A cut and paste method for modification of cMyBP-C in muscle sarcomeres

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Technology description

Invention

This technology utilizes unique “spy” proteins that allow researchers to effectively “cut and paste” desired cMyBP-C sequences that could include a variety of modifications such as point mutations and FRET probes. This method make the manipulation of cMyBP-C in thick filaments a lot easier.

Background

cMyBP-C is an essential regulator of heart muscle contraction. Mutations in the gene that encodes cMyBP-C are a leading cause of abnormal thickening of the heart muscle known as hypertrophic cardiomyopathy (HCM). cMyBP-C has an abundance of dynamic interactions that occur with binding partners in the sarcomere, making the study of this protein extremely complex. Furthermore, manipulation of large, thick filaments such as myosin, titin, and cMyBP-C within muscle cells is very difficult. It is widely recognized that this obstacle is the single most important barrier to progress in cMyBP-C research. This technology uses a new approach to potentially overcome this barrier and improve cMyBP-C research.

Application area

Research tools

cMyBP-C and hypertrophic cardiomyopathy research

Skeletal muscle MyBP-C research

Research for a variety of sarcomeric proteins

Advantages

Makes genetic modifications in the native position of cMyBP-C in the sarcomere

Potential to lay the framework for manipulation of other hard to modify sarcomeric proteins

Institution

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