

orientés, mais répartis en amas anisodiamétriques disposés parallèlement, et que la direction de plus forte absorption des moyennes et grandes longueurs d'onde de la lumière correspond au grand axe de ces amas. Cette répartition de l'argent n'est possible que s'il existe dans l'objet des espaces préformés anisodiamétriques et parallèles, et par conséquent des éléments constitutifs eux-mêmes anisodiamétriques et régulièrement ordonnés. Cela prouve l'existence, dans le cristalloïde fixé, d'espaces anisodiamétriques et parallèles, orientés avec leur grand axe suivant l'allongement du cristalloïde, c'est-à-dire d'une texture de type fibreux.

La disparition progressive du dichroïsme au cours de l'évolution du cristalloïde correspond à une altération de plus en plus grande de la régularité de la structure; cette observation confirme celle de la diminution progressive de la biréfringence des cristalloïdes nucléaires en voie de désagrégation, observée à l'état frais par L. MONNÉ¹.

Nous sommes heureux de remercier M. le Prof. A. WEBER d'avoir bien voulu nous confier cette étude et nous communiquer ses préparations, et M. le Prof. J. A. BAUMANN qui a effectué pour nous les microphotographies qui illustrent ce travail.

C. A. BAUD

Institut d'histologie, Faculté de médecine de Lyon (France), le 15 février 1949.

Summary

WEBER's technique of silver impregnation permits one to observe a distinct dichroism of nuclear crystals. The dichroism proved a texture of fibrous type.

¹ L. MONNÉ, Ark. Zool. 36A, n° 10 (1945).

The Exposition of Chorioallantoic Membranes of the Chick Embryo to Granules from Embryonic Tissue¹

In view of the similarities between viruses and normally occurring cytoplasmic particles rich in ribonucleic acid and other substances, which were suggested in a preceding paper², it was decided to investigate the possible effects of a suspension of granules from embryonic tissue on material widely used in virus studies, the chorioallantoic membrane of the chick embryo. The usual technique of preparing the membranes was used³, and the chorioallantoic received a drop of a suspension of granules prepared either from two-day chick embryos or from frog neurulae. Various controls were carried on at the same time; addition to the membranes of phosphate buffer, of beef-broth medium, of sodium nucleate solution, and, finally, of suspensions of charcoal particles of about the same size as the granules.

It was found, after sectioning the membranes, removed and prepared in the usual manner and stained with toluidine blue, that in 27 out of 32 experiments (86%), the suspension of granules, whatever the origin, produced a marked thickening of the membranes in many places. The outer epithelium of the membrane was thick and strongly basophilic, while large basophilic

cells, showing enlarged nucleoli, were found migrating in thick rows into the mesenchyme layer. Sometimes, the vascularization of these areas was also increased, while the inner membrane reacted by forming large basophilic villi. In the various controls, the membranes usually kept their normal structure. However, in six cases out of 38 (16%), a moderate basophilic reaction occurred. It may be noted here that BEVERIDGE¹ and BURNET have described lesions very similar to the ones we have seen, in chorioallantoic membranes treated with emulsions or filtrates of animal tissues (i. e. homogenates containing granules) and distinguish these from various types of non-specific reactions.

Attempts to "inactivate" the granules by heating to 80°C for ten minutes or by irradiation with U. V. failed to give clear-cut results. We obtained ten positive reactions out of 29 such experiments (35%). The percentage of basophilic reactions in this series was thus in between that for untreated granules and that for the controls.

These experiments agree with those reported in the preceding paper of this series in showing that it is possible by adding microsomes to induce ribonucleic acid synthesis and cellular proliferation. It should be noted that granules from chick embryos have been found by TENNENT, LIEBOW and STERN² to stimulate growth of tissue cultures, and it may well be that we are here dealing with a similar phenomenon. The absence of any reaction in the case of membranes treated with the charcoal suspensions makes it unlikely that the growth seen in the membranes treated with the granules suspensions is simply due to non-specific or mechanical irritations. On the other hand, the difficulties we experienced in trying to inactivate the granules by heat or irradiation suggest that the particles do not multiply like viruses on the chorioallantoic membrane, but that they contain some constituent which stimulates ribonucleic acid synthesis in the neighboring cells. Further experiments are obviously needed to give a clear-cut solution to this last problem.

J. R. SHAVER³ and J. BRACHET

Laboratory of Animal Morphology, University of Brussels, and Department of Zoology, University of Pennsylvania, Philadelphia, Pa., February 12, 1949.

Résumé

En traitant des membranes chorioallantoïdiennes d'embryons de poule par quelques gouttes d'une suspension de granules cytoplasmiques de tissus embryonnaires, on observe dans 86% des cas un épaississement local accompagné d'un accroissement plus ou moins marqué de la basophilie. Quelquefois des cellules à gros nucléoles passent dans la membrane sous-jacente. Les membranes témoins ne donnent cette réaction qu'un petit nombre de fois et toujours de façon beaucoup moins prononcée. L'injection de granules préalablement traités par la chaleur ou les rayons U. V. n'a pas donné de résultats décisifs.

¹ W. I. B. BEVERIDGE and F. M. BURNET, *The Cultivation of Viruses and Rickettsiae in the Chick Embryo* (London, 1946).

² R. TENNENT, A. A. LIEBOW, and K. G. STERN, Proc. Soc. Exptl. Biol., 46, 18 (1941).

³ Fellow of the Belgian-American Educational Foundation, 1948-9.

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² J. BRACHET and J. R. SHAVER, *EXPER.* 5, fasc. 5, 204 (1949).

³ We are indebted for the details of this technique to Mrs T. M. HARRIS, Childrens' Hospital Laboratory, Philadelphia, Pa (U.S.A.).