

Mitochondria in structural and functional cardiac remodeling

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© 2017, Springer International Publishing AG. The heart must function continuously as it is responsible for both supplying oxygen and nutrients throughout the entire body, as well as for the transport of waste products to excretory organs. When facing either a physiological or pathological increase in cardiac demand, the heart undergoes structural and functional remodeling as a means of adapting to increased workload. These adaptive responses can include changes in gene expression, protein composition, and structure of sub-cellular organelles involved in energy production and metabolism. Mitochondria are essential for cardiac function, as they supply the ATP necessary to support continuous cycles of contraction and relaxation. In addition, mitochondria carry out other important processes, including synthesis of essential cellular components, calcium buffering, and initiation of cell death signals. Not surprisingly, mitochondrial dysfunction has been linked to several cardiovascular dis