

The background features a faint, light gray illustration of a gear. The gear's teeth are represented by rectangular shapes. A grid of thin lines is overlaid on the gear, creating a mesh-like pattern. A solid blue horizontal bar is positioned across the middle of the image, containing the text.

Diagnostic Development

Diagnostic Development

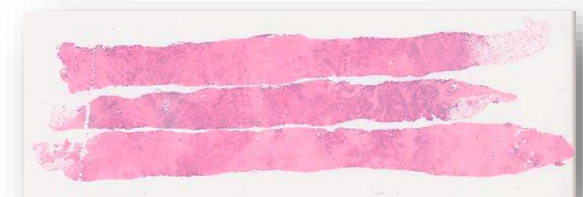


- Initiate
- Disseminate
- Nurture expertise in the development of diagnostic assays
- Support rapid implementation of precision medicine through personalized diagnosis and treatment
- Extend support and expertise to the cancer research community through active collaborative
- Train the next generation of molecular pathologists and clinician-scientists

Existing Technology and Training Support

Tissue Handling

- ▶ Nucleic acid extraction (fresh frozen, formalin-fixed)
- ▶ Micro- or Macro-dissection
- ▶ Laser Capture Microdissection
- ▶ Tissue Microarray Construction
- ▶ Block Sectioning
- ▶ H&E Staining or other special stains



Existing Technology and Training Support

In-Situ Assays

Immunohistochemistry (IHC)

- ▶ Leica Bond
- ▶ Ventana Benchmark

Fluorescence in situ Hybridization

- ▶ Cytogenetic preparations
- ▶ Formalin-Fixed Tissues

Aperio AT2 Slide Scanning

Bright field and Fluorescent Microscopy

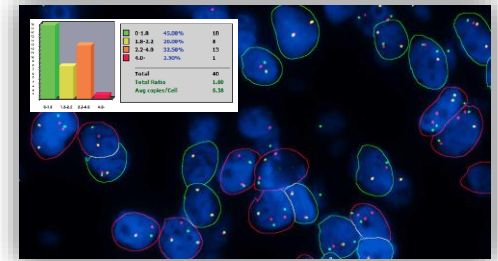
Image Analysis

- ▶ Definiens Tissue Studio

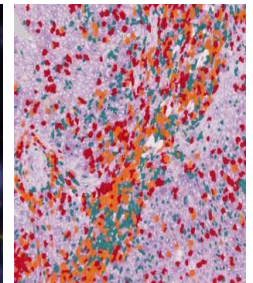
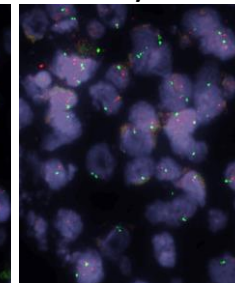
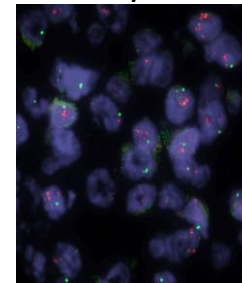


<http://bioview.com/>

HER2/CEP17



CCND1/CEP11



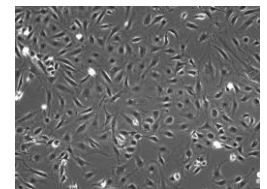
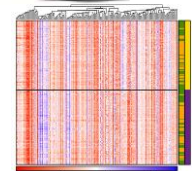
www.definiens.com



Existing Technology and Training Support

Molecular Biology

- ▶ Gene Expression
 - ▶ Nanostring nCounter
 - ▶ RT-PCR
- ▶ Tissue Culture/*in vitro* Assays
- ▶ Targeted Sequencing Assays
 - ▶ Oncomine Comprehensive Assays



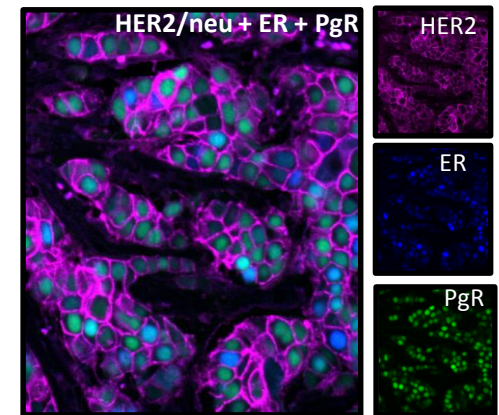
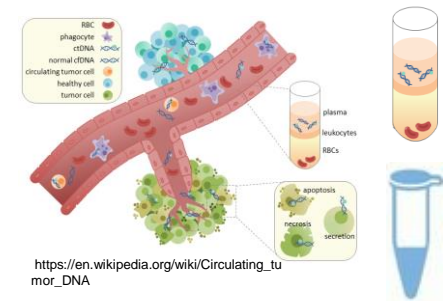
Diagnostic Development Projects

- ▶ **Clinical Trial Translational Science (Retrospective and Prospective)**
 - ▶ OPTIMAprelim (n=300): RNA extraction, Prosigna Assay
 - ▶ BIANCO (n=300): RNA extraction, Prosigna Assay, TMA construction, IHC (ER, PgR, Ki67)
 - ▶ TEAM (n=4500): DNA and RNA extraction, expression profiling multiple panels (Nanostring), copy-number (Affymetrix), targeted sequencing (OICR, Sequenom, Oncomine Comprehensive Assay)
 - ▶ MA27 (n=3700): 79, 200-core TMAs for IHC (ER, PgR, HER2) and HER2/CEP17 FISH
 - ▶ BR9601 (n=300): DNA and RNA extraction, expression profiling multiple panels (Nanostring), targeted sequencing (OICR, Cold Spring Harbour)
 - ▶ MA5 (n=700): DNA and RNA extraction, expression profiling multiple panels (Nanostring),
 - ▶ EORTC Male Breast Cancer Consortium (n=500): Expression profiling (Nanostring), Oncomine Comprehensive Assay
 - ▶ TACT2 (n=4300) 21, 200-core TMAs for IHC (ER, PgR, HER2, Ki67, EGFR, CK5/6, BCL2) and HER2/CEP17 FISH
- ▶ **Industry Partners**
 - ▶ ThermoFisher, NanoString, BioNTech, GE, Roche
- ▶ **Internal Collaborations**
 - ▶ OICR (PanCureX, OCTANE, REACT, OICR TRIs, CDIC)
 - ▶ Sunnybrook Health Sciences, Queen's University, UHN
- ▶ **Academic Collaborations**
 - ▶ Sunnybrook Health Sciences, University of Toronto, McGill University,
- ▶ **Fee for Service**



Technology Development

- ▶ Cell-free DNA Isolation and Targeted Sequencing
 - ▶ diagnosis and prognosis
 - ▶ therapeutic response
- ▶ Custom Multiplex Ligation-dependent Probe Amplification Assay Design
- ▶ Pan-Cancer Targeted Sequencing
- ▶ Multiplex Fluorescence IHC
 - ▶ Collaboration with M.Yaffe (SHSC)
- ▶ Single-Cell Profiling
- ▶ On-slide nucleic acid extraction



M.Yaffe



Diagnostic Development



Dr. John Bartlett

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Dr. Jane Bayani



Ontario Tumour Bank

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Ceola Weir

Elise Poupard

Rachel Kelly

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Diagnostic Development Team

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