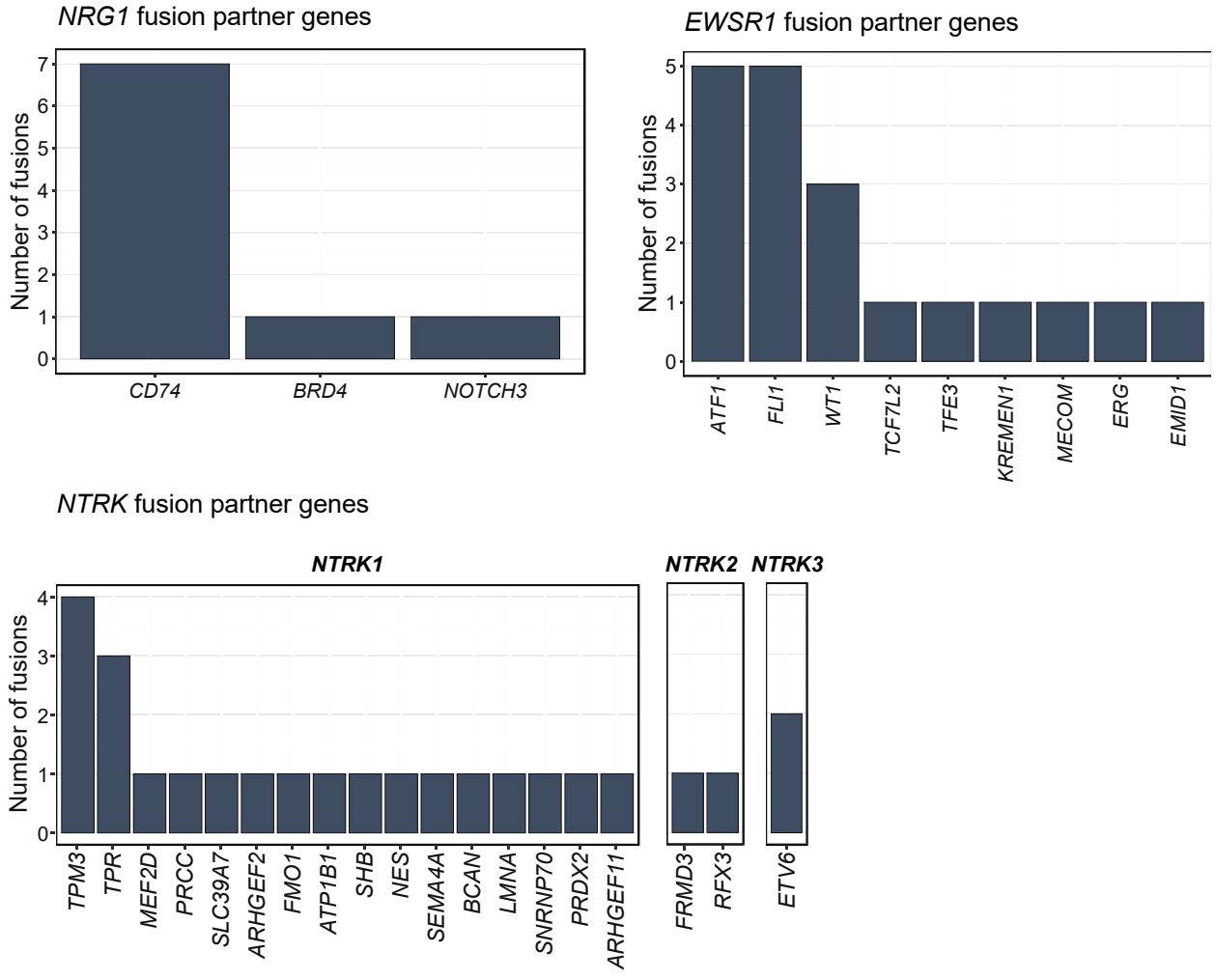# Supplementary Figure 1

Supplementary Figure 1. Rare gain-of-function fusions

Gene partners for *NRG1, EWSR1,* and *NTRK* fusions detected in liquid biopsies.

Supplementary Figure 2

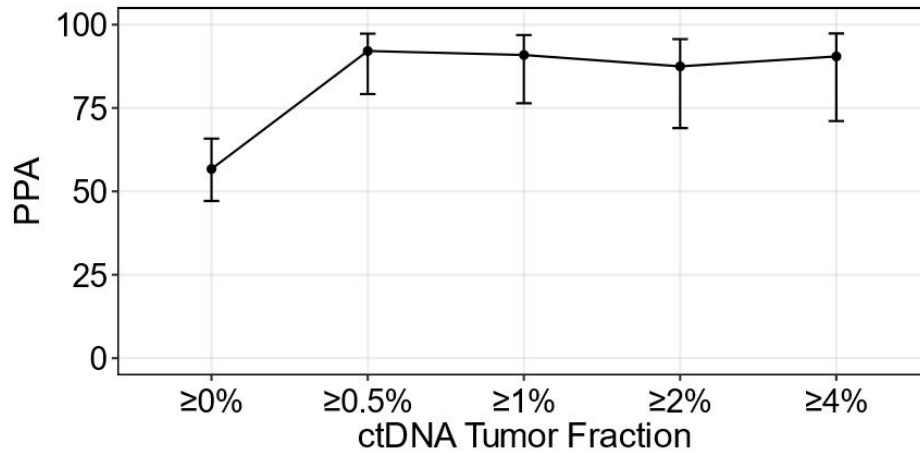| Concordant detection	Liquid-only detection
Tissue-only detection	Detection in neither biopsy
PPA (95% CI)	

NSCLC ALK	**TF < 1%**		**TF ≥ 1%**	
	Tissue+	**Tissue-**	**Tissue+**	**Tissue-**
Liquid+	22	2	20	2
Liquid-	19	964	1	848
	54% (38 - 69%)		95% (74 - 100%)	
	68% (55 – 79%)			

NSCLC RET	**TF < 1%**		**TF ≥ 1%**	
	Tissue+	**Tissue-**	**Tissue+**	**Tissue-**
Liquid+	4	1	6	3
Liquid-	12	990	1	861
	25% (8 - 53%)		86% (42 - 99%)	

NSCLC ROS1	**TF < 1%**		**TF ≥ 1%**	
	Tissue+	**Tissue-**	**Tissue+**	**Tissue-**
Liquid+	3	0	4	0
Liquid-	11	993	1	866
	21% (6 - 51%)		80% (30 - 99%)	

Prostate cancer TMPRSS2-ERG	**TF < 1%**		**TF ≥ 1%**	
	Tissue+	**Tissue-**	**Tissue+**	**Tissue-**
Liquid+	6	1	46	2
Liquid-	37	148	7	232
	14% (6 - 29%)		87% (74 – 94%)	

Prostate cancer BRAF	**TF < 1%**		**TF ≥ 1%**	
	Tissue+	**Tissue-**	**Tissue+**	**Tissue-**
Liquid+	0	0	3	0
Liquid-	1	191	1	283
	0% (0 - 95%)		75% (22 - 99%)	

Supplementary Figure 2. Sensitivity of detection of driver rearrangements in paired tissue and liquid biopsy from the same patient.

For tissue and LBx pairs where LBx was collected up to 90 days earlier and up to 2 years later than tissue, the sensitivity of detection was compared at different tumor fraction thresholds. Sensitivity is calculated as positive percent agreement (PPA), with continuity corrected Wilson 95% confidence intervals.

Supplementary Figure 3

ALK/RET/ROS1 PPA	TF ≥ 0% (N=1878)	TF ≥ 0.5% (N=1006)	TF ≥ 1% (N=871)	TF ≥ 2% (N=732)	TF ≥ 4% (N=560)
	0.57 (0.47-0.66)	0.92 (0.79-0.97)	0.91 (0.76-0.97)	0.88 (0.69-0.96)	0.90 (0.71-0.97)

Supplementary Figure 3. Sensitivity of detection of driver fusions (ALK, RET, and ROS1) in paired tissue and liquid biopsy at different tumor fraction thresholds.

For tissue and LBx pairs where LBx was collected up to 90 days earlier and up to 2 years later than tissue, the sensitivity of detection was compared at different tumor fraction thresholds. Sensitivity is calculated as positive percent agreement (PPA), with continuity corrected Wilson 95% confidence intervals.