“If there were no regeneration there could be no life. If everything regenerated there could be no death. All organisms exist between these two extremes. Other things being equal, they tend toward the latter end of the spectrum, never quite achieving immortality because this would be incompatible with reproduction” (Richard J. Goss, 1969).

Humans possess very limited tissue regenerative potential. On the other hand, vertebrates do exist with impressive regenerative abilities. The heart represents an organ for which the consequences of the lack of human regenerative capacity are easily displayed – cardiovascular disease is a leading cause of death globally.

Several suggestions have been made for the underlying reasons for presence/absence of cardiac regeneration in different vertebrates i.e. cardiomyocyte nucleation, cardiac structural organization, inflammatory response, oxidative stress, and metabolic demand. Understanding the fundamental differences between animals with regenerative potential and the rest of us is instrumental to bypass this limitation.