Fred Hutch Cancer Center

cTRPs: Circular Tandem Repeat Protein Platform

Business Opportunity

Exclusive / non-exclusive license
Start-up

Technology Type

Therapeutic
Manufacturing
Platform tool

State of Development

Preclinical in vitro

Patent Information

16-018: EP3383422B1; US10597466B2; US11078300B2, EP3978010A1, US20210388119A1
19-005: US20220411472A1

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Tech ID

16-018; 19-005

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Brief Description

Methods to create circular tandem repeat proteins (cTRPs) to display a wide variety of functional protein domains

Technology Overview

Protein engineering is a growing field which produces new approaches to the basic study of protein structure and function as well as facilitates opportunities to produce and design novel proteins. One such attractive target for engineered proteins are Tandem Repeat Proteins (TRPs), which are soluble and thermostable proteins that contain multiple repeated peptide sequences and have evolved to bind many different types of proteins. Fred Hutch researchers have created a de-novo circular tandem repeat protein platform (cTRP) which can display multiple copies of functional protein domains at symmetrically distributed positions around the periphery. Designed cTRPs are soluble, thermostable, and can be produced in both prokaryotic and human expression platforms to display a wide variety of functional protein domain “cargos”. The researchers have verified their functionality with several different cargos (e.g., single chain MHC, fluorescent reporter proteins), including demonstrating their utility as soluble receptor super-agonists, which could reduce the cost of a variety of platforms traditionally utilizing large amounts of protein. Therefore, cTRPS can be used for a wide variety of applications which require high avidity molecular interactions on the cell surface.

Applications

- Cell culture/ Biomanufacuring
- Vaccine platforms
- Biofilm disruption
- Other processes which would benefit from protein nanoparticles with functional proteins domains displayed at high copy number and defined symmetry

Advantages

- Solubility, thermostability, and ease of manufacturing could greatly reduce manufacturing costs
- Platform process is widely customizable to a variety of cargo