CytoProcessor®: A New Cervical Cancer Screening System for Remote Diagnosis

Poster Presentation:
Arnaud Renouf, President & Co-Founder, PhD
Christian Potel, VP Sales & Marketing

info: contact@datexim.com

SDiPath
Mikroskopie Hörsaal
Institute for Pathology
University of Bern
6th of June 2019
From Public Research Lab, CNRS, France

Specific skills
- Image processing and analysis
- Artificial Intelligence (Machine Learning & Deep Learning)
- Anatomo-pathology & Digital Pathology

Team
- 6 PhD (Computer Sciences, Artificial Intelligence, Cell Biology)
- 1 Sales & Marketing Director
- 1 Engineer (Computer Sciences, network, support)
- 1 CT (IAC)
Digital Pathology... NOW!

Volume
Sensitivity

Time
Cost

©2019 Datexim – All rights reserved
Digital Cervical Cancer Screening Solution
Complete Chain for Cytology

CytoProcessor™ enters seamlessly in your laboratory practice

Sysmex proposes an integral solution

Sample collection  Sample preparation  Slide scanning  CytoProcessor™  Diagnosis
CytoProcessor®: 3 steps

1. Slide Digitization
2. Cell Nuclei Detection
3. Cell Classification & Sorting
4. Visualization For diagnosis

CytoProcessor® is a system for the automatic detection, classification, and sorting of cell nuclei from digitized slides. It is used for diagnostic purposes in pathology.
Quality and regulation

- Certified ISO 13485

- 4 years of clinical research with top-tier partners
  - gathering and optimizing 200+ morphometric criteria
  - field validation on real routine tests

- CE marking in November 2017 for CytoProcessor
  - 1 Clinical Validation in a public hospital in Cherbourg, France
    - Study to compare to manual review in Cherbourg Hospital center
    - Published in Diagnostic CytoPathology
  - 1 Clinical Validation in a private laboratory in Lyon, France
    - Study to compare to Hologic ThinPrep solution
    - Published in ActaCytologica

- 2 private labs running in routine
  - 30k and 100k analysis per year
Clinically proven performance

Non-interventional clinical study in a high throughput private laboratory (140k LBC smears per year)

- Comparing CytoProcessor and the Hologic ThinPrep Imager
- Ground truth established by collegial review of discordances
- 9 investigators from a private laboratory

Clinical testing of a complete solution
Clinical Validation Conclusion: Better performance at every level

Imager: 4% of patients with a lesion were missed.
   54 false negatives, including 14 LSIL and 1 ASC-H.
CytoProcessor: 1.5% of lesions were missed.
   21 false negatives, including 6 LSIL
=> 2.5-fold decrease!

The gain in sensitivity is attained without sacrificing specificity.
CytoProcessor had a specificity of 87% after training with a set of 100 slides.
The Imager had a specificity of 85% for the same slides.
Conclusion

- Eliminate handling and cost of fragile glass slides and transportation
- Remotely Access slides immediately with a single click
- Eliminate error-prone searching for abnormal cells in fields of view
- Visualize directly the most pertinent cells for diagnosis
- Let CytoProcessor accelerate the tedious work of screening
- Reach the right diagnosis faster

Digital Pathology NOW!

FASTER AND BETTER