OptraASSAYS™

A WEB BASED SOLUTION FOR AUTOMATED DIGITAL IMAGE ANALYSIS

OptraASSAYS™
Digital Pathology Image Analysis Solution
A White Paper
Jan 2013

Introduction:

Digital Pathology refers to an integrated process of converting glass microscope slides into high-resolution, whole-slide digital images that can be viewed, managed, analysed, shared and interpreted by the Pathologist with a computer instead of a microscope.

It refers to a dynamic image based environment which provides fertile soil for application of various computer aided detection and analysis solutions that help generate objective, quantitative and meaningful information from the digital images.

The Problem:

Histopathology slides are a veritable goldmine of information and knowledge that act as a cornerstone in tissue diagnosis of disease. Diagnosis in histopathology is based on detection of morphological features and recognition of patterns that help differentiate between normal and diseased tissue. In this era of personalized medicine ancillary techniques like immunohistochemistry and molecular studies play an important role in making important decisions regarding targeted therapies for specific malignancies. Moreover quantitation of various morphometric parameters is essential in the research and development of newer target molecules.

Conventionally the analysis of bio markers used for targeted therapy is carried out manually by the human eye, using various techniques like IHC, FISH, CISH. This method is subjective with significant inter-observer variation. Accurate quantitative morphometric measurement is a cumbersome and inaccurate task when performed manually.
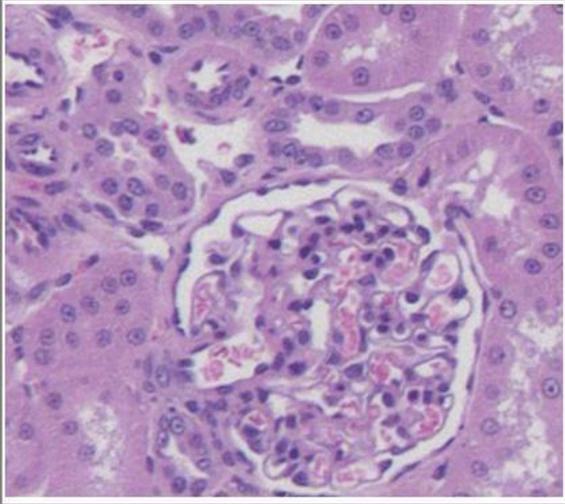
The Solution:

Image analysis algorithms applied to companion diagnostic tests for various biomarkers help in generating quick, automated, quantitative and precise reports. **Optra**ASSAYS™ is an automated image analysis solution that can be used on a variety of tissue stained by various techniques to glean accurate, quantitative information related to biomarker expression. This solution can be used in tandem with CARDs (Computer aided region detection system) for several morphometric analyses. Integration with an efficient image management system facilitates generation of speedy, objective, quantitative and reproducible results.

The OptraASSAYS™ offer multiple benefits like:

1) The solution can be applied to images obtained from digital cameras as well as whole slide scanners

2) Various tissue types like core biopsies, tissue macroarrays and tissue microarrays can be used for image analysis

3) The solution can be integrated with CARDs and analysis libraries for automated selection of region of interest for analysis and various other applications like morphometry, DNA ploidy quantification etc.

4) Variety of nuclear, cytoplasmic and membranous biomarkers stained on IHC can be quantified using the Optra Image analysis solution.

5) A comprehensive, accurate and reproducible image analysis report can be generated with the analysis image and result.

6) The analyzed images are managed, integrated with case details and stored for future reference with the help of an image management system.

7) The information can be accessed anytime anywhere because of the web based architecture

8) Easy integration with 3rd party LIMS and HIS is possible due to HL7 support

9) Being a plug in application the solution can be interfaced with ease to various software applications

10) The solution is compliant with 21CFR part 11 to ensure security and confidentiality of data

Figure 1: Kidney Morphometry (Detection of Glomeruli)
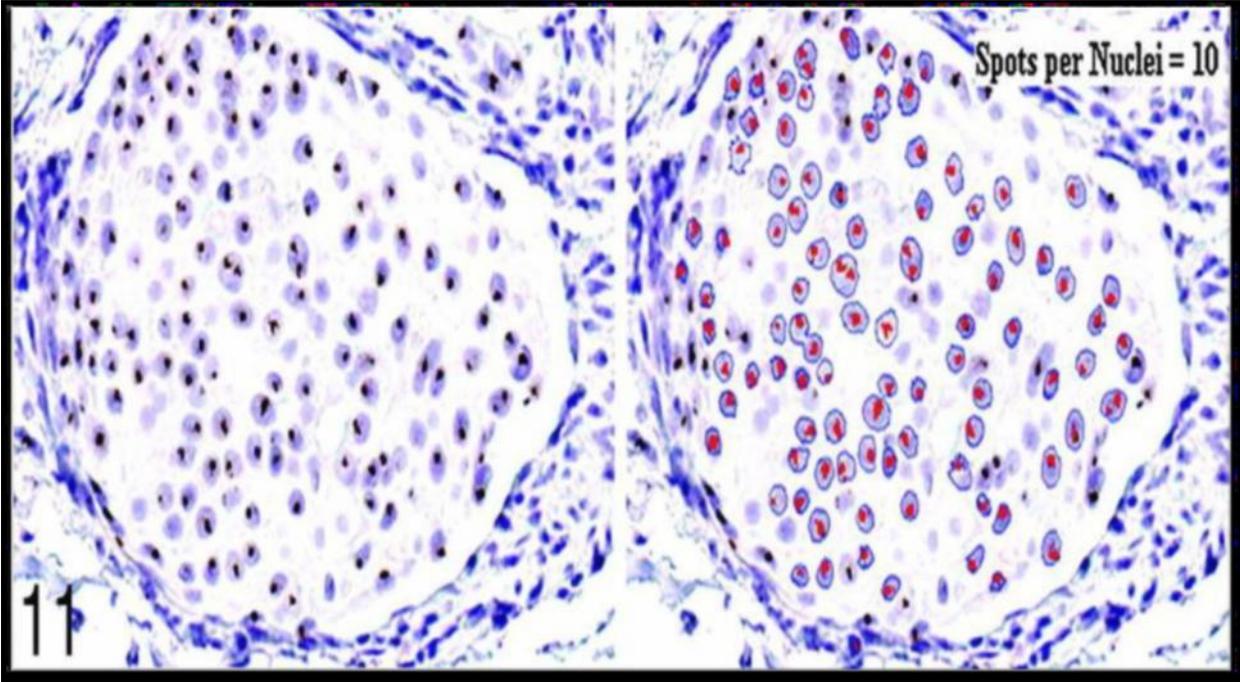

Input image
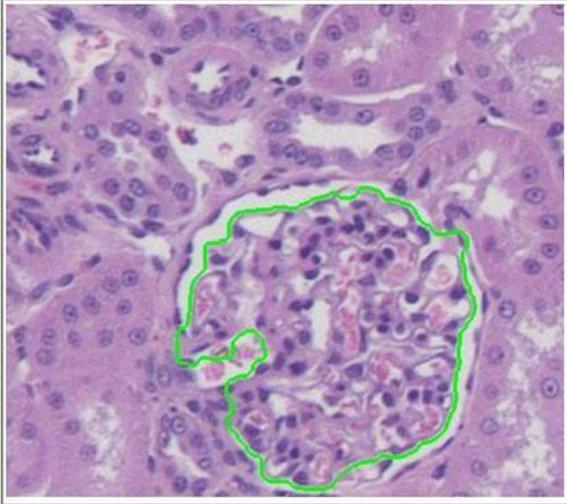
Output image

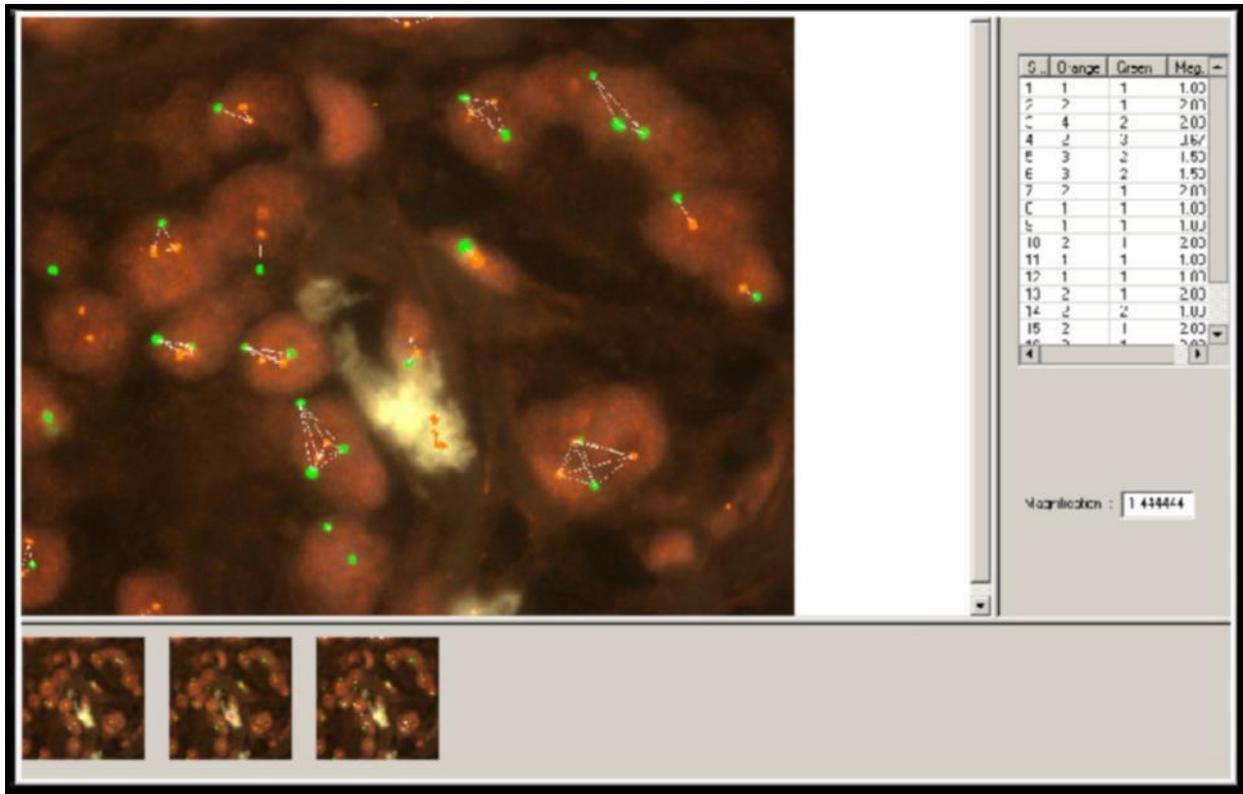## Figure 2: Molecular Genetics (CISH)

FIGURE 3: MOLECULAR GENETICS (FISH)

Summary:

OptraASSAYS™ is an effective image analysis solution that enables automated, objective and reproducible quantification of tissue biomarkers and morphometric parameters, which can be integrated with a computer aided region detection system and image management system, to generate an objective, quantitative and reproducible report.

Getting started:

Please write to us at <u>info@optrahealth.com</u> for a live demo of the solution.