heme are to be separated, heme can be extracted from the ethyl acetate-glacial acetic acid (3:1) phase by 15% HCl. The protoporphyrin-free heme can be crystallized from this solution in the manner described above after neutralization and shaking into an ethyl acetate-glacial acetic acid (3:1) phase.

In conclusion, the procedure described above is suitable for the isolation of the final product of both heme and protoporphyrin synthesis[5].

Zusammenfassung. Neues Verfahren für Häm-Isolierung durch Aceton-Fällung: Lösung in Aethylacetat-Eisessig und Auskristallisieren mit Wasserzugabe.

A. Egyed

Department of Cell Metabolism, National Institute of Haematology and Blood Transfusion, Daróczi ut. 24, Budapest XI (Hungary),
23 May 1972.

Membrana testacea: A Support for Organ Cultures

Organ-culture method is a powerful tool for biological investigations and so it has been extensively used in several fields (e.g. embryology, genetics, cancer research)[1]. The usefulness of this methodology is largely dependent upon many factors such as composition of nutritional media, nature of supports. As concerns the support, the vitelline membrane (VM) is the most frequently employed one, since it favors adhesivity, flattening and nutrition of the explants[2]. On the other hand, its preparation is difficult and time consuming. The research for supports is therefore advisable.

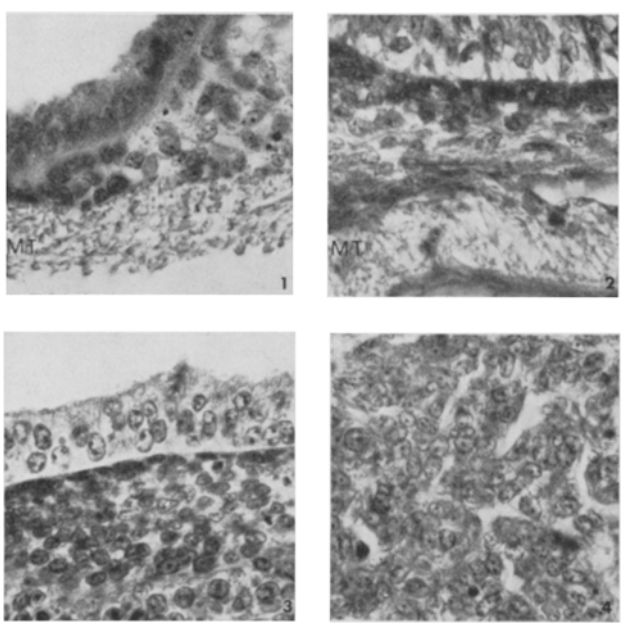

Fig. 1. 6-day lung rudiment after 5 days of incubation. Note the adhesivity of the mesenchyme over the membrana testacea (MT). ×1,500.

Fig. 2. 7-day stomach rudiment after 4 days in culture. ×1,500.

Fig. 3. 6-day intestine rudiment after 4 days of incubation. ×1,500.

Fig. 4. 6-day liver rudiment maintained in culture for 5 days. Note the well preserved structure of epithelial cords. ×1,500.

We have observed that the membrana testacea (MT), a proteinaceous framework placed inside the egg-shell[3], provides a natural support as well and easier to handle than the VM.

MT is removed under sterile conditions from unincubated eggs, rinsed in Tyrode's, cut in small pieces and then placed upon the solid media. Nutrient medium consisted of: 6 drops gelose 1% in Gey fluid, 3 drops chick embryo extract (Difco; 50% in Tyrode's), 3 drops chicken serum (Difco), and Tyrode's containing penicillin 1 drop[4]. Lung, liver stomach, intestine, heart, skin, kidney, limb bud rudiments removed from 6–7-day-old chick embryos have been examined both upon MT and VM. Cultures were incubated at 37 °C; fixed in Bouin fluid; serial sections were cut at 8 + 10 μm and stained with hematoxylin-eosin.

The different anlages undergo a fairly good morphogenesis and differentiation over the MT (Figures 1–4). As shown in Figures 1 and 2, adhesivity to the MT is very good. Morphology of those parts which directly rest upon this support is much better when compared with the VM. One can therefore conclude than nutrition of explants is possible through the MT and occurs at a very good rate[5].

Riassunto. È stato dimostrato che la membrana testacea costituisce un substrato idoneo e di agevole preparazione per culture organotipiche.

M. A. Bodo and P. Carinci

Istituto di Istologia ed Embriologia generale, Via del Giochetto, I-06100 Perugia (Italy),
2 May 1972.

[1] E. N. Willmer, *Cells and Tissues in Culture*, 2nd edn. ((Ed. E. N. Willmer, Academic Press, New York 1965), vol. 4, p. 1.
[2] E. Wolff, Devel. Biol. *3*, 767 (1961).
[3] A. Romanoff and A. I. Romanoff, *The Avian Egg*, 2nd edn. (John Wiley and Sons, New York 1963).
[4] P. Carinci and L. Simonelli, Z. Anat. EntwGesch. *135*, 108 (1971).
[5] These studies were supported by Italian CNR grants No. 69.02110 and No. 70.01069.04.

Zur Bestimmung der Katalaseaktivität in Bodenproben

Die Bestimmung der Aktivität mikrobiell gebildeter Enzyme im Boden ist ein häufig angewendetes Verfahren zur Charakterisierung der biologischen Aktivität des Bodens[1, 2]. Es muss jedoch festgestellt werden, dass für viele interessierende Enzyme keine geeigneten Methoden beschrieben sind, die ihre Aktivitätsbestimmung im Boden ermöglichen.

Die Katalase, ein weit verbreitetes Enzym, das die Spaltung von Wasserstoffperoxyd in Wasser und Sauerstoff katalysiert, kann zwar recht gut über die spektralphotometrische und titrimetrische Bestimmung des Substratverbrauches untersucht werden[3], doch sind beide Methoden nicht anwendbar, wenn die Aktivität des Enzymes in Bodenproben gemessen werden soll, da in diesem