

Secretion pattern, ultrastructural localization and function of extracellular matrix molecules involved in eggshell formation

Soledad Fernandez, Maria

Moya, Alejandra

Lopez, Luis

Arias, Jose Luis

The chicken eggshell is a composite bioceramic containing organic and inorganic phases. The organic phase contains, among other constituents, type X collagen and proteoglycans (mammillan, a keratan sulfate proteoglycan, and ovoglycan, a dermatan sulfate proteoglycan), whose localization depends on a topographically defined and temporally regulated deposition. Although the distribution of these macromolecules in the eggshell has been well established, little is known about their precise localization within eggshell substructures and oviduct cells or their pattern of production and function during eggshell formation. By using immunofluorescent and immuno-ultrastructural analyses, we examined the distribution of these macromolecules in oviduct cells at different post-oviposition times. To understand the role of proteoglycan sulfation on eggshell formation, we studied the effects of inhibition of proteoglycan sulfation by treatment with sodium chlorate. We showed that these macromolecules