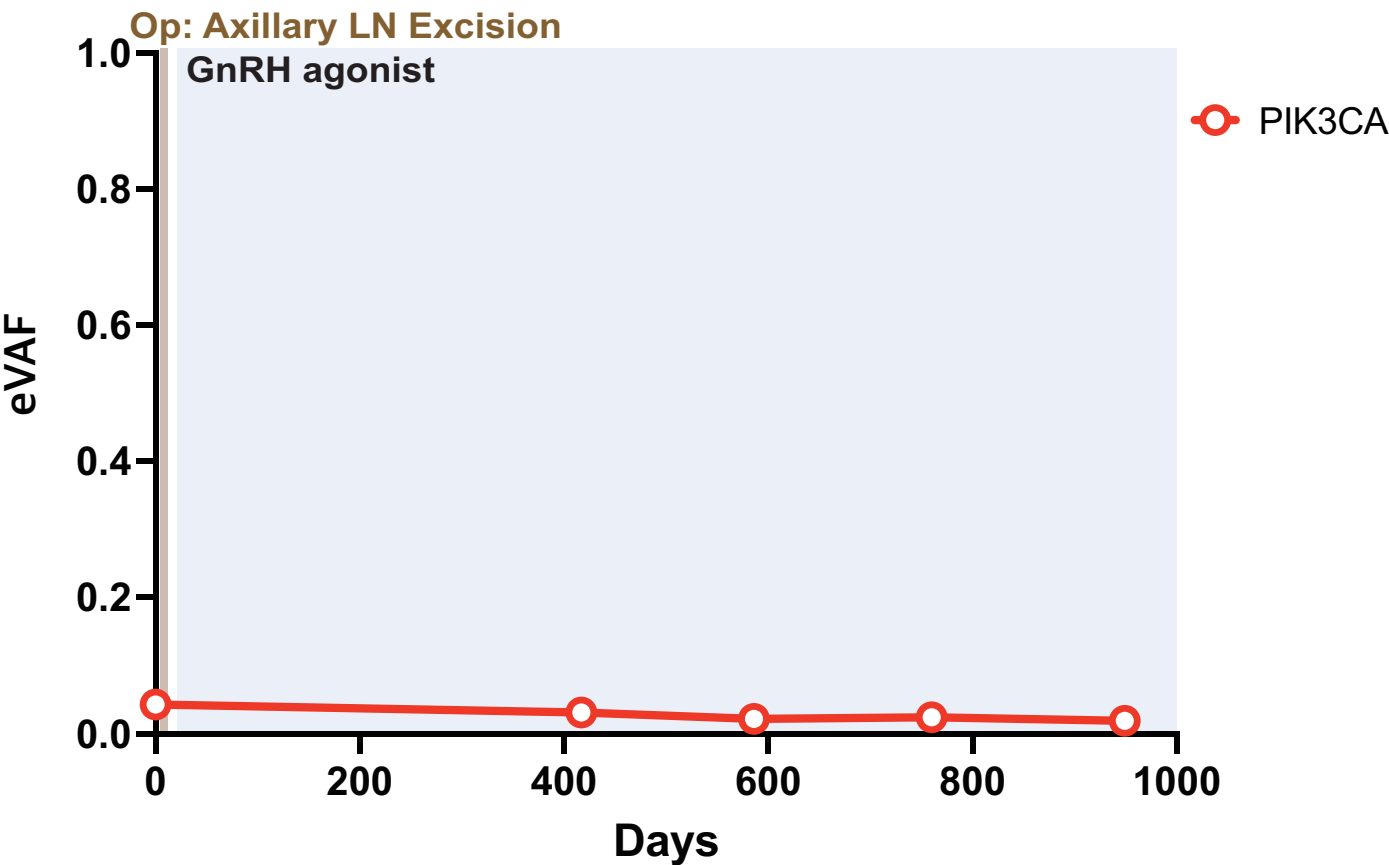
M016 TNBC, Local recurrence

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
GNAS c.2598C>G p.D866E	2.3	52.9
TP53 c.757dup p.T253Nfs*11	45.2	89.1



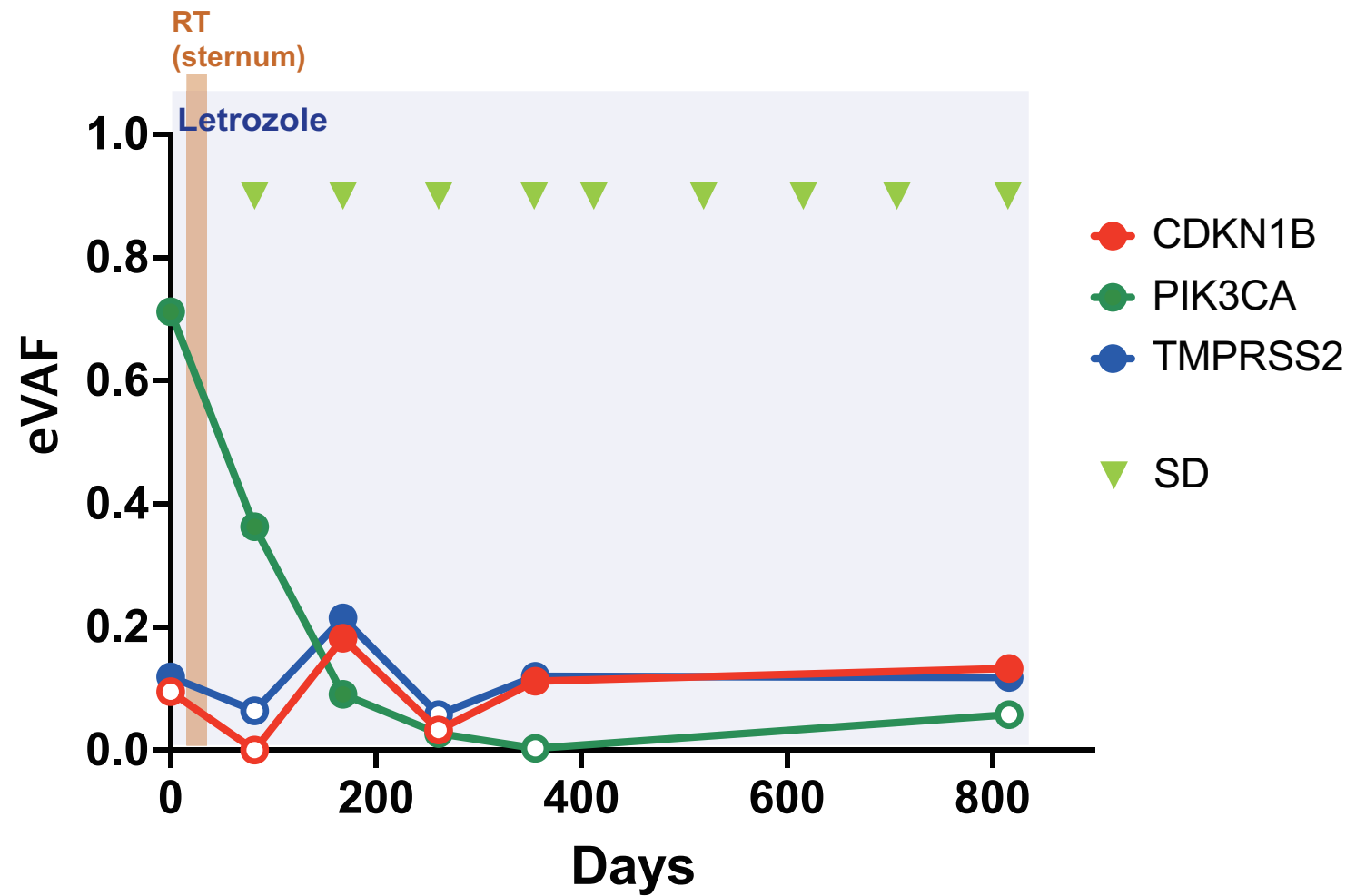
M017 HR+HER2-, Regional recurrence (Axillary LN)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
PIK3CA c.1633G>A p.E545K	13.0	31.2



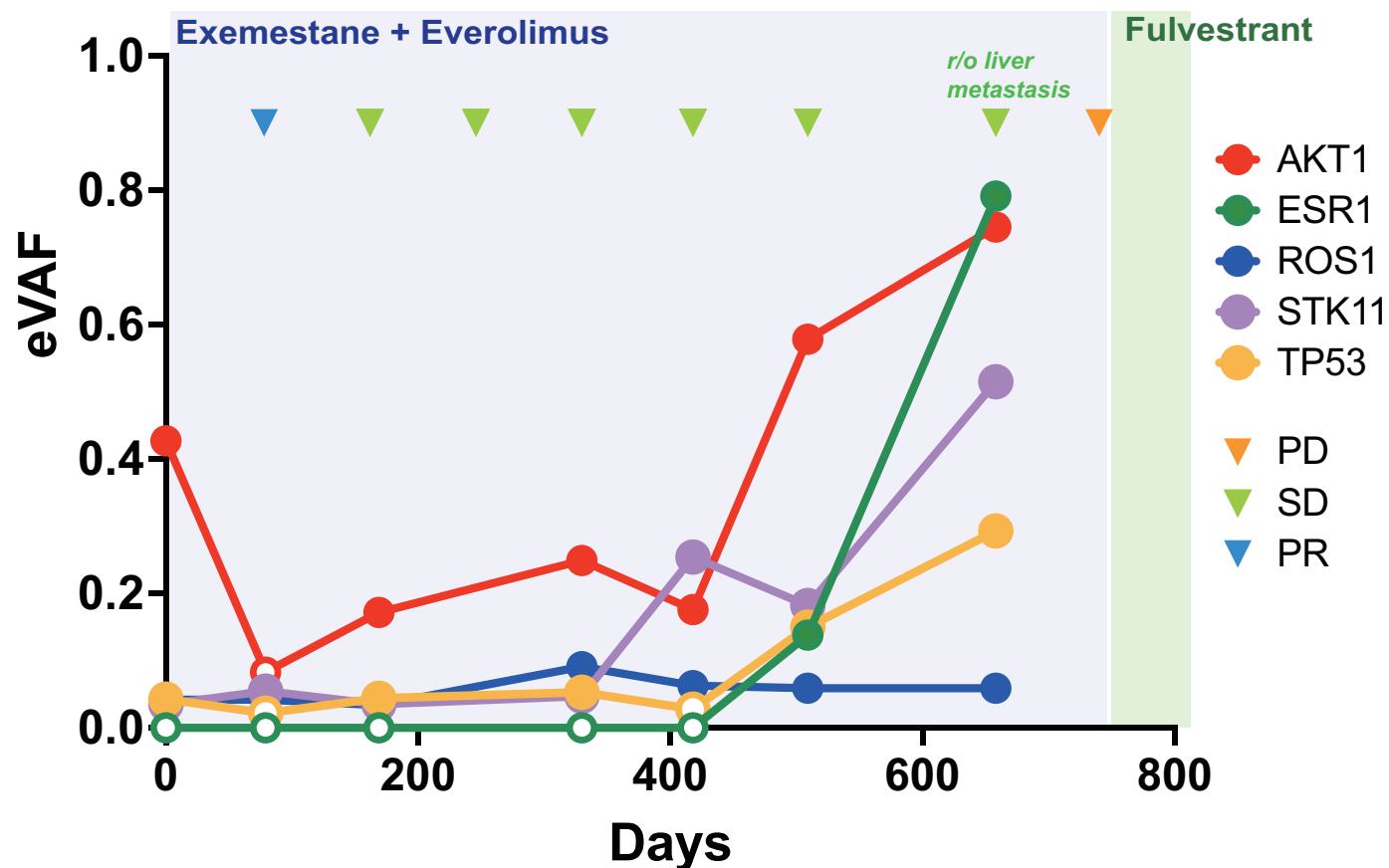
M018 HR+HER2-, Distant metastasis (bone)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
CDKN1B c.17del p.V6Gfs*36	37.8	80.0
PIK3CA c.1624G>A p.E542K	37.9	83.3
TPR2SS2 c.1567C>T p.R523*	11.6	80.8



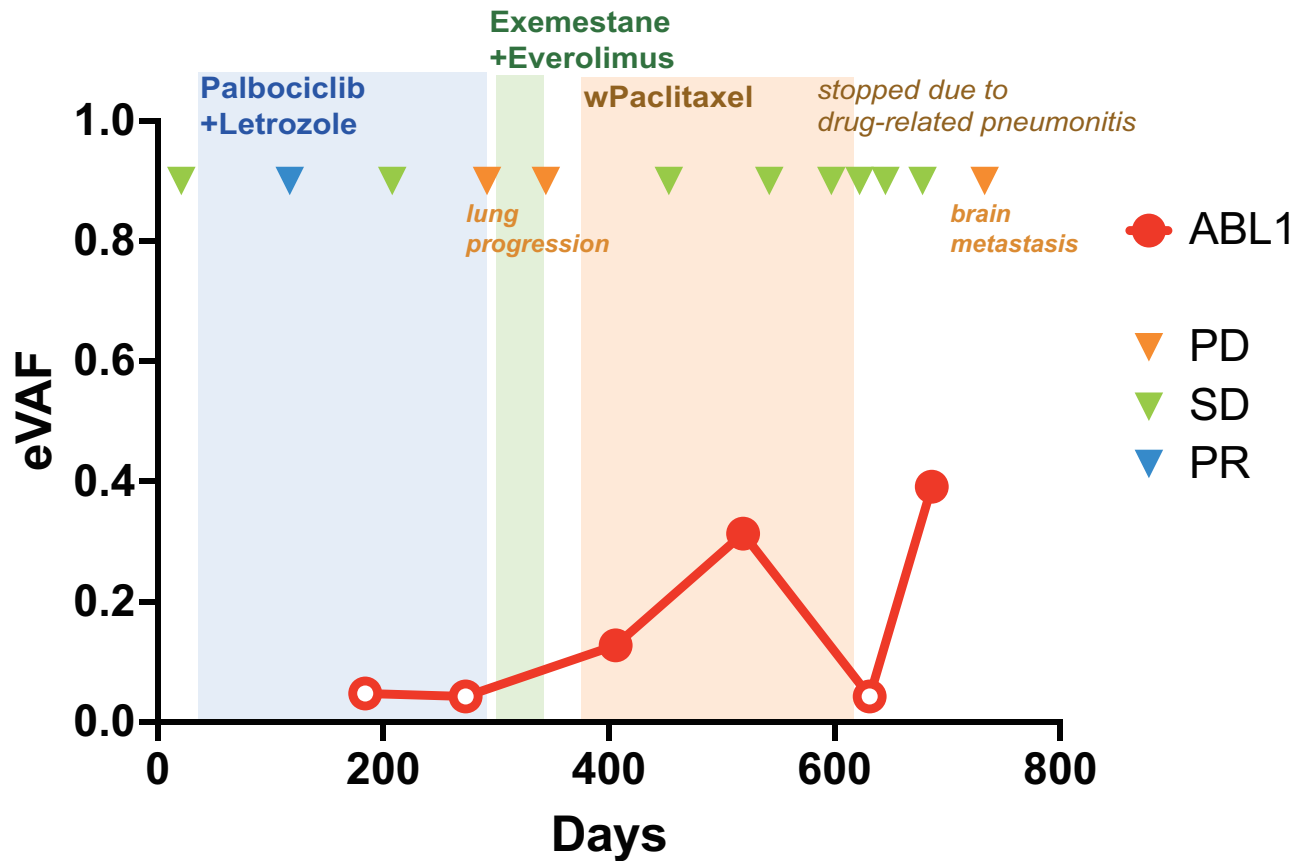
M019 HR+HER2-, Regional recurrence, distant metastasis (neck LN, bone)

	Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)
<i>AKT1</i> c.49G>A p.E17L	52.4	92.9
<i>ESR1</i> c.1261A>T p.M421L	22.2	64.0
<i>ROS1</i> c.4069G>C p.A1357P	3.5	17.5
<i>STK11</i> c.988G>T p.D330Y	24.7	62.7



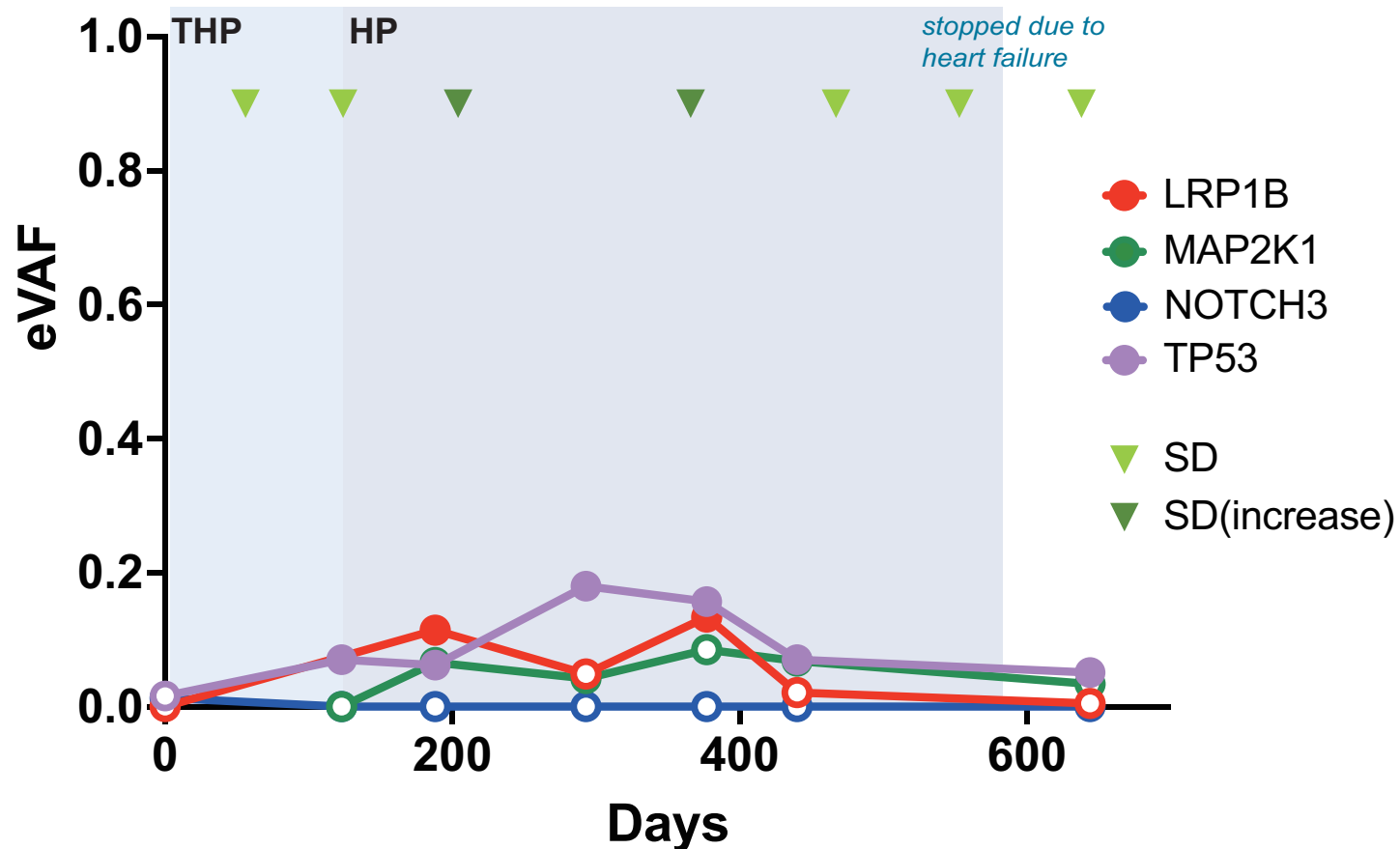
M022 HR+HER2-, Distant metastasis (lung, brain)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
<i>ABL1</i> c.137-65392C>G	43.1	78.3



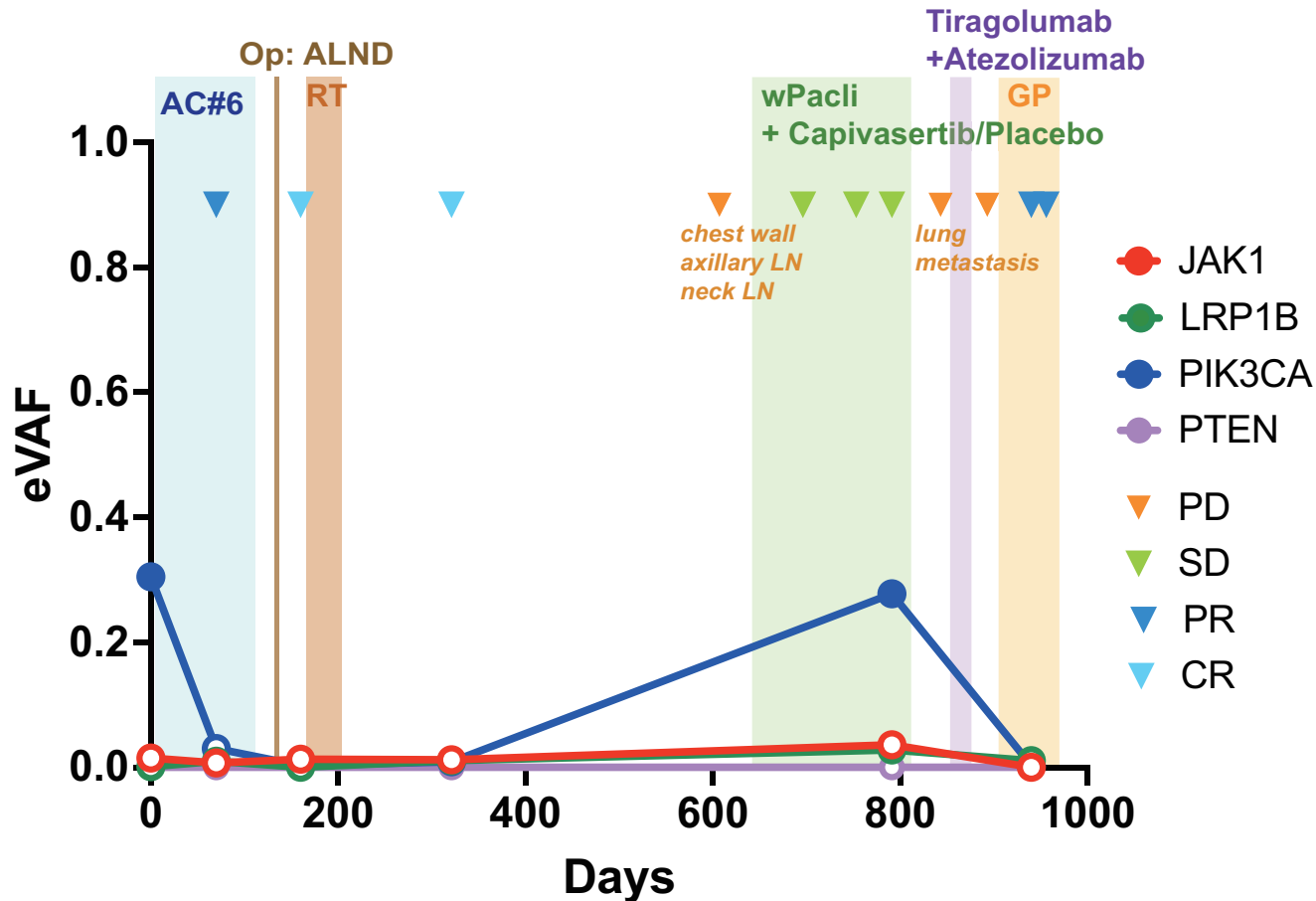
M024 TNBC, Distant metastasis (neck LN)

	Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)
<i>LRP1B</i> c.12526T>C p.C4176R	4.1	13.0
<i>MAP2K1</i> c.319A>C p.I107L	9.1	79.8
<i>NOTCH3</i> c.370C>G p.L124V	5.6	35.2
<i>TP53</i> c.393_395del p.N131del	24.3	50.2



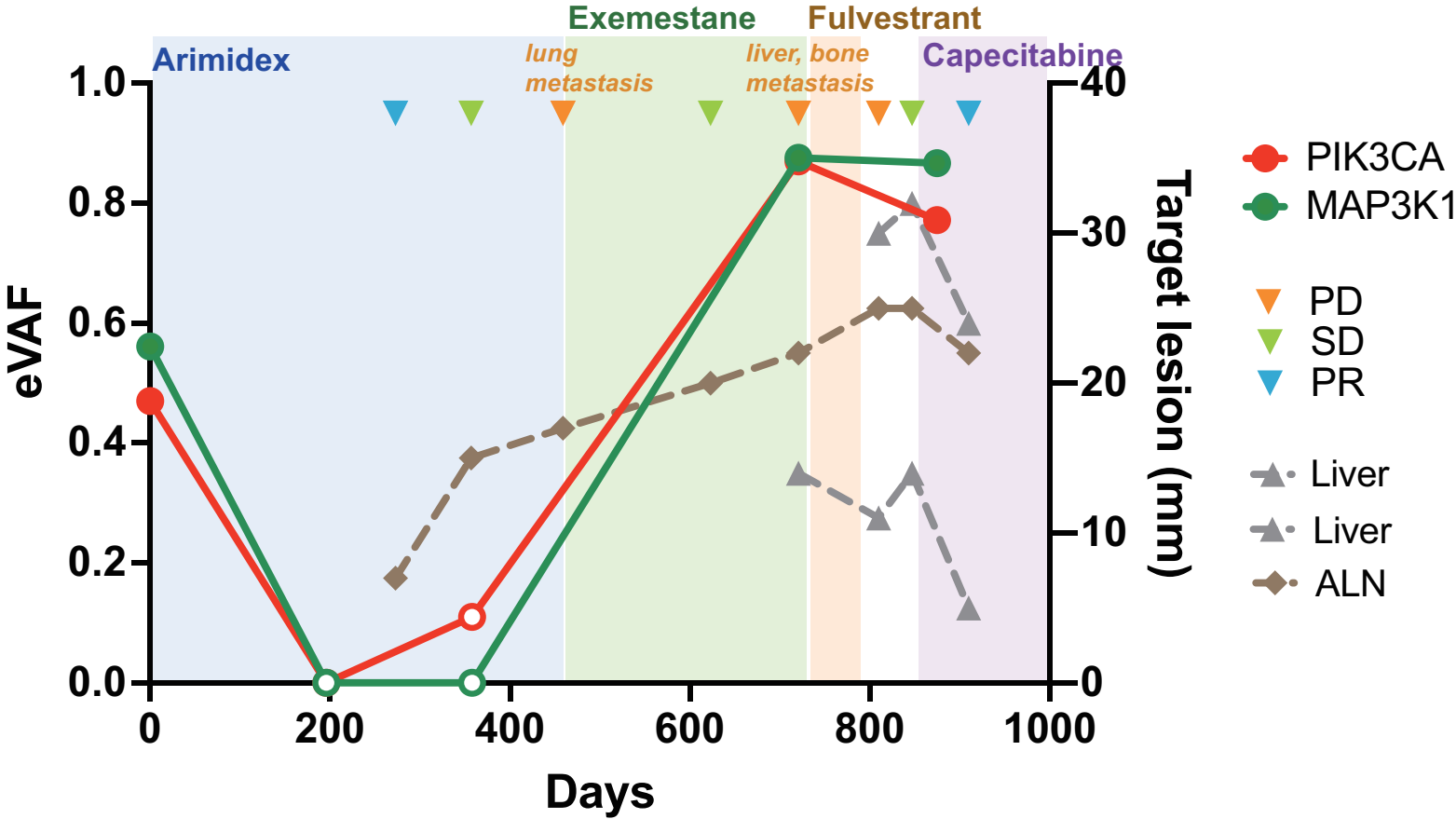
M025 HR+HER2-, Regional recurrence → Distant metastasis (lung)

	Primary tissue		Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)	NGS VAF (%)	UHS eVAF (%)
<i>JAK1</i> c.136G>A p.E46K	13.6	33.5	23.2	45.6
<i>LRP1B</i> c.7864G>A p.E2622K	0	0	26.4	57.1
<i>PIK3CA</i> c.3140A>B p.H1047R	20.7	54.6	28.2	37.8
<i>PTEN</i> c.1006_1024del p.Y336Rfs*2	22.8	71.9	15.7	40.4



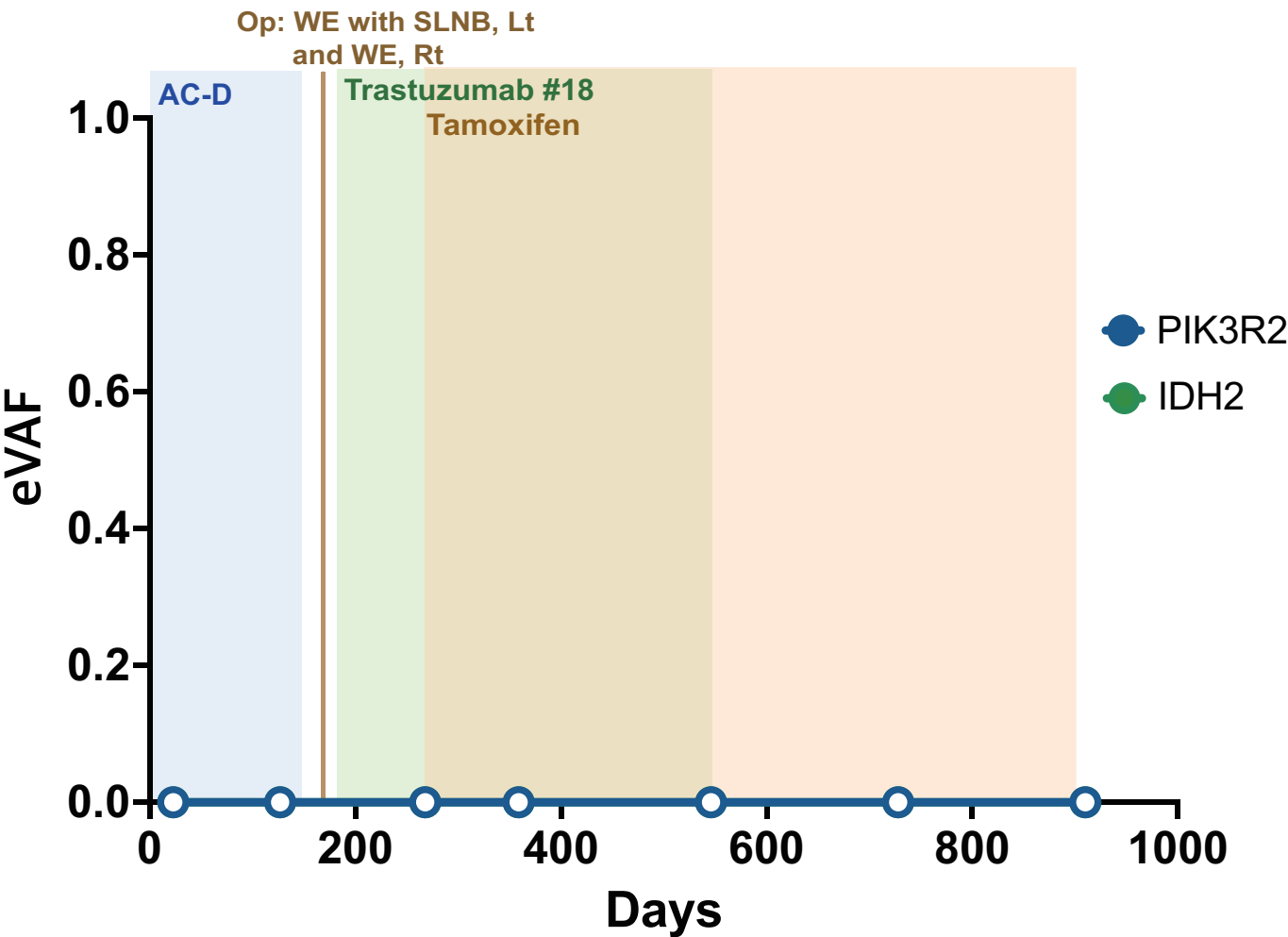
M027 HR+HER2-, Regional recurrence, distant metastasis (bone)

	Primary tissue		Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)	NGS VAF (%)	UHS eVAF (%)
MAP3K1 c.875C>T p.S292*	28.5	87.0	13.3	87.3
PIK3CA c.3140A>G p.H1047R	67.4	85.2	54.8	75.5



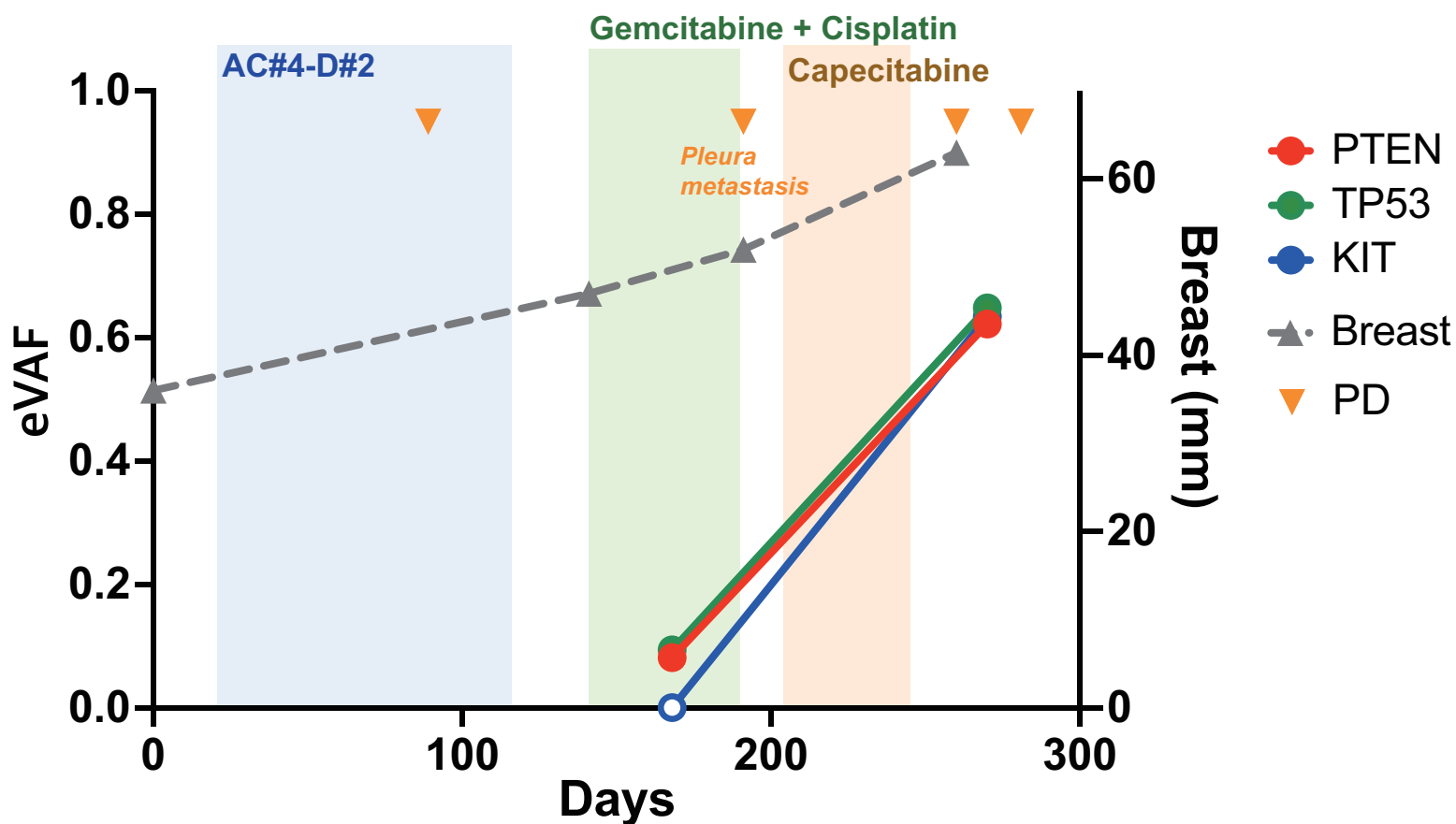
M029 HR+HER2-, Locoregional recurrence (axillary LN)

	Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)
PIK3R2 c.1333C>T p.Q445E	10.6	37.0
IDH2 c.1080+61G>A	16.7	40.0



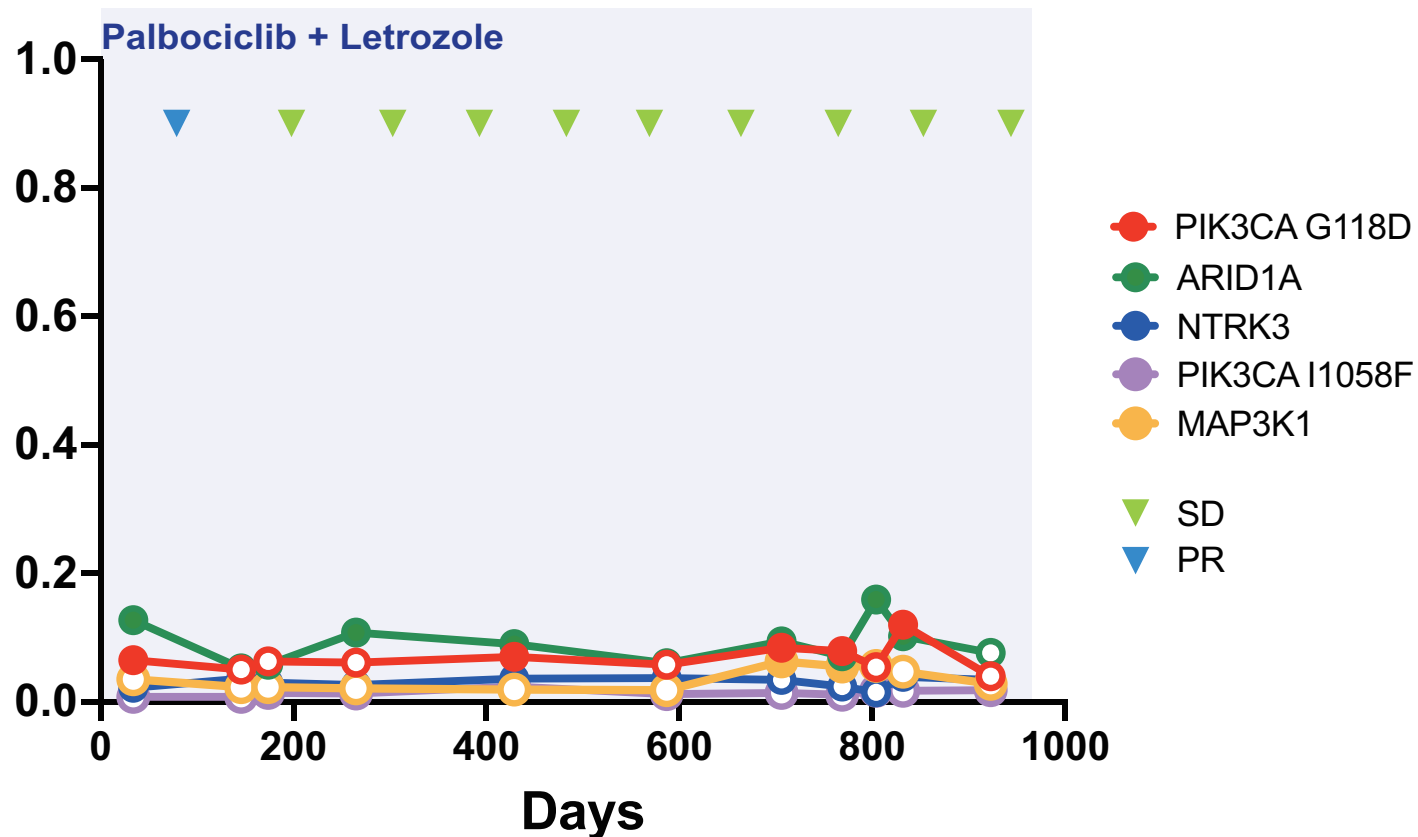
M030 TNBC, Progression during neoadjuvant therapy

	Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)
<i>PTEN</i> c.228T>G p.Y76*	31.1	66.2
<i>TP53</i> c.490A>G p.K164E	86.1	83.9
<i>KIT</i> c.2142-19C>G	28.1	77.4



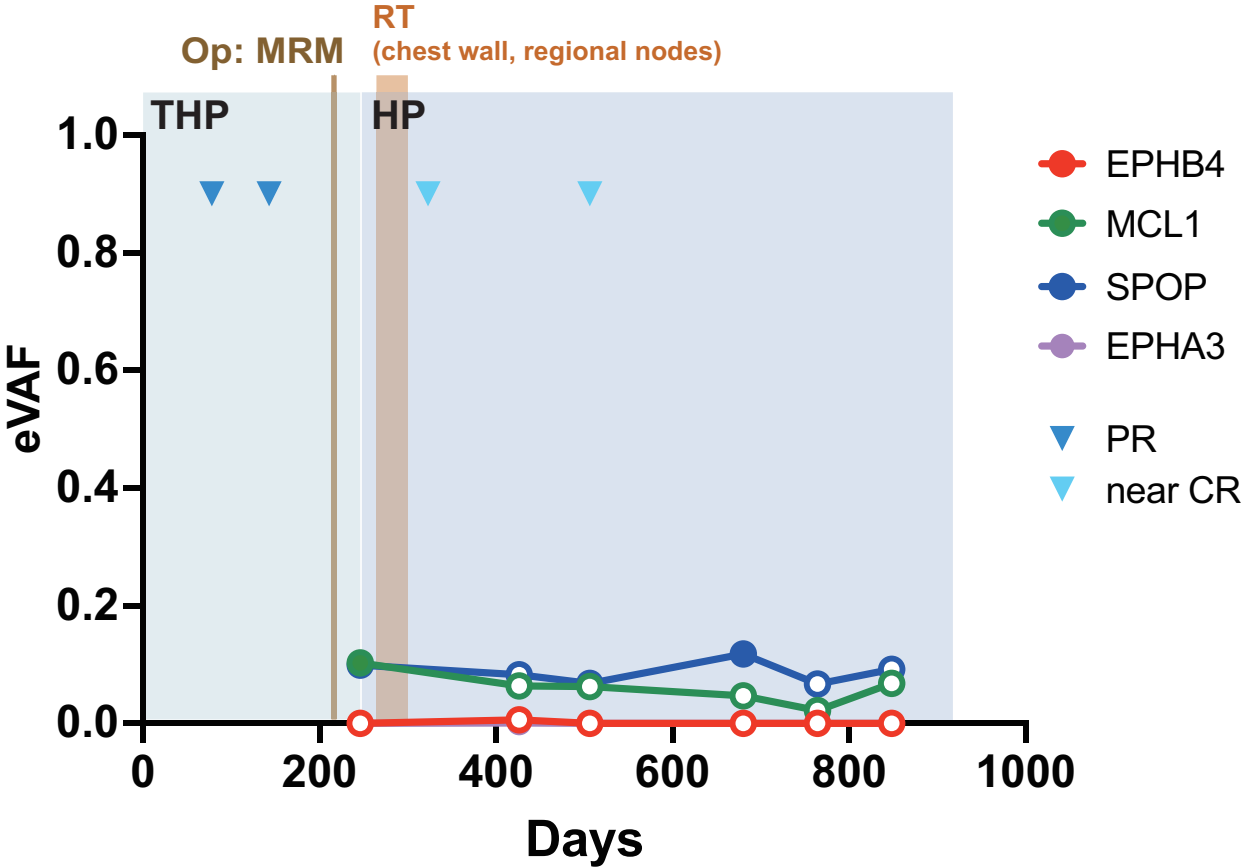
M031 HR+HER2-, Distant metastasis (pleura)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
<i>ARID1A</i> c.3598C>T p.Q1200*	3.3	65.4
<i>MAP3K1</i> c.3885_3886dup p.R1296Kfs*3	27.8	60.3
<i>PIK3CA</i> c.3172A>T p.I1058F	32.1	61.6
<i>PIK3CA</i> c.353G>A p.G118D	38.7	73.2
<i>NTRK3</i> c.1890G>A p.R630=	9.1	25.5



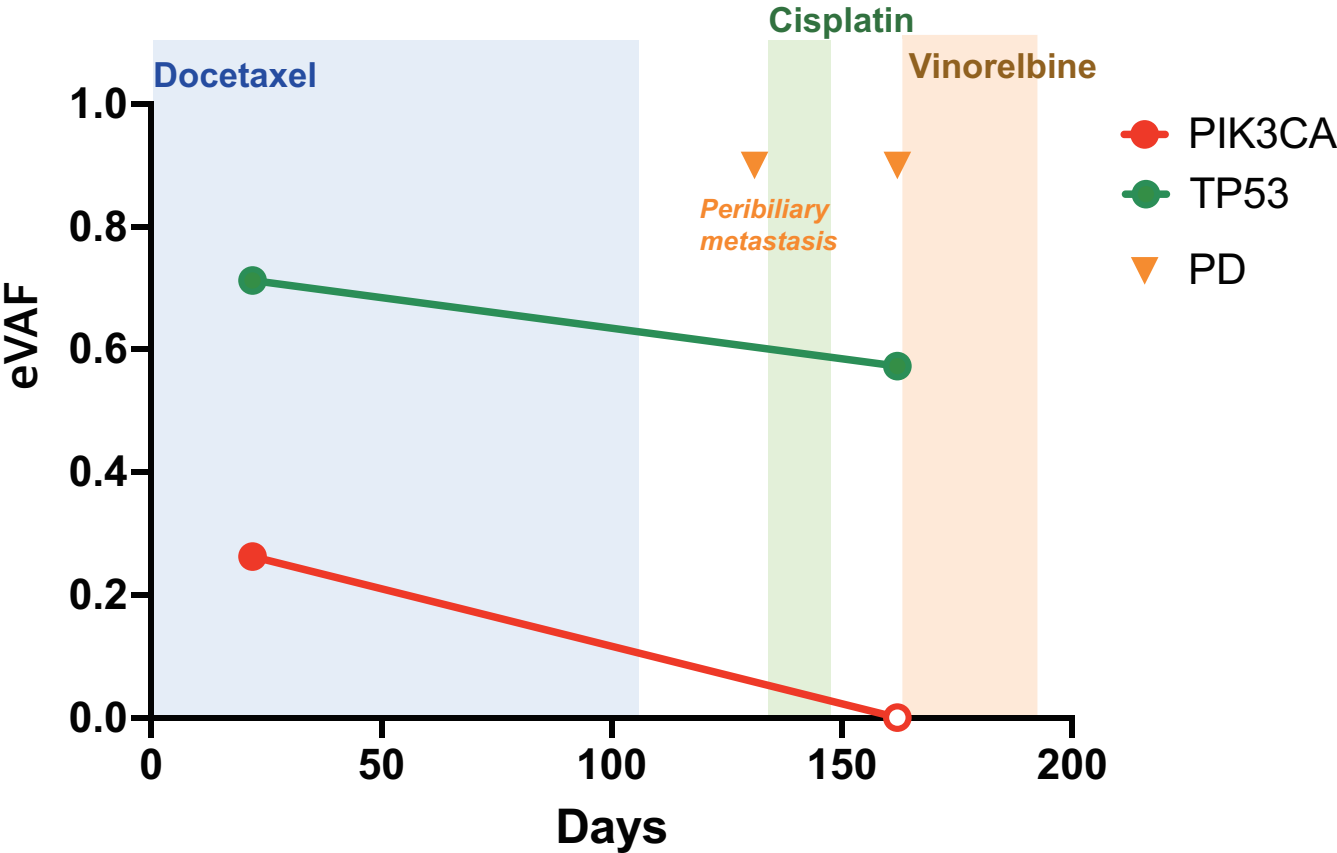
M032 HR-HER2+, Distant metastasis (lung)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
<i>EPHB4</i> c.2432_2443dep p.W811_M814del	32.8	59.1
<i>MCL1</i> c.146G>T p.G49V	18.7	77.9
<i>SPOP</i> c.480+57G>A	14.3	59.1
<i>EPHA3</i> c.2875G>A p.V959I	48.0	61.3



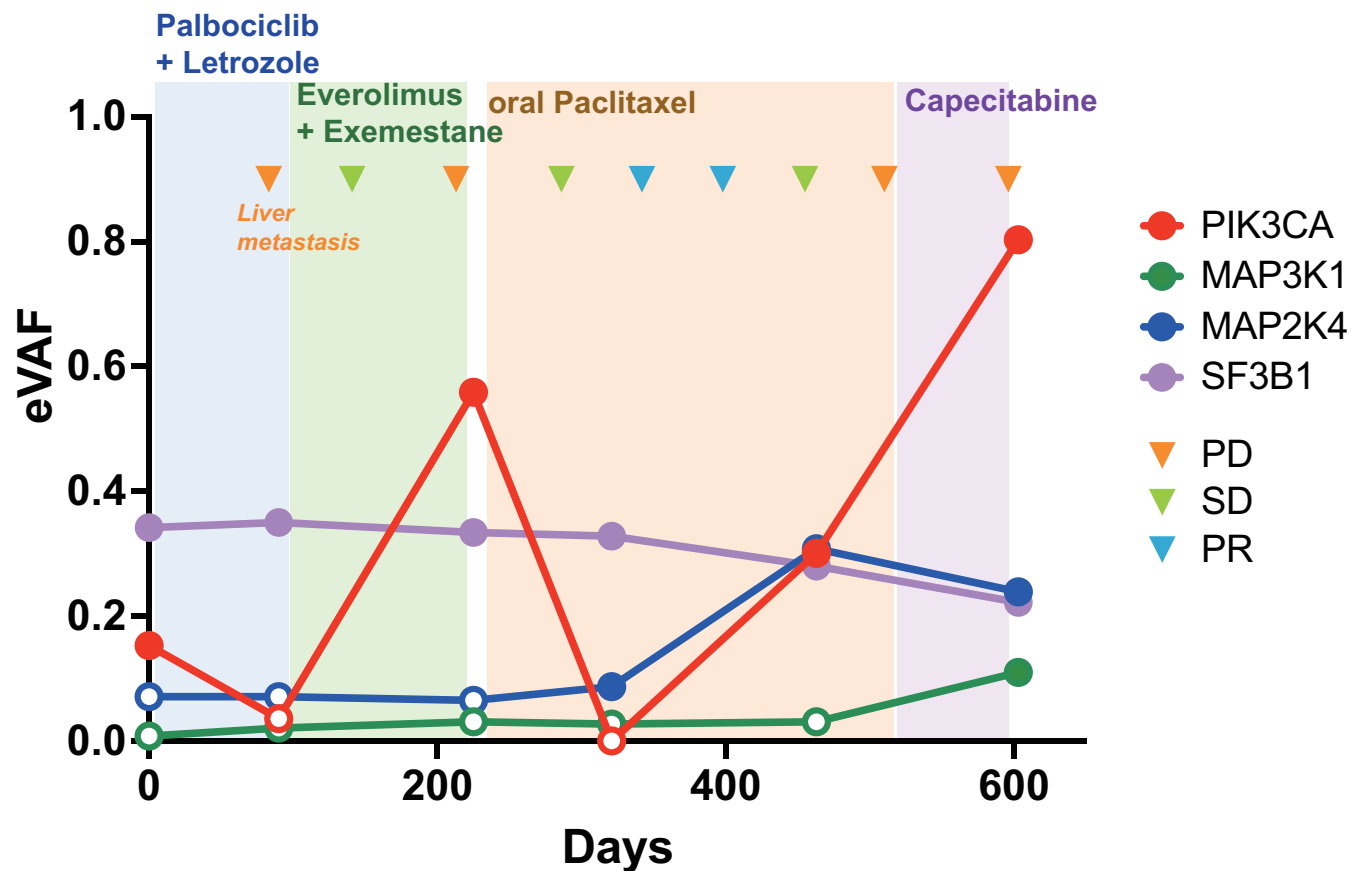
M038 HR+HER2-, Distant metastasis (liver, bone, lymph nodes)

	Primary tissue		Metastatic tissue	
	NGS VAF (%)	UHS eVAF (%)	NGS VAF (%)	UHS eVAF (%)
PIK3CA c.1035T>A p.N345K	46.7	59.7	47.9	65.8
TP53 c.260_270del p.P87Lfs*58	37.1	85.4	26.0	90.1



M039 HR+HER2-, Distant metastasis (lymph node, pleura)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
<i>PIK3CA</i> c.1624G>A p.E542K	37.0	49.8
<i>MAP3K1</i> c.600A>G p.E200=	10.8	57.1
<i>MAP2K4</i> c.551C>T p.S184L	9.2	50.0
<i>SF3B1</i> c.2113A>T p.S705C	8.2	24.8



M041 TNBC, Regional recurrence (axillary LN)

	Primary tissue	
	NGS VAF (%)	UHS eVAF (%)
TP53 c.725G>T p.C242F	62.7	88.7
ATRX c.3737G>T p.G1246V	22.0	99.5

