PROJECT TITLE

DNA-targeting molecular glue to reduce the production of oncogenic proteins, with applications to thyroid, pancreatic, breast and lung cancers

PRINCIPAL INVESTIGATOR

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PROJECT SUMMARY

Proteins responsible for cancer growth and spreading can be difficult to control and their effects hard to combat. Traditionally, small drugs that attach to active elements within the protein have been explored. However, this strategy often is limited due to the requirement to ensure that only the cancer-causing protein is affected (and not other beneficial proteins instead), and due to the cells tweaking the protein itself to escape regulation (a process referred to as 'resistance'). This work takes an alternate approach by aiming to eliminate, or at least reduce, the production of the problematic protein before it can contribute to cancer growth. By acting at the DNA level, where the 'recipe' for that protein is being kept, small molecules are designed to play the role of 'a glue', keeping the recipe page stuck in a folded state. As a result, without any access to the recipe, the cancer cells would not be able to process the coding information, resulting in the absence of that problematic protein, preventing it from causing cancer-cell growth. Our initial work of rationally designing such 'glue' should benefit patients with thyroid, pancreatic, breast and lung cancers who have developed resistance to other therapies.