

The Use of the *Xenopus* Oocyte to Prove the Existence of Messenger Sequences in High Molecular Weight RNA

OOCYTES provide a sensitive test for the translation of messenger RNA^{1,2} and have been used to provide evidence that high molecular weight RNA contains or forms translatable messenger sequences^{3,4}. In experiments carried out over the past two years we also have obtained results which support this conclusion. This question must, however, be regarded as incompletely answered for the following reasons: (a) Stevens and Williamson³ demonstrated immunoglobulin synthesis in oocytes injected with myeloma cell nuclear RNA, but this could have contained mature cytoplasmic mRNA as a contaminant. Moreover, nuclei may normally contain functional messenger RNA⁵; (b) Williamson *et al.*⁴ demonstrated globin synthesis in oocytes injected with HMW mouse erythroblast total cellular RNA, which may have contained 9S globin mRNA as a contaminant. This possibility is not completely eliminated by their control of finding no globin synthesizing activity in HMW brain RNA, when this was extracted from a mixture of brain tissue and reticulocyte lysate: because the globin mRNA present in the lysate may have been degraded by enzymes from the brain tissue; (c) we have injected duck erythroblast RNA derived from isolated nuclei and shown to be high molecular weight, and have found that duck globin is synthesized in oocytes, when analysed by 'Sephadex' and CMC chromatography, a result in agreement with that of Williamson *et al.*⁴. Even here, cytoplasmic or nuclear 9S mRNA contamination is not completely excluded.

The importance of 9S mRNA contamination of HMW RNA should not be underemphasized, as the sensitivity of the oocyte system means that if 1% of the HMW RNA used in our studies were aggregated 9S mRNA, the above results would have been obtained. A more perfect control experiment would be to test RNA prepared from a mixture of duck erythroblast nuclei and rabbit reticulocyte polyribosomes. If messenger aggregation does not occur, the HMW RNA from this preparation should cause the synthesis of duck but not rabbit globin chains,

whereas the 9S from the same preparation should cause the synthesis of duck and rabbit globin chains.

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