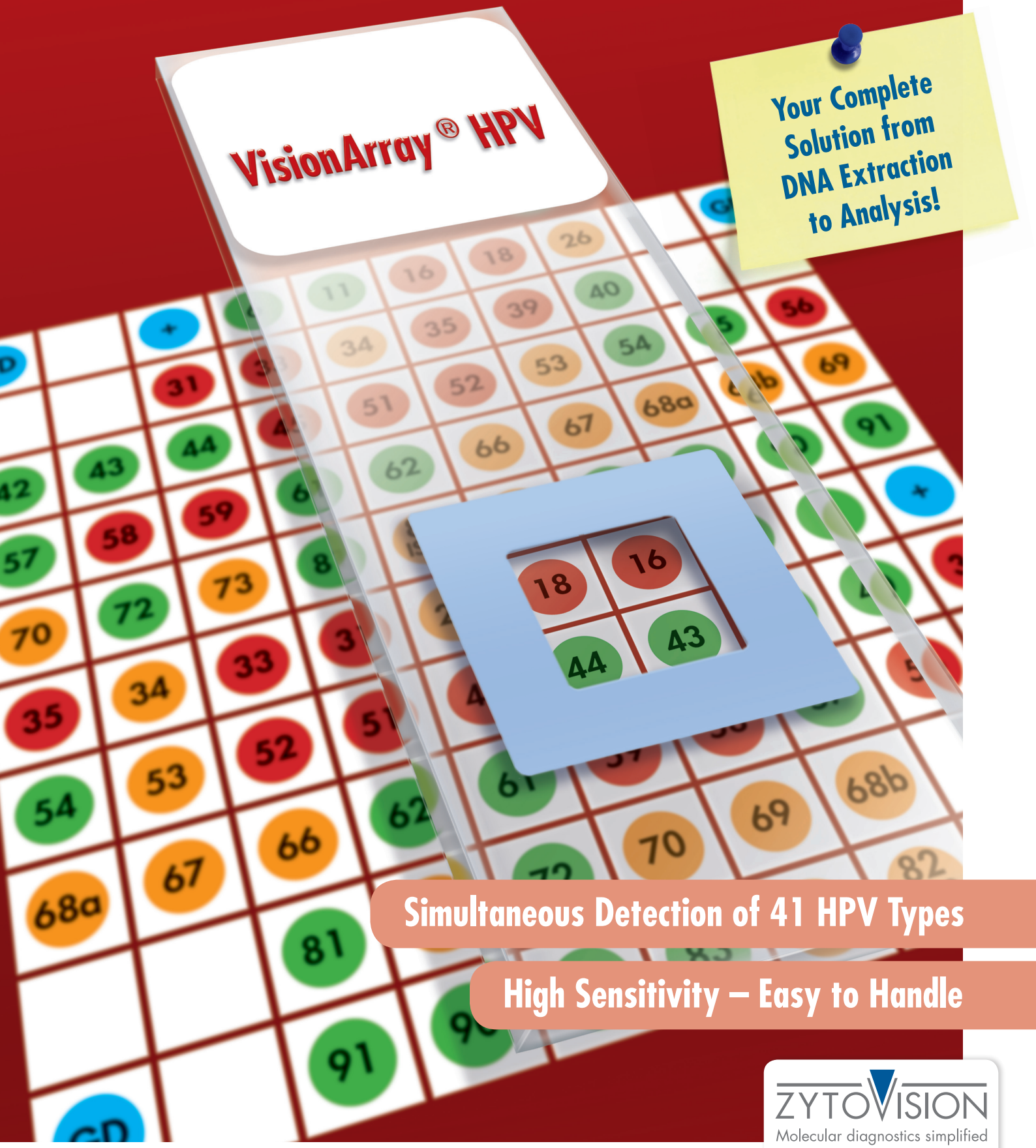
CE IVD

VisionArray®

Arrays for DNA analysis

# Genotyping of Human Papillomavirus




## Simultaneous Detection of 41 HPV Types

## High Sensitivity – Easy to Handle

ZYTOVISION

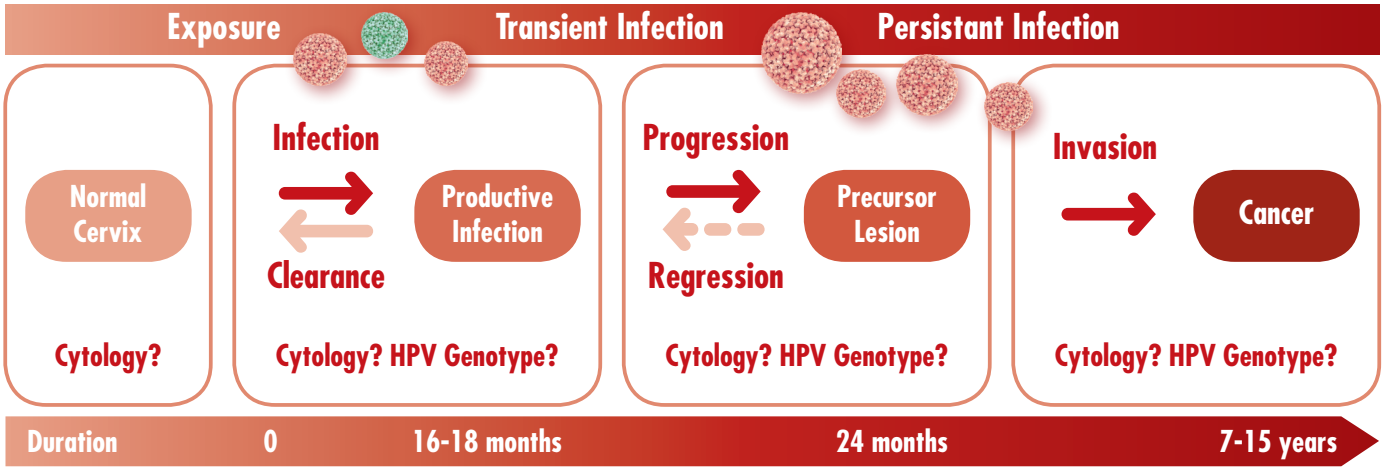
Molecular diagnostics simplified

# Importance of HPV Testing

The human papillomavirus (HPV) has been conclusively identified as the major risk factor for cervical cancer. It is the third most common cancer in women worldwide, with an estimated number of 530,000 new cases and 280,000 deaths each year. Over the last years the relevance of HPV in the history of oropharyngeal cancers has become more and more important which is indicated by a dramatically risen number of cancers of the oral cavity and pharynx linked to HPV.

## Cervical Cancer Progression

Initial HPV infection requires virion integration into the basal epithelial cells. Whereas most HPV infections are transient and are cleared by the immune system, infection with HPV high risk types may lead to cancer when infection persists.




# VisionArray® HPV Chip – Fast and Reliable Genotyping

The VisionArray® HPV Chip 1.0 is intended to be used with the VisionArray® Analysis Package for the qualitative detection and genotyping of PCR amplificates of 41 clinically relevant HPV genotypes.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| GD | | + | 6 | 11 | 16 | 18 | 26 | | GD |
| | | 31 | 33 | 34 | 35 | 39 | 40 | | |
| 42 | 43 | 44 | 45 | 51 | 52 | 53 | 54 | 55 | 56 |
| 57 | 58 | 59 | 61 | 62 | 66 | 67 | 68a | 68b | 69 |
| 70 | 72 | 73 | 81 | 82 IS39 | 82 MM4 | 83 | 84 | 90 | 91 |
| 35 | 34 | 33 | 31 | 26 | 18 | 16 | 11 | 6 | + |
| 54 | 53 | 52 | 51 | 45 | 44 | 43 | 42 | 40 | 39 |
| 68a | 67 | 66 | 62 | 61 | 59 | 58 | 57 | 56 | 55 |
| | | 81 | 73 | 72 | 70 | 69 | 68b | | |
| GD | | 91 | 90 | 84 | 83 | 82 MM4 | 82 IS39 | | |

High Risk
Low Risk
Probably High Risk
Guide Dots (GD)/ Positive Control (+)

**High Risk HPV Types detected by the VisionArray® HPV Chip**

16 18 31 33 35 39
45 51 52 56 58 59

**Probably High Risk HPV Types detected by the VisionArray® HPV Chip**

26 34 53 66 67 68a
68b 69 70 73 82 (IS39) 82 (MM4)

**Low Risk HPV Types detected by the VisionArray® HPV Chip**

6 11 40 42 43 44 54 55 57
61 62 72 81 (CP8304) 83 (MM7) 84 (MM8) 90 91


**References:**
Boumba LM, et al. (2014) BMC Public Health 14: 1320
Colombo N, et al. (2012) Ann Oncol 23 Suppl 7: vii27-32
Crow JM, et al. (2012) Nature 488: S2-S3
IARC (2012) Biological Agents. IARC Monogr Eval Carcinog Risks Hum, 100B: 1-441
Poljak M, et al. (2016) J Clin Virol 76 Suppl 1: S3-S13
http://globocan.iarc.fr

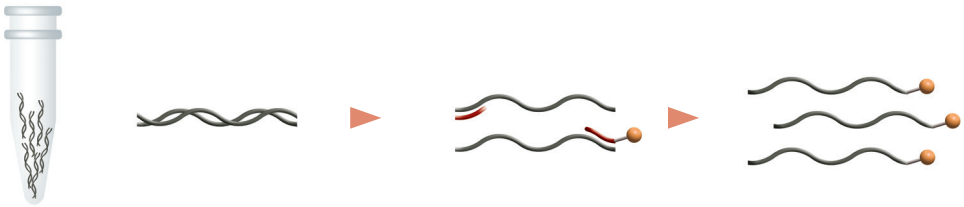
# 1. Sample Collection

For the detection of HPV genotypes with the Vision*Array* ® HPV system the following raw material can be used for DNA extraction:

- Formalin-fixed, paraffin-embedded (FFPE) tissue samples
- Cervical swab/brush specimens
- Liquid based cytology specimens (ThinPrep®)

# 2. Detection & Differentiation of 41 HPV Types

## Step 1: Amplification and Labeling in a PCR

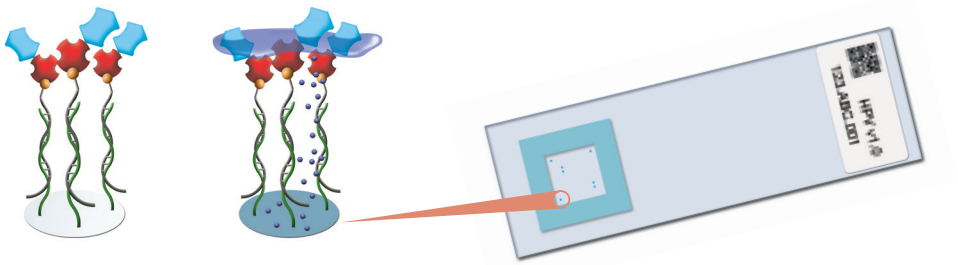


Biotinylated primers are used to amplify and label different sections of the L1 region of the HPV genome. The human HLA-DQA1 gene is also amplified and serves as a PCR positive control and as a genomic control.

## Step 2: Hybridization on the Glass Chip

After amplification, the biotinylated sequences hybridize to complementary DNA capture sequences on the glass chip.

## Step 3: Detection and Visualization



Specifically bound and biotinylated sequences are visualized by secondary marking with a streptavidin-peroxidase conjugate and a staining with tetramethylbenzidine. After color development, evaluation is performed using the Vision*Array* ® Analyzer Software.

# 3. Workflow Schedule

This is a condensed protocol for the Vision*Array* ® method and should not replace the instruction for use!

**0 Min.**

## PCR

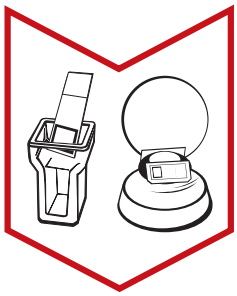
- For the PCR the Vision*Array* ® Primer Kit 2.0 is used
- The master mix is prepared by using the dNTP/dUTP Solution, HPV Primer Mix 2.0, Vision*Array* ® PreCise Taq DNA Polymerase, Vision*Array* ® Uracil-DNA Glycosylase and the corresponding reaction buffers
  *Alternatively: The Vision*Array* ® HPV PreCise Master Mix can be used*
- DNA sample is added to the master mix

**30 Min.**

## Hybridization

- PCR product and Hybridization Solution are mixed well
- Mix is applied onto the Vision*Array* ® Chip

Duration: 30 min

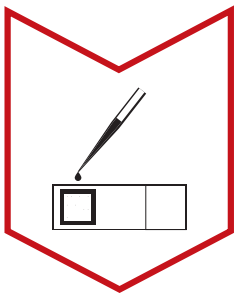


## Stringency Wash

- Unbound DNA fragments are removed using 1x Wash Buffer
- Drying of Vision*Array* ® Chip by centrifugation

Duration: 2 min

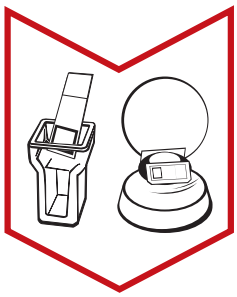
**50 Min.**



## Detection

- Marking of biotinylated sequences using the Detection Solution
- Visualization is performed by applying the Blue Spot Solution

Duration: 17 min



## Wash

- Removing of the Blue Spot Solution by washing with 1x Wash Buffer
- Drying of Vision*Array* ® Chip by centrifugation

Duration: 2 min

**60 Min.**

## Analysis

- Chips are scanned with Vision*Array* ® Scanner 8100
- Automated analysis is performed by using the Vision*Array* ® Analyzer Software

Duration: 10 min

**Quick & easy 1 hour protocol · Automated user-friendly evaluation within a few minutes**

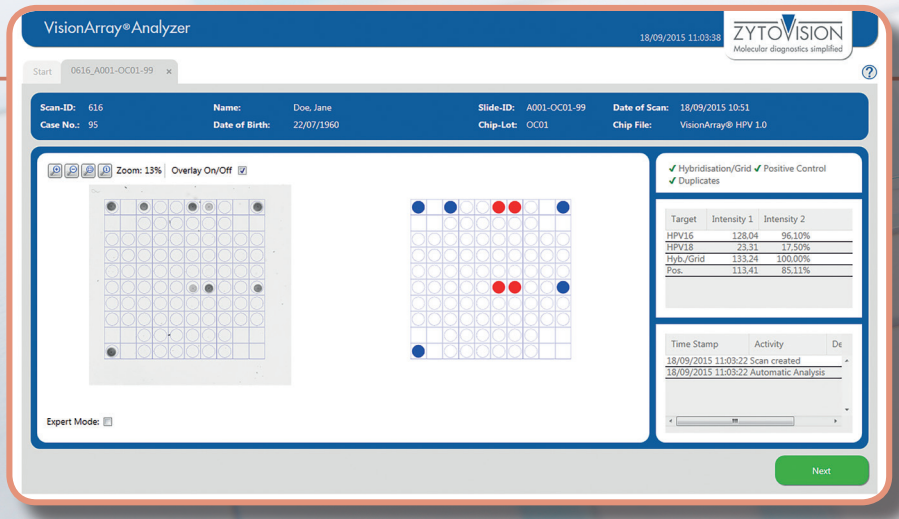
# HPV Tests in Comparison

| Assay | Genotyping | Co-infection | No. of CE-IVD HPV Types | Sensitivity* (copies/reaction) |
|---|---|---|---|---|
| Anyplex™ II HPV28 Detection | ✓ | ✓ | 28 | ≥ 50 |
| Cervista® HPV HR | – | – | 14 | ≥ 1.250 |
| CLART® HPV (3, 4) | ✓ | ✓ | 35 | ≥ 10 |
| cobas® HPV Test | HPV 16 + 18 | HPV 16 + 18 | 14 | ≥ 150 copies/ml |
| *digene*® HC2 HPV DNA Test | – | – | 18 | ≥ 3100 |
| INNO-LiPA® HPV Genotyping *Extra* II | ✓ | ✓ | 32 | ≥ 20 |
| **VisionArray®** | ✓ | ✓ | **41** | **≥ 50** |

* Sensitivity data are according to the respective instruction for use

# VisionArray® – At a Glance

- Simultaneous genotyping of 41 different HPV types – all certified for *in vitro* diagnostic use
- All capture sequences and positive controls are set up on the VisionArray® Chip as duplicates
- High sensitivity and specificity
- Quick & easy 1 hour protocol
- Automated evaluation using the VisionArray® Analyzer Software – simple visualization & quick analysis in just a few minutes



# VisionArray® Arrays for DNA analysis

## VisionArray® HPV Chips


| Prod. No. | Product | Tests |
|---|---|---|
| VA-0001-10 | VisionArray HPV Chip 1.0 CE IVD<br>Incl. 10 pieces | 10 |
| VA-0001-50 | VisionArray HPV Chip 1.0 CE IVD<br>Incl. 5x 10 pieces | 50 |
| VA-0002-10 | VisionArray HPV High Risk Chip 1.0 CE IVD<br>Incl. 10 pieces | 10 |
| VA-0002-50 | VisionArray HPV High Risk Chip 1.0 CE IVD<br>Incl. 5x 10 pieces | 50 |

## VisionArray® DNA Extraction, PCR, and Detection


| Prod. No. | Product | Tests |
|---|---|---|
| VI-0001-50 | VisionArray FFPE DNA Extraction Kit<br>Incl. Paraffin Dissolver; Tissue Lysis Buffer; Decrosslink Buffer; DNA Wash Buffer; Proteinase K; Proteinase K Buffer; Elution Buffer; Columns; Collection Tubes | 50 |
| VI-0002-50 | VisionArray Cytology DNA Extraction Kit<br>Incl. Pre-Lysis Buffer; Cell Lysis Buffer; DNA Wash Buffer; Proteinase K; Proteinase K Buffer; Elution Buffer; Columns; Collection Tubes | 50 |


| Prod. No. | Product | Tests |
|---|---|---|
| VP-0001-50 | VisionArray HPV Primer Kit 2.0 CE IVD Higher Sensitivities<br>Incl. HPV Primer Mix 2.0; dNTP/dUTP Solution | 50 |
| VE-0001-100 | VisionArray PreCise Taq DNA Polymerase CE IVD<br>Incl. VisionArray PreCise Taq DNA Polymerase; PreCise Reaction Buffer, 10x; PreCise $MgCl_2$ 25 mM | 100 |
| VE-0002-100 | VisionArray Uracil-DNA Glycosylase CE IVD | 100 |
| ES-0007-50 | VisionArray HPV PreCise Master Mix CE IVD<br>Containing HPV Primer Mix 2.0; dNTP/dUTP Solution; VisionArray PreCise Taq DNA Polymerase; PreCise Reaction Buffer, 10x; PreCise $MgCl_2$, 25 mM; VisionArray Uracil-DNA Glycosylase | 50 |


| Prod. No. | Product | Tests |
|---|---|---|
| VK-0003-50 | VisionArray Detection Kit CE IVD<br>Incl. Hybridization Solution, 1 ml; Detection Solution, 5 ml; Blue Spot Solution, 5 ml; 100x Wash Buffer, 250 ml | 50 |
| E-4051-1 | Mini Slide Centrifuge | |

## VisionArray® Analysis Package

| Prod. No. | Product |
|---|---|
| E-4060-1 | VisionArray Analysis Package CE IVD<br>Incl. Scanner 8100; Slide Holder; Hand Scanner; PC with preinstalled VisionArray Analyzer Software; USB-Hub; External Hard Drive; Computer Mouse |

*CE IVD only available in certain countries. All other countries research use only! Please contact your local dealer for more information.*

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Molecular diagnostics simplified

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