Serum Response Factor (SRF) is a protein transcription factor. Transcription factors use the information on DNA to create proteins the body needs. SRF promotes the formation and growth of cardiac muscle cells.

SRF functions by joining two identical SRF proteins to form a “dimer.” SRF then works in cooperation with other factors to help control the production of various cardiac proteins. The number and type of extra factors determines which proteins are created. SRF and the other factors join with a DNA sequence known as Serum Response Element (SRE). The SRE region is known for its specific nucleotide sequence that is found in many different species.

One way SRF is important is its influence on the production and growth of cardiac muscle cells. In mice embryos, an excess of SRF is good for healthy cardiac development. Research also shows that embryos deprived of SRF die from underdeveloped hearts, since SRF is needed to allow heart cells to develop healthfully. Conversely, a minimum amount of SRF in adults is favorable, as too much causes cardiac arrest and/or cardiomyopathy (enlarged heart syndrome). An understanding of SRF holds the potential of helping repair human heart damage.

One of SRF’s main functions is to manage the production of cardiac muscle cells. When manipulated, SRF can have various effects on an organism. In studies with mice embryos, those that were deprived of SRF early died quickly, while those given extra SRF developed very healthy hearts. In adult specimens, small amounts of SRF ensured healthy adult hearts. When a large amount of SRF was given to adult subjects, they developed enlarged heart syndrome, or cardiomyopathy.