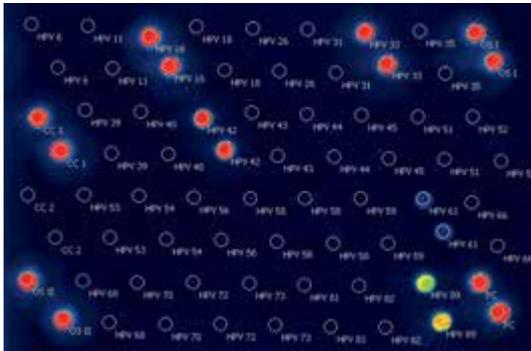




## EUROArray HPV Molecular diagnostic microarray test system



Evaluation using EUROArrayScan

Partial result	Result
Cross contamination control	valid
Chip positive control	valid
HPV 6*	not detected
HPV 11*	not detected
HPV 16*	detected
HPV 18*	not detected
HPV 26*	not detected
HPV 31*	not detected
HPV 33*	not detected
HPV 35*	not detected
HPV 39*	not detected
HPV 42*	not detected
HPV 43*	not detected
HPV 44*	not detected
HPV 45*	not detected
HPV 51*	not detected
HPV 52*	not detected
HPV 53*	not detected
HPV 54*	not detected
HPV 56*	not detected
HPV 58*	not detected
HPV 59*	not detected
HPV 61*	not detected
HPV 66*	not detected
HPV 68*	not detected
HPV 70*	not detected
HPV 72*	not detected
HPV 73*	not detected
HPV 81*	not detected
HPV 82*	not detected
HPV 89*	not detected

Protocol for each individual report

**Intended use:** Detection and typing of all 30 relevant human anogenital high-risk and low-risk papillomaviruses (HPV 6, 11, 16, 18, 26, 31, 33, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 66, 68, 70, 72, 73, 81, 82, 89 (CP6108)) in DNA preparations from cervical smear samples.

**Clinical significance:** Genital human papillomaviruses (HPV) are the most frequently sexually transmitted viruses. The worldwide HPV prevalence is estimated to be 2–44% in women and 4–45% in men. However, the prevalences vary considerably between population groups, depending on culture and sexual activity. HPV only infect epithelial cells, where they replicate in the cell nuclei. HPV can cause unregulated tumour-like growth of the host cells, which can be either benign, with warts forming at the site of infection, or malignant, as in cervical carcinoma.

So far, 30 genital HPV types have been described. They are divided into two groups according to their oncogenic potential: high-risk and low-risk HPV. While high-risk HPV are involved in the development of carcinoma, low-risk HPV alone are only found in non-malignant tissue changes. The WHO has officially classified genotypes 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 and 66 as oncogenic and thus as high-risk HPV. HPV 16 can be detected in 50–60% and HPV 18 in 10–20% of cervical carcinomas. Also further HPV such as 26, 53, 68, 73 are to be considered high-risk HPV. Low-risk viruses include HPV 6 and 11, the main causative agents of genital warts (*Condylomata acuminata*, fig warts). Further low-risk types are 40, 42, 43, 44, 54, 61, 70, 72, 81 and 89 (CP6108). Although infections with low-risk HPV are not potentially lethal, the consequences of the infection, e.g. benign genital warts, can represent a physical and mental impairment for the patient. In Germany, around 1% of people between 15 and 49 years of age are affected. For assessment of the course of HPV infection and the risks involved it is not only important to differentiate between high-risk and low-risk viruses but also to discriminate between the different viruses in the high-risk group.

**Application of the EUROArray HPV:** The EUROArray HPV plays an important role in the early diagnosis of cervical carcinoma. The test system allows the detection and typing of all 30 relevant human anogenital high-risk and low-risk papillomavirus subtypes. The test is based on the detection of oncogenes E6/E7, whose expression is the basis for the malignant transformation of dysplasia.

The use of subtype-specific primer systems and probes in the EUROArray HPV allows the detection and typing of all 30 currently described genital HPV in one test run – namely 18 high risk HPV (16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66, 68, 73, 82) and 12 low risk HPV (6, 11, 40, 42, 43, 44, 54, 61, 72, 81, 89, 70). The EUROArray HPV is extremely easy to perform in comparison to other molecular biological methods – no in-depth molecular biology knowledge is required. Data analysis, data interpretation and electronic archiving are fully automated using the EUROArrayScan software.

### EUROIMMUN IIFT Autoimmune Diagnostics

**Tissue/cell substrates:**  
adrenal gland, monkey  
bladder, rat  
buccal mucosa, monkey\*  
cartilage (trachea), monkey\*  
cerebellum, monkey/rat  
cerebrum, monkey  
Crithidia luciliae  
DNS-bound lactoferrin  
erythrocytes, human\*  
eye, monkey\*  
goblet cells  
granulocytes, human (ethanol-fixed)  
granulocytes, human (formaldehyde-fixed)  
granulocytes, human (methanol-fixed)  
heart, monkey  
HEp-2 cells  
HEp-20-10 cells  
hippocampus, rat  
HLVEC  
hypothalamus, monkey\*  
inner ear, rat\*  
intestine, monkey  
kidney, monkey/mouse/rat  
lacrimal gland, monkey\*  
lip, monkey\*  
liver, monkey/mouse/rat  
lobus temporalis, monkey\*  
lung, monkey\*  
lymph nodes, monkey\*  
lymphocytes, human  
mammary gland, monkey  
nerve, monkey  
nervus opticus, monkey  
oesophagus, monkey/rat  
ovary, monkey  
pancreas, monkey  
parathyroid gland, monkey  
parotid gland, monkey  
pituitary gland, monkey  
placenta, monkey\*  
prostate, monkey\*  
Saccharomyces cerevisiae  
salt-split skin, monkey  
skeletal muscle, monkey  
spermatozoa, human  
spleen, monkey\*  
spinal cord, monkey  
stomach, monkey/mouse/rat  
synovialis, monkey\*  
testis, monkey  
thrombocytes, human  
thymus, monkey\*  
thyroid gland, monkey  
tongue, monkey  
VSM47 cells (F-actin)  
umbilical cord, human

**EUROPLUS substrates:**  
AMA-M2  
BP180-NC16A-4X  
GBM  
gliadin (GAF-3X)  
intrinsic factor  
myeloperoxidase (MPO)  
proteinase 3 (PR3)  
ribosomal P-proteins + Jo-1  
SS-A + SS-B  
SS-B + ribosomal P-proteins + Jo-1  
SS-B + Scl-70 + Jo-1  
thyroglobulin (TG)

**Transfected cells:**  
aquaporin-4  
BP230G  
desmoglein 1 + 3  
GABA receptor B  
GAD65  
glutamate receptor (type NMDA, AMPA1+2)  
NMDA receptor  
phospholipase-A2 receptor (PLA2R)  
rAg 1 + 2 (pancreas antigen 1 + 2)  
VGKC-ass. proteins (Lgi1+Caspr2)

**BIOCHIP Mosaics:**  
ANA global test: HEp-20-10/monkey liver  
Autoantibody Profile: combination of 30 different tissues per slide  
Autoimmune Enzephalitis Mosaic 1:  
glutamate receptor (type NMDA, AMPA1+2)/  
VGKC-ass. proteins (LGI1+CASPR2), GABA-R, B1  
Basic Profile: HEp-20-10/monkey liver/  
rat kidney/rat stomach  
CIBD Profile: monkey pancreas/intest. goblet cells (culture)/  
granulocytes (EOH)/Saccharomyces cerevisiae  
Dermatology Mosaic 7: oesophagus/salt-split skin/  
BP230G/desmoglein 1+3/BP180-NC16A-4X  
EUROPLUS endomysium + gliadin:  
monkey intestine/monkey liver/gliadin (GAF-3X)  
Granulocyte Mosaic 25: granulocytes (EOH/HCHO)/  
granulocytes+HEp-2/MPO/PR3/GBM  
Neuronal Antibody Screen: monkey cerebellum/  
monkey nerve/monkey intestine  
Polyendocrinopathy Mosaic: monkey thyroid/  
monkey pancreas/monkey adrenal/  
monkey ovary/monkey testis/monkey stomach  
Other mosaics also available  
Special substrate combinations  
on request

**Software/Automation:**  
EUROLabOffice  
EUROLabPicture  
EUROLabPattern  
EUROStar III Plus  
EUROLabLiquidHandler  
IF Sprinter  
Sprinter XL

**EUROIMMUN Microarrays**  
**Molecular Genetics:**  
EUROArray HLA-B27 Direct  
EUROArray HLA-DQ2/DQ8  
EUROArray HLA-Cw6  
EUROArray FV/Fl Direct  
EUROArray FV Direct  
EUROArray Fl Direct  
EUROArray HPV  
EUROArray HLA-B57:01 Direct  
EUROArray Haemochromatosis (4 SNP) Direct  
EUROArray Haemochromatosis (2 SNP) Direct

**Software/Automation:**  
Microarray scanner  
EUROArrayScan software

\* Currently not available as IVD in the EU.  
Made in Germany



## EUROIMMUN IIFT Infectious Serology

### Viruses:

Adenoviruses  
Chikungunya virus  
Coxsackieviruses  
Crimean Congo fever virus (CCHFV)  
Cytomegalovirus (CMV)  
Dengue viruses types 1-4 (DENV)  
ECHO virus  
Epstein-Barr virus capsid antigen (EBV-CA)  
Epstein-Barr virus early antigen (EBV-EA)  
Epstein-Barr virus nuclear antigen (EBNA)  
Hantaviruses (types Hantaan, Puumala, Seoul, Saaremaa, Dobrava, Sin Nombre, Andes)  
Herpes simplex virus types 1 and 2 (HSV-1/2)  
Human herpes virus type 6 (HHV-6)  
Influenza v. A  
Influenza v. B  
Japanese encephalitis virus (JEV)  
Measles virus  
Mumps virus  
Parainfluenza viruses types 1-4  
Respiratory syncytial virus (RSV)  
Rift valley fever virus (RVFV)  
Rubella virus  
Sandfly fever virus  
(types Sicilian, Naples, Toscana, Cyprus)  
SARS Coronavirus (SARS-CoV)  
Sindbis virus\*  
Tick-borne encephalitis (TBE) virus  
Usutu virus\*  
Varicella zoster virus (VZV)  
West Nile virus (WNV)  
Yellow fever virus (YFV)

### Bacteria:

Bartonella henselae  
Bartonella quintana  
Bordetella parapertussis  
Bordetella pertussis  
Borrelia afzelii  
Borrelia burgdorferi  
Borrelia garinii  
Campylobacter coli\*  
Campylobacter jejuni  
Chlamydia pneumoniae  
Chlamydia psittaci  
Chlamydia trachomatis  
Haemophilus influenzae\*  
Helicobacter pylori  
Klebsiella pneumoniae\*  
Legionella bozemanii\*  
Legionella dumoffii\*  
Legionella gormanii\*  
Legionella jordanis\*  
Legionella longbeachae  
Legionella micdadei\*  
Legionella pneumophila serotypes 1-14  
Listeria monocytogenes 1/2 a, 4b  
Mycoplasma pneumoniae  
Treponema pallidum  
Treponema phagedenis  
Yersinia enterocolitica\*

### EUROPLUS substrates:

Borrelia VlsE (recombinant)  
Borrelia OspC  
EBV p19 + gp125

### Yeasts:

Candida albicans  
Candida glabrata\*  
Candida krusei\*  
Candida parapsilosis\*  
Candida tropicalis\*

### Parasites:

Echinococcus granulosus  
Leishmania donovani  
Plasmodium falciparum HRP2/MSP-2 (rec.)  
Plasmodium vivax MSP/CSP (recombinant)  
Toxoplasma gondii

### Profiles:

Accompanying hepatitis profile  
Central nervous system profile  
Exanthema profile  
Fever profile South East Asia  
Flavivirus profile  
Gastrointestinal tract profile  
Infectarthritis profile  
Infectarthritis profile (The Tropics)  
Lymphadenitis profile  
Myocarditis profile  
Ophthalmology profile  
Otitis profile  
Pregnancy profile  
Respiratory tract profile  
Sexually transmitted diseases (STD) profile  
TORCH profile  
Special substrate combinations  
on request

### Software/Automation:

EUROLabOffice  
EUROPicture  
EUROIMMUN Pattern  
EUROStar III Plus  
EUROLabLiquidHandler  
IF Sprinter  
Sprinter XL

\* Currently not available as IVD in the EU.

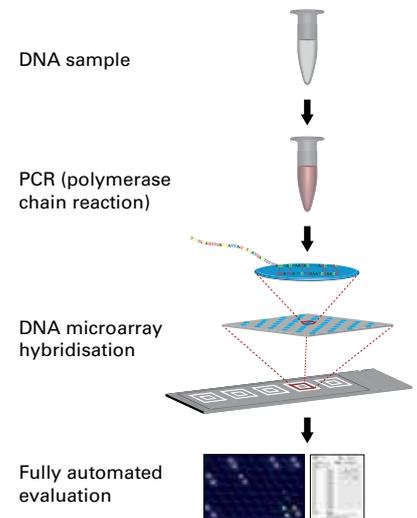
Made in Germany

Version: 02/2014

MV\_2540\_D\_UK\_A01

## Test characteristics EUROArray HPV

**Test principle:** This test system is based on the amplification of defined gene sections of HPV and detection through a hybridisation reaction with immobilised DNA probes in a microarray system. A DNA preparation from cervical smears of the patients is used as sample material. In the first reaction step, the sections of the viral oncogenes E6 and E7 from the HPV in the sample are amplified by polymerase chain reaction (PCR) by means of a multiplex-primer system and labelled with a fluorescence marker. In the second reaction step the products of this reaction are detected with an oligonucleotide microarray. The specific binding (hybridisation) of the fluorescing PCR product to the corresponding oligonucleotide probe is detected using a special Microarray Scanner (EUROIMMUN). The EUROArrayScan software evaluates all spot signals automatically and deducts the test result.



**Test procedure:** The PCRs are firstly incubated in the thermocycler and afterwards on EUROArray slides containing microarray BIOCHIPS, using the TITERPLANE technique. Scanning and evaluation are performed with the EUROArrayScan system (Microarray Scanner incl. EUROArrayScan software). This enables a fully automatic evaluation of the EUROArray analyses and detailed documentation of the results.

**Analytical specificity:** The specificity of the test system is ensured by the design of the primers and probes, as well as the defined conditions for PCR and hybridisation. The amplified sections of the different HPV subtypes do not show any cross reactivity with any probe of another subtype, when a template DNA in a concentration range between the lower detection limit and 2 million DNA copies is used.

**Intra-assay reproducibility:** The reference sample was investigated in 10 parallel reactions in one test run. The results obtained in all the cases were in agreement with the precharacterisation.

**Inter-assay reproducibility:** The reference sample was tested threefold in 5 independent test runs on 5 different days, by 2 different laboratory assistants. The results obtained in all the cases were in agreement with the precharacterisation.

**Inter-lot reproducibility:** The reference sample was tested threefold in 3 independent test runs, using 3 different lots of the test system. The results obtained in all the cases were in agreement with the precharacterisation.

**Evaluation:** 188 precharacterised DNA samples (other HPV test systems) were investigated with the EUROIMMUN EUROArray HPV. The determination of the samples was in all cases successful, the results were identical to the precharacterisation or in agreement with the precharacterisation, taking into consideration different test specifications. Possible differences to the precharacterisation can be explained by the different ranges of parameters used in one test system or by the different detection limits of the test systems.

### Technical data:

Substrate	Single-stranded DNA probes, length: 15 to 50 nukleotides
Test procedure	60 min (PCR)/60 min (hybridisation)/5 min (fully automated evaluation)
Reagents	Ready-for-use
Controls	Integrated DNA positive control
CE-IVD certified	Complete process is validated
Kit formats	5, 10 or 20 slides with 5 test fields each or 8 slides with 3 test fields each
Order numbers	MN 2540-0505, -1005, -2005, -0803