The induction of lung tumors in mice by application of coal tar to the skin at different sites was achieved by Murphy and Sturm in 1925 (Primary lung tumors in mice following cutaneous applications of coal tar. J. Exp. Med., 42: 693–700, 1925). This was an early demonstration of carcinogenesis at a distance from the site of application of the carcinogenic agent.

James B. Murphy (1884–1950) of the Rockefeller Institute of Medical Research headed cancer research at the Institute for many years and contributed research on heterotransplantation, X-ray inhibition of resistance to tumors, and the role of lymphocytes in such resistance. He was a prominent councillor of the National Cancer Institute during its founding in 1937; he chaired the special committee on its research objectives. Ernest Sturm (1894–1955) was his technical assistant for many years.

One of the applications of the lung tumor response was the first clear demonstration of transplacental carcinogenesis, reported by Larsen in 1947 (Pulmonary tumor induction by transplacental exposure to urethane. J. Natl. Cancer Inst., 8: 63–70, 1947). Multiple lung tumors were induced in the offsprings of mice given intraperitoneal urethan during pregnancy.


Pictured are Murphy (left) and Larsen (right), with Sturm under Murphy. Also shown are spontaneous and induced lung tumors in strain A mice, and their histological appearance (from Shimkin and Stoner, Adv. Cancer Res., 21: 1–58, 1975).

M. B. S.