



## Replacing IHC with the AQUA® system

### *The Quantitative Tissue Biomarker Platform*

#### Who are we?

HistoRx is a leader in the development of new quantitative histopathology technology providing exceptional measurement and localization of protein biomarkers to generate more precise, efficient, and cost-effective answers about the safety and effectiveness of new therapeutics in drug development and to provide the foundation for companion diagnostic tests. HistoRx services and products are based on the company's proprietary AQUA® technology, the first platform capable of measuring biomarker concentration with sub-cellular resolution in tissue sections.

#### What do we do?

HistoRx provides collaborative research services for basic biomedical research, preclinical studies, and clinical drug development, facilitating pharmaceutical and biotechnology efforts to improve efficiency and effectiveness across the drug development pipeline to bring new targeted therapies to market. HistoRx develops companion diagnostic products that are linked to our partners' drug candidates to predict therapeutic outcome. The AQUA system is currently being adapted for commercial laboratory use to address the limitations of immunohistochemistry (IHC) based standard-of-care diagnostic tests. IHC is qualitative, lacks standardization, and is inherently subjective resulting in significant deficiencies in the interpretation of test results. HistoRx will replace IHC with quantitative and cost effective biomarker measurement in tissue sections. With the results from AQUA® analysis, oncologists will have for the first time objective, automated quantitative, standardized and reproducible test results that will allow optimal therapeutic treatment selection. HistoRx also sells the AQUA system to academic institutions for non commercial primary research.

#### How do we do it?

Proprietary AQUA® technology from HistoRx brings standardization, reproducibility and quantitation to IHC tissue analysis. The AQUA® platform utilizes automated fluorescence based microscopy, image acquisition and analysis software to provide signal resolution rivaling confocal microscopy while eliminating visual subjectivity associated with conventional IHC methods and offering superior quantification than achievable with conventional chromagen-based systems.

#### What do we provide?

- Customized biomarker assays and reagents
- Instrumentation and software
- Collaborative research services providing quantitative biomarker analysis (while retaining ownership of resulting biomarker assay)

#### Who are our current customers?

- Pharmaceutical and Biotech companies
- Academic research centers

#### Who are our potential customers?

- Commercial reference laboratories
- Hospital, Community and Academic based pathology labs

#### Please contact:

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# HistoRx Turnkey System: Hardware, Software, Reagents



## Platform Architecture:

- Automated Fluorescence Microscope
- PC workstation
- AQUA® image capture and data analysis software
- Commercial grade reagents

## Platform Features:

- Algorithms that generate **confocal-like signal resolution**
- Quantitative output measuring **protein concentration**
- Fully automated **image acquisition and data analysis**
- Reagents compatible with commercial antibodies
- Standardized system with integrated controls
- Target measurement specific to **subcellular localization**

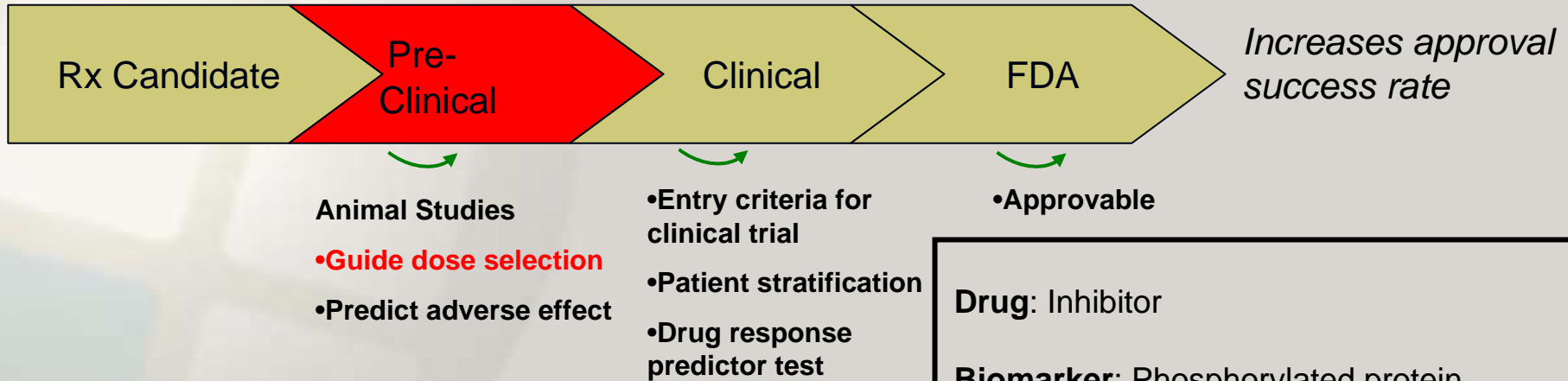
## Performance Features

- AQUA® software subtracts background noise to improve accuracy of biomarker measurement
- AQUA® platform provides instrument-to-instrument standardization to achieve high reproducibility across multiple systems
- AQUA® platform is the **ONLY** system capable of providing quantitative measurement of a biomarker localized to a specific cellular compartment

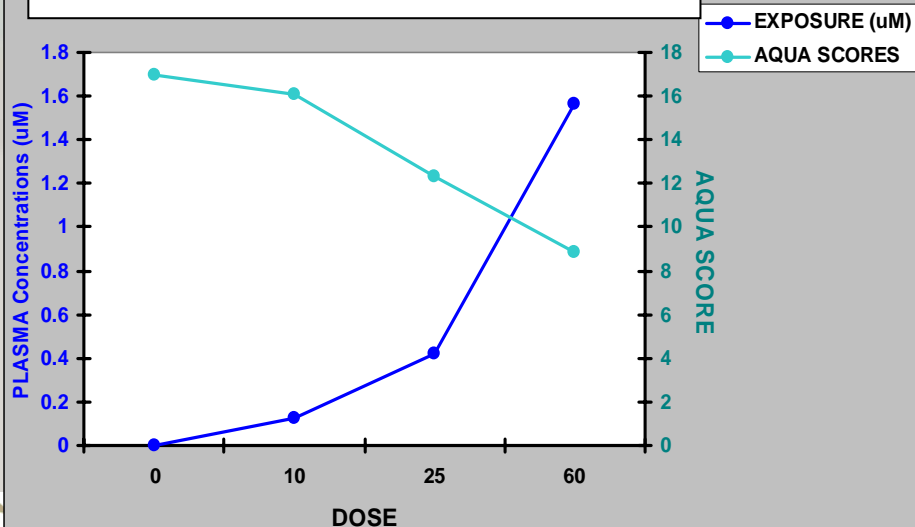
# #1 Pre-Clinical Project: HistoRx “outperforms conventional Western Blot analysis” \*\*

\*\*Pharma client

## How HistoRx Enables Pharma



### HistoRx guides dose selection



**Drug:** Inhibitor

**Biomarker:** Phosphorylated protein

**Samples:** Mice Xenografts

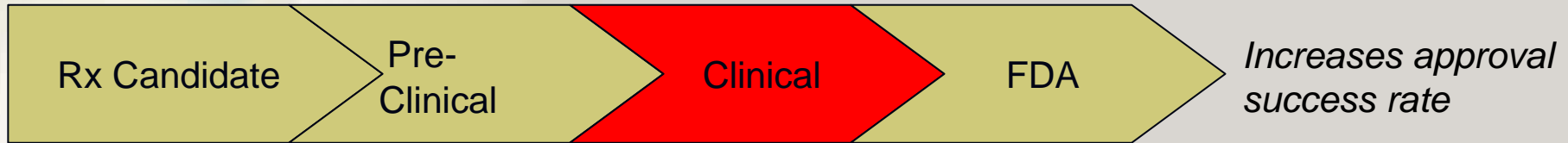
**Objective:** Measure target in 4 animal groups exposed to increasing amounts of drug to guide dose selection

**Result :** Found significant difference in Expression between control and 2 highest dose groups

**Next steps:** refining dose selection

# #2 Clinical Project (retrospective): HistoRx captures changes in protein expression associated with drug response

## How HistoRx Enables Pharma



### Animal Studies

- Guide dose selection
- Predict adverse effect

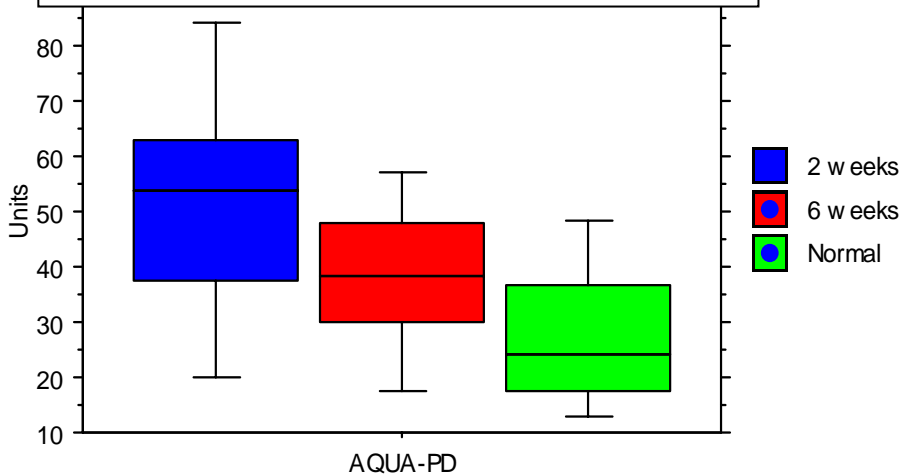
### •Entry criteria for clinical trial

- Patient stratification

### •Drug response predictor test

### •Approvable

### HistoRx measures drug response



**Drug:** Modulates translocation of target between subcellular compartments

**Biomarker:** Molecule that accumulates in subcellular compartment in the absence of functional target

**Samples:** Biopsies from normal and clinical patients at 2 and 6 weeks post treatment

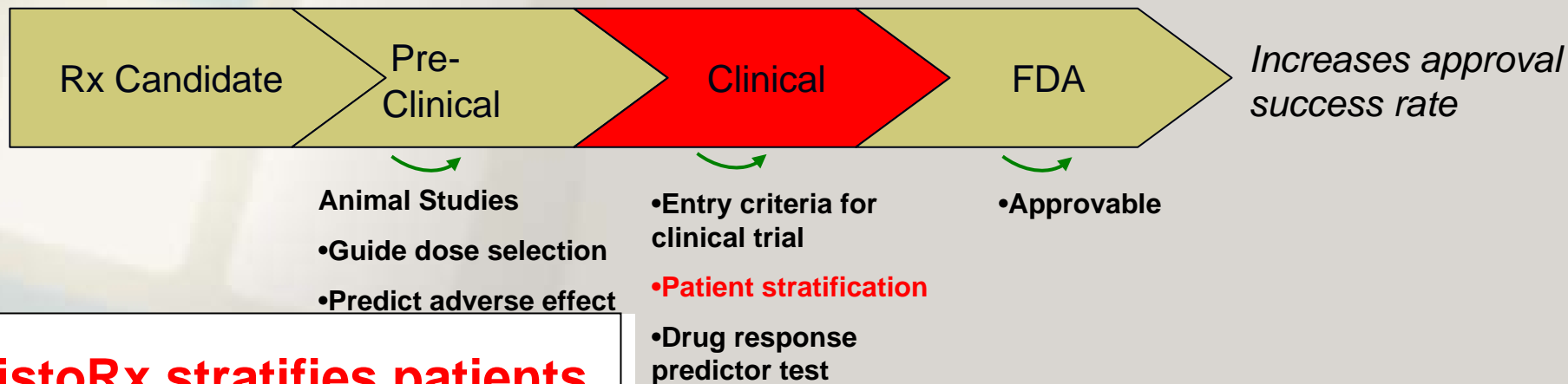
**Objective:** Measure effect of drug dose on biomarker to guide dose selection for clinical trial

**Result:** Measured decrease in biomarker in subcellular compartment in response to drug

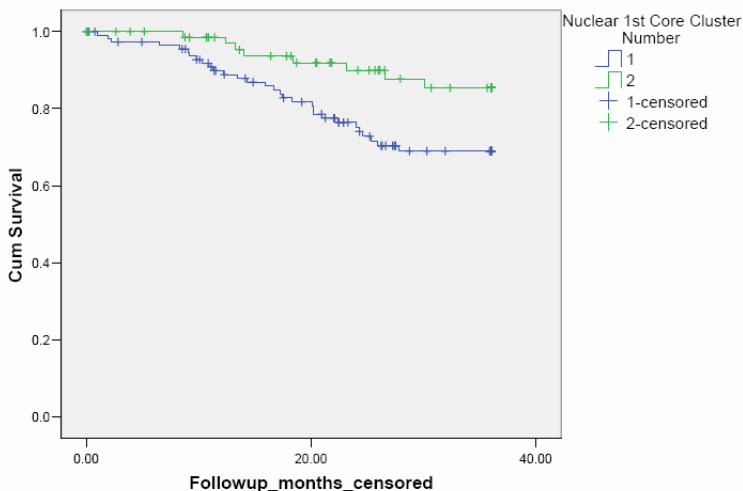
**Next steps:** Test prospectively on clinical samples.

# #3 Clinical Project (retrospective): Identifies patients with low biomarker expression and poor outcome

## How HistoRx Enables Pharma



## HistoRx stratifies patients based on biomarker



**Target:** Biomarker involved in cellular repair

**Samples:** Non-small cell lung cancer biopsies

**Objective:** Stratify samples based on survival and expression of biomarker

**Results:** Statistically significant stratification of patient populations

**Next Steps:** test on larger clinical cohort