

**PL 2**

**PHYSIOLOGY: ITS TIME HAS COME!**

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Biological and medical science is entering a new phase with the concepts of Systems Biology becoming fashionable. This trend presents a challenge and a major opportunity for physiology. Biological functionality is multi-level and there is no privileged level of causality. Nor is causality one-way. Higher (physiological) levels determine gene expression just as much as genes determine physiology. There is therefore no genetic program. In fact, there is no program, FULL STOP. I have therefore recently proposed a theory of biological relativity (Noble, 2006) in which these principles are expressed using various metaphors and stories. I replace 'selfish genes' with 'imprisoned genes' and some cherished biological dogmas are turned upside down. I will illustrate some of these principles using examples from various forms of rhythm generator in biological systems, including the heartbeat.

Noble D. *The Music of Life* (Oxford, OUP). 2006