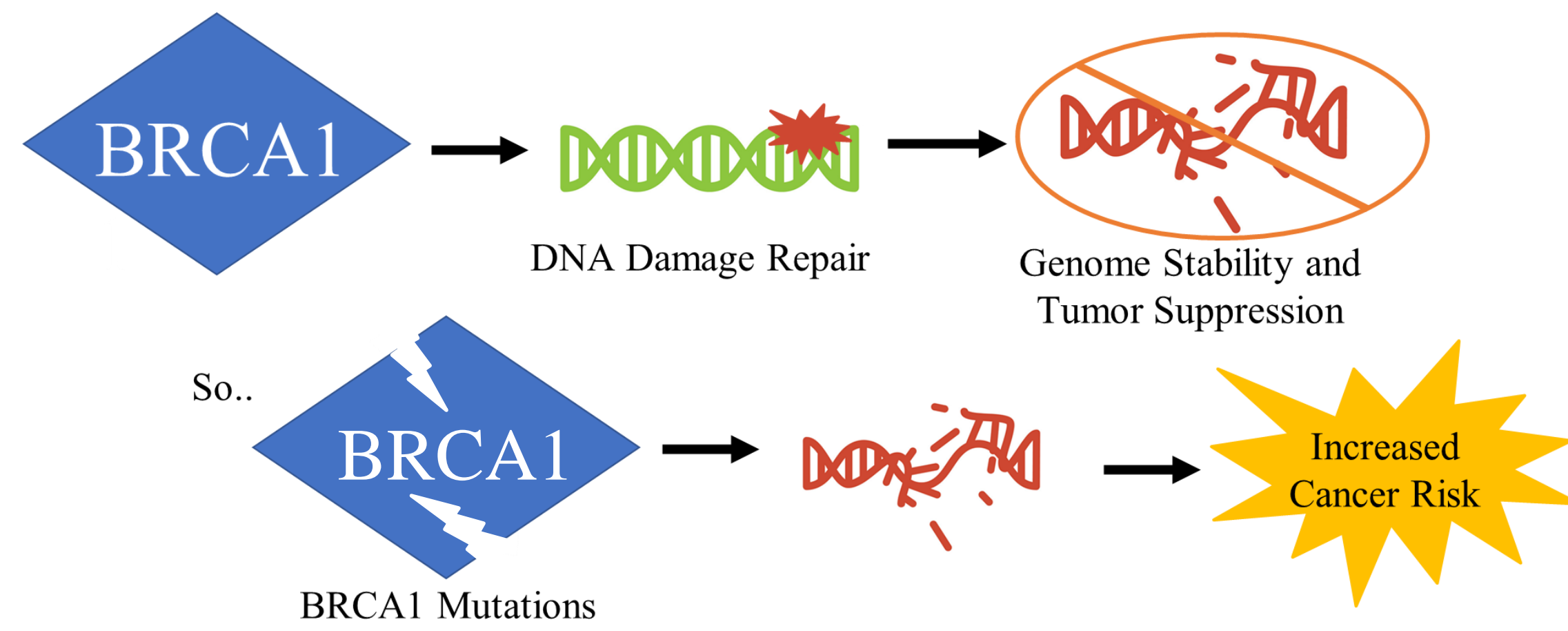


# Identifying the Protein Region Necessary for BRCA1 and p53 Binding

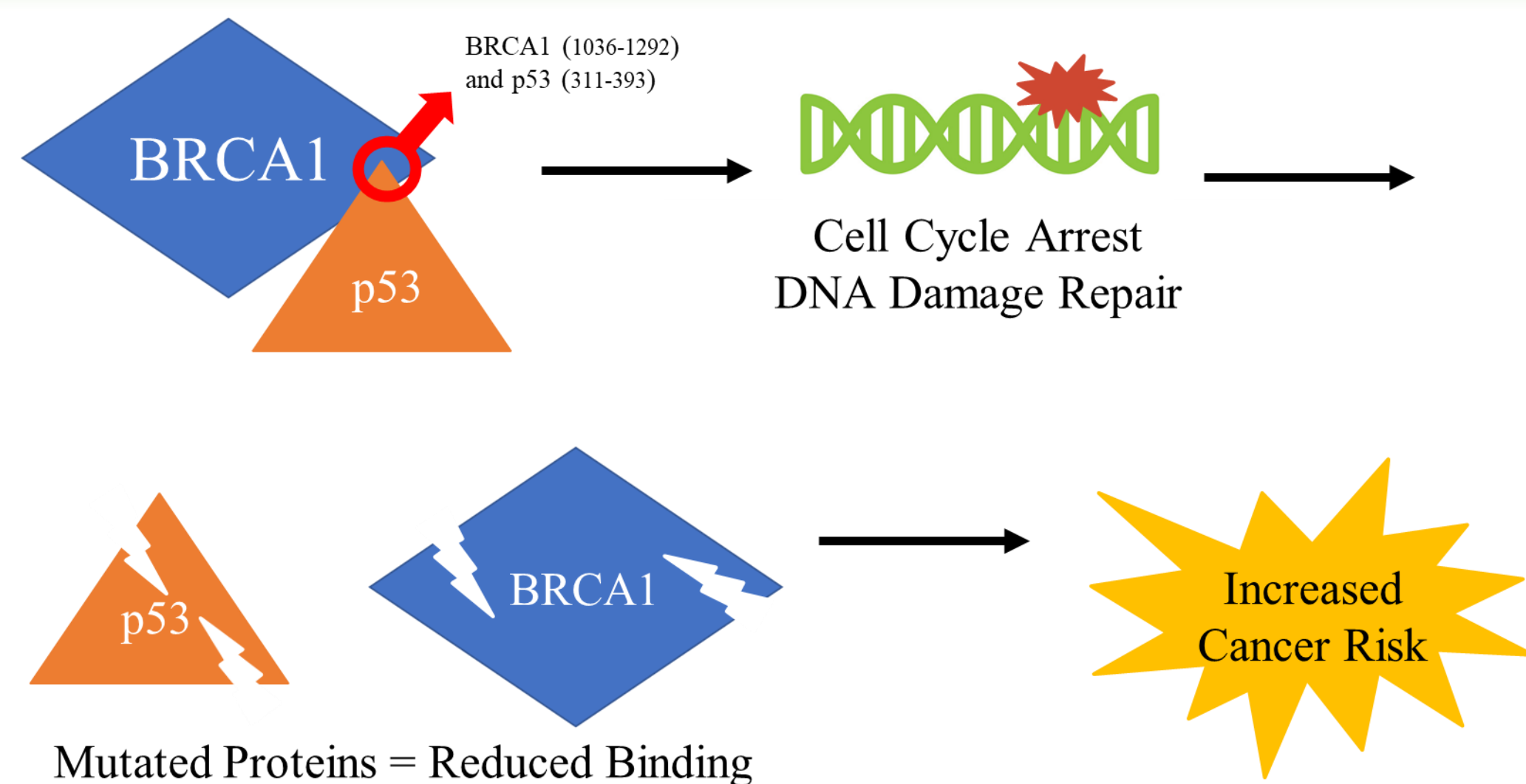
Anna Norman and Dr. Mikaela Stewart. Texas Christian University, Fort Worth, TX

## BRCA1 Function



**Above:** BRCA1 has been implicated in tumor suppression via DNA repair. Mutations in BRCA1 have been linked to an increased risk of developing hereditary breast and ovarian cancer

## BRCA1 and p53 Interaction

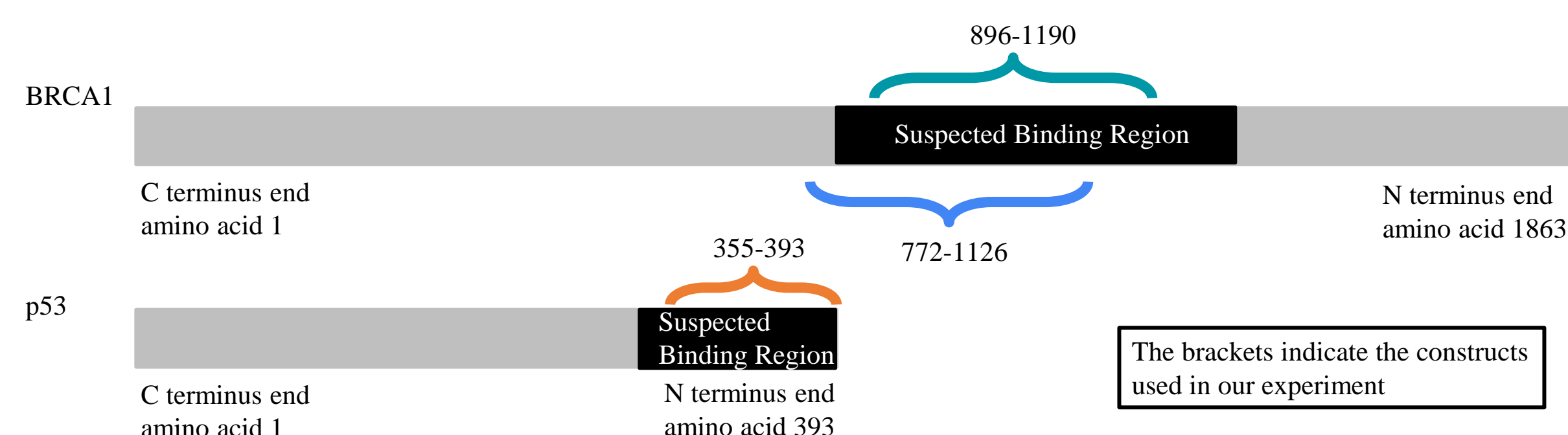


**Above:** p53 is one protein that binds to BRCA1 to suppress tumors. Mutated p53 or BRCA1 will exhibit reduced binding and increase cancer risk.

## Objective

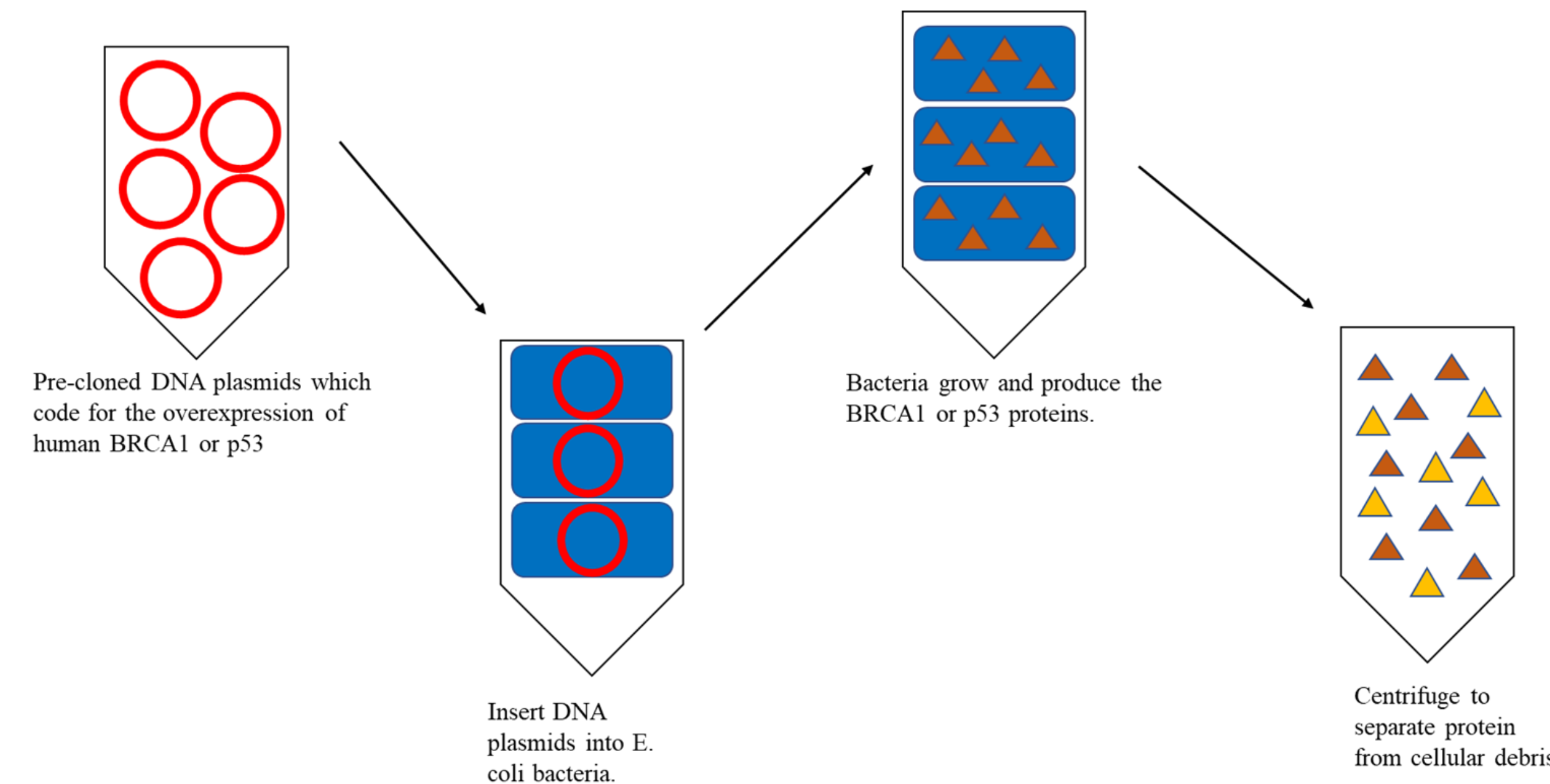
Identify and investigate the interaction site p53 of BRCA1 to identify mutations of interest in cancer formation.

## Constructs of Interest

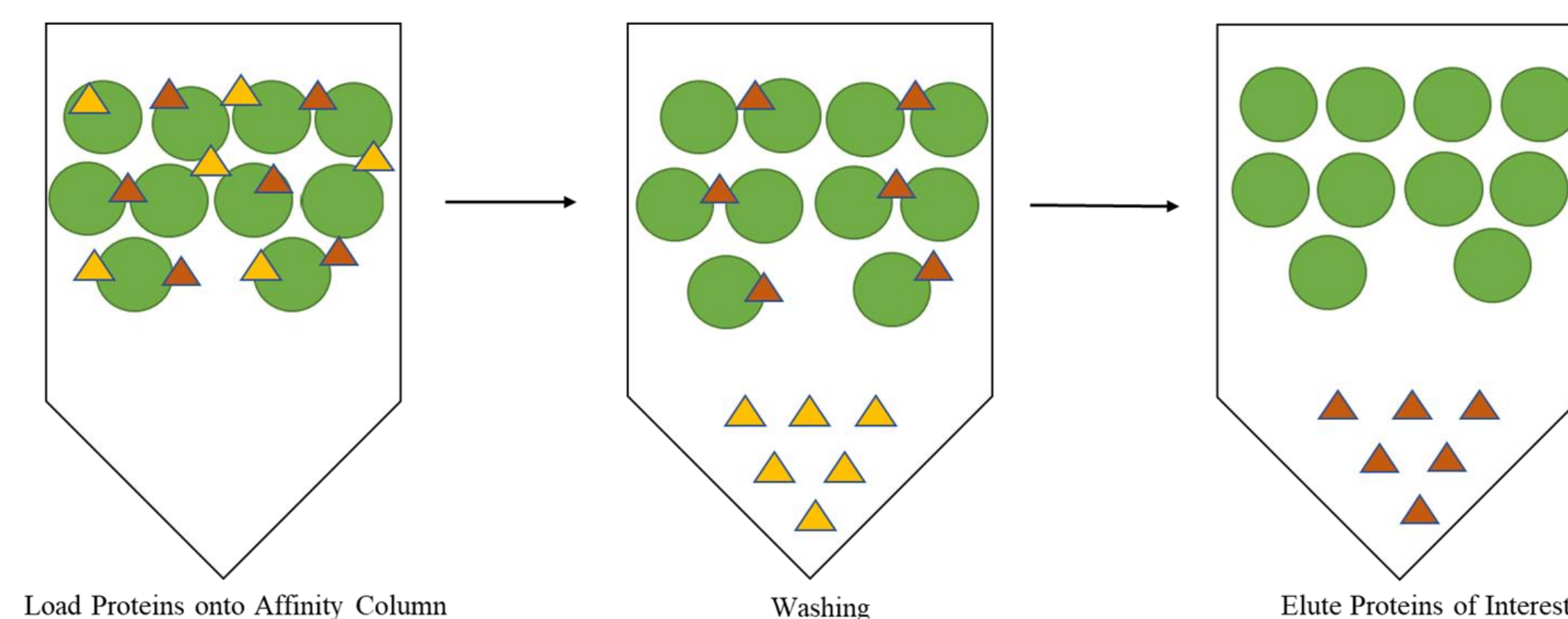


## Methods

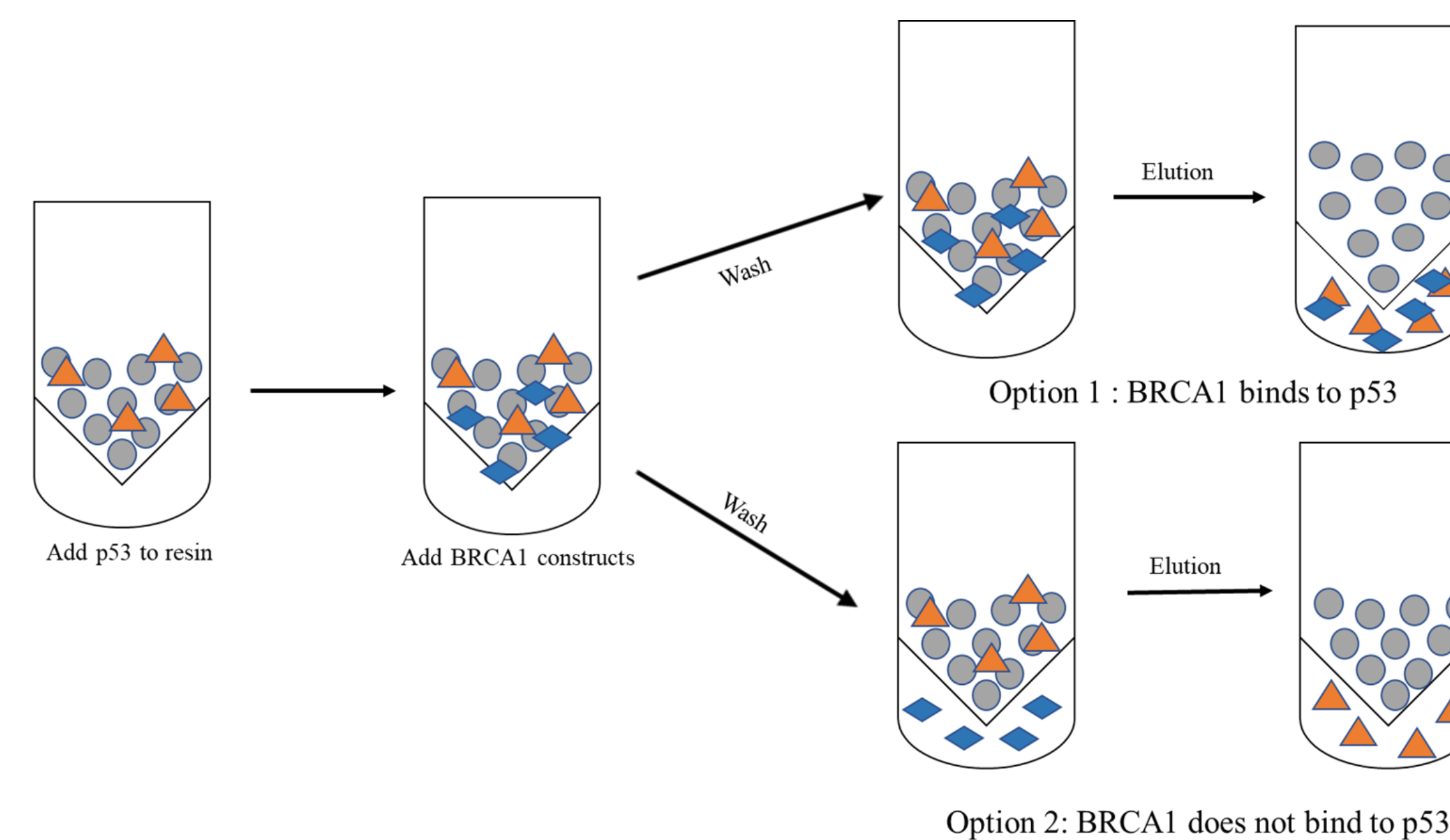
### 1. Making Human Proteins in Bacteria



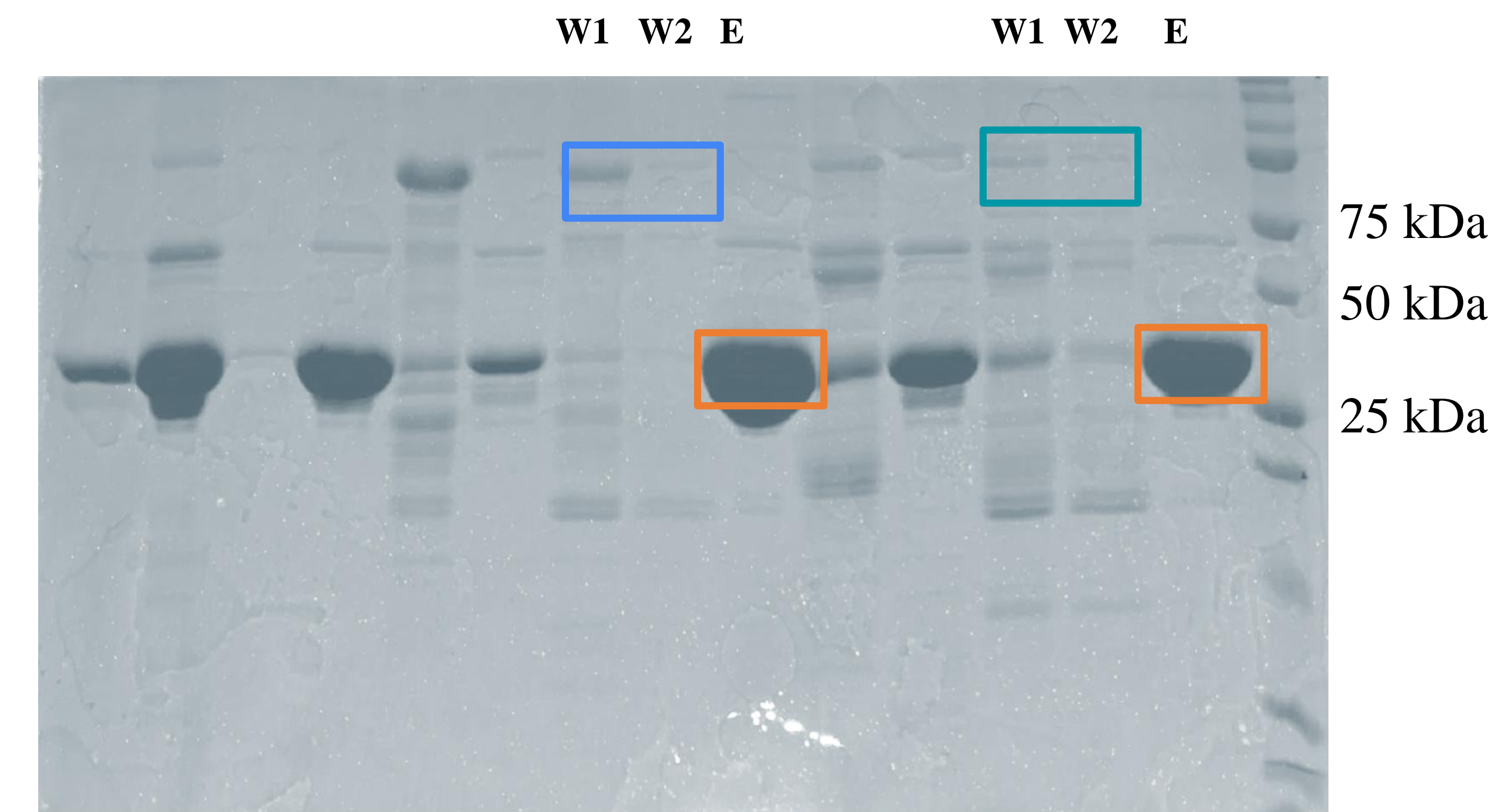
### 2. Affinity Purification



### 3. Pull-Down Assay



## BRCA1 constructs B3 and B6 do not bind to p53 *in vitro*



## Pull down assay showing no binding between BRCA1 constructs and p53.

p53 is present on our SDS PAGE gel in the load sample and elution lanes. The p53 in the elution has been highlighted in red boxes. The BRCA1 constructs are present in the two washes and control BRCA1 sample lanes. The BRCA1 in the wash lanes has been highlighted in green boxes. In the elution, we see only the p53, indicating that the BRCA1 did not stick to the bound p53 in either case, and instead was removed with the introduction of the wash buffer.

## Conclusions

p53 (355-393) does not bind to BRCA1(772-11226) or BRCA1 (896-1190).  
 -try experiment with different protein constructs  
 -try experiment under different environmental conditions

A third-party binding partner may be involved.

This finding is important for assessing cancer risk and adding to our understanding of this molecular interaction.

## References and Funding

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