

Ron Summers

Multiscale physiological systems

ABSTRACT. Descriptions of systems and their power for explanation and interpretation are limited when the framework in which they operate is restricted to one level of scale. In fact, the majority of work in all disciplines is afflicted by this restriction. Using methods, tools and computing power now available, multiscale systems descriptions have become possible and are beginning to appear in the literature. This paper adds to that body of work by investigating the developing embryonic heart from three levels of scale: anatomic, cellular and protein. Pointers to subprotein levels of scale are indicated, which are not restricted to a genetic level description. A link to practical use of the findings is established by considering a specific condition that affects the new-born—the tetralogy of Fallot.

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