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Executive Summary:
In human viral diseases, misbehaviour of the cellular machinery utilizing ubiquitin is frequently observed. Ubiquitin is a small protein that attaches to target proteins in human cells and signals for their destruction. Human deubiquitinases are enzymes that remove ubiquitin to keep protein levels in balance. Viral pathogens have evolved proteins that mimic human deubiquitinases to evade the immune system by interfering with host ubiquitin-dependent processes. Unfortunately, the lack of molecules that can block the activity of viral deubiquitinases has severely hampered attempts to manipulate them for therapeutic benefits. The Sidhu group has invented a new technology to develop synthetic protein modulators for any ubiquitin-interacting proteins. The goal of this project is to generate highly specific and potent inhibitors for viral pathogenic deubiquitinases and a platform to deliver these molecules into human cells. This will lead to effective antiviral therapy, expanding the existing therapeutic portfolio of CCAB.