



Project BASTION „From Basic to Translational Research in Oncology”

Kick-off Meeting International Advisory Board Meeting

WP4: Acquisition of research equipment

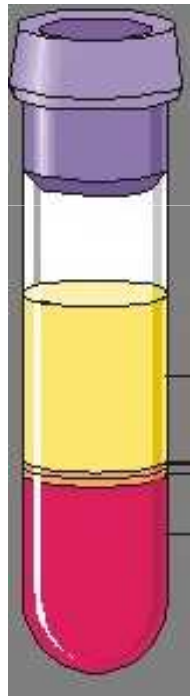
Warsaw

November 27th 2012



Robotic system for large-scale and high-throughput isolation of DNA and RNA

1. Blood collection



Plasma

White blood cells & platelets

Red blood cells

2. Fully automated extraction from up to 100 blood samples/day

DNA

RNA

3. Quality control and analysis

PCR based target-enrichment system for the next-generation sequencing

48 samples x 48 primer pairs in >30nL volume

Sample Barcoding

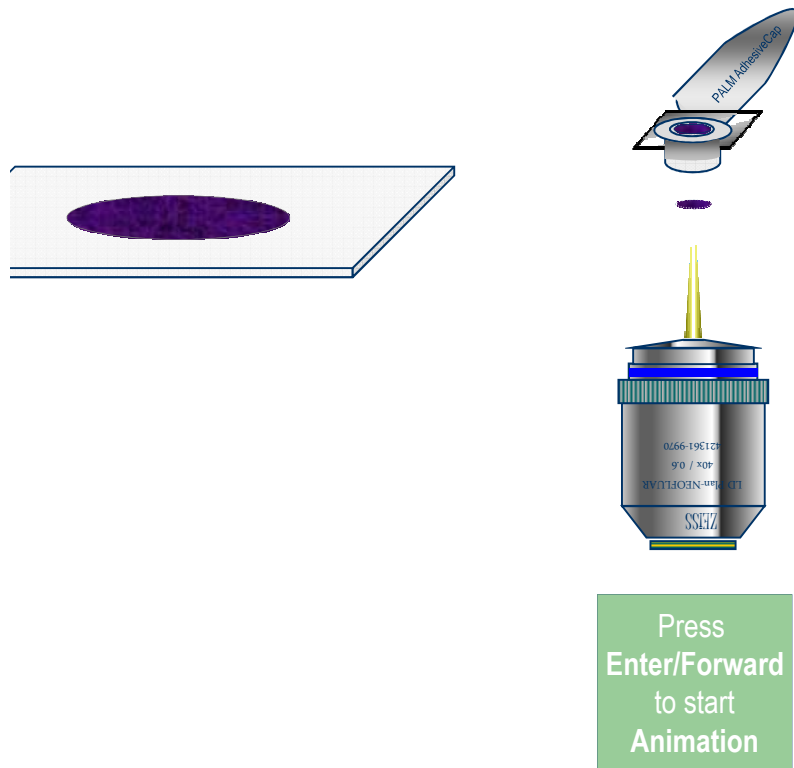
Compatibility with Roche 454, Illumina and Ion Torrent NGS platforms

Custom design of primer sets for desired targets and platforms

Example fo target-enrichment system (Fluidigm)



Non-Contact Laser Capture Microdissection



1. Imaging



2. Capture



3. Verification



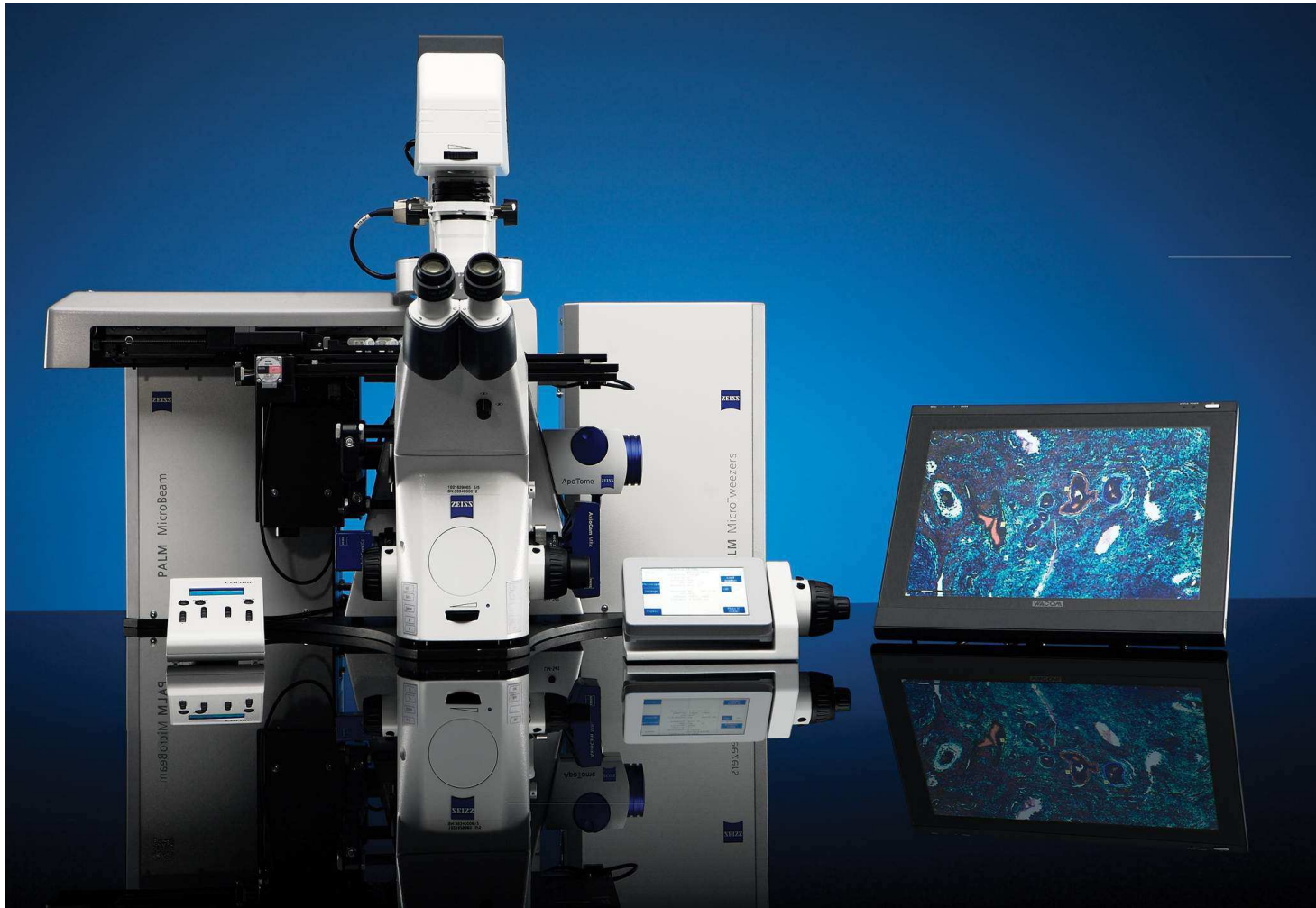
4. Isolation



5. Downstream

- DNA analysis
- RNA analysis
- Protein analysis

Example of Laser Capture Microdissector (Zeiss)



Medium-throughput genomic sequencing system based on semiconductor technology

- low cost of a single experiment
- Quick turnaround (single day)
- potential clinical applications
- key research applications:
 - human scale genome sequencing
 - exome sequencing
 - gene sequencing
 - somatic mutation detection
 - whole transcriptome
 - small RNA sequencing
 - gene expression by sequencing
 - ChIP sequencing
 - methylation analysis
 - de novo sequencing

Complementation of Junior (low throughput) and Illumina HiSeq 1000 (high throughput) NGS systems

Example of a medium-throughput genomic sequencing system (Ion Proton, Life Technologies)



Protein purification workstation

Fast and reliable fully equipped platform for purification/separation of biomolecules for their subsequent structural and functional studies

Components:

- FPLC system
- Ultracentrifuge
- Sonicator
- Homogenizator
- All-purpose laboratory centrifuge
- Full set of columns for purification/separation of biomolecules of different sizes

Protein purification work station example (AKTAavant)



Automatic platform for multispectral detection of fluorescence, absorbance and luminescence on microtiter plates

Applications – detection of:

- luminescence
- absorbance
- fluorescence
- fluorescence polarization (FP)
- fluorescence resonance energy transfer (FRET)
- time resolved fluorescence resonance energy transfer (TR-FRET)

Advantages:

- Monochromator-based
- Fast, reliable and sensitive
- Fully automated process of assay preparation guaranteed with top level liquid handling system (biorobot)
- Ready for high through-put drug screening



In **SUMMARY** we plan to acquire:

System for DNA/RNA isolation
PCR based target-enrichment system
Medium-throughput NGS system
Laser Capture Microdissector
Protein purification workstation
Platform for multispectral detection of fluorescence,
absorbance and luminescence

Acquisition of the listed equipment will extent our research capabilities in particular in the area of high throughput genomic/proteomic research

