differentiated Leydig cells). Reaction products for 3B hydroxysteroid dehydrogenase activity were localized on tubular or lamellar cristae and inner membranes of the mitochondria, and on the membranes of smooth endoplasmic reticulum in the transitional cell as well as in the Leydig cell. From these facts, it is suggested that Leydig cell tumor is derived from the fibroblast-like cell, and the transitional cell, representing various degrees of differentiation between the fibroblast-like cell and the Leydig cell, has already a steroidogenic activity to secrete testosterone with the Leydig cell, and caused clinical symptomes of virilization.

## 184. Immunohistological Study on the Histogenesis and Malignant Transformation of Ovarian Mucinous Tumors, Especially on the Intestinal Metaplasia

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Mucinous tumors of the ovary are generally considered to be dual origin in histogenesis. Teratomatous elements, however, have recently been described to appear in a process of intestinal metaplasia. Malignant transformation has also been suggested to occur through intestinalization.

To clarify these problems, the relationships among morphological changes of intestinalization, carcinoembryonic antigen and mucus antigens named as IMA and M1, which were isolated from intestinal mucosa and ovarian mucinous cyst fluid respectively, were studied in 4 benign, 8 borderline and 6 malignant mucinous tumors of the ovary. Intestinal type and goblet-like cells were sparse, if any, in benign tumors, but conspicuous in borderline or malignant ones. Carcinoembryonic antigen was located in the glycocalyx of intestinal type cells in the benign tumors, but distributed in the entire cytoplasm increasingly with malignancy. These findings are in favor of the theory that malignant transformation may occur through intestinal metaplasia in mucinous tumors.

M1 was positive in many cells of all mucinous tumors, but IMA was shown in some goblet-like cells of a few tumors, regardless of malignancy or presence of argyrophil cells. These phenomena could be best understood by postulating that IMA was located in the teratomatous intestinal goblet cells of the tumors.

## 185. Establishment and Characterization of Human Ovarian Cancer Cell Line

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Ascitic fluid was obtained from the patient of ovarian endometrioid carcinoma. Collected cells were incubated with Eagle's MEM containing 15% fetal calf serum at 37°C under humidified 5% $CO_2$ and 95% air. The epithelial colonies grew rapidly and were released without fibroblastic cells. After the first passage, the cells are growing without interruption.

This cell line has following charactors:

1) The monolayer cultured cells appeared epithelial, pavement like arrangement and piling up without contact inhibition.

2) By heterotransplantation to the nude mouse, the tumor easily developes.

3) Chromosomal number shows pseudodiploidy which mode is 47. A marker submetacentric chromosome is detected with karyotypic analysis.

4) In the cytoplasm PAS positive substance can be seen.

5) Estradiol, Progesterone and Dehydrotestosterone inhibited the growth and $^{3}$H-TdR incorporation.

6) Dexamethasone, h-LH, and h-FSH showed no effect on the growth.

7) Estrogen receptor and Progesterone receptor were not detected with sucrose gradient centrifugation method of RRA.

## 186. Gonadotropin Receptor in Hormone Producting Tumors of Human Ovary

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The binding of $^{125}$I-labelled hLH and hFSH to the tissue of human ovarian tumors was studied. The hLH and hFSH were iodinated by means of the lactoperoxidase method and the specific activity was in the

order of 60 $\mu$Ci/$\mu$g-100 $\mu$Ci/$\mu$g. In autoradiographic study, the sections were incubated in a moist chamber for 1 hour at 37°C with $^{125}$I-labelled hLH and hFSH (approximate 2.5 × $10^5$ cpm/50 ul), washed for 10 min in cold phosphate-buffered saline (pH 7.6), rinsed in distilled water for 5 min and air-dried. The dried sections were coated with Kodak NTB-3 nuclear track emulsion, exposed for 10 days at 4°C and developed. In receptor assay, a fragment about 500 mg in weight was homogenized in 10 mM Tris-HCl buffer (pH 7.4) containing 0.3 mM sucrose. The receptor assay was performed using the 30,000×g pellet of the homogenate. Protein was measured by using bovine serum albumin as standard. The binding data were analysed with the Scatchard plot. In order to determine the binding specificity, sections and homogenates were incubated in the presence of a 1000-fold excess of the respective unlabelled hormone. Theca cell tumor displayed binding of $^{125}$I-hLH and $^{125}$I-hFSH. The number of binding sites of hLH and hFSH in theca cell tumor was 1.35 × $10^{-14}$ moles/mg protein and 0.66 × $10^{-14}$ moles/mg protein. The dissociation constant (Kd) of hLH was 11.47 × $10^{-10}$ M and that of hFSH was 6.57 × $10^{-10}$ M. Lutein cyst displayed binding of $^{125}$I-hLH. Embryonal carcinoma, dysgerminoma, dermoid cyst and serous cystadenoma failed to bind labelled gonadotropic hormones.

These results suggest that the presence of gonadotropin receptor may be a sign of the gonadotropic control of the hormone producting ovarian tumors.

## 187. Steroid Receptors and Tumor-Associated Substances in Ovarian Tumors

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It has been suggested that the growth of ovarian tumors is dependent on hormones such as steroids and/or polypeptides. Some cases of ovarian cancers have been known to respond to endocrine therapy. The presence of steroid receptors in ovarian cancers has been suggested.

In the present study, steroid receptors in human ovarian tumors (including benign and malignant tumors) were characterized biochemically. Such receptors were quantified in each ovarian tumors. The clinical implication of the data was evaluated. The tumor-associated substances such as human chorionic gonadotropin (hCG), carcinoembryonic antigen (CEA) and $\alpha$-fetoprotein (AFP) were also determined in cytosols. The ligand specific estrogen receptor (ER), progestin receptor (PR) and androgen receptor (AR) having 8S and 5S sedimentation coefficients were detected in benign and malignant ovarian tumors. Therefore it was suggested that steroids influence the tumor growth. The presence of PR in tissues seemed to reflect the less responsiveness to chemotherapy in malignant tumors. In the cytosols of dysgerminoma and endodermal sinus tumor, $\beta$-hCG was detected. CEA and AFP were found in the cytosols of endometrioid carcinoma, embryonal carcinoma, endodermal sinus tumor and granulosa cell tumor.

## 188. The Histogenese of Primary Ovarian Squamous Cell Carcinoma

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Ovarian squamous cell carcinomas are rare because of the primary squamous elements are seldom found in normal ovary.

Eight clinical cases of ovarian squamous cell carcinomas were analysed from a clinico-pathological point of view. They were all arising in benign cystic teratomas and one of them showed the direct derivation from normal squamous epithelia.

Similar findings were recognized in 3 DMBA treated rat ovaries with carcinoma showing mainly squamous components. One of them was believed to be a pure squamous cell carcinoma arising from epidermoid cyst. Other two cases were adenoacanthoma and adenosquamous carcinoma, and both of them were considered to be derived from surface epithelium with interposition of endometrioid tumor.

From these clinical and experimental findings, it is suggested that the possible origins of ovarian squamous cell carcinoma are 1) teratoma and 2) coelomic surface epithelium.

## 189. The Transplantation of CEA Producing Ovarian Carcinoma and the Ultrastructural Immunohistochemical Studies

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