

Do the animal cell nucleoli have all the same structural and functional organization ?

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Human and mammalian cells have mainly been used in most studies to date on the nucleolus. A wide variety of cytochemical and immunocytological techniques have been applied to these cell models to better understand the morpho-functional organization of the nucleolus. These studies revealed that the nucleolus is essentially composed of three structural components : fibrillar centers, dense fibrillar component and granular component. It is generally accepted that these three nucleolar compartments correspond to three steps in the ribosome biogenesis. We have recently proposed a model for the functional organization of these nucleoli. However, examination of the fine structure of the nucleolus in different animal species has revealed that many nucleoli do not have any fibrillar center. In order to understand the molecular architecture of these particular nucleoli, we have applied various cytological approaches. The obtained results have allowed us to propose a model for the functional organization of these simpler nucleoli.