

Evidence for in vivo compartmentation of phenylalanyl-tRNA ligase in amphibian oocytes

Gatica, Marta

Allende, Catherine C.

Allende, Jorge E.

The in vivo activity of phenylalanyl-tRNA ligase of *Xenopus laevis* oocytes was assayed by measuring the esterification of microinjected yeast tRNAPhe with [14C]phenylalanine added to the extracellular medium. The three enzyme substrates, ATP, phenylalanine, and tRNAPhe, are present in the in vivo assay at saturating concentrations as seen by the fact that microinjection into the cell of additional amounts of these compounds does not increase the quantity of [14C]Phe-tRNAPhe formed. The in vivo activity of Phe-tRNA ligase in oocytes at several stages of development is less than 10% of the in vitro activity measured in homogenates of the same cells. The in vivo assay of Phe-tRNA ligase in oocytes that have been microinjected with this enzyme partially purified from *X. laevis* ovary shows that the enzyme is not inhibited by the cellular conditions. The conclusion drawn from these experiments is that a large fraction of the Phe-tRNA ligase present in oocytes is in a cellular compartment whi