Claims

1. An *in vitro* method for detecting HPV-induced high-grade precancerous lesions and HPV-induced invasive cancers and non HPV-induced gynaecological and anogenital cancers, said method comprising detection of hypermethylation in the GHSR and/or ZIC1 gene in a cell whereby such hypermethylation indicates the presence of HPV-induced precursor lesions with invasive potential, HPV-induced invasive cancers and nonHPV-induced gynaecological and anogenital cancers.

2. Method according to claim 1, wherein said HPV-induced high-grade precancerous lesion or HPV-induced invasive carcinoma is a high-grade premalignant cervical lesion or invasive cervical cancer.

3. Method according to claim 1 or 2, wherein said HPV-induced invasive cancer is a high-risk HPV-induced invasive cancer.

4. Method according to claim 1, wherein said nonHPV-induced gynaecological cancers is an endometrial cancer.

5. Method according to any one of the preceding claims, wherein said hypermethylation is detected in the CpG rich sequences as indicated in Figures 1 and 2.

6. An *in vitro* method of detecting HPV-induced high-grade precancerous lesion and HPV-induced invasive cancers and nonHPV-induced gynaecological or anogenital cancer according to any of claims 1-5, wherein said hypermethylation is an increased methylation of GHSR and/or ZIC1 CpG rich promoter and/or gene sequences in the test cell as compared to the comparable normal cell

7. Method according to any of claims 1-6, wherein the reagent is a methylation sensitive restriction endonuclease, chosen from the group consisting of BssHII, MspI, NotI and HpaII.