Rapid FISH Spot Counting

Metafer Customization Package
Spot Counting

While the traditional method of manually evaluating FISH signals offers valuable insights, it does come with its challenges.

The approach can be time-consuming and repetitive, with a high potential for errors. Often conducted in low-light conditions, it can lead to fatigue and a decrease in accuracy. In addition, there is lack of comprehensive image documentation and checks according to the four-eyes principle.

Automation is Key

MetaSystems presents with the **Customization Package Spot Counting** a proposed Metafer workflow to tackle these challenges.

Configurations created as a part of the Customization Package Spot Counting streamline the management of FISH cases and bear the potential to lead to a notable reduction in processing time.

Class	Title	Count	Perc.
0	Other	15	6.4
1	2R 2G	173	73.9
2	1R 2G	10	4.3
3	2R 1G	14	6.0
4	1R 1G	8	3.4
5	2R 3G	10	4.3
		3	1.3

R2 G1	5.98%
R1 G2	4.27%
R2 G3	4.27%
R1 G1	3.42%
R0 G0	2.14%

MetaSystems
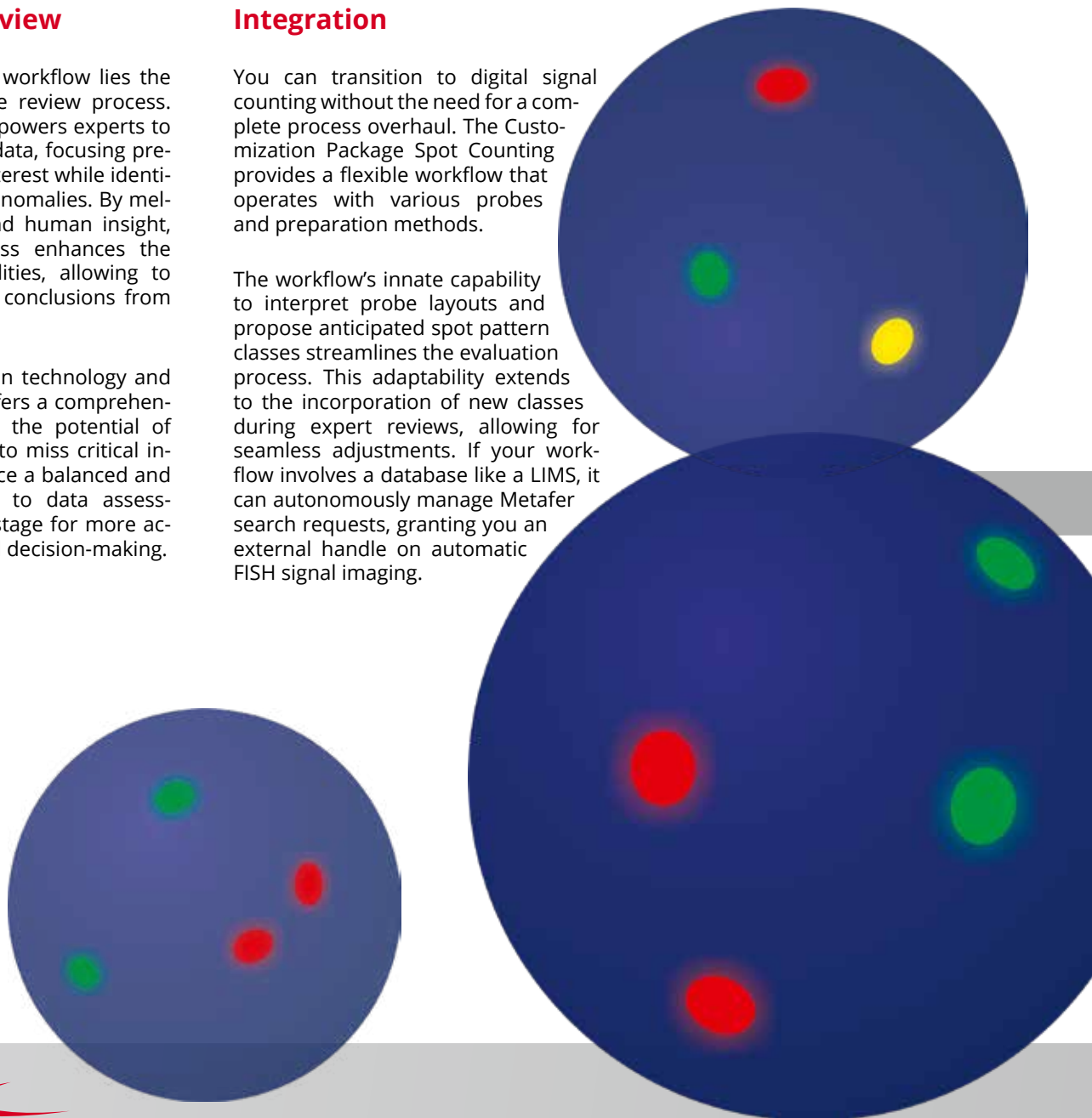
AUTOMATED IMAGING

RapidScore Review

At the heart of the workflow lies the essential RapidScore review process. This crucial step empowers experts to efficiently evaluate data, focusing precisely on areas of interest while identifying any potential anomalies. By melding automation and human insight, this intuitive process enhances the researchers' capabilities, allowing to draw well-informed conclusions from a wealth of data.

The synergy between technology and human expertise offers a comprehensive workflow, with the potential of minimizing the risk to miss critical information. Experience a balanced and insightful approach to data assessment that sets the stage for more accurate and informed decision-making.

Integration

You can transition to digital signal counting without the need for a complete process overhaul. The Customization Package Spot Counting provides a flexible workflow that operates with various probes and preparation methods.

The workflow's innate capability to interpret probe layouts and propose anticipated spot pattern classes streamlines the evaluation process. This adaptability extends to the incorporation of new classes during expert reviews, allowing for seamless adjustments. If your workflow involves a database like a LIMS, it can autonomously manage Metafer search requests, granting you an external handle on automatic FISH signal imaging.

MetaSystems

AND SWIFT EXPERT REVIEW

ADHERE TO YOUR PROVEN METHODS!

Maintain your current laboratory preparation methods without disruption. The comprehensive capabilities of the workflow proposed with the Customization Package Spot Counting allow it to effortlessly manage diverse probe layouts, preparation methods, and color channels.

REGAIN PRECIOUS WORKING TIME!

Enable Metafer to take charge of imaging tasks, liberating you from the constraints of dimly lit rooms and labor-intensive manual microscopy. With its dependable scanning capabilities, Metafer captures your specimens and produces extensive documentation of all outcomes.

ASSESS YOUR RESULTS IN NO TIME!

Harness the benefits of RapidScore, the interactive expert review process. Easily assess gallery images and swiftly score spot patterns with a simple keystroke. Conduct independent assessments with various evaluators and generate visually appealing reports complete with comprehensive documentation.

BENEFITS

- Ready to work with many locus-specific DNA FISH probes.
- Wide range of probes with overnight hybridization from MetaSystems Probes available.*
- Support for samples featuring multiple hybridizations.

- Unattended and automated FISH signal imaging on up to 800 slides per run.
- Remote generation of scanning jobs, e.g., by a connected LIMS.
- Pre-scans to detect preferred regions on the slide.
- Extended focus images.

- Ultra-fast review workflow for FISH signal patterns.
- Programmable RapidScore keyboard to adapt to any probes configuration.
- Blinded review for multiple scorers.
- Full documentation of all results.

* MetaSystems Probes is a sister company of MetaSystems. For more information on their DNA probes portfolio, please go to www.metasystems-probes.com.

① A Passport for Your Slides

Search Information Files (SIFs) are generated either by **your compatible LIMS or manually in the Metafer software.**

SIFs may contain data on slide quantity, FISH probe specifics (including layouts like Dual Color Break Apart, Dual Fusion, etc.), and hybridization patterns on the individual specimens.

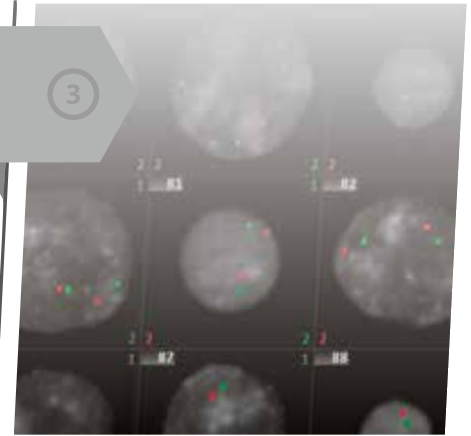**Each slide can be recognized by a barcode and is linked to its respective case and culture.**

② Digitization

Metafer identifies the slides, either by their bar codes or by manual input, loads the according SIF, and executes the scans. The system automatically captures cell nuclei and FISH signals, enabling focus stacking for imaging signals on various focal planes.

The outcome comprises a compilation of nucleus images presented in a Gallery format, along with spot pattern recommendations, and a summary display through graphical representations and tables.

③ It All Comes Together

After scanning, Neon, the case and image management technology, immediately presents the Metafer outcome. Neon offers quick access to information about the case, images, and the FISH probes used.

If additional tests were done for the same case (e.g., karyotyping with Ikaros), those results will also be shown there. Neon's transparent workflow management ensures that authorized users are consistently informed about the status of cases and the availability of scan files.
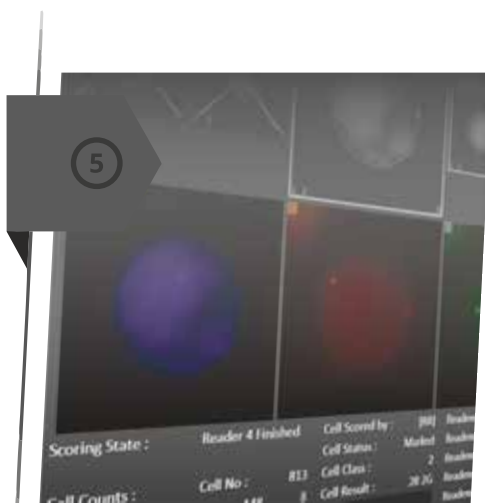
MetaSystems

FISH SPOT WORKFLOW

④

The Expert's View

The RapidScore workflow offers a swift way to review and assess the Metafer output. The RapidScore keyboard showcases spot patterns specific to the probe layout on the keys. Pressing a key allows for the confirmation or modification of Metafer suggestions, and the associated nucleus is marked as reviewed.

If the user identifies any extra signal patterns not shown on the keyboard during the assessment, these can be effortlessly included in the evaluation process.

⑤

Collaboration

When involving multiple evaluators per slide, results blinding becomes crucial. Metafer addresses this with the Cell-Review window, displaying a processed and an unprocessed image of the nucleus together with representations of the individual color channels. An overview display provides the context around the nucleus.

After a set number of evaluated nuclei, the file can be transfered to the next evaluator (up to five), ensuring blinded results to prevent influence.

⑥

Show and Tell

Once data collection is complete and the cytogenetics experts have concluded their review, multiple avenues exist for presenting the outcomes. Neon incorporates an inherent Reporting Interface tailored precisely for this function, streamlining the generation of individualized and visually captivating reports.

Furthermore, data can be effortlessly extracted from Neon — such as returning it to the LIMS — or combined into comprehensive statistical queries to facilitate summarization.

Image Gallery of Nuclei and Signals

Every identified nucleus is displayed in an image gallery alongside the FISH signals.

The gallery exhibits the processed images, with the unprocessed image of the selected nucleus shown in the Image Area. Users can zoom in on the image and also have the capability to navigate through individual focal planes.
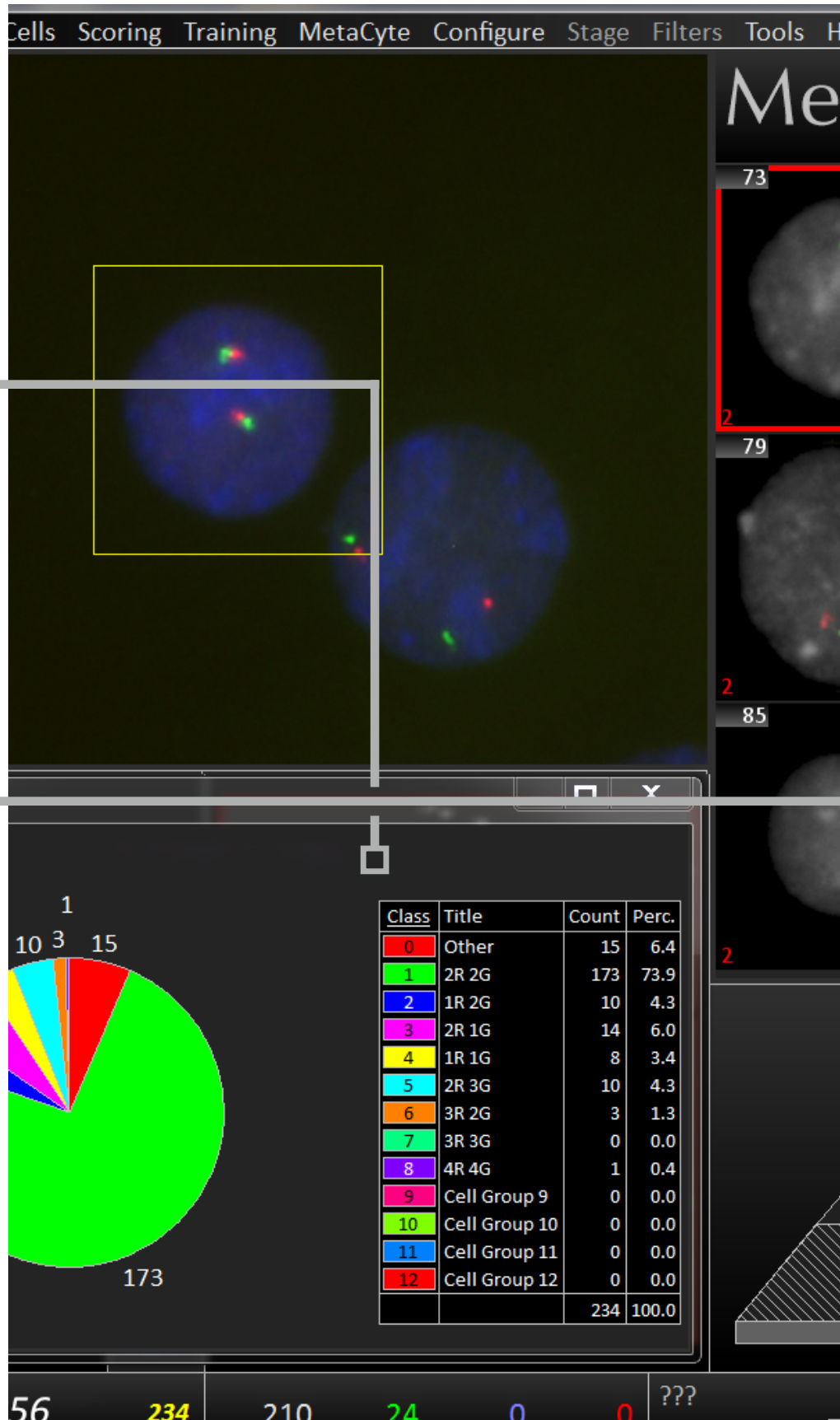
Data Display in Tables and Graphs

Throughout the scan, Metafer categorizes cell nuclei based on the likelihood of their spot patterns and compiles these sorting outcomes into graphs and tables.
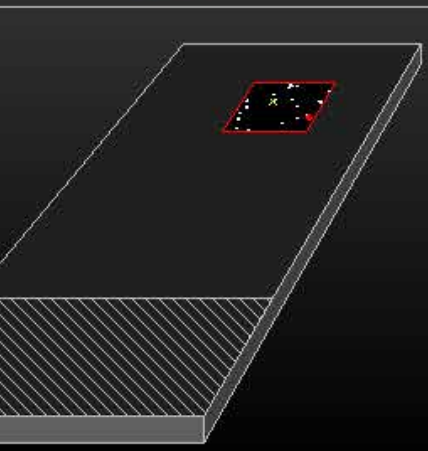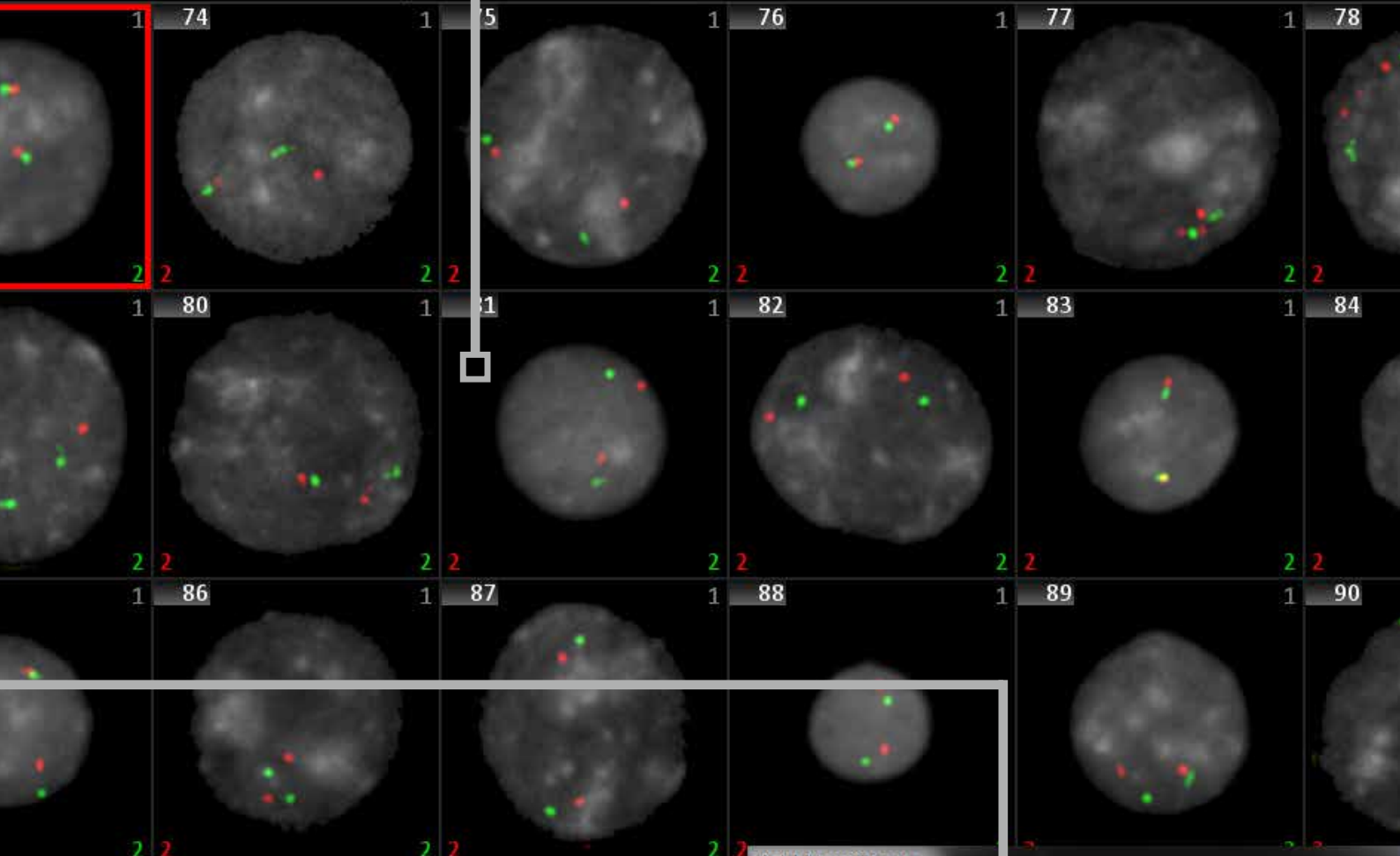
When reviewing the results with Rapid-Score, Metafer produces an additional summary, presenting the outcomes validated by the expert for each nucleus.

Customized Spot Pattern Classes

The RapidScore keyboard showcases the anticipated signal patterns on its keys, depending on the probe layout.

However, if an unlisted signal pattern is identified, the expert can effortlessly include it in the evaluation and allocate one of the as-yet unassigned keys to it.

Class	Title	Count	Perc.
0	Other	15	6.4
1	2R 2G	173	73.9
2	1R 2G	10	4.3
3	2R 1G	14	6.0
4	1R 1G	8	3.4
5	2R 3G	10	4.3
6	3R 2G	3	1.3
7	3R 3G	0	0.0
8	4R 4G	1	0.4
9	Cell Group 9	0	0.0
10	Cell Group 10	0	0.0
11	Cell Group 11	0	0.0
12	Cell Group 12	0	0.0
		234	100.0

MetaSystems

74

75

76

77

78

80

81

82

83

84

86

87

88

89

90

R2 G2
R2 G1   5.98%
R1 G2   4.27%
R2 G3   4.27%
R1 G1   3.42%
R0 G0   2.14%
R3 G2   1.28%
R2 G0   0.85%
R1 G0   0.43%
R0 G2   0.43%

Add New Group ...

Group Name :   Normal Cells

Group Number :   10

Feature Values

Red Spots - Auto

Green Spots - Auto

OK

???   ???   ???   ?

WORLDWIDE OFFICES

AMERICAS

USA, Medford
info@metasystems.org

Argentina, Buenos Aires
info@metasystems-latam.com

EUROPE

Germany, Altlussheim
info@metasystems-international.com

Italy, Milan
info@metasystems-italy.com

ASIA

China, Hong Kong
info@metasystems-asia.com

China, Taizhou
info@metasystems-china.com

India, Bangalore
info@metasystems-india.com

MetaSystems software provides, among other functions, features to assist users with image processing. These include, but are not limited to, the use of machine and deep learning algorithms for pattern recognition. The output generated in this process should be regarded as preliminary suggestions and, in any case, mandatorily requires review and assessment by trained experts.

MetaSystems offers **Customization Packages** for application workflows that have been successfully implemented for customer labs using standard Metafer platform functionality. It is expected that they can be implemented for other customer labs using similar workflows and slide preparation procedures. If a Customization Package is purchased, MetaSystems product specialists will - based on their experience from other similar application cases - support the customer lab in adapting the Metafer software configuration to their needs. The performance of the solution will depend on the quality of the customer slides and the expertise of the users, MetaSystems cannot specify or guarantee any performance parameters. The validation of the solution for clinical use is the sole responsibility of the customer lab.

CONTACT US

OR YOUR LOCAL
MetaSystems
REPRESENTATIVE

metasystems-international.com

MetaSystems

info@metasystems-international.com
www.metasystems-internationel.com