

## BIBLIOGRAPHY

- ALMEIDA, J.D., ORIEL, J.D. & STANNARD. 1969. Characterization of the virus found in human genital warts. *Microbios.*, 3: 225-232.
- ANDROPHY, E.J., SCHILLER, J.T. & LOWY, D.R. 1985. Identification of the protein encoded by the E6 transforming gene of bovine papillomavirus. *Science*, 230: 442-445.
- ANDROPHY, E.J., LOWY, D.R. & SCHILLER, J.T. 1987a. Bovine papillomavirus E2 trans-activating gene product binds to specific sites in papillomavirus DNA. *Nature* (London), 235: 70-73.
- ANDROPHY, E.J., HUBBERT, N.L., SCHILLER, J.T. & LOWY, D.R. 1987b. Identification of the HPV 16 E6 protein from transformed mouse cells and human cervical carcinoma cell lines. *EMBO J.*, 6: 989-992.
- ARENDS, M.J., DONALDSON, Y.K., DUVALL, E., WYLLIE, A.H. & BIRD, C.C. 1993. Human papillomavirus type 18 associated with more advanced cervical neoplasia than human papillomavirus type 16. *Hum. Pathol.*, 24 : 432 -437.
- AWADY, M., KAPLAN, J., O'BRIEN, S. & BURK, R. 1987. Molecular analysis of integrated papillomavirus 16 sequences in the cervical cancer cell line SiHa. *Virology*, 159: 389-398.
- BAKER, C.C. 1987. Sequence analysis of papillomavirus genomes. In *The Papovaviridae*. Salzman, N. & Howley, P. (eds.). Plenum Press, New York., pp 321-385.
- BAKER, C.C., PHELPS, W.C., LINDGREN, V., BRAUN, M.J., GONDA, M.A. & HOWLEY, P.M. 1987. Structural and transcriptional analysis of human papillomavirus type 16 sequences in cervical carcinoma cell lines. *J. Virol.*, 61: 962-971.
- BANKS, L., SPENCE, P., ANDROPHY, E., HUBERT, N., MATLASZEWSKI, G., MURRAY, A. & CRAWFORD, L. 1987. Identification of human papillomavirus type 18 E6 polypeptide cells derived from human cervical carcinomas. *J. Gen. Virol.*, 68 : 1351 - 1359.
- BARBOSA, M. & SCHLEGEL, R. 1989. The E6 and E7 genes of HPV 18 are sufficient for inducing two-stage in vitro transformation of human keratinocytes. *Oncogene*, 4: 1529-1532.
- BARBOSA, M.S. & WETTSTEIN, F.O. 1988. Identification and characterization of the CRPV E7 protein expressed in COS-7 cells. *Virology*, 165: 134-140.
- BARBOSA, M.S., LOWY, D.R. & SCHILLER, J.T. 1989. Papillomavirus polypeptides E6 and E7 are zinc-binding proteins. *J. Virol.*, 63: 1404-1406.

- BARNES, W., WOODWORTH, C., WAGGONER, S., STOLER, M., JENSON, A.B., DELGADO, G. & DIPAOLO, J. 1990. Rapid dysplastic transformation of human genital cells by human papillomavirus type 18. *Gynecol. Oncol.*, 38 : 343 - 346.
- BARTON, S.E., MADDOX, P.H., JENSKIN, D., EDWARDS, R., CUZIRK, J. & SINGER, A. 1988. Effect of cigarette smoking on cervical epithelial immunity : A mechanism for neoplastic change? *Lancet*, : 652-654.
- BAUER, H.M., TING, Y., GREER, C.E., CHAMBERS, J.C., TASHIRO, C.J., CHIMERA, J., REINGOLD, A. & MANOS, M.M. 1991. Genital human papillomavirus infection in female university students as determined by a PCR-based method. *J. Am. Med. Assoc.*, 265 : 472 - 477.
- BEAUDENON, S., KREMSDORF, D., CROISSANT, O., JABLONSKA, S., WAIN-HOBSON, S. & ORTH, G. 1986. Human papillomaviruses associated with cervical intraepithelial neoplasia. *Am. J. Pathol.*, 167: 641-649.
- BECKMANN, A.M., MYERSON, D., DALING, J.R., KIVIAT, N.B., FENEGLIO, C.M. & MCDOUGALL, J.K. 1985. Detection of human papillomavirus DNA in carcinomas by *in situ* hybridization with biotinylated probes. *J. Med. Virol.*, 16 : 265 - 273.
- BEDEL, M.A., JONES, K.H. & LAIMINS, L.A. 1987. The E6 and E7 region of human papillomavirus type 18 is sufficient for transformation of NIH 3T3 and Rat-1 cells. *J. Virol.*, 61 : 3634.
- BEDEL, M.A., JONES, K.H., GROSSMAN, S.R. & LAIMINS, L.A. 1989. Identification of human papillomavirus type 18 transforming genes in immortalized and primary cells. *J. Virol.*, 63 : 1247 - 1255.
- BERAL, V., HANNAFORD, P. & KAY, C. 1988. Oral contraceptive use and malignancies of the genital tract. Results from the Royal College of General Practitioners' Oral Contraception Study. *Lancet*, ii : 1331-1335.
- BERG, L., LUSKY, M., STENLUND, A. & BOTCHAN, M.R. 1986. Repression of bovine papillomavirus replication is mediated by a virally encoded trans-acting factor. *Cell*, 46: 753-762.
- BERGER, T., SAWCHUK, W., LEONARDI, C., LANGENBERG, A., TAPPERO, J. & LEBOIT, P. 1991. Epidermodysplasia verruciformis associated papillomavirus infection complicating human immunodeficiency virus diseases. *Br. J. Dermatol.*, 124: 79-83.
- BERGERON, C., FERENCZY, A., SHAH, K.V. & NAGHASHFAR, Z. 1987. Multicentric human papillomavirus infections of the female genital tract. Correlation of viral types with abnormal mitotic figures, colposcopic presentation and location. *Obstet. Gynecol.*, 69: 736-742.

**BERGERON, C., BARSSO, R., BEAUDENON, S., FLAMANT, P., CROISSANT, O. & ORTH, G.** 1992. Human papillomaviruses associated with cervical intraepithelial neoplasia. Great diversity and distinct distribution in low-and high-grade lesions. *Am. J. Surg. Pathol.*, **16**(7) : 641 - 649.

**BERGERON, C., FERENCZY, A., SHAH, K.V. & NAGHASHFAR, Z.** 1987. Multicentric human papillomavirus infections of the female genital tract. Correlation of viral types with abnormal mitotic figures, colposcopic presentation and location. *Obstet. Gynecol.*, **69**: 736-742.

**BERNARD, H.U., CHAN, S.Y., MANOS, M.M., ONG, C.K., VILLA, L.L., DELIUS, H., PEYTON, C.L., BAUER, H.M. & WHEELER, C.M.** 1994. Identification and assessment of known and novel human papillomaviruses by polymerase chain reaction amplification, restriction fragment length polymorphisms, nucleotide sequence and phylogenetic algorithms. *J. Infect. Dis.*, **170** : 1077 - 1085.

**BLEUL, C., MULLER, M., FRANK, R., GAUSEPOHL, H., KOLDOVSKY, U., MGAYA, H.N., LUANDE, J., PAWLITA, M., MEULEN, J.T., VISCIKI, R. & GISSLAND, L.** 1991. Human papillomavirus type 18 E6 and E7 antibodies in human sera: Increase anti-E7 prevalence in cervical cancer patients. *J. Clin. Microbiol.*, **29**: 1579-1588.

**BOEHRINGER MANNHEIM**, 1989. **DIG, DNA labeling and detection (Non-radioactive)**. Boehringer Mannheim GmbH Biochemica.

**BOEHRINGER MANNHEIM, BIOCHEMICA** 1992. **Nonradioactive in situ hybridization**. An application manual. Boehringer Mannheim GmbH, Biochemica.

**BOENISCH, T., FARNILO, A.J. & STEAD, R.H.** 1989. **Immunochemical staining methods**. Naish, S.J., (ed.) Dako Corporation, California.

**BOOG, C.J.P., KAST, W.M., MARC TIMMERS, H.T., BOES, J., de WAAL, L.P. & MELIEF, C.J.M.** 1985. Abolition of specific immune response defect by immunization with dendritic cells. *Nature*, **318**: 59-62.

**BOSHART, M., GISSLAND, L., IKENBERG, H., KLEINHEINZ, A., SCHEURLEN, W. & ZUR HAUSEN, H.** 1984. A new type of papillomavirus DNA, its presence in genital cancer biopsies and in cell lines derived from cervical cancer. *EMBO J.*, **3**: 1151-1157.

**BOUVARD, V., STOREY, A., PIM, D., BARAGGINO, E., WISENFELD, U. & BANKS, L.** 1994. Detection of HPV 16 E2 protein in cervical keratinocytes. In **Immunology of human papillomaviruses**. Stanley, M.A. (ed.) Plenum Press, New York, pp 33 - 38.

**BOYD, J.T. & DOLL, R.** 1964. A study of the aetiology of carcinoma of the cervix uteri. *Br. J. Cancer*, **18**: 419-434.

- BOYLE, J.G., LU, T., NELSON, J.H. & JOYCE, D. 1972. Cervical carcinoma and oral contraception. *Obstet. Gynecol.*, **40**: 139-146.
- BRADSMA, J., BURK, R.D., LANCASTER, W.D., PFISTER, H. & SCHIFFMAN, M.H. 1989. Inter-laboratory variation as an explanation for varying prevalence estimates of human papillomavirus infection. *Int. J. Cancer*, **43**: 260 - 262.
- BRINTON, L.A. 1992. **Epidemiology of cervical cancer and human papillomavirus.** Meheus, A. (ed.) pp 3-23. International Agency for Research on Cancer, Lyon.
- BRINTON, L.A., HUGGINS, G.R., LEHMAN, H.F., MALLIN, K., SAVITZ, D.A., TRAPIDO, E., ROSENTHAL, J. & HOOVER, R. 1986a. Long-term use of oral contraceptives and risk of invasive cervical cancer. *Int. J. Cancer*, **38**: 339-344.
- BRINTON, L.A., SCHAIRER, C., HAENSZEL, W., STOLLEY, P., LEHMAN, H.F., LEVINE, R. & SAVITZ, D.A. 1986b. Cigarette smoking and invasive cervical cancer. *J. Am. Med. Ass.*, **255**: 3265-3269.
- BRINTON, L.A., HAMMAN, R.F., HUGGINS, G.R., LEHMAN, H.F., LEVINE, R.S., MALLIN, K. & FRAUMENI, J.F. 1987. Sexual and reproductive risk factors for invasive squamous cell cervical cancer. *J. Natl. Cancer Inst.*, **79**: 23-30.
- BRINTON, L.A., REEVES, W.C., BRENES, M.M., HERRERO, R., de BRITTON, R.C., GAITAN, E., TENORIO, F., GARCIA, M. & RAWLS, W.E. 1989a. Parity as risk factor for cervical cancer. *Am. J. Epidemiol.*, **130**: 486-496.
- BRINTON, L.A., REEVES, W.C., BRENES, M.M., HERRERO, R., GAITAN, E., TENORIO, F., de BRITTON, R.C., GARCIA, M. & RAWLS, W.E. 1989b. The male factor in the etiology of cervical cancer among sexually monogamous women. *Int. J. Cancer*, **44**: 199-203.
- BRINTON, L.A., REEVES, W.C., BRENES, M.M., HERRERO, R., de BRITTON, R.C., GAITAN, E., TENORIO, F., GARCIA, M. & RAWLS, W.E. 1990. Oral contraceptive use and risk of invasive cervical cancer. *Int. J. Epidemiol.* **19**: 4-11.
- BROCOME, H.M., CHURCHER, M.J., STANLEY, M.A., SMITH, G.L. & MINSON, A.C. 1988. Analysis of the L1 gene product of human papillomavirus type 16 expression in a vaccinia virus recombinant. *J. Gen. Virol.*, **69**: 1263-1273.
- BRODERSEN, I. & GENNER, J. 1973. Histological and immunological observations on common warts in regression. *Acta Dermvener (Stockholm)*, **54**: 292.
- BROWN, D.R., BRYAN, J., RODRIGUEZ, M., ROSE, R.C. & STRIKE, D.G. 1991. Detection of human papillomavirus types 6 and 11 E4 gene products in condyloma acuminatum. *J. Med. Virol.*, **34**: 20-28.
- BROWN, L.J.R. & WELLS, M. 1986. Cervical glandular neoplasia : a premalignant lesion? *J. Clin. Pathol.*, **39** : 22 - 28.

- BUNNEY, M. 1982. *Viral warts: their biology and treatment*. Oxford University Press, Oxford.
- BURNETT, A.F., GRENDYS, E.C., WILLET, G.D., JOHNSON, J.C., BARTER, J.F. & BARNES, W.A. 1994. Preservation of multiple oncogenic human papillomavirus types in recurrences of early-stage cervical cancers. *Am. J. Obstet. Gynecol.*, **170**(5) : 1230 - 1233.
- BUTTERWORTH, C.E., HATCH, K.D., GORE, H., MUELLER, H. & KRUMDIECK, C.L. 1982. Improvement in cervical dysplasia associated with folic acid therapy in users of oral contraceptives. *Am. J. Clin. Nutr.*, **35**: 73-82.
- CAMPION, M.J. 1989. Human cervical papillomavirus infection : a clinical perspective. In *Human papillomavirus and cervical cancer*. Munoz, N., Bosch, F.X. and Jensen, O.M. (eds.) IARC, Lyon. pp41-65
- CARTWRIGHT, R.A. & SINSON, J.D. 1980. Carcinoma of penis and cervix. *Lancet* I, : 97.
- CASON, J., PATEL, D., NAYLOR, J., LUNNEY, D., SHEPHERD, P.S., BEST, J.M. & McCANCE, D.J. 1989. Identification of immunogenic human papillomavirus type 16 that contain type-restricted epitopes. *J. Gen. Virol.*, **70** : 2973 - 2987.
- CASON, J., KAMBO, P.K., BEST, J.M. & McCANCE. 1992. Detection of antibodies to a linear epitope on the major coat protein (L1) of human papillomavirus type 16 (HPV 16) in sera from patients with cervical intraepithelial neoplasia and children. *Int. J. Cancer*, **50** : 349 - 355.
- CHAN, W.K., KLOCK, G. & BERNARD, H.U. 1989. Progesterone and glucocorticoid response elements occur in the long control regions of several human papillomaviruses involved in anogenital neoplasia. *J. Virol.*, **63**: 3261-3269.
- CHEN, E.Y., HOWLEY, P.M., LEVINSON, A.D. & SEEDBURG, P.H. 1982. The primary structure and genetic organization of the bovine papillomavirus type 1 genome. *Nature*, **299**: 529-534.
- CHEN, M., POPESCU, N., WOODWORTH, C., BERNEMAN, Z., CORBELLINO, M., LUSSO, P., ABLASSHI, D.V., & DIPAOLO, J.A. 1994. Human Herpesvirus 6 infects cervical epithelial cells and transactivates human papillomavirus gene expression. *J. Virol.*, **68** (2) : 1173 - 1178.
- CHOO, K., LEE, H., PAN, C., WU, S., LIEW, L., CHEUNG, W. & HANS, S. 1988. Sequence duplication and internal deletion in the integrated human papillomavirus type 16 genome cloned from a cervical carcinoma. *J. Virol.*, **62**: 1659 - 1666.
- CHOW, L.T., HIROCHIKA, H., & NASSERI, M. 1987. Human papillomavirus gene expression. In *Cancer cells*. Steinberg, J.M., Bradysma, J.L. & Taichman, L.B.

(eds.) 5: 55-72.

- CHOW, L.T., REILLY, S.S., BROKER, T.R. & TAICHMAN, L.B. 1987a. Identification and mapping of human papillomavirus type 1 RNA transcripts recovered from plantar warts and infected epithelial cell culture. *J. Virol.*, **61**: 1913-1918.
- CHOW, L.T., NASSERI, M., WOLINSKY, S.M., & BROKER, T.R. 1987b. Human papillomavirus type 6 and 11, mRNAs from genital condylomata acuminata. *J. Virol.*, **61**: 2581-2588.
- CHRISTOPHERSON, W.M., NEALSON, N. & GRAYLA, SR. 1979. Noninvasive precursor lesions of adenocarcinoma and mixed adenosquamous carcinoma of the cervix uteri. *Cancer*, **44** : 975 - 983.
- CLARKE, E.A., MORGAN, R.W. & NEWMAN, A.M. 1982. Smoking as a risk factor in cancer of the cervix : Additional evidence from a case control study. *Am. J. Epidemiol.*, **115**: 59-66.
- COGGIN, J.R. & ZUR HAUSEN, H. 1979. Workshop on papillomaviruses and cancer. *Cancer Res.*, **39**: 545-546.
- COMERFORD, S.A., McCANCE, D.J., DOUGAN, G. & TITE, J.P. 1991. Identification of T- and B-cell epitopes of the E7 protein of human papillomavirus type 16. *J. Virol.*, **65(a)**: 4681-4690.
- COOK, T.A., BRUNSCHWIG, T.P., BUTEL, J.S., COHEN, A., GEOPFERT, H. & RAWLS, W. 1973. Laryngeal papilloma : etiologic and therapeutic considerations. *Ann. Oto-rhino-laryngol.*, **82** : 649 - 655.
- CORNELISSEN, M.T.E., VAN DEN TWEEEL, J.G., STRUYK, A.P.B.H., JEBBINK, M.F., BRIET, M., VAN DER NOORDAA, J. & TER SCHEGGET, J. 1989. Localization of human papillomavirus type 16 DNA using the polymerase chain reaction in the cervix uteri of women with cervical intraepithelial neoplasia. *J. Gen. Virol.*, **70** : 2555 - 2562.
- COTRAN, R.S., KUMAR, V. & ROBBINS, S.L. 1989. Female Genital and Tract. In *Robbins Pathologic Basis of Disease*.
- CRYPE, T.P., HAUGEN, T.H., TURK, J.P., TABATABAI, F., SCHMID III, P.G., DURST, M., GISSMANN, L., ROMAN, A. & TUREK, L.P. 1987. Transcriptional regulation of the human papillomavirus-16 E6-E7 promoter by a keratinocyte-dependent enhancer, and by viral E2 trans-activator and repressor gene products; implication for cervical carcinogenesis. *EMBO J.*, **6**: 3745-3753.
- CROISSANT, O., BREITBURD, F. & ORTH, G. 1985. Specificity of cytopathic effect of cutaneous human papillomaviruses. *Clin. Dermatol.*, **3**: 43-55.
- CROOK, T., STOREY, A., ALMOND, N., OSBORN, K. & CRAWFORD, L. 1988. Human papillomavirus type 16 cooperates with activated ras and fos oncogenes in

- the hormone-dependent transformation of primary mouse cells. Proc. Natl. Acad. Sci., USA., 85 : 8820 - 8824.
- CROSS, H.E., KENNEL, E.E. & LILIENFELD, A.M. 1968. Cancer of the cervix in an Amish population. Cancer, 21: 102-108.
- CRUM, C.P., MITAO, M., LEVINE, R.U. & SILVERSTEIN, S.J. 1985. Cervical papillomaviruses segregate within morphologically distinct precancerous lesions. J. Virol., 54: 675-681.
- CRUM, C.P., NAGAI, N., LEVINE, R.U. & SILVERSTEIN, S. 1986. In situ hybridization analysis of HPV 16 DNA sequences in early cervical neoplasia. Am. J. Pathol., 123 : 174 - 182.
- CRUM, C.P., FRIEDMAN, D., NUOVO, G. & SILVERSINK, S.J. 1987. Morphological correlates of the genital HPV infection : viral replication, transcription and gene expression. In *Viruses and human cancer*. Alan R. Liss, Inc. pp 355 - 369.
- CRUM, C.P., NUOVO, G., FRIEDMAN, D. & SILVERSINK, S.J. 1988. Accumulation of RNA homologous to human papillomavirus type 16 open reading frames in genital precancers. J. Virol., 62 (1) : 84 - 90.
- CRUM, C.P., BARBER, S., SYMBULA, M., SNYDER, K., SALEH, A.M. & ROCHE, J.K. 1990. Coexpression of human virus type 16 E4 and L1 open reading frames in early cervical neoplasia. Virology, 178: 238-246.
- CUBIE, H.A. 1972. Serological studies in a student population prone to infection with human papillomavirus. J. Hyg. Camb., 70: 677-690.
- CULLEN, A.P., REID, R., CAMPION, M. & LORINCZ, A.T. 1991. Analysis of the physical state of different human papillomavirus DNAs in intraepithelial and invasive cervical neoplasm. J. Virol., 65: 606-612.
- DAVIES, D.H., MARKHILL, C., ROTHBARD, J.B. & CHAIN, B.M. 1990. Definition of murine T helper cell determinants in the major capsid protein of human papillomavirus type 16. J. Gen. Virol., 71: 2691-2698.
- DAVIS, L.G., DIBNER, M.D. & BATTERY, J.F. 1986. Basic methods in molecular biology. pp 38 - 41. Elsevier, New York, London, Amsterdam.
- DE SANJOSE, S., SANTAMARIA, M., ALONSO DE RUIZ, P., ARISTIZABAL, N., GUERRERO, E., CASTELLSAGUE, X. & BOSCH, F.X. 1992. HPV types in women with normal cervical cytology. In *The epidemiology of cervical cancer and human papillomavirus*. Munoz, N., Bosch, F.V., Shah, K.V. & Meheus, A. (eds.) IARC Scientific Publications No. 119, International Agency for Research on Cancer, Lyon. pp 75 - 84.
- DE VILLIERS, E.M. 1989. Heterogeneity of the human papillomavirus group. J. Virol., 63: 4898-4903.

- DE VILLIERS, E.M.** 1992a. Hybridization methods other than PCR : An update. In **The Epidemiology of cervical cancer and human papillomavirus**. Munoz, N., Bosch, F.X., Shah, K.V. and Meheus, A. (eds.) IARC Scientific Publications No 119. International Agency for Research on Cancer, Lyon. pp 111-120
- DE VILLIERS, E.M.** 1992b. Laboratory techniques in the investigation of human papillomavirus infections. *Genitourin. Med.*, **68** : 50 - 54.
- DE VILLIERS, E.M., GISSMANN, L. & ZUR HAUSEN, H.** 1981. Molecular cloning of viral DNA from human genital warts. *J. Virol.*, **40**: 932-935.
- DE VILLIERS, E.M., SCHNEIDER, A., MIKLAU, H., PAPENDICK, U., WAGNER, D., WESCH, H., WAHRENDORF, J. & ZUR HAUSEN, H.** 1987. Human papillomavirus infections in women with and without abnormal cervical cytology. *Lancet*, **ii** : 703 - 706.
- DEMMLER, G.J., BUFFONE, G.J., SCHIMBOR, C.M. & MAY, R.A.** 1988. Detection of cytomegalovirus in urine from newborns by using polymerase chain reaction DNA amplification. *J. Infect. Dis.*, **158** : 1177 - 1184.
- DI LUCA, D., PILOTTI, S., STEFANON, B., ROTOLA, A., MONINI, P., TOGNON, M., DE PALO, G., RILKE, F. & CASSAI, E.** 1986. Human papillomavirus type 16 DNA in genital tumours : a pathological and molecular analysis. *J. Gen. Virol.*, **67**: 583-589.
- DILLNER, J.** 1990. Mapping of linear epitopes of human papillomavirus type 16 : the E1, E2, E4, E5, E6 and E7 open reading frame. *Int. J. Cancer*, **46**: 703-711.
- DILLNER, J., STERNAS, L., KALLIN, B., ALEXANDER, H., EHLLIN-HENRIKSSON, B., JORNVALL, H., KLEIN, G. & LERNER, R.** 1984. Antibodies against a synthetic peptide identify Epstein-Barr virus determined nuclear antigen. *Proc. Natl. Acad. Sci.*, **81** : 4652 - 4656.
- DILLNER, J., DILLNER, L., ROBB, J., WILLEMS, J., JONES, I., LANCASTER, W., SMITH, R., & LERNER, R.** 1989. A synthetic peptide defines a serologic IgA response to a human papillomavirus-encoded nuclear antigen expressed in virus-carrying cervical neoplasia. *Proc. Natl. Acad. Sci., USA* **86**: 3838-3841.
- DILLNER, J., DILLNER, L., UTTER, G., EKLUND, C., ROTOLA, A., COSTA, S. & DILUCA, D.** 1990a. Mapping of linear epitopes of human papillomavirus type 16 : the L1 and L2 open reading frame. *Int. J. Cancer*, **45**: 529-535.
- DILLNER, L., MORENO-LPEZ, J. & DILLNER, J.** 1990b. Serological response to papillomavirus group-specific antigens in women with neoplasia of the cervix uteri. *J. Clin. Microbiol.*, **28** (3) : 624 - 627.
- DILLNER, L. & DILLNER, J.** 1994. Prevalence of antibodies against defined HPV

epitopes among incident cases of cervical neoplasia : current status and concepts. In **Immunology of human papillomaviruses**. Stanley, M.A. (ed.) Plenum Press, New York. pp 91 - 101.

DJEU, J.Y., STOSKS, N., ZOON, K., STANTON, G.J., TIMONENT, J. & HERBERMAN, R.B. 1982. Positive self regulation of cytotoxicity in human natural killer cells by production of interferon upon exposure to influenza and herpes viruses. *J. Exp. Med.*, **156**: 1222-1234.

DOORBAR, J., CAMPBELL, D., GRAND, R. & GALLIMORE, P. 1986. Identification of the human papillomavirus 1a E4 gene products. *EMBO J.*, **5**: 355-362 .

DOORBAR, J., ELY, S., STERLING, J., MCLEAN, C. & CRAWFORD, L. 1991. Specific interaction between HPV 16 E1-E4 and cytokeratins results in collapse of the epithelial cell intermediate filament network. *Nature*, **352**: 824-827.

DURST, M., GISSLAND, L., IKENBERG, H. & ZUR HAUSEN, H. 1983. A new papillomavirus DNA from a cervical carcinoma and its prevalence in cancer biopsy samples from different geographic regions. *Proc. Natl. Acad. Sci., USA* **80**: 3812-3815.

DURST, M., KLEINHEINZ, A., HOTZ, M. & GISSLAND, L. 1985. The physical state of human papillomavirus type 16 DNA in benign and malignant genital tumours. *J. Gen. Virol.*, **66**: 1515-1522.

DURST, M., CROCE, C.M., GISSLAND, L., SCHWARZ, E. & HUEBNER, K. 1987a. Papillomavirus sequences integrate near cellular oncogenes in some cervical carcinomas. *Proc. Natl. Acad. Sci., USA* **84**: 1070-1074.

DURST, M., DZARLIENA-PETRUSEVSKA, R.T., BOUKAMP, P., FUSENIG, N.E. & GISSLAND, L. 1987b. Molecular and cytogenetic analysis of immortalized human primary keratinocytes obtained after transfection with human papillomavirus type 16 DNA. *Oncogene*, **1** : 251 - 256.

DURST, M., BOSCH, F.X., GLITZ, D., SCHNEIDER, A. & ZUR HAUSEN, H. 1991. Inverse relationship between HPV 16 early gene expression and cell differentiation in nude mouse epithelial cysts and tumors induced by HPV positive human cell lines. *J. Virol.*, **65**: 796.

DVORETZKY, I., SHOBER, R., CHATTOPADHYAY, S.K. & LOWY, D.R. 1980. A quantitative in vitro focus assay for bovine papillomavirus. *Virology*, **103**: 369-375.

DYSON, N., HOWLEY, P.M., MUNGER, K. & HARLOW, E. 1989. The human papillomavirus 16 E7 oncoprotein is able to bind to the retinoblastoma gene product. *Science*, **243** : 934.

ERB, P. & FELDMANN, M, 1975. Role of macrophages in in vitro induction of T helper cells . *Nature* , **254**: 352-354.

- FEINBERG, P. & VOGELSTEIN, B. 1984. A technique for radiolabelling DNA restriction enzyme fragments to high specific activity. *Anal. Biochem.*, **137**: 266-267.
- FERENCZY, A. 1982. Anatomy and histology of the cervix, In **Pathology of the Female Genital Tract**. Blaustein, A. (ed.) Springer-Verlag, New York. pp119-135,
- FERENCZY, A. & WINKLER, B. 1987. Cervical intraepithelial neoplasia and condyloma. In **Blaustein's Pathology of Female Genital Tract**. Kurman, R. (ed.). New York, Springer - Verlag. pp 177-218.
- FIGUEROA, J. & CAORSI, I. 1981. An ultrastructural and morphometric study of Langerhans' cells in normal human ectocervix. *J. Anat.*, **131**: 669-682.
- FIRZLAFF, J.M., KIVIAT, N.B., BECKMANN, A.M., JENISON, S.A. & GALLOWAY, D.A. 1988. Detection of human papillomavirus capsid antigens in various squamous epithelial lesions using antibodies directed against the L1 and L2 open reading frames. *Virology*, **164** : 467 - 477.
- FORBES, J.T., GRECO, F.A. & OLDHAM, P.K. 1980. Natural cell mediated cytotoxicity in human tumour patients. In **Natural cell mediated immunity against tumours**. Herberman, R.B. (ed.) Academic Press, New York. pp 1031-1046
- FRAUMENI, J.F., JR, LLYOD, J.W., SMITH, E.M. AND WAGONER, J.K. 1969. Cancer mortality among nuns: Role of marital status in etiology of neoplastic disease in women . *J.Natl. Cancer Inst.*, **42**: 455-468.
- FRAZER, I.H., CRAPPER, R.M., MEDLEY, G., BROWN, T.C. & MACKAY I.R. 1986. Association between anorectal dysplasia, human papillomavirus, and human immunodeficiency virus infection in homosexual men. *Lancet*, **II** : 657-660.
- FUCHS, P.G., GIRARDI, F. & PFISTER, H. 1988. Human papillomavirus DNA in normal, metaplastic, preneoplastic and neoplastic epithelia of the cervix uteri, *Int.J. Cancer* **4**: 41-45.
- FUCHS, P., GIRARDI, F. & PFISHER, H. 1989. Human papillomavirus 16 DNA in cervical cancers and in lymph nodes of cervical cancer patients: a diagnostic marker for early metastases? *Int. J. Cancer*, **43** : 41-44.
- FUJINAGA, Y., SHIMADA, M., OKAZAWA, K., FUKUSHIMA, M., KATO, T. & FUJINAGA, K. 1991. Simultaneous detection and typing of genital human papillomavirus DNA using the polymerase chain reaction. *J. Gen. Virol.*, **72** : 1039 - 1044.
- FUKUSHIMA, M., OKAGAKI, T., TWIGGS, L.B., CLARK, B.A., ZACHOW, K.R., OSLROW, R.S. & FARAS, A.J. 1985. Histological types of carcinoma of the uterine cervix and the detectability of human papillomavirus DNA. *Cancer Res.*, **45** : 3252 - 3255.

GALLOWAY, D.A. 1992. Serological assays for the detection of HPV antibodies. In **The epidemiology of cervical cancer and human papillomavirus** Munoz, N., Bosch, F.X., Shah, K.V. and Meheus, A. (eds.) International Agency for Research on Cancer, Lyon. pp 147-161.

GALLOWAY, D.A. & MCDOUGALL, J. 1989. Human papillomaviruses and carcinomas. Advances in Virus Research, **37**: 125 - 171.

GARDNER, J.W. & LYON, J.L. 1977. Low incidence of cervical cancer in Utah. Gynecol. Oncol., **5**: 68 - 80.

GARRY, R. & JONES, R. 1985. Relationship between cervical condylomata, pregnancy and subclinical papillomavirus infection. J. Reprod. Med., **30** : 393 - 399.

GILLIS, M., DE BOEVER, J.G., & FIERS, W. 1970. The effect of salts concentration on the polyribonucleotide synthesizing activities in extracts of uninfected and RNA bacteriophage infected "*Escherichia coli*". Arch. Int. Physiol. Biochim., **78**: 519-530.

GIRI, I., DANOS, O., THIERRY, F., GEORGE, E., ORTH, G. & YANIV, M. 1985. Characterization of transcription control regions of the cotton tail rabbit papillomavirus. UCLA Symposia on Molecular and Cellular Biology, **32** : 379 - 390.

GISSMANN, L. & ZUR HAUSEN, H. 1980. Partial characterization of viral DNA from genital warts (Condylomata acuminata). Int. J. Cancer, **25**: 605-609.

GISSMANN, L., DIEHL, V., SCHULTZ-COULON, H. & ZUR HAUSEN, H. 1982. Molecular cloning and characterization of human papillomavirus DNA from laryngeal papilloma. J. Virol. **44**: 393-400.

GISSMANN, L., WOLNICK, L., IKENBERG, H., KOLDOVSKY, U., SCHNURCH, H.G. & ZUR HAUSEN, H. 1983. Human papillomavirus type 6 and 11 DNA sequences in genital and laryngeal papillomas and in some cervical cancers. Proc. Natl. Acad. Sci. USA. **80**: 560-563.

GISSMANN, L., BOSHART, M., DURST, M., IKENBERG, H., WAGNER, D. & ZUR HAUSEN, H. 1984. Presence of human papillomavirus (HPV) DNA in genital tumours. J. Invest. Dermatol. (Suppl.), **83**: 26 - 28.

GISSMANN, L. & SCHWARZ, E. 1987. Persistence and expression of human papillomavirus DNA in genital cancer. In **Papillomaviruses** Everett, D. and Clark, S. (eds.) Ciba Foundation. Bath Press, Avon, United Kingdom. pp 190 - 207.

GOVAN, A.D.T., HART, D.M. & CALLANDER, R. 1993. Diseases of the cervix. In **Gynaecology Illustrated**. Churchill Livingstone, New York pp 208 - 221..

GRAHAM, S. & SCHOTS, W. 1979. Epidemiology of cancer of the cervix in Buffalo, New York. J. Natl. Cancer Inst., **63**: 23 - 27.

**GRAVITT, P.E. & MANOS, M.M.** 1992. Polymerase chain reaction-based methods for the detection of human papillomavirus DNA. In **The epidemiology of cervical cancer and human papillomavirus**. Munoz, N., Bosch, F.X. and Meveus, A. (eds.). IARC Scienteific Publications No 199. International Agency for Research on Cancer, Lyon. pp 121- 134.

**GREEN, M., BRACKMANN, K.H., SANDERS, P.R., LOEWENSTEINS, P.M., FREEL, J.H., EISINGER, M. & SWITLYK, S.A.** 1982. Isolation of a human papillomavirus from a patient with epidermodysplasia verruciformis : presence of related viral DNA genomes in human urogenital tumors. Proc. Natl. Acad. Sci., **79**: 4437 - 4441.

**GREGOIRE, L., ARELLA, M., CAMPIONE-PICCARDO, J. & LANCASTER, W.D.** 1989. Amplification of human papillomavirus DNA sequences by using conserved primers. J. Clin. Microbiol., **27** : 2660 - 2665.

**GRiffin, N.R., BERAN, I.S., LEWIS, F.A., WELLS, M., YOUNG, L.S.** 1990. Demonstration of multiple HPV types in normal cervix and in cervical squamous cell carcinoma using the polymerase chain reaction on paraffin wax embedded material. J. Clin. Pathol., **43** : 52 - 56.

**GRiffin, N.R., DOCKEY, D., LEWIS, F.A. & WELLS, M.** 1991. Demonstration of low frequency of human papillomavirus DNA in cervical adenocarcinoma and adenocarcinoma in situ by the polymerase chain reaction and in situ hybridization. Int. J. Gynecol. Pathol., **10** : 36 - 43.

**GRiffis, R., ANDRE, P.M., & THIBON, M.** 1990. Synthesis of digoxigenin-labeled DNA probe by polymerase chain reaction : Application to Epstein-Barr virus and *Chlamydia trachomatis*. Res. Virol., **141**: 331-335.

**GROSSMAN, S. & LAIMINIS, L.A.** 1989. E6 protein of human papillomavirus type 18 binds zinc. Oncogene, **4**: 1089 - 1093.

**GUPTA, J.W., GUPTA, P.K., SHAH, K.V. & KELLY, D.P.** 1983. Distribution of human papillomavirus antigen in cervicovaginal smears and cervical tissues. Gynecol. Patho., **2**: 160.

**GUPTA, J., SCHNEIDER, A. & SHAH, K.** 1986. Detection of papillomavirus antigen etiology of cervical cancer. Peto., R and zur Hausen, H. (ed.). Banbury report. Cold Spring Harbour Laboratory, U.S.A. pp 247-252.

**GUZICK, D.S.** 1978. Efficacy of screening for cervical cancer. A review. Am. J. Public Health, **68**: 125.

**HAGEN, C. & FROLAND, A.** 1972. Depressed lymphocyte response to P.H.A. in women taking oral contraceptives. Lancet, **i** : 1185.

**HALPERT, R., FRUCHTER, R.G., SEDLIS, A., BUTT, K., BOYCE, J.G. & SILLMAN, F.H.** 1986. Human papillomavirus and lower genital neoplasia in renal

transplant patients. *Obstet. Gynecol.*, **68**: 251 - 258.

**HANNA, N. & FIDLER, I.** 1983. Relationship between metastatic potential and resistance to natural killer cell mediated cytotoxicity in the murine tumour system. *J. Natl. Cancer Inst.*, **66**: 1183-1190.

**HAUGEN, T.H., CRIPE, T.P., GINDER, G.D., KARIN, M. & TUREK, L.P** 1987. Trans-activation of an upstream early gene promoter of bovine papillomavirus 1 by a product of the viral E2 gene. *EMBO J.*, **6** : 145 - 152.

**HAWLEY-NELSON, P., VOUSDEN, K.H., HUBBERT, N.L., LOWY, D.R. & SCHILLER, J.T.** 1989. HPV 16 E6 and E7 proteins cooperate to immortalize human foreskin keratinocytes. *EMBO J.*, **8** : 3905.

**HAWTHORN, R.J.S., MUDOCH, J.B., MACLEAN, A.B. & MACKIE, R.M.** 1988. Langerhans' cells and subtypes of human papillomavirus in cervical intraepithelial neoplasia. *Br. Med. J.*, **297**: 643 -646.

**HEILES, H.B.J., GEVERSCH, E., KESSLER, C., NEUMANN, R. & EGGERS, H.J.** 1988. In situ hybridization with digoxigenin-labeled DNA of human papillomavirus (HPV 16/18) in HeLa and SiHa cells. *Biotechniques*, **6**: 978 - 981.

**HERNEMAN, R.B.** 1982. NK cells and other natural effector cells. Academic Press, New York.

**HERRERO, R., BRINTON, L.A., REEVES, W.C., BRENES, M.M., TENORIO, F., DE BRITTON, R.C., GAITAN, E., GARCIA, M. & RAWLS, W.E.** 1990. Sexual behavior, venereal diseases, hygiene practices, and invasive cervical cancer in a high-risk population. *Cancer*, **65**: 380 - 386.

**HERSEY, P., EDWARDS, A., LEWIS, R., KEMP, A. & MCLUNES, J.** 1982. Deficient natural killer cell activity in a patient with Fanconi's anaemia and squamous cell carcinoma associated with defect in interferon release. *Clin. Exp. Immunol.*, **48**: 205 - 212.

**HILDESHEIM, A., REEVES, W.C., BRINTON, L.A., LAVERY, C., BRENES, M., DE LA GUARDIA, M.E., GODOY, J. & RAWLS, W.E.** 1990. Association of oral contraceptive use and human papillomaviruses in invasive cervical cancer. *Int. J. Cancer*, **45**: 860 - 864.

**HILDESHEIM, A., SCHIFFMAN, M.H. & GRAVITT, P.** 1994. Persistence of type-specific HPV infection among cytologically normal women. *J. Infect. Dis.*, **169** : 235 - 240.

**HOFFMAN, D., ADAMS, J.D. & BRUNNEMANN, K.D.** 1982. Tobacco specific N-nitrosamines : Occurrence and bioassays. *IARC Sci. Publ.*, p 41.

**HOLLINGWORTH, T. & BARTON, S.** 1988. The natural history of early cervical neoplasia and cervical human papillomavirus infection. *Cancer Sur.*, **7(3)**: 519-527.

- HOWLEY, P.M. 1990. Papillomavirinae and their replication. In *Virology* (Fields, B.N., Knipe, D.M. (eds.) Raven Press, Ltd., New York. pp 1625 - 1650.
- HSEIN, C.Y., LEE, S.C. & HUANG, S.C. 1988. Presence and expression of human papillomavirus types 16 and 18 DNA sequences in cervical carcinomas. *Asia-Oceania J. Obstet.*, **14** : 87 - 95.
- HUDSON, J.B., BEDELL, M.A., MCCANCE, D.J. & LAIMINS, L.A. 1990. Immortalization and altered differentiation of human keratinocytes in vitro by the E6 and E7 open reading frames of human papillomavirus type 18. *J. Virol.*, **64** : 519 - 526.
- IFNER, T., FUCHS, P.G. & PFISTER, H. 1988. Involvement of human papillomavirus type 8 genes E6 and E7 in transformation and replication. *J. Virol.*, **62**: 3655 - 3661.
- JENISON, S.A., FIRZLAFF, J.M., LANGENBERG, A. & GALLOWAY, D.A. 1988. Identification of immunoreactive antigens of human papillomavirus type 6b by using Escherichia coli-expressed fusion proteins. *J. Virol.*, **62**: 2115 - 2123.
- JENISON, S.A., YU, X.P., VALENTINE, J.M. & GALLOWAY, D.A. 1989. Human antibodies react with an epitope of the human papillomavirus type 6b L1 open reading frame which is distinct from the type-common epitope. *J. Virol.*, **63**: 809 - 818.
- JENISON, S.A., YU, X.P., VALENTINE, J.M., KOUTSKY, L.A., CHRISTIANSEN, A.E., BECKMANN, A.M. & GALLOWAY, D.A. 1990. Evidence of prevalent genital-type human papillomavirus infections in adults and children. *J. Infec. Dis.*, **162**: 60 - 69.
- JENSON, A., ROSENTHAL, J., OLSON, C., PASS, F., LANCASTER, W. & SHAH, K. 1980. Immunological relatedness of papillomaviruses from different species. *J. Natl. Cancer Inst.*, **64**: 495 - 500.
- JOCHMUS-KUDIELKA, I., SCHNEIDER, A., BRAUN, R., KIMMIG, R., KOLDOVSKY, U., SCHNEWEIS, K.E., SEEDORF, K. & GISSMANN, L. 1989. Antibodies against the human papillomavirus type 16 early proteins in human sera : correlation of anti-E7 reactivity with cervical cancer. *J. Natl. Cancer Inst.*, **81**: 1698 - 1704.
- JOHN, H., BIRNSTIEL, M. & JONES, K. 1969. RNA : DNA hybrids at the cytological level. *Nature*, **223**: 582 - 587.
- KANDA, T., WATANABE, S. & YOSHIIKE, K. 1988. Immortalization of primary rat cells by human papillomavirus type 16 subgenomic DNA fragments controlled by the SV 40 promoter. *Virology*, **165**: 321 - 325.
- KASAHARA, T., HOOSE, J.J., DOUGHERTY, S.F., & OPPENHEIM, J.J. 1983. Interleukin 2 mediated immune interferon (IFN-gamma) production by human T cell and T cell subsets. *J. Immunol.*, **131**: 1784 - 1789.

- KAWASAKI, E.S. 1990. Sample preparation from blood, cells, and other fluids. In **PCR protocols** : A guide to methods and applications. Gelfand, M., Sninsky, J. and White, T. (eds.). Academic Press, San Diego. pp 146 - 152.
- KESSLER, I.I. 1977. Venereal factors in human cervical cancer : Evidence from marital clusters. *Cancer*, **39**: 1912 - 1919.
- KESSLER, C., HOLTKE, H.J., SEILD, R., BURG, J. & MUHLECKER, K. 1990. Non-radioactive labeling and detection of nucleic acids. *Biol. Chem. Hoppe-Seyler*, **371**: 917-965.
- KIENZLER, J.L., LEMOINE, M.TH., ORTH, G., JIBARD, N., BLANC, D., LAURENT, R. & AGACHE, P. 1983. Humoral and cell-mediated immunity to human papillomavirus type 1 (HPV 1) in human warts. *Brit. J. Dermatol.*, **108**: 665 - 672.
- KIRCHNER, H. 1986. Immunobiology of human papillomavirus infection. *Prog. Med. Virol.* **33**: 1 - 41.
- KIVIAT, N., ROMPALO, A., BOWDEN, R., GALLOWAY, D., HOLMES, K. & COREY, L. 1990. Anal human papillomavirus infection among human immunodeficiency virus seropositive and seronegative men. *J. Infect Dis.*, **162**: 358 - 361.
- KJAER, S.K., DE VILLIERS, E.M. & HAUGAARD, B.J. 1988. Human papillomavirus herpes simplex virus and cervical cancer incidence in Greenland and Denmark : a population-based cross-sectional study. *Int. J. Cancer*, **41**: 518 - 524.
- KJAER, S.K., DE VILLIERS, E.M., DAHL, C., ENGHOLM, G., BOCK, J.E., VESTERGAARD, B.F., LYNGE, E. & JENSEN, O.M. 1991. Case-control study of risk factors for cervical neoplasia in Denmark I : Role of the "male factor" in women with one lifetime sexual partner. *Int. J. Cancer*, **48** : 39 - 44.
- KLUG, A. & FINCH, J.T. 1965. Structure of virus of the papiloma-polyoma type I human wart virus. *J. Mol. Biol.*, **11**: 403 - 423.
- KOCHEL, H.G., MONAZAHIAN, M., SIEVERT, K., HOHNE, M., THOMSEN, C., TEICHMANN, A., ARENDT, P. & THOMSEN, R. 1991a. Occurrence of antibodies to L1, L2, E4 and E7 gene products of human papillomavirus type 6b, 16 and 18 among cervical cancer patients and controls. *Int. J. cancer*, **48**: 682 - 688.
- KOCHEL, H.G., SIEVERT, K., MONAZAHIAN, M., MITTELSTADT-DETERDING, A., TEICHMANN, A., & THOMSEN, R. 1991b. Antibodies to human papillomavirus type 16 in human sera as revealed by the use of prokaryotically expressed viral gene products. *Virology*, **182**: 644 - 654.
- KOMLY, C.A., BREITBURD, F., CROISSANT, O. & STREECK, R.E. 1986. The L2 open reading frame of human papillomavirus type 1a encodes a minor structural

- protein carrying type-specific determinants. *J. Virol.*, **60**: 813 - 816.
- KORANDA, F., DEHMEL, E., KAHN, G. & PENN, I. 1974. Cutaneous complications in immunosuppressed renal homograft recipients. *JAMA*, **229**: 419 - 424.
- KOSS, L.G. 1987. Cytologic and histologic manifestations of infection of the female genital tract and their clinical significance. *Cancer Suppl.*, **60**: 1942 - 1947.
- KRANTZ, K.E. 1973. The anatomy and the human cervix, gross and microscopic. In *The Biology of the Cervix*. Moghissi, R.J.(ed.) University of Chicago Press pp 57 - 69.
- KRCHNAK, V., VAGNER, J., SUCHANKOVA, A., KREMAR, M., RITTEROVA, L & VONKA, VLADIMIR 1990. Synthetic peptides derived from E7 region of human papillomavirus type 16 used as antigens in ELISA. *J. Gen. Virol.*, **71**: 2719 - 2724.
- KREIDER, J.W., HOWETT, M.K., STOLER, M.H., ZAINO, R.J. & WELSH, P. 1987a. Susceptibility of various human tissue to transformation in vivo with human papillomavirus type II. *Int. J. Cancer*, **39**: 459 - 465.
- KREIDER, J.W., HOWETT, M.K., LEURRE-DUPREE, A.E., ZAINO, R.J. & WEBER, J.A. 1987b. Laboratory production in vitro of infectious human papillomavirus type II. *J. Virol.*, **61**: 590 - 593.
- KULSKI, J.K., HOWARD, M.J. & PIXLEY, E.C. 1987. DNA sequences of human papillomavirus type 11, 16 or 18 in invasive cervical carcinoma of Western Australian women. *Immunol. Cell Biol.*, **65(1)** : 77 - 84.
- KURMAN, R., JENSON, A. & LANCASTER, W. 1983. Papillomavirus infection of the cervix II. Relationship to intraepithelial neoplasia based on the presence of specific viral structural proteins. *Am. J. Surg. Pathol.*, **7**: 39.
- KURMAN, R.J., SCHIFFMAN, M.H., LANCASTER, W.D., REID, R., JENSON, A.B., TEMPLE, G.F. & LORINZ, A.T. 1988. Analysis of individual human papillomavirus types in cervical neoplasia : A possible role for type 18 in rapid progression. *Am J. Obstet. Gynecol.*, **159** : 293 - 296.
- KWOK, S. & HIGUCHI, R. 1989. Avoiding false positive with PCR. *Nature (London)*, **339**: 237 - 238.
- LA'VECCHIA, C., FARANCESCHI, S., DECARLI, A., FASOLI, M., GENTILE, A., PARAZZINI, F. & REGALLO, M. 1986. Sexual factors, venereal diseases, and the risk of intraepithelial and invasive cervical neoplasia. *Cancer*, **58**: 935 - 941.
- LA'VECCHIA, C., DECARLI, A., FASOLI, M., PARAZZINI, F., FRANCESCHI, S., GENTILE, A. & NEGRI, E. 1988. Dietary vitamin and the risk of intraepithelial and invasive neoplasia. *Gynecol. Oncol.*, **30**: 187-195

- LACK, E.E., VAWTER, G.E., SMITH, H.G. & HEALY, G.B. 1980. Immunohistochemical localisation of human papillomavirus in squamous papillomas of the larynx. *Lancet*, ii : 592.
- LAMBERT, P.F. 1991. Papillomavirus DNA replication. *J. Virol.*, **65** : 3417 - 3420.
- LAMBERT, P.F., SPALHOLZ, B.A. & HOWLEY, P.M. 1987a. A transcriptional repressor encoded by BPV-1 shares a common carboxyterminal domain with the E2 transactivator. *Cell*, **50** : 69 - 78.
- LAMBERT, P.F., SPALHOLZ, B.A. & HOWLEY, P.M. 1987b. Evidence that bovine papillomavirus type 1 may encode a negative transcriptional regulatory factor. *Cancer cells*, **5** : 15 - 22.
- LAMBERT, P.F. & HOWLEY, P.M. 1988. Bovine papillomavirus type E1 replication - defective mutants are altered in their transcriptional regulation. *J. Virol.*, **62** : 4009 - 4015.
- LAMBERT, P.F., HUBBERT, N.L., HOWLEY, P.M. & SCHILLER, J.T. 1989. Genetic assignment of multiple E2 gene products in bovine papillomavirus transformed cells. *J. Virol.*, **63** : 3151 - 3154.
- LANCASTER, W.D. & NORRILD, B. 1989. Diagnosis of HPV hybridization techniques. In *Human papillomavirus and cervical cancer*. Munoz, N., Bosch, F.X. and Jensen, O.M. (eds.) IARC Scientific Publications, No. 94. International Agency for Research on Cancer, Lyon. pp 87-104
- LAW, M.F., LANCASTER, W.D., HOWLEY, P.M. 1979. Conserved sequences among the genomes of papillomaviruses. *J. Virol.*, **32** : 199 - 211.
- LEES, E., OSBORN, K., BANKS, L. & CRAWFORD, L. 1990. Transformation of primary BRK cells by human papillomavirus type 16 and EJ-ras is increased by overexpression of the viral E2 protein. *J. Gen. Virol.*, **71** : 183 - 193.
- LEHN, H., VILLA, L.L., MARZIONA, F., HILGARTH, M., HILLEMANS, H.G. & SAVER, G. 1988. Physical state and biological activity of human papillomavirus genomes in precancerous lesions of the female genital tract. *J. Gen. Virol.*, **69** : 187 - 196.
- LEHN, H., KRIEG, P. & SAUER, G. 1985. Papillomavirus genomes in human cervical tumours: analysis of their transcriptional activity. *Proc. Natl. Acad. Sci. USA* **82**: 5540-5544.
- LEHTINEN, M., LEMINEN, A., PAAVONEN, J., LEHTOVIRTA, P., HYOTY, H., VESTERINEN, E. & DILLNER, J. 1992. Predominance of serum antibodies to a synthetic peptide stemming from HPV 18 open reading frame E2 predominate in cervical adenocarcinoma. *J. Clin. Pathol.*, **45** : 494.
- LEPTAK, C., RAMON, S., KULKE, R., HORWITZ, B.H., RIESSELL, O.T., QOTTO, G.P. & DI MAIO, D. 1991. Tumorigenic transformation of murine keratinocytes by

the E5 genes of bovine papillomavirus type 1 and human papillomavirus type 16. *J. Virol.*, **65** : 7078 - 7083.

LI , J.Y., LI, F.P., BLOT, W.J., MILLER, R.W. & FRAUMENI, J.F., JR 1982. Correlation between cancers of the uterine cervix and penis in China. *J. Natl. Cancer Inst.*, **69**: 1063-1065.

LI, C.C.H., SHAH, K.V., SETH, A. & GILDEN, R.V. 1987. Identification of the human papillomavirus type 6b L1 open reading frame protein condylomas and corresponding antibodies in human sera. *J. Virol.*, **61** : 2684 - 2690.

LI, C.C.H., GILDEN, R.V., SHOWALTER, S.D. & SHAH, K.V. 1988. Identification of the human papillomavirus E2 protein in genital tract tissues. *J. Virol.*, **62** : 606 - 609.

LIANG, X.H., VOLKMANN, M., KLEIN, R., HERMAN, B. & LOCKETT, S.J. 1993. Co-localization of the tumour-suppressor protein p53 and human papillomavirus E6 protein in human cervical carcinoma cell lines. *Oncogene*, **8** : 2645 - 2652.

LIM, P.S., JENSON, A.B., COWSERT, L., NAKAI, Y., LIM, L.Y., JIN, W. & SUNDBERG, J.P. 1990. Distribution and specific identification of papillomavirus major capsid protein epitopes by immunocytochemistry and epitope scanning of synthetic peptides. *J. Infect. Dis.*, **162** : 1263 - 1269.

LION, T. & HAAS, O.A. 1990. Non-radioactive labelling of probe with digoxigenin by polymerase chain reaction. *Biochemistry*, **188**: 335-337

LITTLER, E., BAYLIS, S.A., ZENG, Y., CONWAY, M.J., MACKETT, M. & ARRAUD, J.R. 1991. Diagnosis of nasopharyngeal carcinoma by means of recombinant Epstein-Barr virus proteins. *Lancet*, **337** : 685 - 689.

LLEWELYN-JONES, D. 1982. The Cervix. In **Fundamentals of Obstetrics and Gynaecology**. Faber and Faber Limited.

LORINCZ, A.T., LANCASTER, W.D. & TEMPLER, G.F. 1986. Cloning and characterization of the DNA of a new papillomavirus from a woman with dysplasia of the uterine cervix. *J. Virology*, **58** : 225 - 229.

LORINCZ, A.T., TEMPLE, G.F., KURMAN, R.J., JENSON, A.B. & LANCASTER, W.D. 1987. Oncogenic association of specific human papillomavirus types with cervical neoplasia. *J. Natl. Cancer Inst.*, **79** : 671-677

LORINCZ, A.T., SCHIFFMAN, M.H., JAFFURS , W.J., MARLOW, J., QUINN, A.P. & TEMPLE, G.F. 1990. Temporal association of human papillomavirus infection with cervical cytologic abnormalities. *Am J. Obstet. Gynecol.*, **162** : 645-651

LOW, S.H., THONG, T.W., HO, T.H., LEE, Y.S., MORITA, T., SINGH, M., YAP, E.H. & CHAN, Y.C. 1990. Prevalence of human papillomavirus type 16 and 18 in cervical carcinomas : a study by dot and Southern blot hybridization and the

- polymerase chain reaction. *Jpn. J. Cancer Res.*, **8** : 1118 - 1123.
- LUNGU, O., XIAO, W.S., FELIX, J., RICHART, R.M., SILVERSTEIN, S. & WRIGHT, T.C. 1992. Relationship of human papillomavirus type to grade of cervical intraepithelial neoplasia. *J. Am. Med. Assoc.*, **267** : 2493 - 2496.
- MACGREGOR, J.E. & INNES, G. 1980. Carcinoma of penis and cervix (letter). *Lancet I* : 1246 - 1247.
- MAITLAND, N.J., COX, M.F., LYNAS, C., PRIME, S.S., MEANWELL, C.A. & SCULLY, C. 1987. Detection of human papillomavirus DNA in biopsies of human oral tissue. *Br. J. Cancer*, **56** : 245 - 250.
- MALEJCZUK, J., MAJEWSKI, S., JABLONSKA, S., ROGOZINSKI, T.T. & ORTH, G. 1988. Abrogated NK-cell lysis of human papillomavirus (HPV)-16-bearing keratinocytes in patients with pre-cancerous and cancerous HPV-induced anogenital lesions. *Int. J. Cancer*, **43** : 209 - 214.
- MALLON, R.G., WOJEICHOWICZ, D. & DEFENDI, V. 1987. DNA-binding activity of papillomavirus proteins. *J. Virol.*, **61** : 1655 - 1660.
- MANN, V.M., DE LAO, S.L., BRENE, M., BRINTON, L.A., RAWLS, J.A., GREEN, M., REEVES, W.C. & RAWLS, W.E. 1990. Occurance of IgA and IgG antibodies to select peptides representing human papillomavirus type 16 among cervical cancer cases and controls. *Cancer Res.*, **50** : 7815 - 7819.
- MANOS, M.M., TING, Y., WRIGHT, D.K., LEWIS, A.J., BROKER, T.R. & WOLINSKY, S.M. 1989. The use of polymerase chain reaction amplification for the detection of genital human papillomaviruses. *cancer cells*, **7** : 209 - 214.
- MARSHALL, V. 1979. Premalignant and malignant skin tumours in immunosuppressed patients. *Transplantation*, **17** : 272 - 275.
- MARSHALL, J.R., GRAHAM, S., BYERS, T., SWANSON, M. & BRASURE, J. 1983. Diet and smoking in the epidemiology of cancer of the cervix. *J. Natl. Cancer Inst.*, **70** : 847 - 851.
- MARTINEZ, I. 1969. Relationship of squamous cell carcinoma of the cervix uteri to squamous cell carcinoma of the penis among Puerto Rican women married to men with penile carcinoma. *Cancer*, **24** : 777 - 780.
- MATLASHEWSKI, G., BANKS, L., PIM, D. & CRAWFORD, L. 1986. Analysis of human p53 proteins and mRNA levels in normal and transformed cells. *Eur. J. Biochem.*, **154** : 665 - 672.
- MATLASHEWSKI, G., SCHNEIDER, J., BANKS, L., JONES, N., MURRAY, A. & CRAWFORD, L. 1987. Human papillomavirus type 16 DNA cooperates with activated ras in transforming primary cells. *EMBO J.*, **6** : 1741 - 1746.

- MATSUKURA, T., KOI, S. & SUGASE, M. 1989. Both episomal and integrated forms of human papillomavirus type 16 are involved in invasive cervical cancer. *Virology*, **172** : 63 - 72.
- MATSUKURA, T. & SUGASE, M. 1990. Molecular cloning of a novel human papillomavirus (type 58) from an invasive cervical carcinoma. *Virology*, **177** : 833 - 836.
- MCBRIDE, A.A., ROMANCZUK, H. & HOWLEY, P.M. 1991. The papillomavirus E2 regulatory proteins. *J. Biol. Chem.*, **266** : 18411 - 18414.
- MCCANCE, D.J., CAMPION, M.J., CLARKSON, P.K., CHESTER, P.M., JENSKIN, D. & SINGER, A. 1985. Prevalence of human papillomavirus type 16 DNA sequences in cervical intraepithelial neoplasia and invasive carcinoma of the cervix. *Br. J. Obstet. Gynecol.*, **92** : 1101 - 1105.
- MCCONAUGHEY, B.L., LAIRD, C.D. & MCCARTHY, B.J. 1969. Nucleic acid reassociation in formamide. *Biochemistry*, **8** : 3289 - 3295.
- MCINDOE, W.A., MCLEAN, M.R., JONES, R.W. & MULLINS, P.R. 1984. The invasive potential of carcinoma in situ of the cervix. *Obstet. Gynecol.*, **64** : 451 - 458.
- MEANWELL, C.A., COX, M.F., BLACKEDGE, G., MAITLAND, N.J. 1987. HPV 16 DNA in normal and malignant cervical epithelium : Implications for the aethiology and behavior of cervical neoplasia. *Lancet.*, **703** - 707.
- MEIJER, C.J.L.M., VAN DEN BRULE, A.J.C., SNIJders, P.J.F., HELMERHORST, T., KENEMAMS, P. & WALLOOMERS, J.M.M. 1992. Detection of human papillomavirus in cervical scrapes by the polymerase chain reaction in relation to cytology : possible implications for cervical cancer screening. In **The epidemiology of cervical cancer and human papillomavirus**. Munoz, N., Bosch, F. X., Shah, K.V. & Meheus, A. (eds.) IARC Scientific Publication No 119, International Agency for Research on Cancer, Lyon. pp 271 - 282.
- MEISELS, A. & FURTIN, R. 1976. Condylomatous lesions of the cervix and vagina. I. Cytologic Patterns. *Acta Cytol.*, **20** : 505 - 509.
- MEISSELS, A., FORTIN, R., & ROY, M. 1977. Condylomatous lesions of the cervix II. Cytologic, colposcopic and histopathologic study. *Acta Cytol.*, **21** : 379 - 390.
- MEISSELS, A. 1983. The story of a cell. *Acta Cytol.*, **27** : 584 - 596.
- MEISELS, A. 1992. Cytologic diagnosis of human papillomavirus. Influence of age and pregnancy stage. *Acta. Cytol.*, **36 (4)** : 480 - 482.
- MEISSELS, A., FORTIN, R., & ROY, M. 1977. Condylomatous lesions of the cervix II. Cytologic, colposcopic and histopathologic study. *Acta Cytol.*, **21** : 379 - 390.
- MELBYE, M., PALEFSKY, J., GONZALES, J., RYDER, L.P., NIELSEN, H.,

- BERGMANN, O., PINDBORG, J. & BIGGAR, R.J. 1990. Immune status as a determinant of human papillomavirus detection and its association with anal epithelial abnormalities. *Int. J. Cancer*, **46** : 203 - 206.
- MELCHERS, W., VAN DEN BRULE, A.J.C., WLBOOMERS, J.M.M., DE BRUIN, M., HERBRINK, P., MEIJER, C., LINDERMAN, J. & QUINT, W. 1989. Increased detection rate of human papillomavirus in cervical scrapes by the polymerase chain reaction as compared to modified FISH and Southern-blot analysis. *J. Med. Virol.*, **27** : 329 - 335.
- MELNICK, J.L., ALLISON, A.C. & BUTEL, J.S. 1974. Papoviridae. *Intervirology*, **3** : 106 - 120.
- MILLER, L.G., GOLDSKIN, G., MURPHY, M. & GINNS, L.C. 1982. Reversible alterations in immunoregulatory T cells in smoking. *Chest*, **5** : 527 - 529.
- MORIARTY, A.M., ALEXANDER, H., LERNER, R.A. & THORNTON, G.B. 1985. Antibodies to peptides detect new hepatitis B antigen : serological correlation with hepatocellular carcinoma. *Science*, **227** : 427 - 432.
- MORRIS, R.G., ARENDTS, M.J., BISHOP, P.E., SIZER, K., DURALL, E. & BIRD, C.C. 1990. Sensitivity of digoxigenin and biotin labelled probes for detection of human papillomavirus by *in situ* hybridization. *J. Clin. Path.*, **43** : 800 - 805.
- MORRISON, E.A.B., VERMUND, S.H., GOLDBERG, G.L., KADISH, A.S., KELLEY, K.F. & BURK, R.D. 1991. Human papillomavirus infection and other risk factors for cervical neoplasia : a case-control study. *Int. J. Cancer*, **49** : 6 - 13.
- MORRISON, E.A.B., GOLDBERG, G.L., KEDISH, A.S. & BURK, R.D. 1992. Polymerase chain reaction detection of human papillomavirus : quantitation may improve clinical utility. *J. Clin. Microbiol.*, **30(10)** : 2539 - 2543.
- MORRISON, W.L. 1975a. Viral warts, herpes simplex and herpes zoster in patients with secondary immune deficiency and neoplasms. *Br. J. Dermatol.*, **92** : 625 - 630.
- MULLEN, D., SILVERBERG, S., PENN, I. & HAMMOND, W. 1976. Squamous cell carcinoma of the skin and lip in renal homograft recipients. *Cancer*, **37** : 729 - 734.
- MULLER, M., VISCIDI, R.P., SUN, Y., GUERRERO, E., HILL, P.M., SHAH, F., BOSCH, X., MUÑOZ, N., GISSMANN, L. & SHAH, K.V. 1992. Antibodies to HPV 16 E6 and E7 proteins as markers for HPV 16 - associated invasive cervical cancer. *Virology*, **187** : 504 - 514.
- MULLIS, K.B. & FALOONA, F.A. 1987. Sensitivity DNA *in vitro* via polymerase-catalysed chain reaction. *Methods, Enzymol.*, **155** : 335 - 350.
- MUNGER, K., PHELPS, W.C., BUBB, V., HOWLEY, P.M. & SCHLEGEL, R. 1989. The E6 and E7 genes of the human papillomavirus type 16 together are necessary and sufficient for trans-formation of primary human keratinocytes. *J.*

Virol., 63 : 4417 - 4421.

MUNOZ, N., BOSCH, X.L. & KALDOR, J.M. 1988. Does human papillomavirus cause cervical cancer? The state of the epidemiological evidence. Br J. Cancer, 57 : 1 - 5.

MUNOZ, N., & BOSCH, F.X. 1989. Epidemiology of cervical cancer. In **Human papillomaviruses and cervical cancer**. Munoz, N., Bosch, F.X. and Jensen, O.M.(eds.). IARC Scientific Publications No. 94, International Agency for Research on Cancer, Lyon. pp 9-39.

MURDOCK, J.B., CASSIDY, L.J., FLETCHER, K., CARDINER, J.W. & MACNAB, J.C.M. 1988. Histological and cytological evidence of viral infection and human papillomavirus type 16 DNA sequences in cervical intraepithelial neoplasia and normal tissue in the west of Scotland : evaluation of treatment policy. Br. Med J., 296 : 381 - 385.

NORHANOM, A.W. & YADAV, M. 1995. Prevalence of cancer in Malaysia. Special issue on Nasopharyngeal Cancer. J. Mal. Soc. Health., 13 : 1 - 13.

NORRBY, E., BIBERFELD, G., CHIODI, F., VON GEGERFELDT, A., NAUCLER, A., PARKS, & LERNER, R. 1987a. Discrimination between antibodies to HIV and to related retroviruses using site-directed serology. Nature, 329 : 248 - 250.

NORRBY, E., MUFSON, M.A., ALEXANDER, H., HOUGHTEN, R.A. & LERNER, R.A. 1987b. Site-directed serology with synthetic peptides representing the large glycoprotein G of respiratory syncytial virus. Proc. Natl. Acad. Sci., 84 : 6572 - 6576.

NUOVO, G.J., FRIEDMAN, D. & RICHART, R.M. 1990. In situ hybridization analysis of human papillomavirus DNA segregation patterns in lesions of the female genital tract. Gynecol. Oncol., 36 : 256 - 262.

NUOVO, G.J., DARFLER, M.M., IMPRAIN, C.C. & BROMLEY, S.E. 1991. Occurrence of multiple types of human papillomavirus in genital tract lesions. Am. J. Pathol., 138(1) : 53 - 58.

OGILVIE, M.M. 1970. Serological studies with human papova (wart) virus. J. Hyg. Camb., 68 : 479 - 483.

ORTH, G., FAVRE, M. & CROISSANT, O. 1977. Characterization of a new type of human papillomavirus that causes skin warts. J. Virol., 24 : 108 - 120.

OSTOR, A.G., PAGANO, R.M., FORTUNE, D.W., CHANEN, W. & ROME, R. 1984. Adenocarcinoma in situ of the cervix. Int. J. Gynecol., 3 : 179 - 190.

OSTROW, R.S., MANIAS, D.A., CLARK, A.B., OKAGAKI, T., TWIGGS, L.B. & FARAS, A.J. 1987. Detection of human papillomavirus DNA in invasive carcinomas of the cervix by in situ hybridization. Cancer Res., 47 : 649 - 653.

- PALEFSKY, J.M., WINKLER, B., RABANUS, J.P., CLARK, C., CHAN, S., NIZET, V. & SCHOOLNIK, G.K. 1991. Characterization of in vivo expression of human papillomavirus type 16 E4 protein in cervical biopsy tissue. *J. Clin. Invest.*, **87** : 2132 - 2141.
- PARAZZINI, F., LA VECCHIA, C., NEGRI, E., CECHETTI, G. & FEDELE, L. 1989. Reproductive factors and the risk of invasive and intraepithelial cervical neoplasia. *Br. J. Cancer*, **59** : 805 - 809.
- PARDUE, M.L. & GALL, J.G. 1969. Molecular hybridization of radioactive DNA to the DNA of cytological preparations. *Proc. Natl. Acad. Sci.*, **64** : 600 - 604.
- PARKIN, D.M., LAARA, E. & mUIR, C.S. 1988. Estimates of the worldwide frequency of sixteen major cancers in 1980. *Int. J. Cancer*, **41** : 184 - 190.
- PARRECO, R., PENN, I., DROEGEMUELLER, W., GREER, B. & MAKOWSKI, E. 1975. Gynecologic and malignancies in immunosuppressed organ homograft recipients. *Obstet. Gynecol.*, **45** : 359 - 364.
- PATER, M.M. & PATER, A. 1985. Human papillomavirus type 16 and 18 sequences in carcinoma cell lines of the cervix. *Virology*, **145** : 313 - 318.
- PATER, M.M., HUGHES, G.A., HYSLOP, D.E., NAKSHATRI, H. & PATER, A. 1988. Glucocorticoid-dependent oncogenic transformation by type 16 but not type 11 human papillomavirus DNA. *Nature*, **335** : 832 - 835.
- PETERS, R.K., THOMAS, D., HAGAN, D.G., MACK, T.M. & HANDERSON, B.E. 1986b. Risk factors for invasive cervical cancer among latinas and non-latinas in Los Angeles County. *J. Natl. Cancer Inst.*, **77** : 1063 - 1077.
- PFISTER, H. 1984. Biology and biochemistry of papillomaviruses. *Rev. Physiol. Biochem. Pharmacol.*, **99** : 111 - 181.
- PFISTER, H. 1987a. Papillomavirus : general description, taxonomy, and classification. In *The papoviridae*. Salzman, N. P. and Howley, P.M. (eds) Plenum Press, New York. pp 1 - 38.
- PFISTER, H. 1987b. Human papillomaviruses and genital cancer. *Adv. Cancer Res.*, **48** : 113 - 147.
- PFISTER, H. & ZUR HAUSEN, H. 1978. Seroepidemiological studies of human papillomavirus (HPV 1) infections. *Int. J. Cancer*, **21** : 161 - 165.
- PHELPS, W.C., YEE, C.L., MUNGER, K. & HOWLEY, P.M. 1988. The human papillomavirus type 16 E7 gene encodes transactivation and transformation fuctions similar to adenovirus Ela. *Cell*, **53** : 539 - 547.
- PILACINSKI, W.P., GLASSMAN, D.L., KRZYZEK, R.A., SADOWSKI, P.L. &

- ROBBINS, A.K. 1984. Cloning and expression in E-coli of the bovine papillomavirus L1 and L2 open reading frames. *Biotechnology*, 2 : 356 - 360.
- PONTA, H., KENNEDY, N., SCROCH, P., HYNES, H. & GRONER, B. 1985. The hormonal response region in the mouse mammary tumour virus long terminal repeat can be dissociated from the proviral promoter and has enhancer properties. *Proc. Natl. Acad. Sci.*, 82 : 1020 - 1024.
- PRAKASH, S.S., REEVES, W.C., SISSON, G.R., BRENES, M., GODOY, J., BRACCHETTI, S., DE BRITTON, R.C. & RAWLS, W.E. 1985. Herpes simplex virus type 2 and human papillomavirus type 16 in cervicitis, dysplasia and invasive cervical carcinoma. *Int. J. Cancer*, 35 : 51 - 57.
- PUROLA, E. & SAVIA, E. 1977. Cytology and gynecologic condyloma acuminatum. *Acta Cytol.*, 21 : 26 - 31.
- PURTILLO, D.T., HALLGREN, H.M. & YUNIS, E.J. 1972. Depressed maternal lymphocyte response to phytohaemagglutinin in human pregnancy. *Lancet*, i : 769 - 771.
- PYRHONEN, S. 1978. Human wart virus antibodies in patients with genital and skin warts. *Acta Dermatovener (Stockholm)*, 58 : 427 - 432.
- PYRHONEN, S., & PENTTINEN, K. 1972. Wart-virus antibodies and the prognosis of wart disease. *Lancet*, 2 : 1330 - 1332.
- PYRHONEN, S., & JOHANSSON, E. 1975. Regression of warts. An immunological study. *Lancet*, 1 : 592 - 595.
- QIAGENOLIST : Application Protocols, 1990. Qiagen Inc. and Diagen GmbH.
- RAKOCZY, P., STERRET, G., KULSKI, J., WHITAKER, D., HUTCHINSON, L., MACKENZIE, J. & PIXLEY, E. 1990. Time trends in the prevalence of human papillomavirus infections in archival papanicolaous smears : analysis by cytology, DNA hybridization, and polymerase chain reaction. *J. Med. Virol.*, 32 : 10 - 17.
- REEVES, W.C., BRINTON, L.A., MARIANA GARCIA, M.S., BRENES, M.M., HERRERO, R., GAITAN, E., TENORIO, F., DE BRITTON, R.C. & RAWLS, W.E. 1989. Human papillomavirus infection and cervical cancer in Latin America. *New England. J. Med.*, 320(22) : 1437 - 1441.
- REEVES, W.C., RAWLS, J.A., GREEN, M. & RAWLS, W.E. 1990. Antibodies to human papillomavirus type 16 in patients with cervical neoplasia. *Lancet*, i : 551 - 552.
- RHEINWALD, J.G. & BECKETT, M.A. 1986. Tumorigenic keratinocyte lines requiring anchorage and fibroblast support cultured from human squamous cell carcinoma. *Cancer Res.*, 41 : 1657 - 1663.

- RIAO, G., FAVRE, M., JEANNEL, D., BOURHIS, J., DOUSSAL, V.L. & ORTH, G. 1990. Association between poor prognosis in early stage invasive cervical carcinomas and non-detection of HPV DNA. *Lancet*, **335** : 1171 - 1174.
- RICHART, R.M. 1990. Clinical commentary on a modified terminology for cervical intraepithelial neoplasia. *Obstet. Gynecol.*, **75** : 131 - 133.
- RICHART, R.M. 1973. Cervical intraepithelial neoplasia. In *Pathol Ann. Sommers S.C. (ed.)*, pp 301 - 328. New York, Appleton-Century-Crafts.
- RICHART, R.M. 1987. Causes and management of cervical intraepithelial neoplasia. *Cancer*, **60** : 1951.
- RICHART, R.M. 1990. Clinical commentary on a modified terminology for cervical intraepithelial neoplasia. *Obstet. Gynecol.*, **75** : 131 - 133.
- RICHART, R.M. & BARRON, B.B. 1969. A follow-up study of patients with cervical dysplasia. *Am. J. Obstet. Gynecol.*, **105** : 386.
- RIGBY, P.W.J., DIECKMANN, M., RHODES, C. & BERG, P. 1977. Labeling deoxyribonucleic acid to high specific activity in vitro by nick translation with DNA polymerase 1. *J. Mol. Biol.*, **113** : 237 - 241.
- ROMAN, A. & FIFE, K. 1989. Human papillomaviruses : are we ready to type ? *Clin. Microbiol. Rev.*, **2** : 166 - 190.
- ROMANCZUK, H., VILLA, L.L., SCHLEGEL, R. & HOWLEY, P. 1991. *J. Virol.*, **65** : 2739 - 2744.
- ROTKIN, J.D. & CAMERON, J.R. 1968. Clusters of variables influencing risk of cervical cancer. *Cancer*, **21** : 663 - 671.
- RUDLINGER, R., SMITH, I., BUNNEY, M. & HUNTER, J. 1986. Human papillomavirus infections in a group of renal transplant recipients. *Br. J. Dermatol.*, **115** : 681 - 692.
- SAIKI, R.K., FALOONA, F., SCHARF, S., MULLIS, K.B., THORN, G.T., ERLICH, H.A. & ARNHEIM, N. 1985. Enzymatic amplification of  $\beta$ -genomic sequences and restriction analysis for diagnosis of sickle cell anemia. *Science*, **230** : 596 - 601.
- SAIKI, R.K., GELFAND, D.H., STOFFEL, S., SCHARF, S.J., HIGUCHI, R., THORN, G.T., MULLIS, K.B. & ERLICH, H.A. 1988. Primer-directed enzymatic amplification of DNA with a thermostable DNA polymerase. *Science*, **239** : 487 - 491.
- SAITO, J., YUTSUDO, M., INOVE, M., UEDA, G., TANIZAWA, O. & HAKURA, A. 1987. New human papillomavirus sequences in female genital tumours from Japanese patients. *Jpn. J. Cancer Res.*, **78** : 1081 - 1087.

- SANTUCCI, S., ANDROPHY, E.J., BONNE-ANDREA, C. & CLERTANT, P. 1990. Proteins encoded by the bovine papillomavirus E1 open reading frame : expression in heterologous systems and in virally transformed cells. *J. Virol.*, **64** : 6027 - 6039.
- SASSON, I.M., HELLBERG, D., HALEY, N.J., NILSSON, S., HOFFMAN, D. & WYNDER, E.L. 1985. Cigarette smoking and neoplasia of the uterine cervix : smoke constituents in cervical mucus. *N. Engl. J. Med.*, **312** : 315.
- SATO, S., OKAGAKI, T., CLARK, B.A., TWIGGS, L.B., FUKUSHIMA, M., OSTOW, R.S. & FARAS, A.J. 1987. Sensitivity of koilocytosis, immunocytochemistry, and electron microscopy as compared to DNA hybridization in detecting human papillomavirus in cervical and vaginal condyloma and intraepithelial neoplasia. *Int. J. Gynecol. Pathol.*, **5** : 297 - 307.
- SAVAGE, E. 1986. Cervical Dysplasia and Cancer. In **Essentials of Obstetrics and Gynecology**. Hacker, N.F. and Moore, J.G.(eds.). W.B. Saunders Co., Philadelphia pp 475 - 487.
- SCALA, G., ALLARENA, P., DJEN, J.Y., KASAHARA, T. & ORTALDO, J.R. 1984. Human large granular lymphocytes are potent producers of interleukin 1. *Nature*, **309** : 57 - 59.
- SCHEFFNER, M., WERNESS, B.A., HUIREGTSE, J.M., LEVINE, A.J. & HOWLEY, P.M. 1990. The E6 oncoprotein encoded by human papillomavirus types 16 and 18 promotes the degradation of p53. *Cell*, **63** : 1129 - 1136.
- SCHILLER, J.T., VASS, W.C. & LOWY, D.R. 1984. Identification of a second transforming region in bovine papillomavirus DNA. *Proc. Natl. Acad. Sci., USA*, **81** : 7880 - 7884.
- SCHILLER, J.T., VASS, W.C., VOUSDEN, K.H., & LOWY, D.R. 1986. The E5 open reading frame of bovine papillomavirus type 1 encodes a transforming gene. *J. Virol.*, **57** : 1 - 6.
- SCHLEGEGL, R., WADE-GLASS, M., RABSON, M.S., & YANG, Y.C. 1986. The E5 transforming gene of bivine papillomavirus encodes a small hydrophobic protein. *Science*, **233** : 464 - 467.
- SCHLEGEGL, R., PHELPS, W.C., ZHANG, Y.L. & BARBOSA, M. 1988. Quantitative keratinocyte assay detects two biological activities of human papillomavirus DNA and identifies viral types associated with cervical carcinoma. *EMBO J.*, **7** : 3181 - 3187.
- SCHMELZ, I. 1971. Nicotine and other tobacco alkaloids. In **Naturally occurring insecticides**. Jacobson, M.(ed.). New York
- SCHMITT, J., SCHLEHOFER, J.R., MERGENER, K., GISSMANN, L. & ZUR HAUSEN, H. 1989. Amplification of bovine papillomavirus DNA by N-methyl-N-nitro-N-nitroguanidine, ultraviolet irradiation, or infection with herpes simplex virus. *Virology*, **172** : 73 - 81.

- SCHMITZ, G.G., WALTER, T., SEIBL, R. & KESSLER, C. 1991. Nonradioactive labeling of oligonucleotids in vitro with the hapten digoxigenin by tailing with terminal transferase. *Anal. Biochem.*, **192** : 222 - 231.
- SCHNEIDER, V., KAY, S. & LEE, M.M., 1983. Immunosuppression as a high-risk factor in the development of condyloma acuminatum and squamous neoplasia of the cervix. *Acta Cytol.*, **27** : 220 - 224.
- SCHNEIDER, A., KRAUS, H., SCHUHMAN, R. & GISSMAN, L.. 1985. Papillomavirus infection of the lower genital tract : detection of viral DNA in gynecological swabs. *Int. J. Cancer*, **35** : 443 - 448.
- SCHNEIDER, A., OTZ, M. & GISSMANN, L. 1987. Increased of papillomavirus in the lower genital tract of pregnancy women. *Int J. cancer*, **40** : 198 - 201.
- SCHNEIDER, A., & KOUTSKY, L. 1992. Natural history and epidemiological features of genital HPV infection. In **The epidemiology of cervical cancer and human papillomavirus** Munoz, N., Bosch, F.X., Shah, K.V. and Meheus, A. (eds). IARC Scientific Publications, No. 119. International Agency for Research on Cancer, Lyon. pp 23 - 52.
- SCHNEIDER-GADICKE, A. & SCHWARZ, E. 1986. Different human cervical carcinoma cell lines show similar transcription patterns of human papillomavirus type 18 early genes. *EMBO J.*, **5** : 2285 - 2292.
- SCHOLL, S.M., KINGSLEY-PILLERS, E.M., ROBINSON, R.E. & FARREL, P.J. 1985. Prevalence of human papillomavirus type 16 DNA in cervical carcinoma samples in East Anglia. *Int. J. Cancer*, **35** : 215 - 218.
- SCHWARZ, E., DURST, M., DEMANKOWSKI, C., LATTERMANN, O., ZECH, R., WOLFSBERGER, E., SUHAI, S. & ZUR HAUSEN, H. 1983. DNA sequence and genome organization of genital human pallomavirus type 6b. *EMBO J.*, **2** : 2341 - 2348.
- SCHWARZ, E., FREESE, U.K., GISSMANN, L., MAYER, W., ROGENBUCK, B., STREMLAU, A. & ZUR HAUSEN, H. 1985. Structure and transcription of human papillomavirus sequences in cervical carcinoma cells. *Nature*, **314** : 111 - 114.
- SCHWARZ, E., SCHNEIDER-GADICKE, A., ROGENBUCK, B., MAYER, W., GISSMAN, L. & ZUR HAUSEN, H. 1986. Expression of human papillomavirus DNA in cervical carcinoma cell lines. In **Viral etiology of cervical cancer**. Peter, R. and zur Hausen, H.(eds.) CSH Lab. Cold Spring Harbor pp 281-290.
- SEBBELOV, A.M., KJORSTAD, K.E., ABELER, V.M. & NORILD, B. 1991. The prevalence of human papillomavirus type 16 and 18 DNA in cervical cancer in different age groups : A study on the incidental cases of cervical cancer in Norway in 1983. *Gynecol. Oncol.*, **41** : 141 - 148.
- SEEDORF, K., OLTERSDORF, T., KRAMMER, G. & ROWEKAMP, W. 1987.

Identification of early proteins of the human papillomaviruses type 16 (HPV 16) and type 18 (HPV 18) in cervical carcinoma cells. *EMBO J.*, **6** : 139 - 144.

SHAH, K.V., LEWIS, M.G., JENSON, A.B., KURMAN, R.J. & LANCASTER, W.D. 1980. Papillomavirus and cervical dysplasia. *Lancet ii* : 1190.

SHAH, K.V. & GISSLAND, L. 1989. Experimental evidence on oncogenicity of human papillomaviruses. In *Human papillomavirus and cervical cancer*. Munoz, N., Bosch, F.X. and Jensen, O.M. (eds.) IARC Scientific Publications No. 94. International Agency for Research on Cancer, Lyon. pp. 105 - 112.

SHAH, K.V. & HOWLEY, P.M. 1990. Papillomaviruses. In *Virology* Fields, B.N., Knipe, D.M. et al.(eds.) Raven Press, Ltd., New York pp 1651 - 1675..

SHELLEY, W. & JUHLIN, L. 1976. Langerhans' cells form a reticuloepithelial trap for external contact allergens. *Nature*, **261** : 46 - 47.

SHIBATA, D., MARTIN, W.J., APPLEMAN, M.D., CAUSEY, D.M., LEEDOM, J.M. & ARNHEIM, N. 1988. Detection of cytomegalovirus DNA in peripheral blood of patients infected with human immunodeficiency virus. *J. Infect. Dis.*, **158** : 1185 - 1191.

SHIRASAWA, H., TOMITA, Y., SEKIYA, S., TAKAMIZAWA, H. & SIMIZU, B. 1987. Integration and transcription of human papillomavirus type 16 and 18 sequences in cell lines derived from cervical carcinomas. *J. Gen. Virol.*, **68** : 583 - 591.

SHOKRI-TABIBZADEH, S., KOSS, L., MOLNAR, J. & ROMMEY, S. 1981. Association of human papillomavirus with neoplastic processes in the genital tract of four women with impaired immunity. *Gynecol. Oncol.*, **12** : 129 - 140.

SHOPE, R. 1933. Infectious papillomatosis of rabbits. *J. Exp. Med.*, **58** : 607 - 624.

SINGER, A. 1975. The urine cervix from adolescence to the menopause. *Br J. Obstet. Gynaecol.*, **82** : 81 - 99.

SKEGG, D.C.C., CORWIN, P.A., PAUL, C. & DOLL, R. 1982. Importance of the male factor in cancer of the cervix. *Lancet, II* : 581.

SLATTERY, M.L., ROBINSON, L.M., SCHUMAN, K.L., FRENCH, T.K., ABBOT, R.M., OVERALL, J.C., JR & GARDNER, J.W. 1989b. Cigarette smoking and exposure to passive smoke are risk factors for cervical cancer. *J. Am., Med. Ass.*, **261** : 1593 - 1598.

SLATTERY, M.L., OVERALL, J.C., ABBORT, T.M., FRENCH, T.K., ROBISON, L.M. & GARDNER, J. 1989a. Sexual activity, contraception, genital infections, and cervical cancer: Support for a sexually transmitted disease hypothesis. *Am. J. Epidemiol.*, **130** : 248 - 258.

SLATTERY, M.L., ABBORT, T.M., OVERALL, J.C., JR, ROBINSON, L.M., FRENCH, T.K., JOLLES, C., GARDNER, J.W. & WEST, D.W. 1990. Dietary

vitamins A, C, and R and selenium as risk factors for cervical cancer. *Epidemiology*, **1** : 8 - 15.

**SMITH, K.T. & CAMPO, M.S.** 1985. The biology of papillomaviruses and their role in oncogenesis. *Anticancer Res.*, **5** : 31 - 48.

**SMITH, S.R., NASO, R.B., ROSEN, J., WHALLEY, A., HOM, J.A., SPECTOR, S. & RICHMAN, D.D.** 1987. Antibody to a synthetic oligopeptides in subjects at risk for human immunodeficiency virus infection. *J. Clin. Microbiol.*, **25** : 1498 - 1504.

**SMITS, M.L., RAADSHEER, E., ROOD, I., MEHENDALE, S., SLATER, R.M., VAN DER NOORDAA, J. & TER SCHEGGET, J.** 1988. Induction of anchorage-independent growth of human embryonic fibroblasts with a deletion in the short arm of chromosome 11 by human papillomavirus type 16 DNA. *J. Virol.*, **62** : 4538 - 4543.

**SMOTKIN, D., BEREK, J.S., HACKER, N.F. & WETTSTEIN, F.O.** 1980. Human papillomavirus deoxyribonucleic acid in adenocarcinoma and adeno-squamous carcinoma of the uterine cervix. *Obstet. Gynecol.*, **68** : 241 - 4.

**SMOTKIN, D. & WETTSTEIN, F.O.** 1986. Transcription of human papillomavirus type 16 early gene in a cervical cancer and a cancer-derived cell line and identification of the E7 protein. *Proc. Natl. Acad. Sci., USA.*, **83** : 4680 - 4684.

**SNIJDERS, P.J.F., VAN DEN BRULE, A.J.C., SCHRIJNEMAKERS, H.F.J., SNOW, G., MEIJER, C.J.L.M. & WALBOOMERS, J.M.M.** 1990. The use of general primers in the polymerase chain reaction permits the detection of a broad spectrum of human papillomavirus genotypes. *J. Gen. Virol.*, **71** : 173 - 181.

**SOUTHERN, E.M.** 1975. Detection of specific sequences among DNA fragments separated by gel electrophoresis. *J. Mol. Biol.*, **93** : 503 - 517.

**SPALHOLZ, B.A., YANG, Y. & HOWLEY, P.M.** 1985. Transactivation of bovine papillomavirus transcriptional regulatory element by the E2 gene product. *Cell*, **42** : 183 - 191.

**STEREITT, G.F., ALESSANDRI, L.M., PIXLEY, E. & KULSKI, J.K.** 1987. Assessment of precancerous lesions of the uterine cervix for evidence of human papillomavirus infection : A histological and immunohistochemical study. *Pathology*, **19** : 84 - 90.

**STERN, E. & COFFELT, C.F.** 1977. Steroid contraceptive use and cervical dysplasia : increase risk of progression. *Science (Wash. DC)*, **196** : 1460 - 1462.

**STINGL, G., KATZ, S., GREEN, I. & SHERACH, E.M.** 1980. The functional role of Langerhans' cells. *J. Invest. Dermatol.*, **74** : 315 - 318.

**STOLER, M.H., & BROKER, T.R.** 1986. In situ hybridization detection of human papillomavirus DNAs and messenger RNAs in genital condylomas and a cervical

carcinoma. *Hum. Pathol.*, **17** : 1250 - 1258.

**STOLER, M.H., RHODES, C.R., WHIBECK, A., CHOW, L.T. & BROKER, T.R.** 1990. Gene expression of HPV types 16 and 18 in cervical neoplasia. In **Papillomaviruses**. Howley, P.M. & Broker, T.R. (eds.) Wiley-Leiss, New York p1.

**STOREY, A., PIM, D., MURRAY, A., OSBORN, K., BANKS, L. & CRAWFORD, L.** 1988. Comparison of the in vitro transforming activities of human papillomavirus types. *EMBP J.*, **7** : 1815 - 1820.

**STRIKE, D.G., BONNEZ, W., ROSE, R.C. & REICHMAN, R.C.** 1989. Expression in *Escherichia coli* of seven DNA fragments comprising of the complete L1 and L2 open reading frames of human papillomavirus type 6b and localization of the common antigen region. *J. Gen. Virol.*, **70** : 543 - 555.

**SUCHANKOVA, A., RITTER, O., KRCHNAK, V., KALOS, Z., HAMSIKOVA, E., BRICHACEK, B. & VONKA, V.** 1990. Presence of antibody reactive with synthetic peptide derived from L2 open reading frame of human papillomavirus type 6b and 11 in human sera. *Acta. Virol.*, **34** : 433 - 442.

**SUN, S., THORNER, L., LENTZ, L., MACPEHRSON, P. & BOTCHAN, M.** 1990. Identification of a 68-kilodalton nuclear ATP-binding phosphoprotein encoded by bovine papillomavirus type 1. *J. Virol.*, **64** : 5093 - 5105.

**SUNDBERG, J.P.** 1987. Papillomavirus infections in animals. In **Papillomaviruses and human diseases**. Syrjanen, K., Gissman, L. and Koss, L.G. (eds.) Springer-Verlag, Berlin. pp 40 - 103.

**TAGAMI, H., OKU, T. & IWATSUKI, K.** 1985. Primary tissues culture of spontaneously regressing flat warts. In vitro attack by mononuclear cells against wart-derived epidermal cells. *Cancer*, **55** : 2437 - 2441.

**TAY, S.K., JENKINS, D., MADDOX, P. & SINGER, A.** 1987. Lymphocyte phenotypes in cervical intraepithelial neoplasia and human papillomavirus infection. *Br. J. Obstet. Gynecol.*, **94** : 16 - 21.

**TAY, S.K., JENKINS, D., MADDOX, P., CAMPION, M. & SINGER, A.** 1987. Subpopulations of Langerhans' cells in cervical neoplasia. *J. Obstet. Gynecol.*, **94** : 10 - 15.

**TAY, S.K., JENKINS, D., MADDOX, P., CAMPION, M. & SINGER, A.** 1987. Subpopulations of Langerhans' cells in cervical neoplasia. *Br. J. Obstet. Gynecol.*, **94** : 10 - 14.

**THIERRY, F. & YANIV, M.** 1987. The BPV 1 E2 trans-acting protein can be either an activator or a repressor of the HPV 18 regulatory region. *EMBO J.*, **6** : 3391 - 3397.

**THOMAS, D.B.** 1972. Relationship of oral contraceptives to cervical carcinogenesis. *Obstet. Gynecol.*, **40** : 508 - 518.

- TIDY, J.A., PARRY, G.C.N. & WART, P. 1989. High rate of human papillomavirus type 16 infection in cytologically normal cervices. *Lancet*, i : 434.
- TINDLE, R.W., FERNANDO, G.J.P., STERLING, J.C. & FRAZER, I.H. 1991. A "public" T-helper epitope of the E7 transforming protein of human papillomavirus type 16 provides cognate help for several E7 B cell epitopes from cervical cancer-associated human papillomavirus genotypes. *Proc. Natl. Acad. Sci., USA*, **88** : 5887 - 5891.
- TOMITA, Y., SHIRASAWA, H., & SIMIZU, B. 1987. Expression of human papillomavirus type 6b and 16 L1 open reading frames in *Escherichia coli* : Detection of a 56,000 dalton polypeptide containing genus-specific (common) antigens. *J. Virol.*, **61** : 2389 - 2394.
- TOMITA, Y., SHIRASAWA, H., SEKINE, H. & SIMIZU, B. 1987. Expression of human papillomavirus type 6b and 16 L1 open reading frames in *Escherichia coli* : L2-beta-galactosidase fusion proteins and their antigenic properties. *Virology*, **158** : 8 - 14.
- TUREK, L.P., BYRNE, J.C., LOWY, D.R., DVORETZKY, I., FREIDMAN, R.M. & HOWLEY, P.M. 1982. Interferon induces morphologic reversion with elimination of extrachromosomal viral genomes in bovine papillomavirus-transformed mouse cells. *Proc. Natl. Acad. Sci., USA*, **79** : 7914 - 7918.
- VAN DEN BRULE, A.J.C., SNIJDERRS, P.J.F., GORDIJN, R.L.J., BLEKER, O.P., MEIJER, C.J.L. & WALBOOMERS, J.M.M. 1990. General primer-mediated polymerase chain reaction permits the detection of sequenced and still unsequenced human papillomavirus genotypes in cervical scrapes and carcinomas. *Int. J. Cancer*, **45** : 644 - 649.
- VERREAUULT, R., CHU, J., MANDELSON, M. & SHY, K. 1989. A case-control study of diet and invasive cervical cancer.. *Int. J. Cancer*, **48** : 34 - 38.
- VESSEY, M.P., LAWLESS, M., MCPHERSON, K. & YEATES, D. 1983. Neoplasia of the cervix uteri and contraception : a possible adverse effect of the pill. *Lancet II* : 930 - 934.
- VIAC, J., SCHMITT, D. & THIVOLET, J. 1978. An immunoelectronmicroscopic localization of wart associated antigens present in human papillomavirus (HPV) infected cells. *J. Invest. Derm.*, **70** : 263 - 266.
- VOLLER, A., BIDWELL, D.E. & BARTLETT, A. 1984. Enzyme-linked Immunosorbent Assay (ELISA). A guide with abstracts of microplate application.
- VON KNEBEL DOEBERITZ, M., OLTERDORF, T., SCHWARZ, E. & GISSMAN, L. 1988. Correlation of modified human papillomavirus early gene expression with altered growth properties in C4-1 cervical carcinoma cells. *Cancer Res.*, **48** : 3780 - 3786.
- VYAKARNAM, A., BRENNER, M.K., REITTIE, J.E. & LACHMANN, P.J. 1985.

Human cell clones with NK activity activate B cells and secrete B cell differentiation factor. *Eur. J. Immunol.*, **15** : 606 - 610.

WAGNER, H., FELDMANN, M., BOYLE, W. & SCHRADER, J.W. 1972. Cell mediated immune response in vitro. The requirement for macrophage in cytotoxic reactions against cell-bound subcellular alloantigen. *J. Exp. Med.*, **136** : 331 - 343.

WAGNER, H., IKENBERG, H., BOHM, N. & GISSMANN, L. 1984. Identification of human papillomavirus in cervical swabs by deoxyribonucleic acid in situ hybridization. *Obstet. Gynecol.*, **64** : 767 - 772.

WATANABE, S., KANDA, T. & YOSHIKE, K. 1989. Human papillomavirus type 16 transformation of primary human embryonic fibroblasts requires expression of open reading frames E6 and E7. *J. Virol.*, **63** : 965 - 969.

WERNESS, B.A., LEVINE, A.J. & HOWLEY, P.M. 1990. Association of human papillomavirus type 16 and 18 E6 proteins with p53. *Science*, **248** : 76 - 79.

WETMUR, J.G. & DAVIDSON, N. 1986. Kinetics of renaturation of DNA. *J. Mol. Biol.*, **31** : 349 - 370.

WHO Collaborative Study of Neoplasia and Steroid Contraceptives. (1985). Invasive cervical cancer and combined oral contraceptives. *Br. Med. J.*, **290** : 961 - 965.

WHO MEETING 1987. Genital human papillomavirus infections and cancer - In Memorandum from a World Health Organization Meeting. *Bull. WHO*, **65** : 817 - 827.

WILCZYNKI, S.P., BERGEN, S. & WALKER, J.S. 1988. Human papillomaviruses and cervical cancer : analysis of histopathologic features associated with different viral types. *Hum. Pathol.*, **19** : 697 - 704.

WINDELSTEIN, W. 1977. Smoking and cancer of the uterine cervix : Hypothesis. *Am. J. Epidemiol.*, **106** : 257.

WINKLER, B.W., CRUM, C.P., FUJII, T., FERENCZY, A., BOON, M.E., BRAUN, L., LANCASTER, W.D. & RICHARD, R.M. 1984. Koilocytotic lesions of the cervix : the relationship of mitotic abnormalities to the presence of papillomavirus antigens and nuclear DNA content. *Cancer*, **53** : 1081.

WOODRUFF, J.D. & PETERSON, W.F. 1958. Condylomata acuminata of the cervix. *Am. J. Obstet. Gynecol.*, **75** : 1354 - 1362.

WOODRUFF, J.D., BRAUN, L., CAVALIERI, R., GUPTA, P., PASS, F. & SHAH, K.V. 1980. Immunologic identification of papillomavirus antigen in condyloma tissues from the female genital tract. *Obstet. Gynecol.*, **56(6)** : 727 - 732.

WOODWORTH, C., WAGGONER, S., BARNES, W., STOLER, M. & DIPAOLO, J. 1990. Human cervical and foreskin epithelial cells immortalized by human

papillomavirus DNA's exhibit dysplastic differentiation in vivo. *Cancer Res.*, **50** : 3709 - 3715.

**WOODWORTH, C., CHENG, S., SIMPSON, S., HAMACHER, L., CHOW, L. & BROKER, T.** 1992. Recombinant retroviruses encoding human papillomavirus type 18 E6 and E7 genes stimulate proliferation and delay differentiation of human keratinocytes early after infection. *Oncogene*, **7** : 619 - 626.

**WRIGHT, T.C. & RICHART, R.M.** 1989. Role of human papillomavirus in the pathogenesis of genital tract warts and cancer. *Obstet. Gynecol.*, **151**-164.

**WRIGHT, D.K. & MANOS, M.M.** 1990. Sample preparation from paraffin-embedded tissues. In *PCR Protocols : A guide to methods and applications*. Innis, M.A., Gelfand, D.H., Sninsky, D.H. and White, T.J. (eds.) Academic Press, San Diego, pp. 153 - 158.

**YAEGASHI, N., JENISON, S.A., BATRA, M. & GALLOWAY, D.A.** 1992. Human antibodies recognize multiple distinct type-specific and cross-reactive regions of minor capsid proteins of HPV types 6 and 11. *J. Virol.*, **66** : 2008 - 2019.

**YAJIMA, H., NODA, T., DE VILLIERS, E.M., JAJIMA, A., YAMAMOTO, K. & NODA, K.** 1988. Isolation of a new type of human papillomavirus (HPV 52b) with a transforming activity from cervical cancer tissue. *Cancer Res.*, **48** : 7164 - 7172.

**YASUMOTO, S., BURKHARDT, A.L., DONIGER, J. & DIPAOLO, J.A.** 1986. Human papillomavirus type 16 DNA-induced malignant transformation of NIH 3T3 cells. *J. Virol.*, **57** : 572 - 577.

**YEE, C., KRISNAN-HEWLETT, I., BAKER, C., SCHLEGEL, R. & HOWLEY, P.** 1985. Presence and expression of HPV sequences in human cervical carcinoma cell lines. *Am. J. Pathol.*, **119** : 361 - 366.

**YOSHIKAWA, H., MATSUKURA, T., YAMAMOTO, E., KAWANA, T., MIZUNO, M. & YOSHIKE, K.** 1985. Occurrence of human papillomavirus type 16 and 18 DNA patients in cervical carcinomas from Japan : age of patients and histological type of carcinomas. *Jpn. J. Cancer Res.*, **76** : 667 - 671.

**YOUNG, L.S., BEVAN, I.S., JOHNSON, M.A., BLOMFIELD, P.I., BROMIDGE, T., MAITLAND, N.J. & WOODMAN, C.B.J.** 1989. The polymerase chain reaction : a new epidemiological tool for investigating cervical human papillomavirus infection. *Br. Med. J.*, **298** : 14 - 18.

**ZHANG, Z.F., PARKIN, D.M., YU, S.Z., ESTEVE, J. & YANG, X.Z.** 1989. Risk factors for cancer of the cervix in a rural Chinese population. *Int. J. Cancer*, **43** : 762 - 767.

**ZHOU, J.J., DOORBAR, X.Y., SUN, L.V., CRAWFORD, L.V., MALEAN, C.S. & FRAZER, I.H.** 1991. Identification of the nuclear localization signal of human papillomavirus type 16 L1 protein. *Virology*, **185** : 625 - 632.

- ZIEGLER, R.G., BRINTON, L.A., HAMMAN, R.F., LEHMAN, H.F., LEVIRE, R.S., MALLIN, K., NORMAN, S.A., ROSENTHAL, J.F., TRUMBLE, A.C. & HOOVER, R.N. 1990. Diet and the risk of invasive cervical cancer among white women in the United States. *Am. J. Epidemiol.* **132** : 432 - 445.
- ZUNZUNEGUI, M.V., KING, M.C., CORIA, C.F. & CHARLET, J. 1986. Male influences on cervical cancer risk.
- ZUR HAUSEN, H. 1976. Condylomata acuminata and human genital cancer. *Cancer Res.*, **36** : 530.
- ZUR HAUSEN, H. 1977. Papillomaviruses and their possible role in squamous cell carcinoma. *Top. Microbiol. Immunol.*, **78** : 1 - 30.
- ZUR HAUSEN, H. 1982. Human genital cancer : Synergism between two virus infections or synergism between a virus infections and initiating events. *Lancet*, ii : 1370 - 1372.
- ZUR HAUSEN, H. 1986a. Genital papillomavirus infections. In **Viruses and Cancer**. Robgy, P.W.J. and Wilkie, M. (eds.) Cambridge University Press, pp 83 - 89.
- ZUR HAUSEN, H. 1986b. Intracellular surveillance of persisting viral infections. Human genital cancer results from deficient control of papillomavirus gene expression. *Lancet*, ii : 489 - 491.
- ZUR HAUSEN, H. 1989. Papillomaviruses as carcinomaviruses. *Adv. Viral Onc.*, **8** : 1 - 26.
- ZUR HAUSEN, H. 1991. Papillomavirus / host cell interactions in the pathogenesis of anogenital cancer. In **Origins of human cancer** : a comprehensive review. Cold Spring Harbor Laboratory Press pp 685 - 705.
- ZUR HAUSEN, H. 1992. Immortalization and malignant transformation by human pathogenic papillomaviruses. In **Malignant transformation by DNA viruses**. Doerfler, W and Bohm, P.(eds.) VCH Publishers, Weiheim, New York, Basel, Cambridge pp 55 - 68.
- ZUR HAUSEN, H. & SCHULTE-HOLTHAUSEN, H. 1970. Presence of Epstein-Barr virus nuclei acid homology in a "virus free" line of Burkitt tumour cells. *Nature*, **227** : 245 - 248.
- ZUR HAUSEN, H., MEINHOF, W., SCHEIBER, W. & BORNKAMM, G.W. 1974. Attempts to detect virus-specific DNA sequences in human tumours : nucleic acid hybridizations with complementary RNA of human wart virus. *Int. J. Cancer*, **13** : 650 - 656.