

UPTAKE OF THYMIDINE AND CYTIDINE BY EGGS OF THE SAND DOLLAR,  
Echinarachnius parma

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Experiments were designed to answer two questions: (1) would unfertilized eggs take up DNA precursors as thymidine and cytidine? and (2) if so, would these substances be utilized for DNA production following fertilization? Sand dollar eggs were exposed to tritiated thymidine or cytidine of the same radioactivity. The cells were then washed well in sea water and subsequently fertilized. When the cells attained the four-cell stage, they were fixed in formalin. Uptake of tritiated nucleosides was determined by autoradiographic studies. The nuclei of dividing cells exposed to tritiated thymidine revealed a marked degree of radioactivity. In contrast, nuclei of cells exposed to tritiated cytidine revealed minimal radioactivity. It is concluded that, under the conditions of these experiments, unfertilized eggs take up thymidine and use it for DNA production after fertilization. Cytidine uptake is negligible. The difference in uptake of these two nucleosides cannot be explained by a consideration of base ratios in DNA.

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