IN VITRO DEVELOPMENT OF TUMOURIGENIC AND INVASIVE PROPERTIES IN CELLS INITIATED BY ETHYLNITROSOUREA (ENU) IN UTERO. J.Kieler[1], Y.Oda[2] and Y.Tokuriki[3]. [1]The Fibiger Laboratory, Division of Environmental Carcinogenesis, Copenhagen, Denmark; [2]Kochi Medical School, Kochi, Japan; [3]Kyoto Medical School, Kyoto, Japan.

After intraperitoneal injection of ethylnitrosourea (ENU) at a dose of 60 mg/kg body weight into pregnant rats 1-5 days before delivery, the offspring were observed until death or were killed in the moribund stage. The median survival time of these animals after ENU injection was 199 days (range: 129-289). In 70% of the rats, transplantable tumours mostly of neurogenic origin, were found at autopsy. Apparently healthy littermates were sacrificed 1, 22, 89, 146 and 188 days after ENU initiation in utero. Biopsies from brain, skin and liver were explanted, and a number of cell lines were established in vitro. The invasiveness of these cell lines into fragments of embryonic chick hearts and their tumourigenicity in newborn Wistar rats and nude mice have been studied at regular intervals. Cultivation in vitro was found to promote the development of invasiveness and tumourigenicity. A positive invasion test was predictive of later development of tumourigenic properties.

FOURIER ANALYSIS OF NORMAL AND TRANSFORMED HUMAN UROTHELIAL CELLS IN VITRO. J.Kieler[1], K.Ostrowski[2], P.Strojny[2], A.Dziedzic-Goclawska[3] and W.Bulski[4]. [1]The Fibiger Laboratory, Division of Environmental Carcinogenesis, Copenhagen, Denmark; [2]Departments of Histology and [3]Transplantology, Medical Academy and [4]Department of Physics, Institute of Oncology, Warsaw, Poland.

The exact shape of cells can be characterized numerically by the use of Fourier analysis. We have studied the following cultured human cell lines by this method: The confluent part of HCV cell cultures (HCV con) which are derived from morphologically normal human urothelium, and the peripheral part of the same cell population (HCV per). These cells do not produce tumours in nude mice and do not show invasiveness in vitro. Furthermore two tumourigenic and invasive cell lines were studied, i.e. the apparently spontaneously transformed HCV-T subline derived from HCV, and the Hu 1703 hemicyst cell line derived from a transitional cell carcinoma of the bladder. Finally a human fibroblast line was included as a control.

Results: HCV con was nearly identical with HCV-T both being statistically significantly different from Hu 1703h. The difference between HCV-T and Hu 1703h was less pronounced than the difference between HCV and Hu 1703h. HCV per and the fibroblast line were both very different in shape from the epithelioid HCV con, HCV-T and Hu 1703h.

KIRKMAN-ROBBINS HEPATOMA SPECIFIC CHROMATIN PROTEINS. W.M.Krajewska, Z.Kiliańska, A.Lipińska, Z.Wojtkowiak, M.Gaczyński and L.Kłyszejko-Stefanowicz. Department of Biochemistry, University of Łodz, Łodz, Poland.

The molecular distribution of three classes of non-histone proteins (NHCP1, NHCP2, NHCP3), histones and chromatin-bound protease activity between micrococcal nuclease-sensitive (SP) and nuclease-resistant (PP) chromatin fractions from Kirkman-Robbins hepatoma and hamster liver was compared. Among non-histone proteins, differences mainly of quantitative nature were observed. However it was found that polypeptides with mol. wt 81 000 (NHCP1), 39 000 (NHCP2) and 21 000, 35 000, 37 000 (NHCP1). 70 000, 112 000,141 000, 157 000 (NHCP2), 30 000-33 000 (NHCP3) were associated only with SP chromatin fraction of hepatoma and normal tissue, respectively. The hepatoma specific non-histone components were further studied using antibodies against chromatin proteins by complement fixation and immunolocalization technique with PAP. A major difference in histone composition of both tissues concerns histones H2A and H1. Activity of chromatin-bound protease in SP as well as PP chromatin fractions from hamster hepatoma and liver was found.