

limb regeneration in the crustacean hermit crabs. The whole animal respiration rate was found to increase over the normal level following autotomy of the legs, the more legs removed the greater the increase in respiratory rate. The period of increased respiratory rate coincides with the period of growth and differentiation of the limb regenerates. The adult muscle structure consists of bundles of myofibrils interspersed with mitochondria arranged in a multinucleate syncytium. Light and electron microscopic studies of fixed material are presently being carried out to elucidate the details of muscle development.

In conjunction with these problems we applied and modified the disc electrophoresis and paper chromatographic techniques to the study of protein components in developing cellular systems. Preliminary data indicate changes in the number of electrophoretic mobility of components during development.

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#### A DIFFERENCE BETWEEN TUMOR CELLS OF THE LOCAL OR PRIMARY TRANSPLANTED GROWTH AND TUMOR CELLS OF THE METASTASES

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Existing observations indicate that many tumor cell emboli, released by the primary cancer into veins, never develop into metastases. The following hypothesis was erected to explain this phenomenon. The cells of a primary tumor must change to produce new cells capable of growing out of a blood vessel into a new organ; since this change is in the nature of a mutation, the incidence of change is low. Hence, very few tumor cell emboli can yield metastases.

If this hypothesis were true, then cells of the metastasis should yield more metastases than cells of the primary tumor. Experiments were designed to test this hypothesis, using the B16 melanoma in C57 mice. Metastases were produced by the intravenous injection of a cell suspension made from a stock tumor. Then cells of the metastases were injected subcutaneously into a normal mouse to make a "metastasis stock" tumor. This tumor was to be compared with the "regular stock" tumor, the tumor which was always passed subcutaneously. Suspensions of tumor cells were made from "metastasis stock" and "regular stock" tumors. Equal numbers of tumor cells were injected intravenously into corresponding series of mice. All mice were sacrificed one month later, and numbers of lung metastases were counted. Mice receiving cells from the "metastasis stock" tumor developed about 50 times as many lung tumors as did recipients of cells from "regular stock" tumors. This experiment indicates that cells of a metastasis differ from those of the primary tumor.

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