Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

PAP smear

(Papanicolaou Test)

Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

PAP test

- Is a screening test to prevent/ detect cancerous processes in endocervical canal
- It reduces the mortality caused by cervical cancer up to 80%

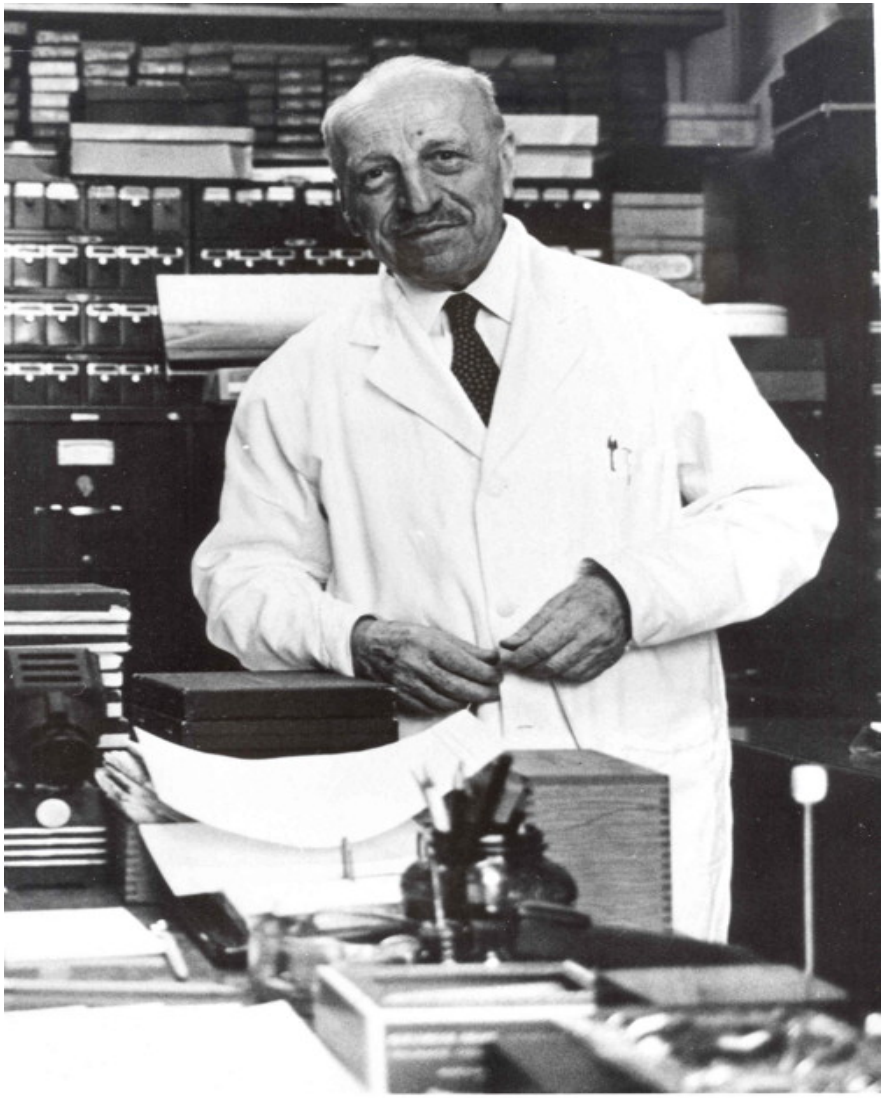
M. Arbyn; et al. (2010). "European Guidelines for Quality Assurance in Cervical Cancer Screening. Second Edition—Summary Document". Annals of Oncology 21 (3): 448–458.)

Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

PAP test

- The test was invented by and named after the Greek doctor Georgios Papanikolaou in 1928



Koss, Leopold G. M.D.;(January 2003); Aurel Babes; International Journal of Gynecology Pathology; Volume 22 - Issue 1 - pp 101-102

Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

PAP test

- Aurel Babeş of Romania independently made similar discoveries in 1927

Koss, Leopold G. M.D.;(January 2003); Aurel Babes; International Journal of Gynecology Pathology; Volume 22 - Issue 1 - pp 101-102

Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

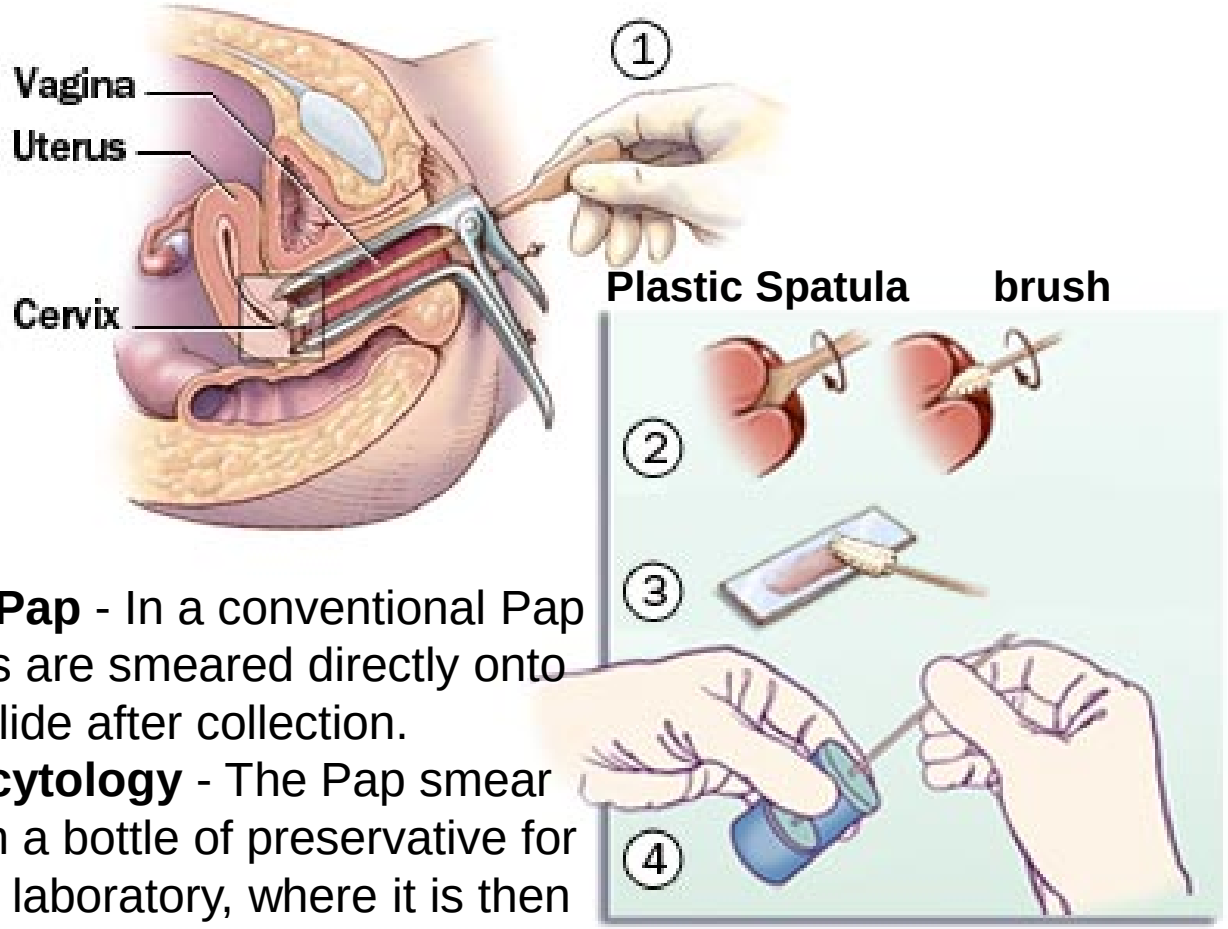
MEDIZINISCHE UNIVERSITÄT WIEN

PAP test

- Papanicolaou's name was repeatedly submitted to the Nobel Committee in 1950s and rejected every time.
- Because the investigator discovered Babeş' contributions that had never been cited by Papanicolaou and duly reported this fact to the Committee, which then rejected Papanicolaou's Nobel award.

Koss, Leopold G. M.D.;(January 2003); Aurel Babes; International Journal of Gynecology Pathology; Volume 22 - Issue 1 - pp 101-102

PAP test



Conventional Pap - In a conventional Pap smear, samples are smeared directly onto a microscope slide after collection.

Liquid based cytology - The Pap smear sample is put in a bottle of preservative for transport to the laboratory, where it is then smeared on the slide.

PAP test

- Abnormal results are grouped as follows:

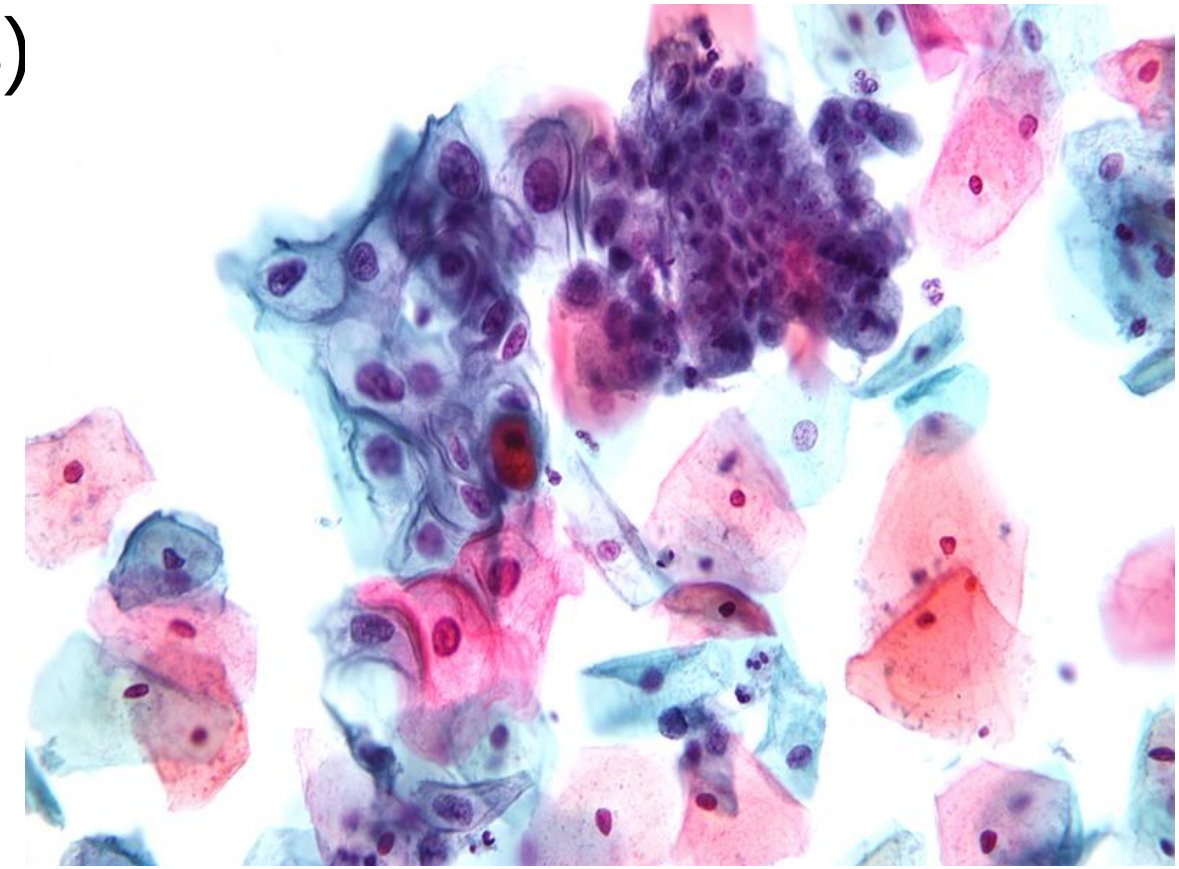
- Atypical squamous cells of undetermined significance (ASCUS) (typically 2–5% of Pap results)

  (atypical cells of uncertain significance)

PAP test

- Low-grade dysplasia (LSIL) (about 2% of PAP results)

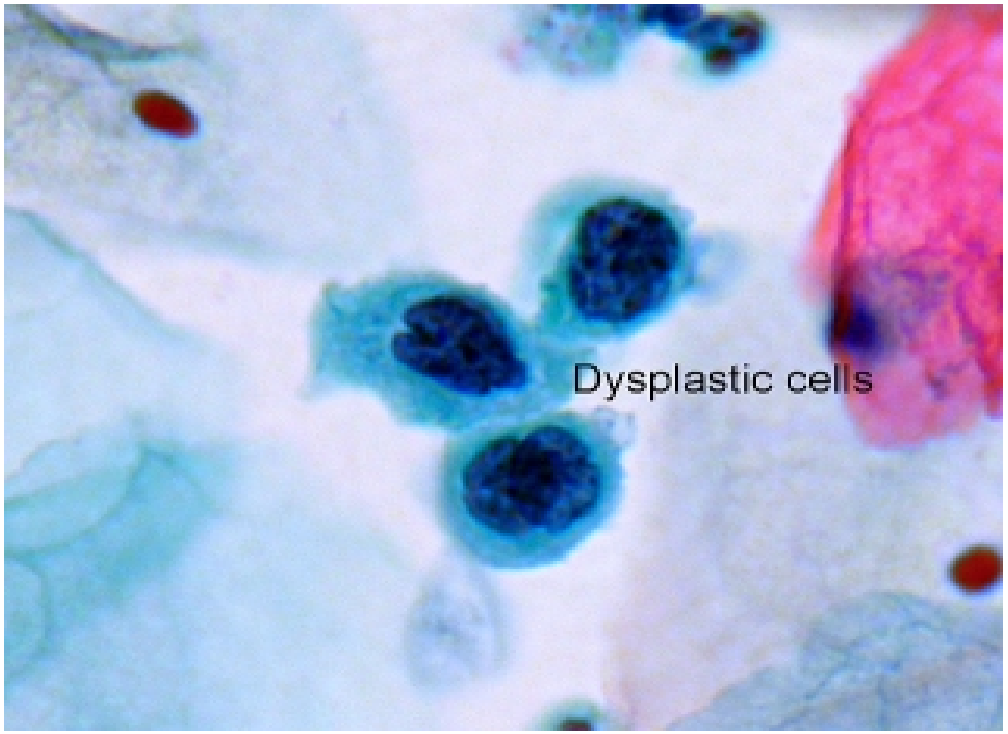
precancerous changes are likely to be present
But spontaneously regress without ever leading to cervical cancer



PAP test

- High-grade dysplasia (HSIL) (about 0.5% of PAP results)

The risk of cervical cancer is higher



Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

PAP test

- Carcinoma in situ (CIS)

- Atypical glandular cells (AGC)

Cell changes that may lead to cancer are seen in cervical canal or inside the uterus

PAP test

Due to American Cancer Society Screening should start:

- 3 years after the first sexual intercourse

or

- At the age of 21

Saslow, D, et al. (2012). "American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology Screening Guidelines for the Prevention and Early Detection of Cervical Cancer". Journal of Lower Genital Tract Disease 16 (3)

Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

PAP test

- Repeat every 3 years until the age 30
- Over the age 30 with both normal PAP smear and HPV test, every 5 years

Saslow, D, et al. (2012). "American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology Screening Guidelines for the Prevention and Early Detection of Cervical Cancer". Journal of Lower Genital Tract Disease 16 (3)

Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

PAP test

- Precaution:

Do not do for 24 hours before the test:

- Douche (douching should never be done)
- Have sexual intercourse
- Take a bath
- Use tampons
- Menstrual blood may make the Pap smear results less accurate

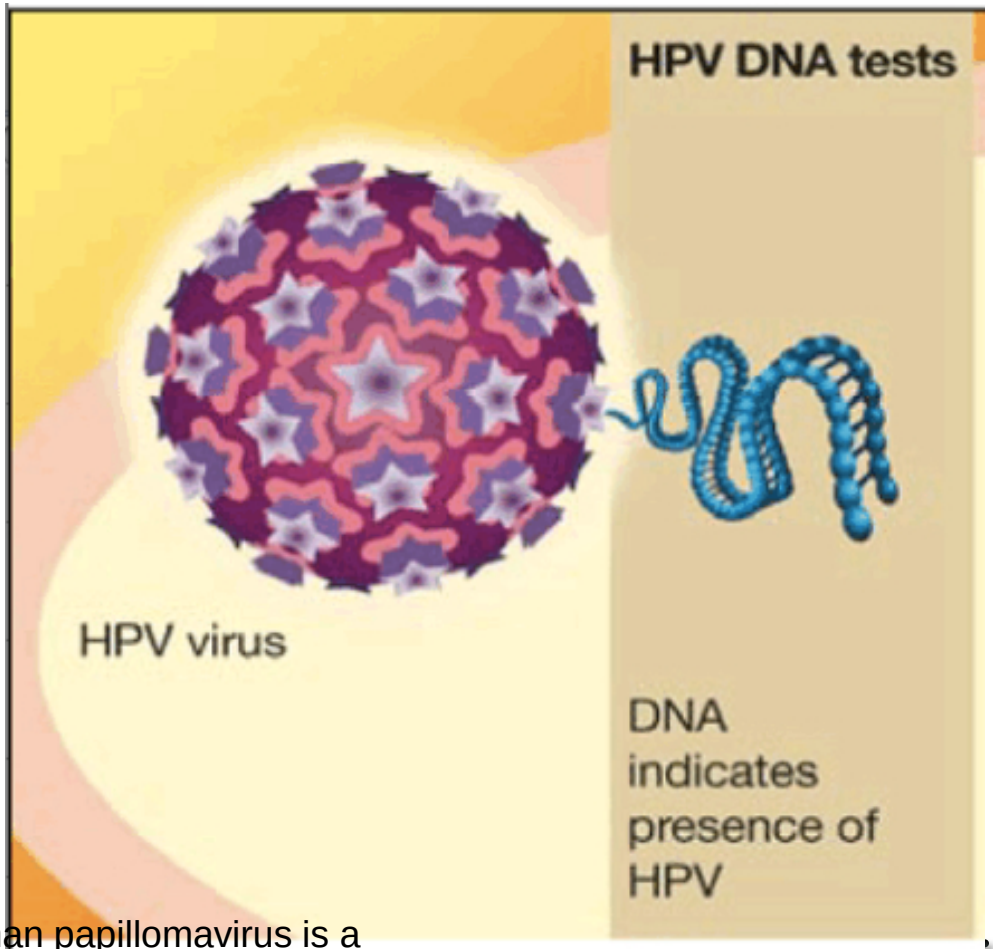
Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

HPV

Human Papilloma Virus

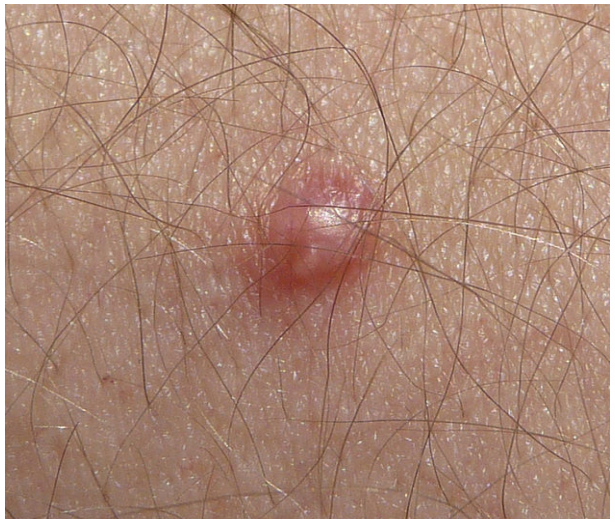
HPV is a DNA Virus. Its infection is a cause of nearly all cases of cervical cancer.



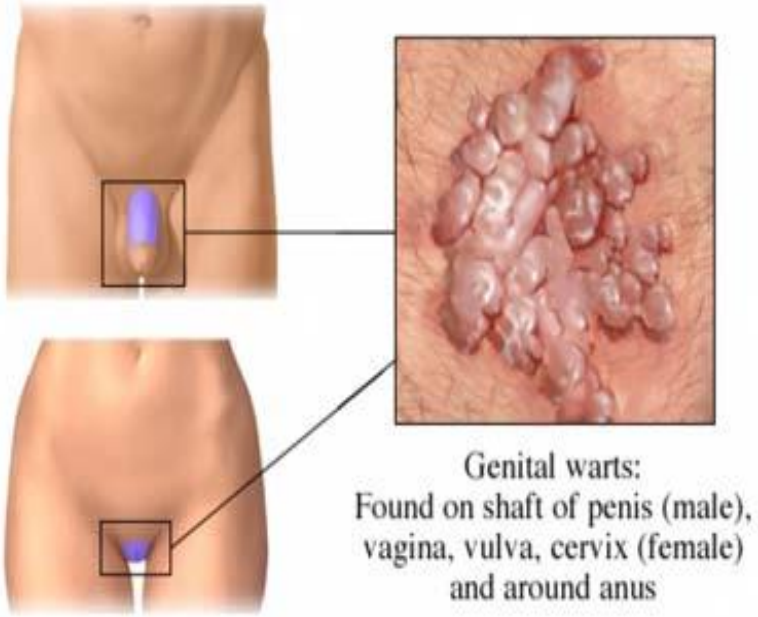
Walboomers JM, Jacobs MV, Manos MM (1999). "Human papillomavirus is a necessary cause of invasive cervical cancer worldwide". J. Pathol. 189 (1): 12–9

HPV

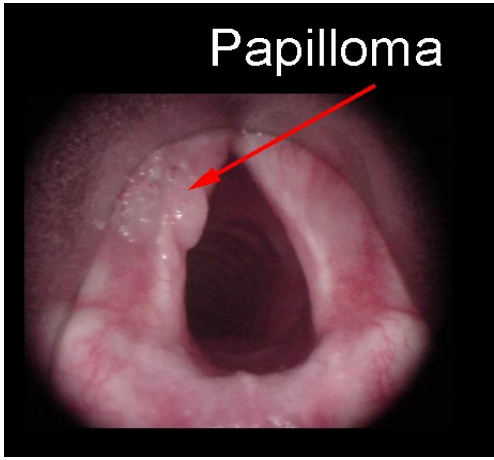
- Worldwide Infection prev.: 9-13% = 630 million
- Prevalence of clinically pre-malignant infections: 28-40 Million



Cutaneous HPV inf.



Genital HPV inf.



Throat cancer

WHO; http://www.who.int/vaccines/en/hpvrd.shtml

HPV

Transmission:

- Parental
- Sexual (genital infections)
- Blood products

Hernandez, B. Y.; Wilkens, L. R.; Zhu, X.; Thompson, P.; McDuffie, K.; Shvetsov, Y. B.; Kamemoto, L. E.; Killeen, J.; Ning, L.; Goodman, M. T. (2008). "Transmission of human papillomavirus in heterosexual couples". *Emerging infectious diseases* **14** (6): 888–894

Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

HPV

- Over 120 HPV types have been identified
- HPV-5 is discovered in 1978 by Stefania Jablonska and Gerard Orth

Human papillomaviruses. World Health Organization, International Agency for Research on Cancer. 2007. ISBN 978-92-832-1290-4

Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

HPV

- carcinogenic "high-risk" sexually transmitted HPVs are:
- Types **16**, **18**, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73, and 82

Chaturvedi, Anil; Maura L. Gillison (March 4, 2010). "Human Papillomavirus and Head and Neck Cancer". In Andrew F. Olshan. Epidemiology, Pathogenesis, and Prevention of Head and Neck Cancer (1st ed.). New York: Springer. ISBN 978-1-4419-1471-2

HPV

- 95% of infected women clear HPV within 18 month
- Prolonged infection with a high-risk type can lead to precancerous developments after 10-15 Years

Cuschieri KS, Cubie HA, Whitley MW, et al. (2005). "Persistent high risk HPV infection associated with development of cervical neoplasia in a prospective population study". J. Clin. Pathol. 58 (9): 946–50

HPV

- Two Vaccines available:
- 1. Gardasil – marketed by merck
- 2. Cervarix – marketed by GlaxoSmithKline
- Both cover the infection with type 16 and 18
- Gardasil also protects against types 6 and 11, which cause 90% of genital warts

Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

Thanks for your attention

Prof. L. G. Koss: "…the lesson is clear: always cite papers written by your predecessors and contemporaries, if you ever wish to obtain the **Nobel Award**"