The activity (mean $\pm$ S.E.M.) was found to be 53.2 ± 1.2 after 16 hr. overnight starvation. Feeding of the T+ diet produced an immediate increase in activity, which rose to 119.9 ± 5.0 at 60 min. and fell to 78.2 ± 3.6 at 120 min. The T- diet gave no immediate response until after 45 min., when the activity rose to 92.7 ± 2.8 at 60 min. and then fell to 54.4 ± 3.8 by 120 min. The activity of the enzyme appeared to correlate with the free tryptophan content in liver in both groups of animals. The enzyme activities in the starved rats, in those given the T+ diet for 1 hr. and in those given the T- diet for 1 hr. were compared for Mg^{2+} optima, pH optima and sensitivity to actinomycin D. They were all similar. A group of animals was pretreated with puromycin or cycloheximide, and the enzyme activity was assayed 15 min. after the animals were given the T+ diet. The activity did not differ significantly from that in the starved rats, and it can therefore be suggested that the rat liver nucleus responds to an increase in the amino acid supply by synthesizing Mg^{2+} -activated RNA nucleotidyl-transferase.

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Incorporation of [3H]Uridine and [3H]Thymidine by Murine Peritoneal Macrophages *in vitro*

By D. KEAST and G. D. BIRNIE. (*Department of Environmental Carcinogenesis, Imperial Cancer Research Fund, London N.W.7*)

A new species of RNA, or an RNA associated with extremely immunogenic antigen, has been postulated in antigen-stimulated macrophages and it is suggested that this material is the stimulus to antibody production by the lymphocytes (Fishman & Adler, 1967; Gottlieb, 1968). Few data on RNA metabolism in macrophages cultured *in vitro* are available, and it seemed likely that useful information about this suggestion might be obtained by studies of nucleic acid synthesis in macrophages antigenically stimulated *in vitro*.

Mouse peritoneal macrophages were planted on stainless-steel squares essentially as described for mouse-embryo fibroblasts by Birnie & Simons (1967). Within 3 hr., macrophages had attached to the steel squares and the majority of lymphoid cells could be removed by vigorous washing with culture medium. Cultures were incubated for 3 days

at 37° in air + CO₂ (95:5), either in serum-free medium or in the same medium with 10% calf serum (Glaxo). They were then labelled with [3H]thymidine (0.85 μ C/ml.; 25 c/m-mole) or [3H]uridine (0.85 μ C/ml.; 5 c/m-mole) for 40 min., washed, fixed with acid and dried, and the radioactivity incorporated into nucleic acid was measured (Birnie & Simons, 1967). Digestion with deoxyribonuclease and ribonuclease confirmed that the radioactivity was in DNA and RNA respectively.

Very little [3H]thymidine was incorporated into macrophage DNA (0.75 c.p.m./10³ cells in serum-free medium; 0.3 c.p.m./10³ cells in the presence of calf serum). In contrast, extensive incorporation of [3H]uridine into RNA was observed, which much exceeded that found in mouse-embryo fibroblasts under similar conditions (Birnie & Simons, 1967). In serum-free medium, the cultures incorporated 32 c.p.m./10³ cells and this was not increased when they were maintained in medium containing 10% of isologous mouse serum. However, in the presence of calf serum, the amount incorporated was increased to 54 c.p.m./10³ cells. Similar stimulation by calf serum was observed with macrophages cultured for from 18 hr. to 15 days.

These results show that calf serum stimulates the incorporation of [3H]uridine into macrophage RNA and suggest that this stimulation may be produced by the 'foreign antigens' of this serum. The observations will be discussed in the context of current concepts of the role of macrophages in antibody production.

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Effects of Limiting Different Purine Nucleotide Precursors on Nucleic Acid Synthesis and Nucleotide Pools of Purine-Requiring Mutants of *Escherichia coli*

By GILLIAN A. JEFFRIES and K. BURTON. (*Department of Biochemistry, University of Newcastle upon Tyne*)

Adenylosuccinase is involved at two steps in the biosynthesis of adenine nucleotides but is not required for converting IMP into GMP. We have studied the effects of supplying either adenine or guanosine singly to an adenylosuccinase mutant of *Escherichia coli* (AB-1325) or to another strain (AG-1) that requires both adenine and guanine for