UW-Madison: New tool for assessing heart muscle cells helps unlock their potential

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MADISON – Heart muscle cells made from stem cells could be used to screen drugs or develop cell-based therapies for heart disease. But these cells, called cardiomyocytes, are often immature, disorganized and unable to behave together like working muscle tissue.

University of Wisconsin-Madison researchers have created a new way to study how fully capable heart cells organize themselves into muscle with rod-like units called myofibrils which can contract together to pump blood. What they learn could help them steer cardiomyocytes into more useful stages of development.

"We want to produce mature cardiomyocytes with internal structures that are nicely organized and aligned, which allows them to work in a coordinated way with their neighboring cells to generate functional muscle behavior," says Wendy Crone, a University of Wisconsin-Madison professor of engineering physics.

A team led by Crone has created a powerful tool to help assess what experimental factors achieve this goal. The researchers developed an algorithm for image analysis that quantifies the organization and alignment of structures within the myofibrils of cardiomyocytes with considerable accuracy. The team described its advance in a paper published in May in the Journal of Applied Physics.

Crone says this new technique, called the scanning gradient Fourier transform (SGFT) method, gives researchers a valuable tool for evaluating cells and determining the most effective interventions for coaxing immature cardiomyocytes to become mature cells with highly organized internal structures.

STORY CONTINUES AT https://news.wisc.edu/new-tool-for-assessing-heart-muscle--cells-helps-unlock-their-potential/