

NEWS

FSU researchers explore cardiomyopathy prevention in the heart

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Researchers at Florida State University have helped locate and understand a thin filament inside the heart muscle, which is the first that science has known of this piece of the cardiovascular puzzle.

Working with other researchers from Eastern Virginia Medical School and the University of Virginia, Professor Bryan Chase and Professor Jose Pinto of FSU have a better understanding of the complicated muscular processes of the heart.

The structure in the heart that is currently studied is called the thin filament. In the past, cardiovascular researchers have known about the thin filament, but did not know its exact structure.

“What we are showing in this article is that these thin filaments can be found in different states, and what the thin filament looks like in a diseased heart,” said Pinto.

However, over the past two years the researchers found a link between the thin filament and the calcium that binds to it. Once the calcium binds to the thin filament structure, it can interact with the thick filament which leads to the beating of the heart, and the pumping of blood throughout the body.

Chase and Pinto have worked together for a number of years, and even knew of each other's research in the field before they both worked at the university.

The team's research focused on the structure of the thin filament as the heart relaxes and contracts when it beats. They also discovered the makeup of individual structures of the thin filament which the heart has at three different stages of calcium concentrations.

In the long run, the team is also working on cardiomyopathy research, which is a disease of the heart that makes it difficult for the heart to pump blood and often leads to heart failure.

According to the Centers for Disease Control and Prevention, cardiomyopathies can often go undiagnosed but are very common. The FSU team is looking at the connection in subtypes of cardiomyopathies and genetic modifications of the heart.

The goal, according to Chase, is to tailor medicine and therapies directly to patients with certain genetic mutations. The entire field of cardiomyopathy research is very broad, but Pinto and Chase are specifically looking into the subtypes of hypertrophic and dilated cardiomyopathies. Both of these types can be devastating if not treated, according to Chase.

“The treatments would be very different depending on the type of cardiomyopathy the patient has,” he said. There are five main categories of cardiomyopathy, all of which are treated differently depending on the type and severity of the disease.

The research was published in the Proceedings of the National Academy of Sciences, and is considered groundbreaking in the field.

"We knew that if we could make this work, which was not a guarantee, it would almost certainly be groundbreaking. We ended up with more surprises than we imagined," said Chase. He mentioned that those surprises and challenges are the best part of the research process.

Chase also emphasized that all students at FSU should look into the research opportunities that the school offers no matter what they are interested in, especially for undergraduates.

“What I tell students in class is that regardless of what their interests are, they should consider if they like finding out things nobody has ever found out before. And if that is the case they should consider research,” said Chase.