

MOLLUSCAN CASTLE-BUILDING:HOW MOLLUSCS MAKE THEffl SHELLS

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The shell is the mollusc's castle, but few biologists appreciate how it is constructed and how its design meets the structural demands and the mollusc's adaptation to its mode of life and environment. Research on molluscan shell formation is also more broadly important: it provides a model system for studying biomineralization, the role of organic matrix in the precipitation of hard tissues, how hard tissues are remodeled, and the mechanical and functional properties of different crystal forms. In this presentation on how the mollusc's mantle forms its shell, I will describe several aspects of mantle-shell relationships, including the chemistry of calcium carbonate precipitation, the roles of protein in shell formation, and the relationship of the different mantle regions to the layers of the shell and their crystal architecture. In addition I will discuss exterior and interior remodeling of shells, the basic geometry of gastropod shells, and the biological significance of shell colour patterns.