CNIV 2017
« 2ᴱᴹᴱ CONGRÈS NATIONAL D'IMAGERIE DU VIVANT »
8 - 9 NOVEMBRE 2017 – INSTITUT PASTEUR (PARIS)

medicen PARIS REGION | innovation for health

IMSTAR PATHFINDER™ PIONEER IN AUTOMATED CELL ANALYSIS SYSTEMS

FRANÇOISE SOUSSALINE, PRESIDENT CEO

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Corporate in brief

- **Spin-off of the CEA/SHFJ** Life Sciences Division, founded by F. Soussaline, SPECT-PET Functional Imaging Group.

- **Lean, flexible & multidisciplinary team**. MDs and PhD Scientists shareholders. Cumulated know-how in digital cell imaging representing > 150 year-man.

- **Expertise:** Information-dependent, *not Operator-dependent Imaging-Analytical Data*, addressing different markets: Health Technologies R&D, Pharma, Biotech, Nutrition, Cosmetics, Tobacco Industries.

- **International Network**: over 100 Academic Institutions; **8 collaborative R&D** EU Frame Programs, ITEA EUREKA and 4 French consortia; 15 partnerships; 180 scientific articles.

- **Intellectual Property:** 13 issued patents, 150 copyrights and 15 trademarks.

- **Global base in KOLs' public/private Labs**: Cytogenetic, Cyto-Pathology, Genetic Toxicology. Worldwide market of ~1000 Software series in Europe, America and Asia (50% in China).

PATHFINDER™ PRODUCTS RANGE

Our goal : To provide high performance, proven, versatile, Quantitative Cell Imaging systems, integrating a software library in comprehensive Solutions for BioMedical Research, Biomarkers' test development, Molecular Cytogenetic, Genetic Toxicology, and assistance to *ex vivo* diagnostic.
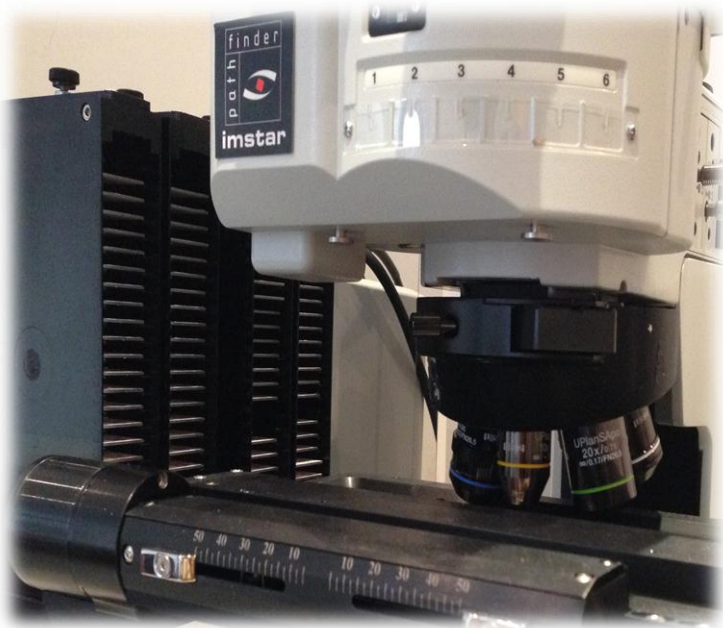
Pathfinder™ Workstation
Automation of standard/well slides
Network of Analysis software station(s)

Solutions for reliable tests: A range of hardware & software configurations combining specific modules adapted to a range of applications.

Innovative Applications: Automated Biomarkers' tests using validated Cellular High-Content Phenotype Analysis, eventually combined with in vivo Imaging and clinical data.

Pathfinder™ technology:

- Selected components for a multimodality (BF, IF, FISH) motorized photon microscope, high precision 3D scanning, large field high-resolution CCD and 160-slides' loader robot.

- Customized Software Protocols (dedicated proprietary algorithms) for automated scanning, fast parallel image processing & analysis of a variety of sample format.

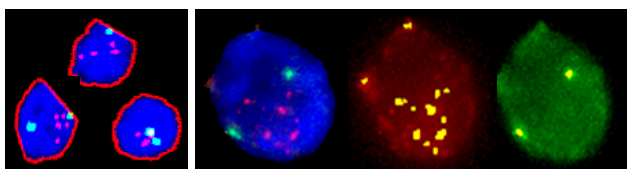2ème congrès national d'imagerie du vivant   8 - 9 novembre 2017 – Institut Pasteur (Paris)
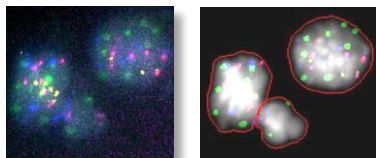
TUMOR MARKER ASSESMENT
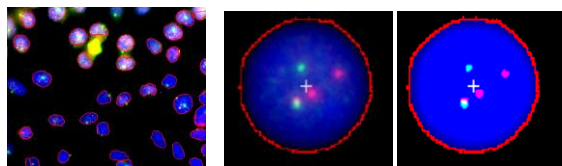
Focus on Applications for Personalized Medicine

Cellular Biomarker tests using IHC, IF, FISH, M-FISH, DNA staining, polyploidy …)
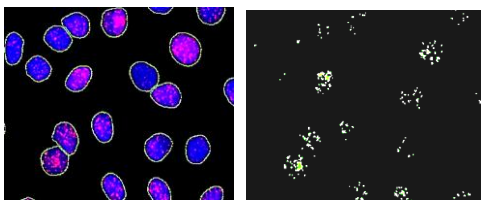Standardized Sample Procedures and Customized Cells' Data Analytics
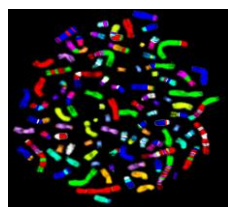

Her2 Breast cancer: Tissue & Cytology

Bladder cancer M-FISH
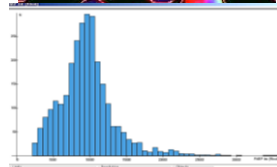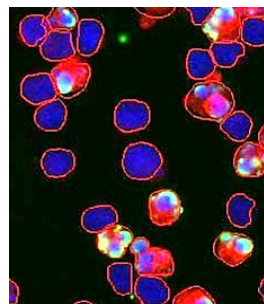(Abbott UroVision® probes)

AML Bcr-Abl fusion (3D-colocalization)
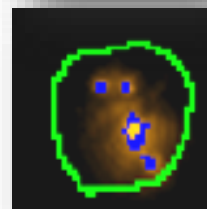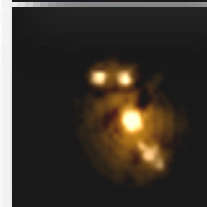

γH2AX Q-phosphorylation signals

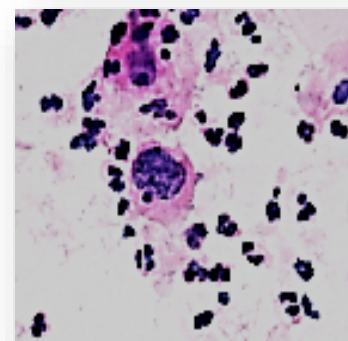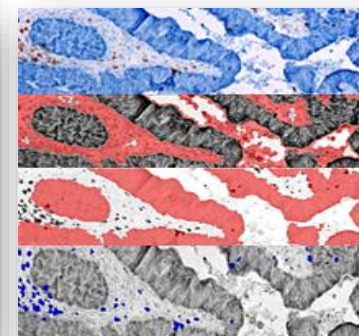**Sarcoma (M-FISH)**
chromosomes rearrangement

Breast cancer
apoptosis quantification (PARP-TUNEL)

Lung cancer : CTCs automated detection & ploidy classification (specific FISH probes)

HSIL cells in cervical LBC
Automated detection

Colon tumor: ROIs & Immune infiltration %
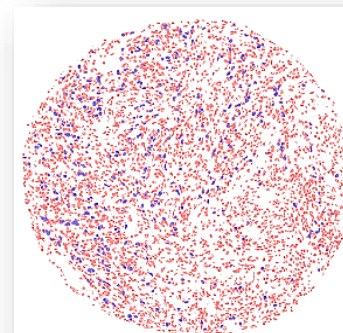
Prostate tumor TMA
Proliferation Index (Ki67)
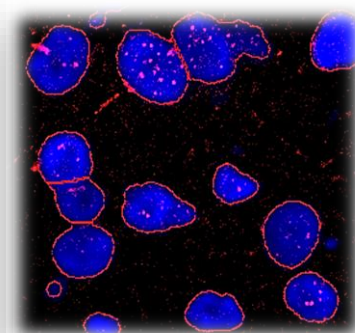
Hepatoma: Telomerase
activity assessment

CTC : Assisted Digital Quantitative Cytology

" Review & Validate " dialog
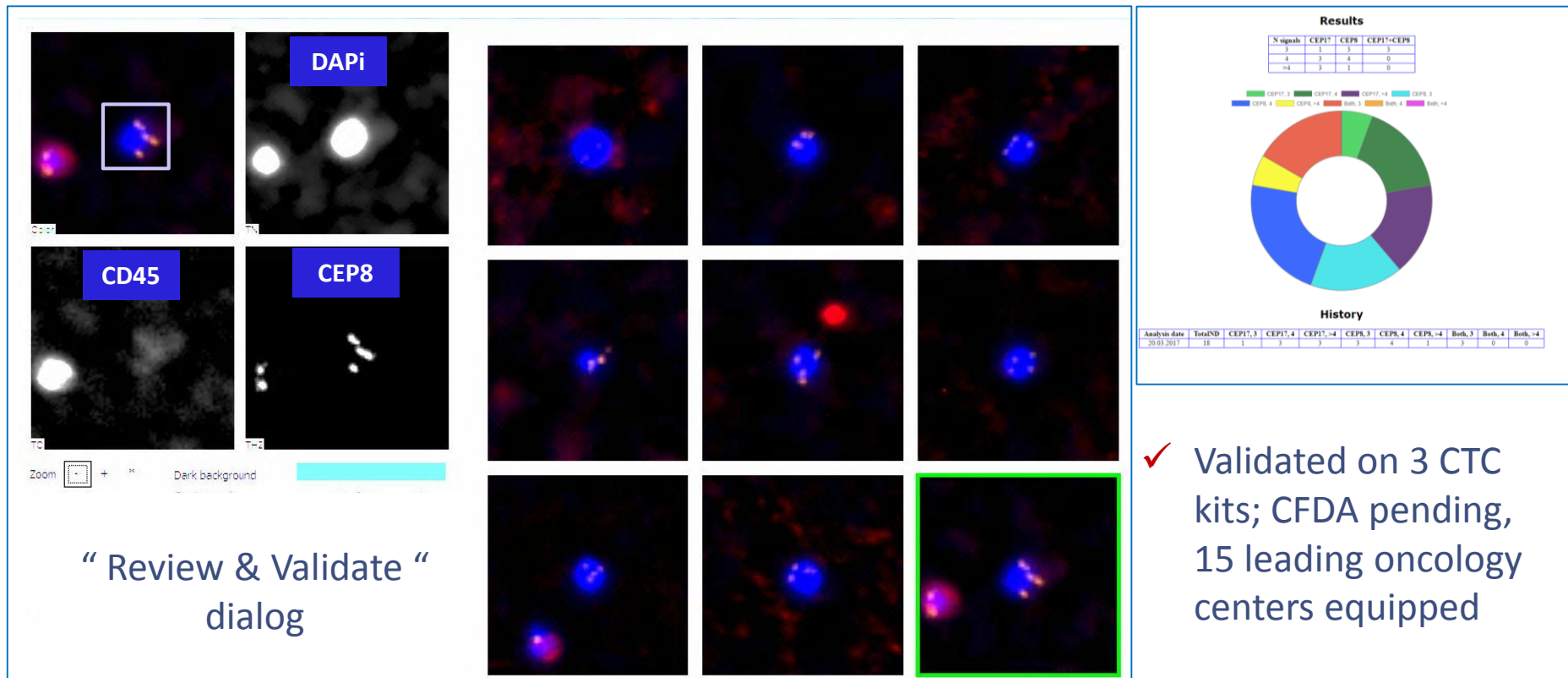
✓ Validated on 3 CTC kits; CFDA pending, 15 leading oncology centers equipped

CTCs' detection, counting and classification

- High sensitivity (98%) and specificity (85%)

- Customized Software Protocol modules adapted to commercial kits (blood sampling, enrichment, markers & probes)

Smart Solution for Rare and abnormal Cell characterization

Our extensive library of validated software protocols allows a variety of markers assays covering the whole spectrum of Life Sciences R&D

Multiplex Protein Quantification
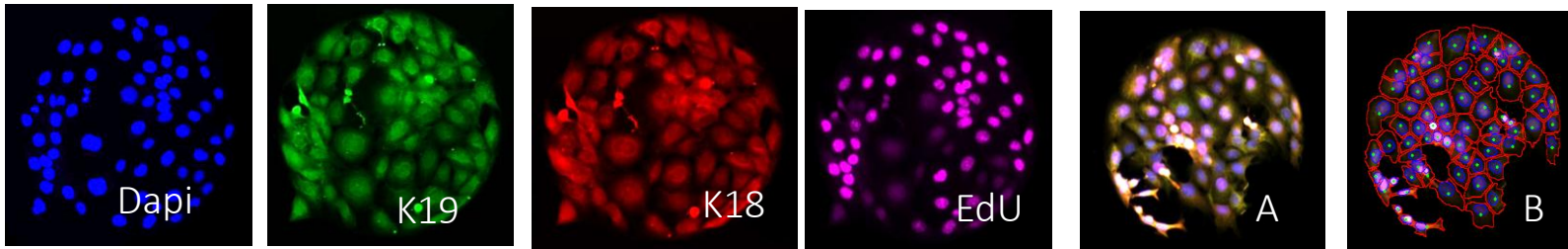
Phenotype Screening of siRNA cell-microarray using Pathfinder High-Content Imaging for multiplex study of kinase inhibition effect on 4 prostate (here PNT2) cell lines and primary cells' differentiation, proliferation, and viability variations.
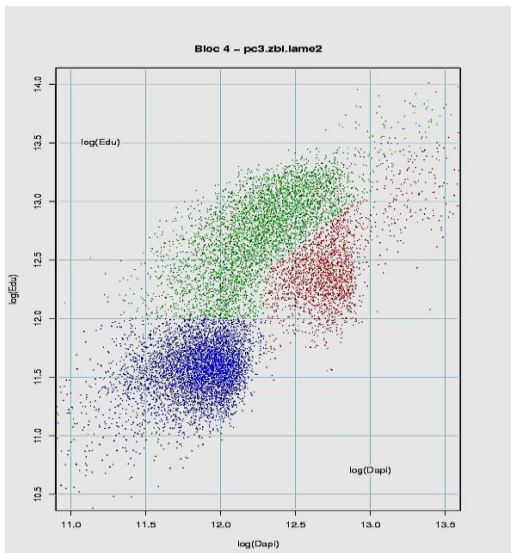
A - Merge of multimodalities images of 4 fluorescent dyes
B - Individual cells segmentation and phenotypes distribution' Analysis

BIOTYPE is a DGE/Territories FUI 2 funded Project, led by IMSTAR, labeled by MEDICEN Paris Region. Collaboration with CEA/LSD, Dr. Xavier Gidrol

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DISCRIMINATIVE ADVANTAGES

The Pathfinder technology and its products range is characterized by:

- Applications versatility thanks to Scanning versatility and Library of proprietary algorithms.

- Accuracy, Sensitivity, Specificity… closest to Cyto-pathologist's eyes ("Golden Standard") for multiplex biomarker identification, validation & standardization.

- Gain of 10 to 20-fold in terms of total process' time and workflow's cost efficiency.

- Up-scalable image-data analysis for automated scoring & interpretation with all benefits of flow cytometry.

- Regular upgrades. New developments take advantage from customers' global base.

- Compliancy with International SOPs and OECD guidelines. Integrated Image Database Management (US Patent n° 7,379,578.

- Unique «Review & Validate» interface for effective interpretation of selected abnormal/rare cells.

- Adaptability to User's timeline : Reactivity, customization and tailored project management.

DOMAIN OF EXPERTISE AND OFFER

Quantitative Cell imaging for tumor markers tests

- **Precision Medicine** : Assistance to earlier diagnostic, prognosis or treatment management in oncology, by *in situ* cells' fine characterization, cellular/molecular biomarkers validation, phenotype *ex vivo* assessment and CTCs detection & scoring.

- **Predictive Heal**th: DNA damage evaluation, e.g. Micro-Nucleus, Comet, and H2AX expression assays, in Genetic Instability, cancer studies and Genotoxicity for Biomonitoring.

IMSTAR Offers Systems / Services

- Co-development or sub-contracting in large scale phenotype screening tools and ex vivo assisted diagnostic (may be combined with in vivo imaging).

- Tumor cells and Regions-of-Interest recognition and characterization in Digital Cyto-Pathology (cells spread, liquid biopsy, tissue sections). Dramatic assistance to the Biologist, Oncologist, Pathologist/technician for robust, faster interpretation.

- Highly-parallel sample (e.g. cell-arrays) testing for higher throughput.

- Virtual and distant imaging functionalities (expertise sharing).

Pathfinder™ fully automated workstation is intended for use as a tool for the scientist, biologist, pathologist in the detection, classification and counting of cells of interest based on morphology, phenotype, structure or organization. All cytology/histology modules are used as an assistance in diagnostic. All other applications are for Research Use Only*.

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IMSTAR Expertise

Some reference customers & partners

THANK YOU FOR ATTENTION!

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