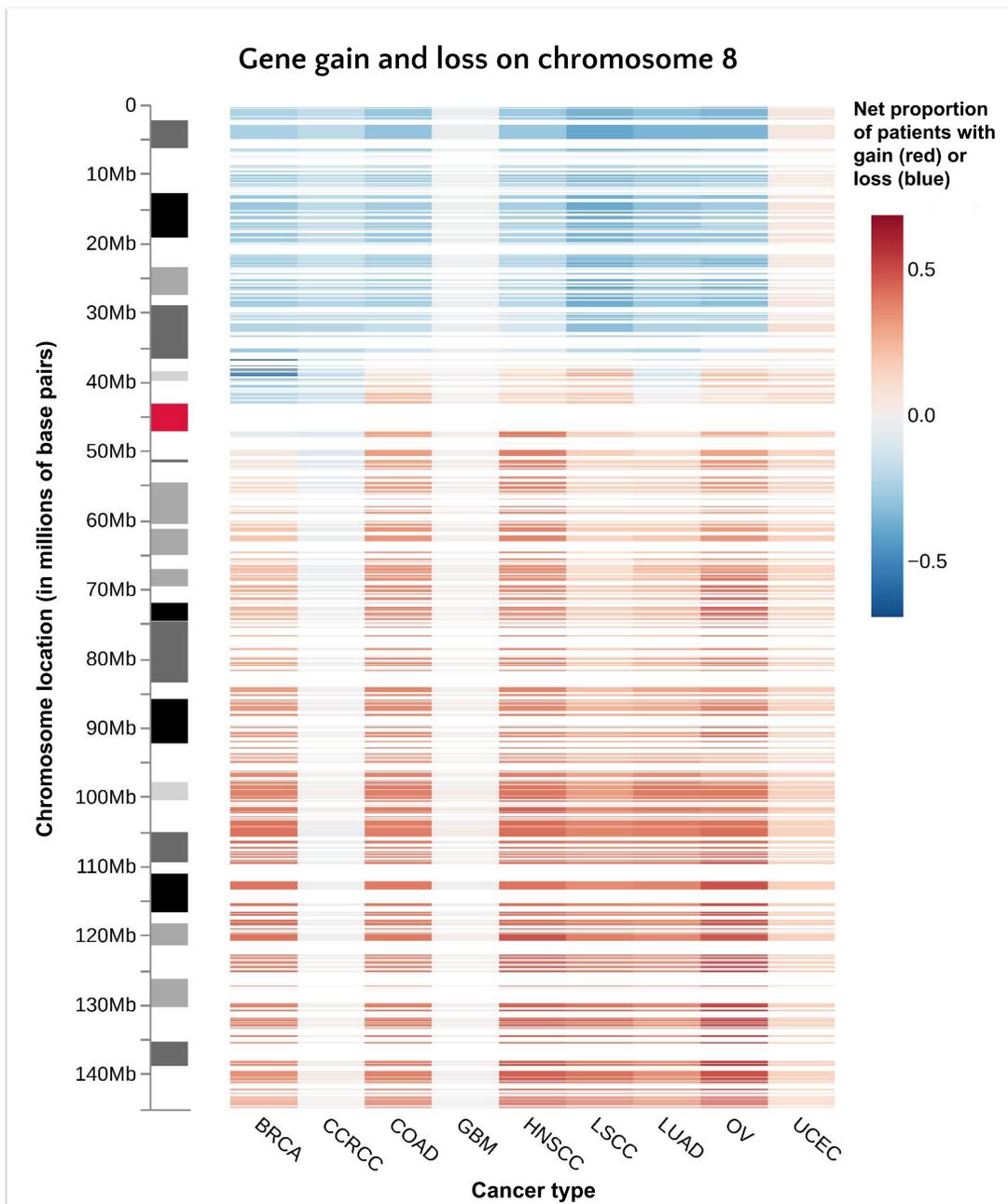
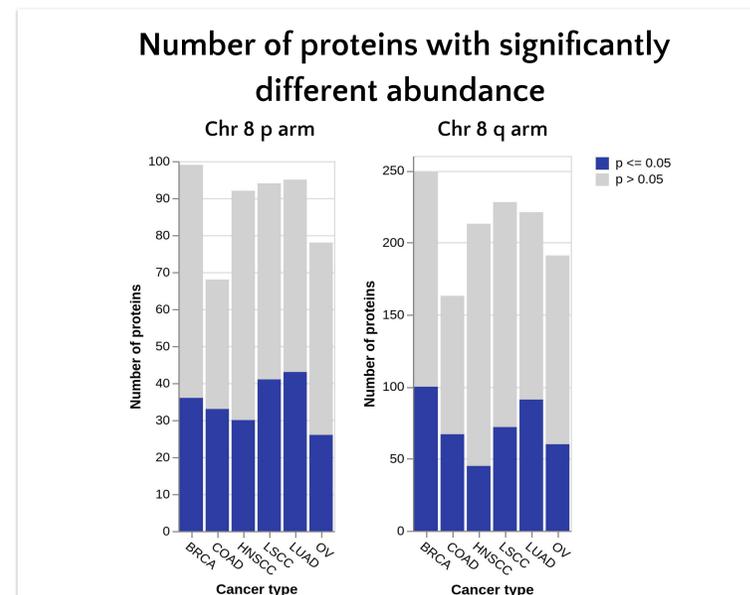


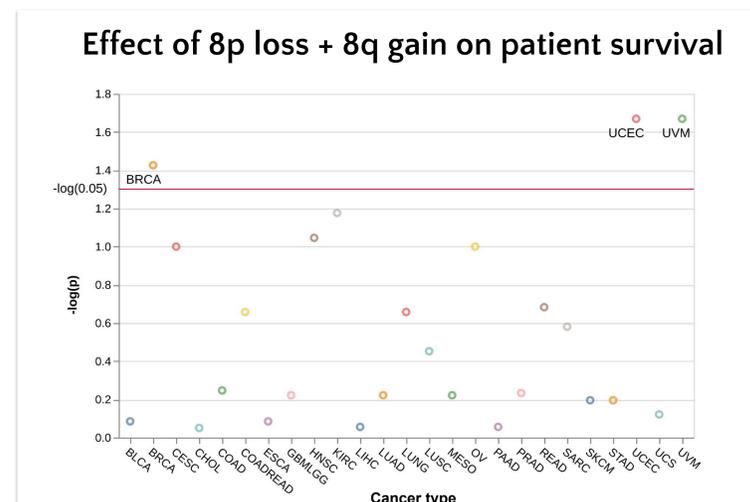
# Tumor cells can erase the effects of duplicated and deleted chromosomes.



**Figure 1: Duplication and deletion of chromosome arms happens frequently in tumor cells.** In 6 of the 9 cancer types shown, the p arm of chromosome 8 (blue) was commonly deleted, and the q arm (red) was commonly duplicated. Normally, we expect deletions to lead to decreased protein production, and duplications to lead to increased production.



**Figure 2: Most chromosome 8 proteins aren't affected by the duplication or deletion events.** Gray is proteins whose abundance was the same between patients with and without the event. Blue is proteins whose abundance differed.



**Figure 3: 8p deletion and 8q duplication events rarely affect patient survival.** In all cancer types below the red line, patients with the two events had the same survival rate as patients without them. This implies that events have no overall effect on the cancer in the long run.

## Introduction

In most cancers, tumor cells frequently delete some chromosomes and duplicate others. This is called copy number variation (CNV). Normally, we expect deletions to cause decreases in protein production, and duplications to cause increases. To see if this is what happens in cancer, we identified common CNVs and studied their effects on protein production and patient survival.

## Methods

- Data from CPTAC and TCGA
- Classified each gene as duplicated or deleted if  $\log_2$  ratio normalized CNV value exceeded  $\pm 0.2$
- Classified each arm as duplicated or deleted if  $>80\%$  of genes were duplicated or deleted, respectively

## Results

- Most common CNV events:
  - Deleted p arm on chromosome 8
  - Duplicated q arm on chromosome 8
- In 6 out of 9 cancer types, 30–40% percent of patients had at least one of these events
- However, most chromosome 8 proteins had no change in abundance between patients with and without the events
- The events rarely affected patient survival

## Conclusions

Overall, tumor cells seem to erase the downstream effects of these common CNV events. These events may just be side effects of overall genomic instability, or they could depend on other CNV events to affect cancer progression. Future work will investigate connections between CNVs on different chromosomes.

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