

## **Supplementary Data**

**DNA barcoding and gene expression recording reveal the presence of cancer cells with unique properties during tumor progression**

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## **Supplementary Figure legends**

### **Figure S1. Evaluation of mutation in stgRNA**

Heatmap depicting mutation rate (deletion, insertion, and mismatch) in each position in stgRNA. NT, non-treatment; DTX, docetaxel treatment; and Sphere, sphere formation

### **Figure S2. The detection rate of mutation in stgRNA in all cells**

The cumulative distribution fraction of insertion and deletion in each sample. NT, non-treatment; DTX, docetaxel treatment; and Sphere, sphere formation

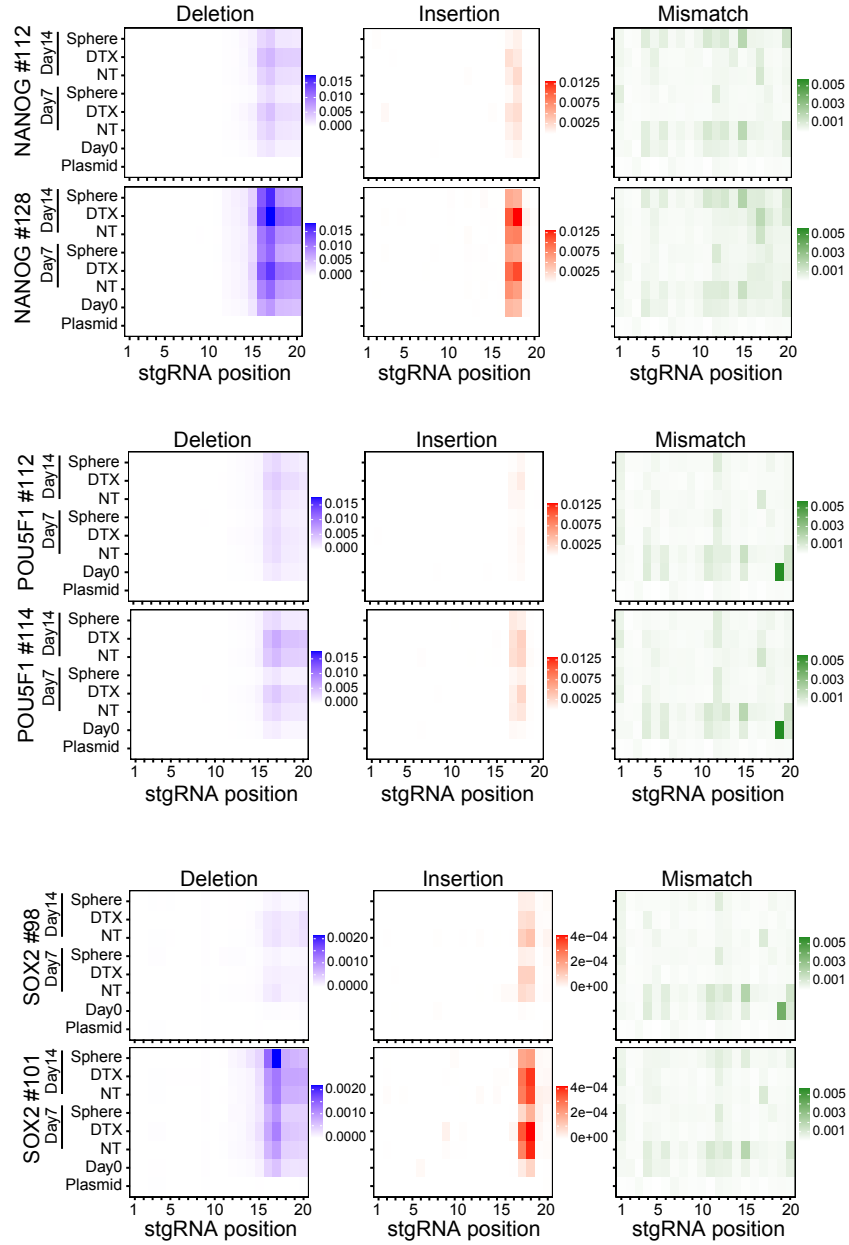
### **Figure S3. The analysis of cellular composition in DU145 cells**

(A) The bubble plot of top 10 barcodes corrected from each of the 21 samples (n = 3 for each sample). The total bubble number is 97 for NANOG #112, 83 for NANOG #128, 99 for POU5F1 #112, 92 for POU5F1 #114, 97 for SOX2 #98, and 94 for SOX2 #101 in each line since there is a redundancy. Bubble size indicates the proportion of the barcode. (B) Heatmap representing JS divergence calculated using top 10 barcodes in each sample or all barcodes. NT, non-treatment; DTX, docetaxel treatment; and Sphere, sphere formation

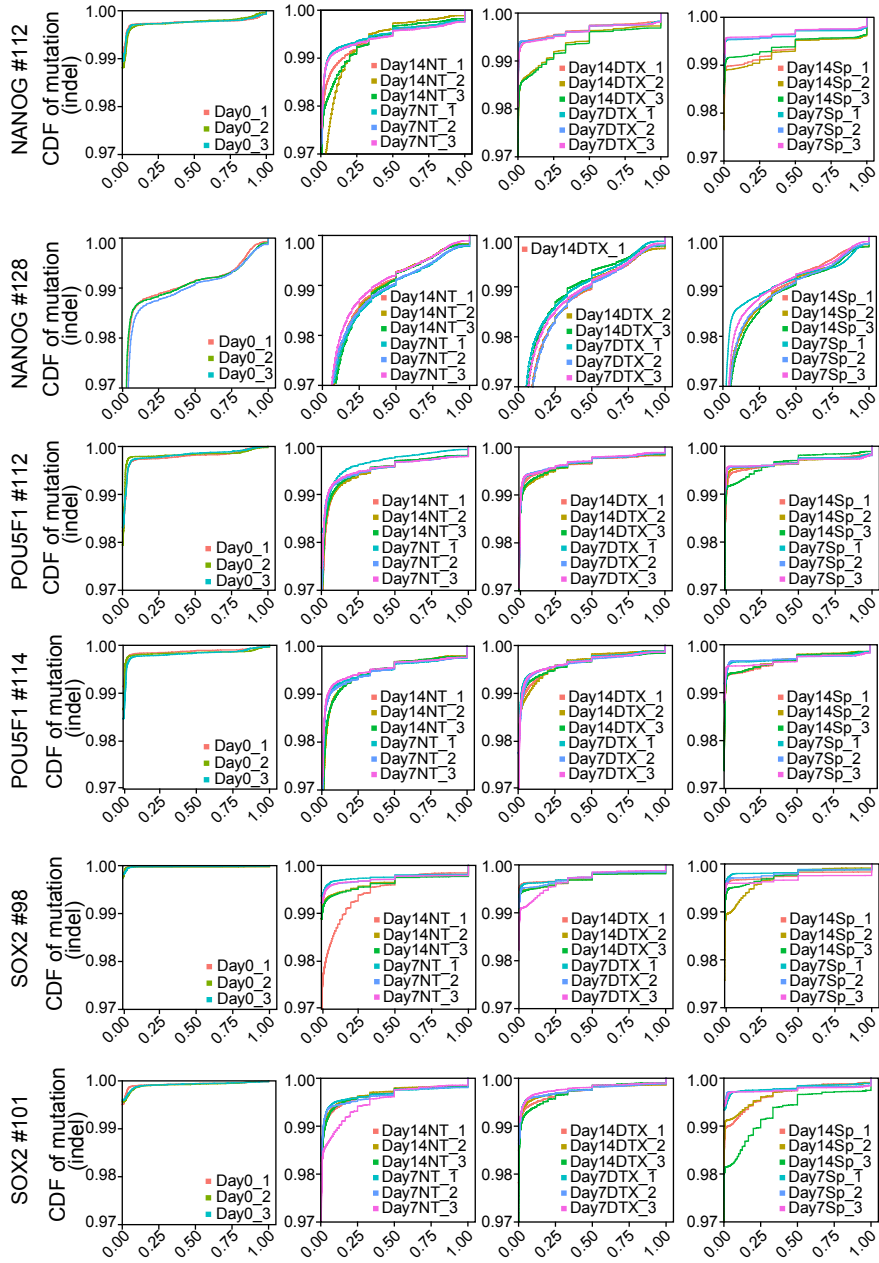
### **Figure S4. Raw images of Western blots**

**Table S1. The mean significant Spearman's correlations between mutation size of stgRNA and weighted number of cell barcode reads in DU145 cells**

# Figure S1

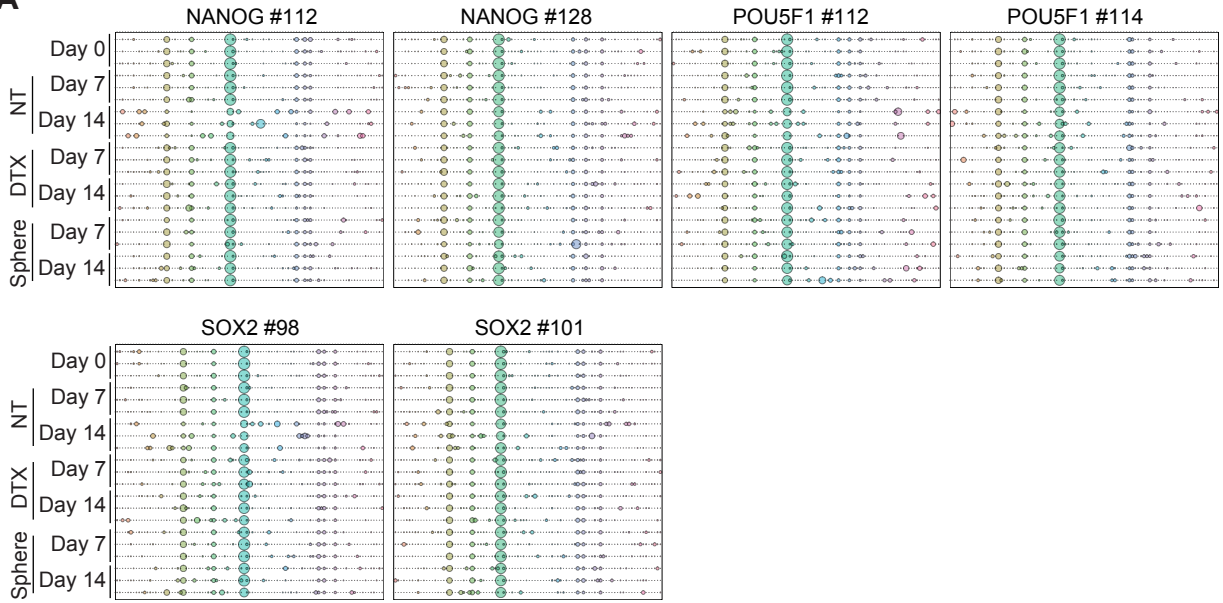


# Figure S2

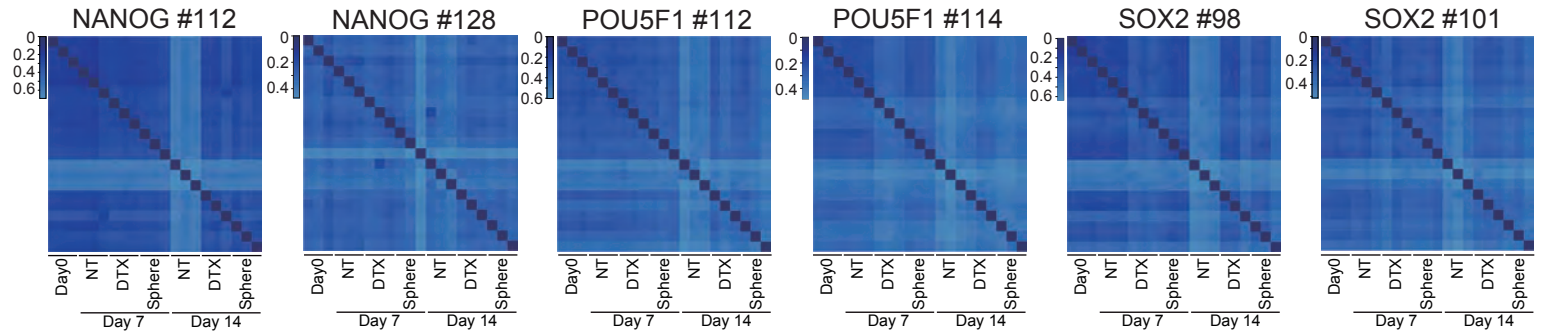


# Figure S3

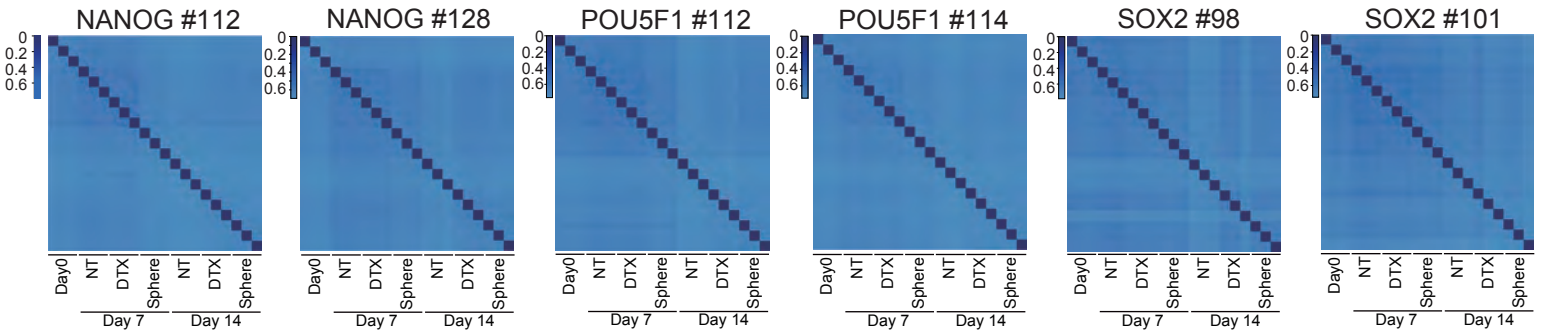
**A**



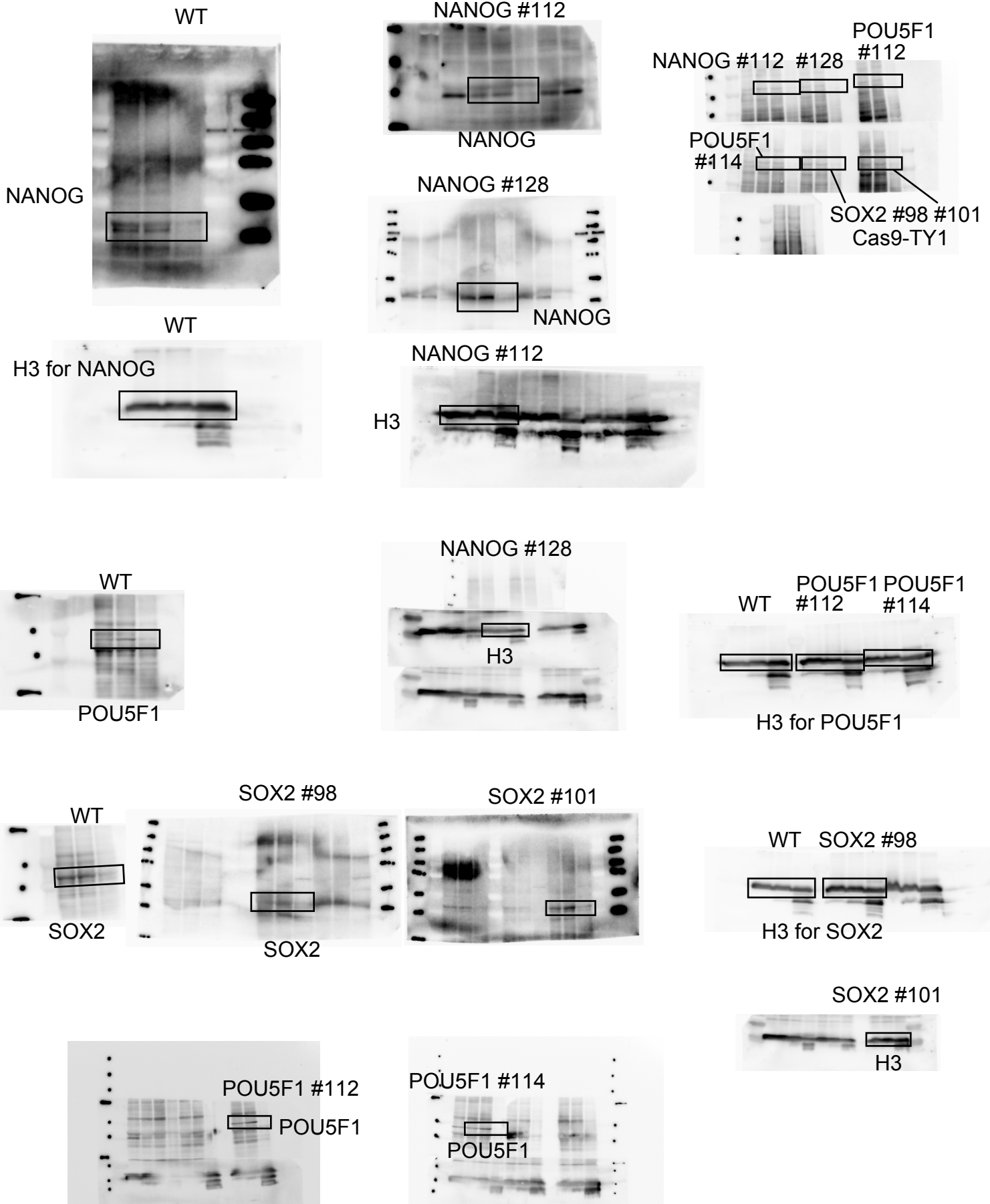
**B** Top 10



**C** All



**Figure S4**



**Table 1. The mean significant Spearman's correlations between mutation size of stgRNA and weighted number of cell barcode reads in DU145 cells**

NANOG #112	NT	DTX	Sphere	total
Day 0	0.15084268	-	-	0.15084268
Day 7	0.21315188	0.25839764	0.18485206	0.21880053
Day 14	0.30707507	0.40959186	0.21077919	0.30914871
Day 7+Day 14	0.26011348	0.33399475	0.19781563	0.26397462

NANOG #128	NT	DTX	Sphere	total
Day 0	0.21243562	-	-	0.21243562
Day 7	0.29823256	0.34826646	0.29545658	0.3139852
Day 14	0.37051868	0.38781393	0.40101021	0.3864476
Day 7+Day 14	0.33437562	0.3680402	0.34823339	0.3502164

POU5F1 #112	NT	DTX	Sphere	total
Day 0	0.20116341	-	-	0.20116341
Day 7	0.22713807	0.30403789	0.21230744	0.2478278
Day 14	0.27527996	0.45500784	0.29374913	0.34134564
Day 7+Day 14	0.25120902	0.37952287	0.25302828	0.29458672

POU5F1 #114	NT	DTX	Sphere	total
Day 0	0.1767808	-	-	0.1767808
Day 7	0.25948499	0.29843192	0.19680559	0.25157417
Day 14	0.4000513	0.43264499	0.36335375	0.39868335
Day 7+Day 14	0.32976814	0.36553846	0.28007967	0.32512876

SOX2 #98	NT	DTX	Sphere	total
Day 0	0.13050151	-	-	0.13050151
Day 7	0.17763144	0.20721606	0.15236738	0.17907163
Day 14	0.24090878	0.34915232	0.25964547	0.28323552
Day 7+Day 14	0.20927011	0.27818419	0.20600643	0.23115358

SOX2 #101	NT	DTX	Sphere	total
Day 0	0.18075414	-	-	0.18075414
Day 7	0.21770528	0.21647747	0.17719019	0.20379098
Day 14	0.23513658	0.3699066	0.29745854	0.30083391
Day 7+Day 14	0.22642093	0.29319203	0.23732436	0.25231244