Docket #: S18-270

Wnt agonist and antagonists for organoid cultures

Researchers at Stanford and their colleagues have developed easily expressed Wnt agonist and antagonists. Wnts are central mediators of development as they influence cell proliferation, differentiation and migration. They exert their influence by activating a variety of signaling pathways. Due to the central role of Wnt in development, there has been great interest in Wnt for therapeutic and research purposes. Indeed, a number of *in vitro* cell culture systems, such as organoid stem cell culture systems, require Wnt. However, Wnt is challenging to use as it is a lipidated protein that is very difficult to express in recombinant form. To overcome this challenge, the inventors have engineered these Wnt agonists and antagonists. They are easily expressed and the agonist can serve as a Wnt surrogate in organoid culture media. This technology provides easily expressed, engineered Wnt proteins for use in research and therapeutic development.

Stage of research
Validation studies for use in organoid cell culture have been conducted and show great promise.

Applications

- Research tool
    - Organoid cell culture
    - Wnt research studies

Advantages

- Agonists can be used as Wnt surrogates in organoid cell culture

    - Enables growth of organoids that is not possible with natural or recombinant Wnt
    - Improves activation of organoid growth
- Water soluble
- Highly specific
- Readily expressed in conventional recombinant systems

Patents

- Published Application: WO2020018445
- Published Application: 20210317413
- Published Application: 20250034527
- Issued: 12,084,684 (USA)

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