Automated Analysis of Her2/neu Samples with Metafer MetaCyte *PV*

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MetaSystems Germany

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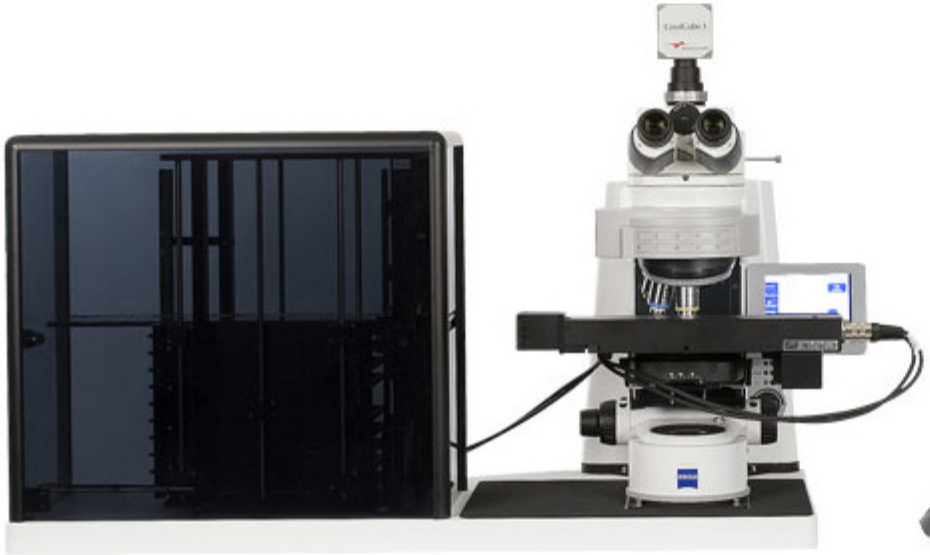
4th International Congress on Virtual Microscopy
Vilnius, Lithuania

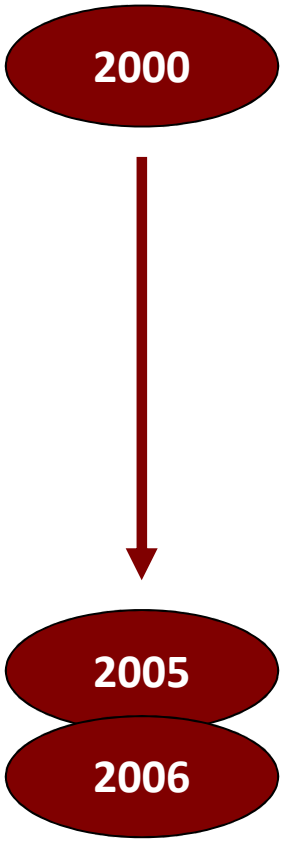
MetaSystems

System Architecture

- Slide Feeder for up to 80/500 Slides
- Research Microscope (CZ AxioImager Z2) w/ FL Illumination
- Windows Compatible PC with Metafer PV Software
- 8-Slides Motorized Stage
- High-res. b/w CCD Camera
- Printer and Peripherals



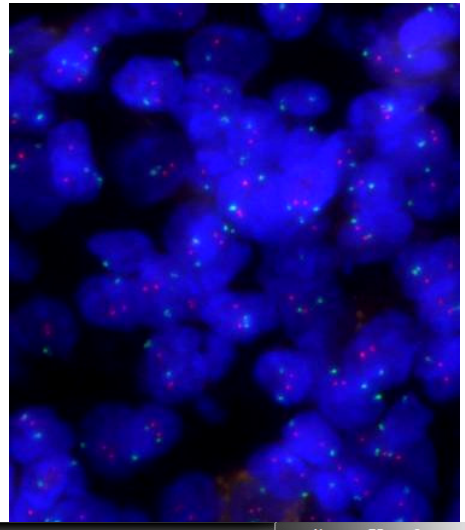
History of Metafer PV System

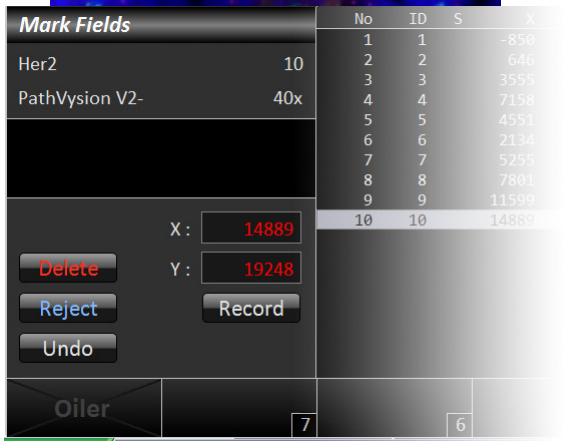


- Collaboration of Abbott‘s Vysis and MetaSystems to develop an automated, FDA approved system to analyze PathVysion™ samples
- Development of a PV analysis system based on the Metafer platform (“*Metafer PV*”)
- Analysis of ~1,000 samples
  (2 training data sets, 1 independent test data set)

- FDA approval for the *“AutoVysion”* system to analyze PathVysion™ Her2 DNA probe kit samples
- Final agreement between Vysis and MetaSystems on marketing the *AutoVysion* / *Metafer PV* systems

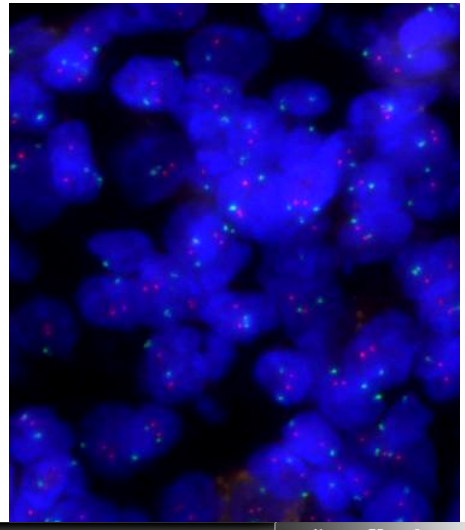
Her2/neu Analysis Strategy

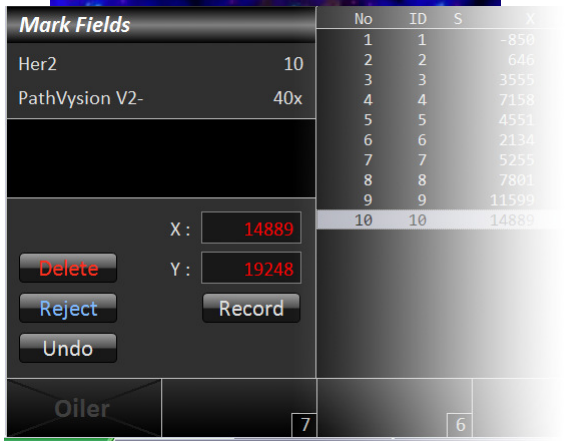




1. **Interactive selection of tumor regions by a trained pathologist**

Her2/neu Analysis Strategy





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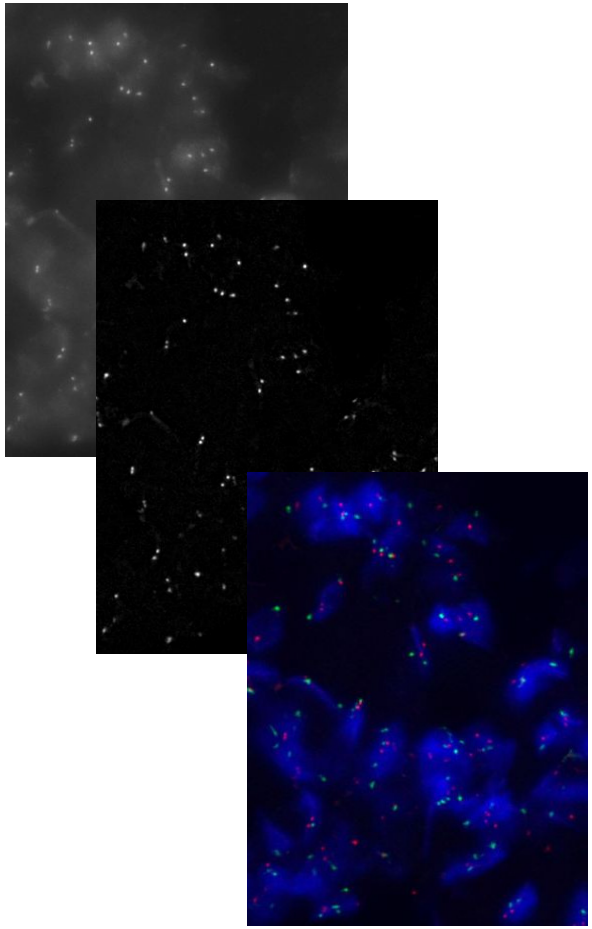

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2. **Automated image acquisition with 9 focus planes (signal channels only), and generation of extended focus image; image processing**

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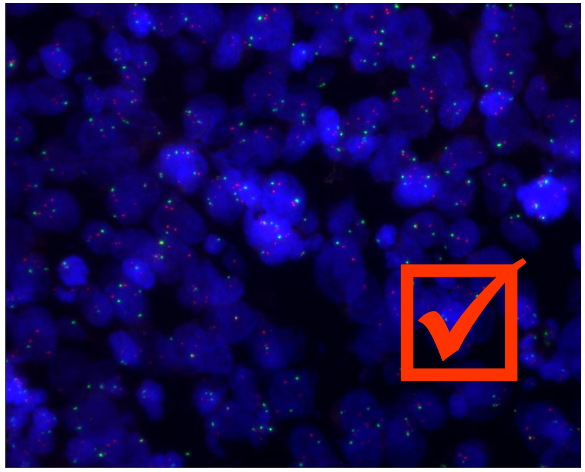

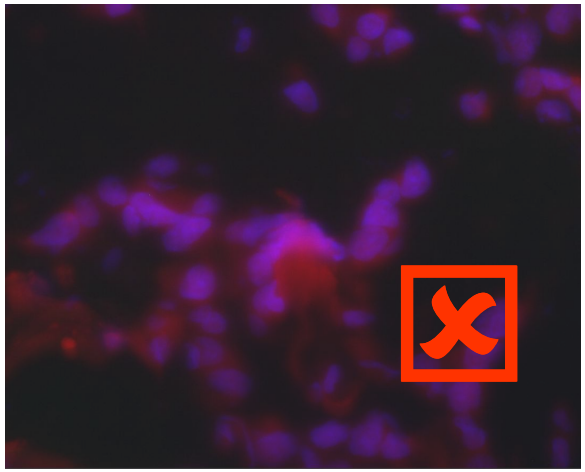

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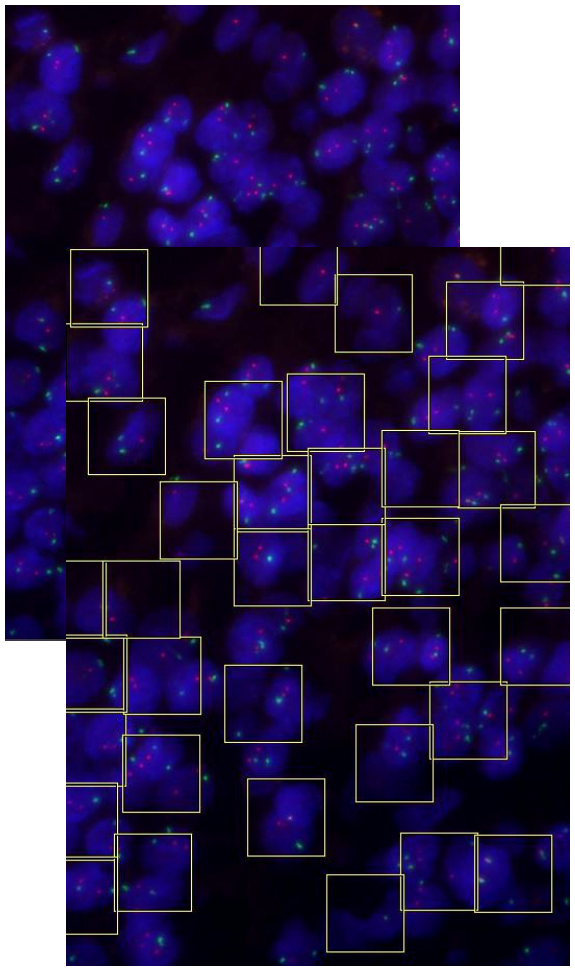
Her2/neu Analysis Strategy



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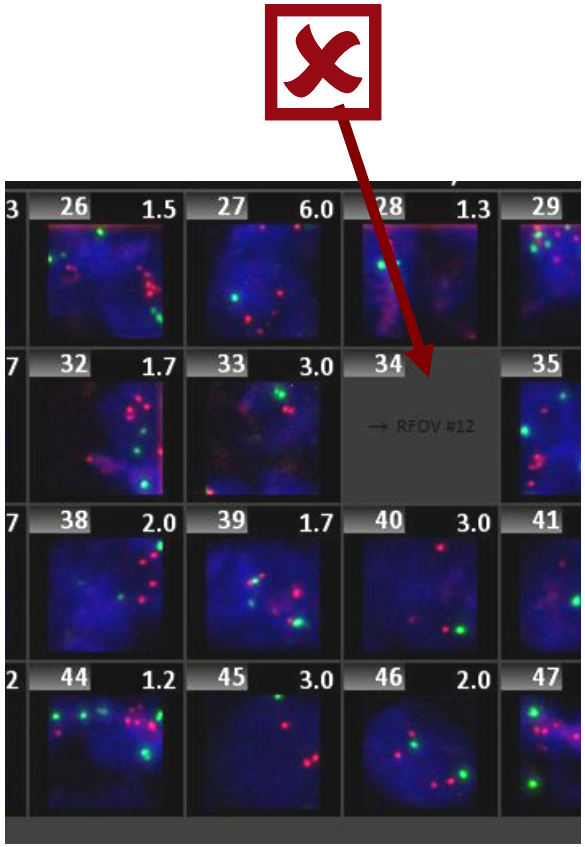
Her2/neu Analysis Strategy



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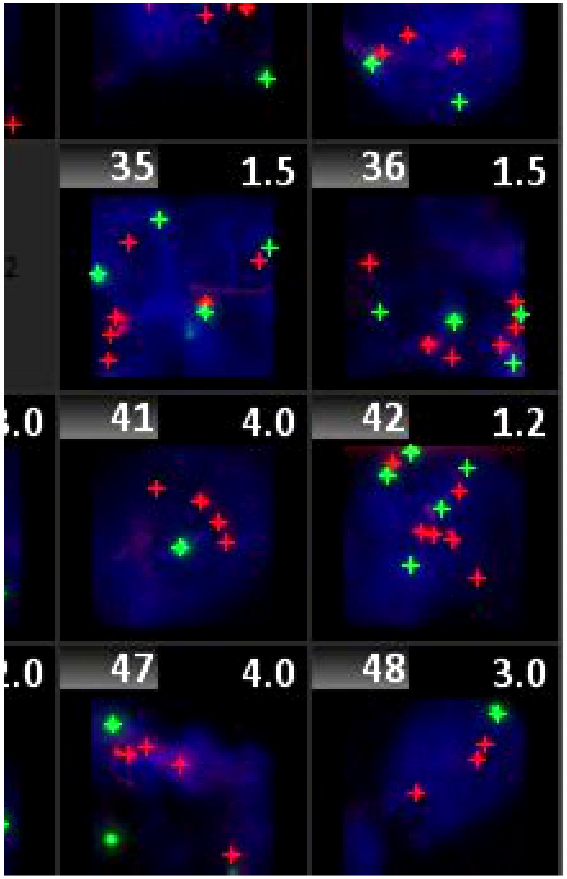

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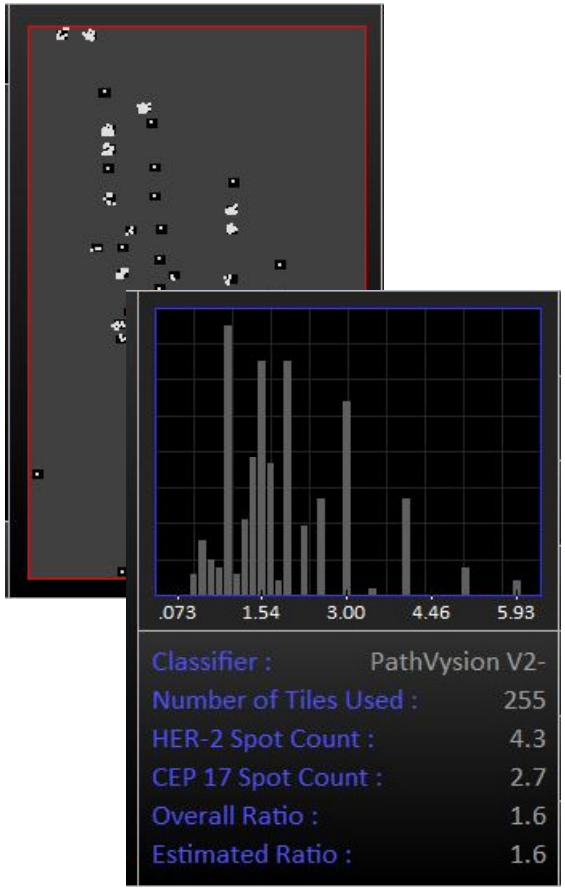
Her2/neu Analysis Strategy



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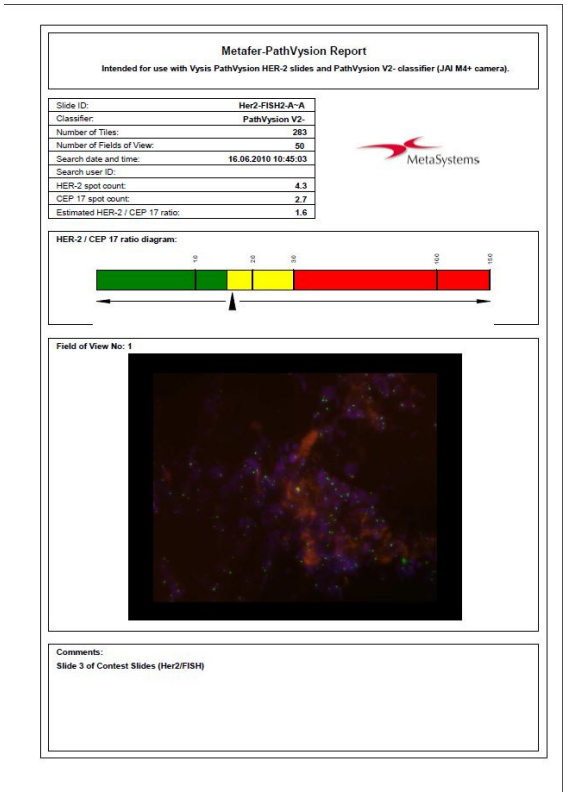
7. **Data summary and display on screen**

Her2/neu Analysis Strategy



Metafer-PathVysion Report

Intended for use with Vysis PathVysion HER-2 slides and PathVysion V2- classifier (JAI M4+ camera).

Slide ID:	Her2-FISH2-A~A
Classifier:	PathVysion V2-
Number of Tiles:	283
Number of Fields of View:	50
Search date and time:	16.06.2010 10:45:03
Search user ID:	
HER-2 spot count:	4.3
CEP 17 spot count:	2.7
Estimated HER-2 / CEP 17 ratio:	1.6

MetaSystems

HER-2 / CEP 17 ratio diagram:

Field of View No: 1

Comments:
Slide 3 of Contest Slides (Her2/FISH)

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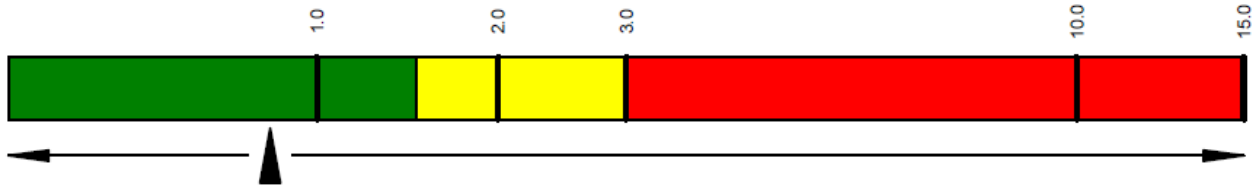
7. Data summary and display on screen
8. **Reporting**

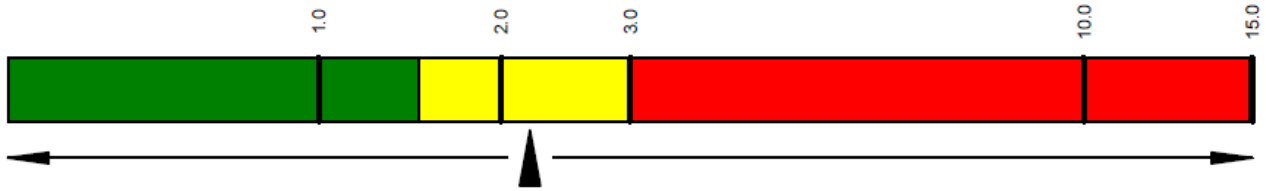
Results

HER-2 / CEP 17 ratio diagram:



Non-amplified sample: **Contest Sample No. 5**

HER-2 / CEP 17 ratio diagram:



Ambiguous sample: **Contest Sample No. 1**

Contest Slides Data

No.	No. of Analyzed Tiles	Her2 Signal Count	CEP17 Signal Count	Overall Ratio	Amplified
1	210*	(3.9)	(1.7)	(2.2)	Ambiguous
2	255	4.3	2.7	1.6	Ambiguous
3	1285	3.5	2.3	1.5	No (Ambiguous)
4	102	3.8	6.6	0.6	No
5	95	2.7	3.2	0.8	No

FOVs and ROIs (tiles) did not pass the quality test. Rejection criteria were disabled, and manual tiles rejection has been done.

References

- Analysis of HER2 gene amplification using an automated fluorescence in situ hybridization signal enumeration system.
  Stevens et al., J Molecular Diagn 9(2007)
- New cutpoints to identify increased HER2 copy number: analysis of a large, population-based cohort with long-term follow-up.
  Jensen et al., Breast Cancer Res Treat 3(2008)
- High concordance between immunohistochemistry and fluorescence in situ hybridization testing for HER2 status in breast cancer requires a normalized IHC scoring system.
  Gown et al., Mod Pathol 10(2008)