absolutely required. They show that its inductive action has its most efficient effect on the mesoblast lying just over it. Furthermore, they provide clear evidence that it induces somites through the medium of diffusible substances, since it has been formally demonstrated that the porous membrane filter prevents any direct contact between the 2 interacting components (GROBSTEIN[5], NYHOLM et al.[6], GALLERA et al.[7]). If these results are compared to those which were obtained in other systems, we find that the somite genesis recalls in some way what several authors, namely SAXEN et al.[8], have observed during the kidney tubulogenesis. In both cases, the cells indeed aggregate when the diffusible inductive factors have modified their behaviour and their mutual affinity[9].

Résumé. L'utilisation de fragments de filtre millipore, intercalés entre un fragment de ligne primitive et un explantat de jeune chorde, nous permet de démontrer présentement que l'induction des somites par la chorde s'opère par le truchement de substances diffusibles chez les oiseaux.

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Succinic Dehydrogenase in the Cnidoblast of Hydra and its Role in the Discharge of Nematocyst

There are a large number of light and electron microscopic observations[1-7] concerned with the structure and discharge of the stenotele of hydra. As far as the source of energy for firing the nematocyst is concerned, the electron microscopic studies present very little evidence. Apart from these considerations, no histochemical studies have been reported on the localization and distribution pattern of oxidative enzymes in the cnidoblast of hydra. Among histochemically detectable enzymes of the Krebs cycle, succinic dehydrogenase (SDH) was found to be the most distinctive in preliminary studies. The present note, therefore, deals with the histochemical localization of SDH in cnidoblast of hydra and its role in the discharge of nematocyst.

Fresh specimens of hydra were collected locally from the ponds in the campus. The tentacles were cut from the living specimens, teased out a little and then transferred directly into the incubation medium for SDH. The composition of the medium was as described by PEARSE[8]. Nitro blue tetrazolium was used as the electron acceptor and the incubation medium was also supplemented with phenazine methosulfate. The material was incubated in toto for 20 min, washed in distilled water, fixed in 10% solution of buffered neutral formalin for 3 min and then after washing mounted in glycerol jelly.

Microscopic observations revealed the presence of sharp bluish diformazan spherical granules (Figure), representing the approximate sites of mitochondria, as it is known that SDH is exclusively confined to mitochondria. Since succinate is considered to be major metabolite of the Krebs cycle, it is obvious that there is a definite source of energy supply through the operation of the Krebs cycle in mitochondria, which lie in the neighbourhood of the fine fibrils or tubules reported earlier[7,9]. The presence of these fine fibrils or tubules, showing a similarity to the basic contractile structures, along with high SDH activity in the cnidoblast, suggest a definite role of these tubules in contraction, thereby bringing about a forceful discharge of the nematocyst[10].

Zusammenfassung. Nachweis von Succinodehydrogenase in unmittelbarer Nähe der Nesselkapseln bei Hydra.

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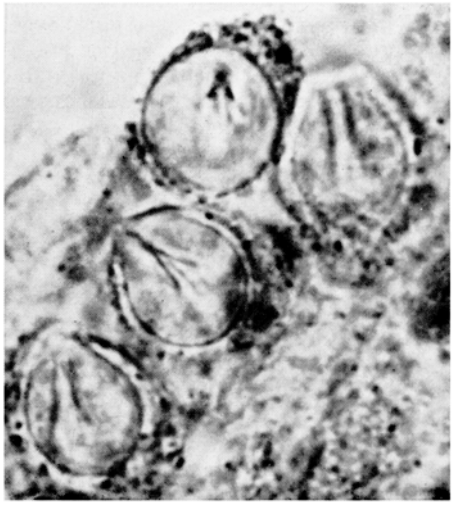

Photomicrograph showing histochemical localization of succinic dehydrogenase in the cnidoblast of hydra. Conditions as described in the text. Darkly stained spherical granules represent the sites of the enzyme activity. ×1000.

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