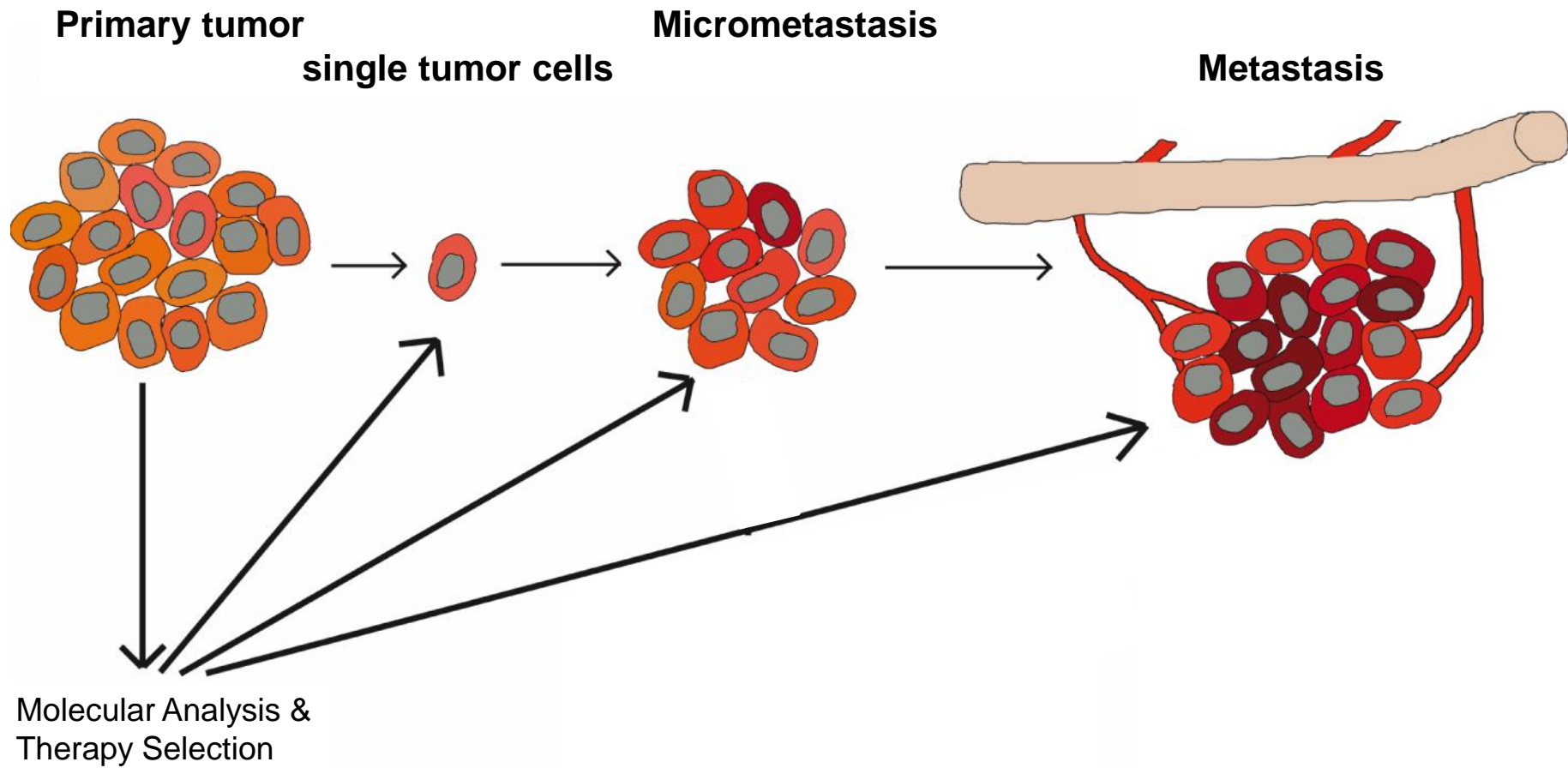

Integrated platform for liquid biopsy-based personalized cancer medicine

Dr. Bernhard Polzer

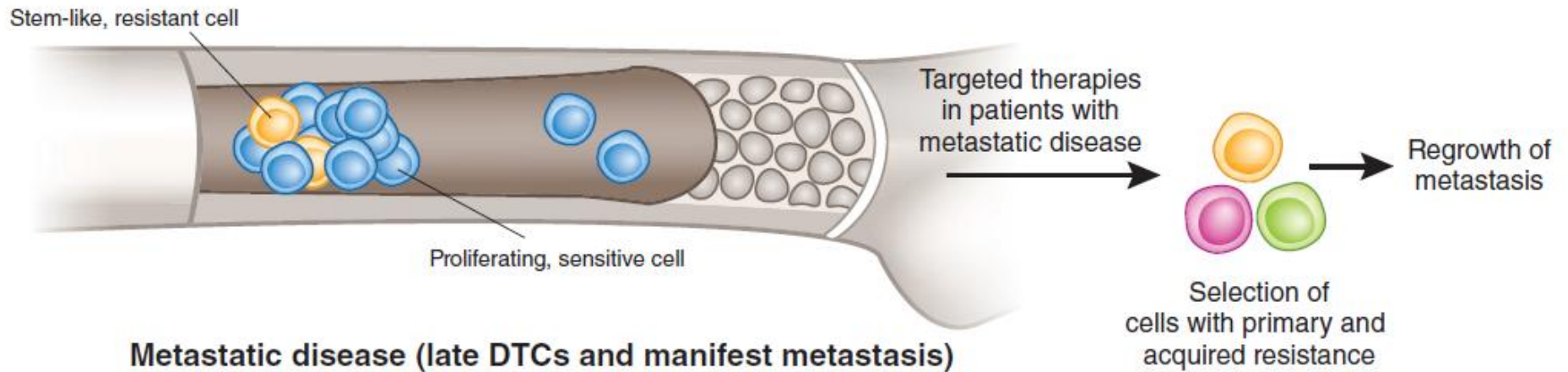
**Fraunhofer ITEM-Regensburg
Personalized Tumor Therapy**



Personalized cancer therapy



Cancer is an evolving disease

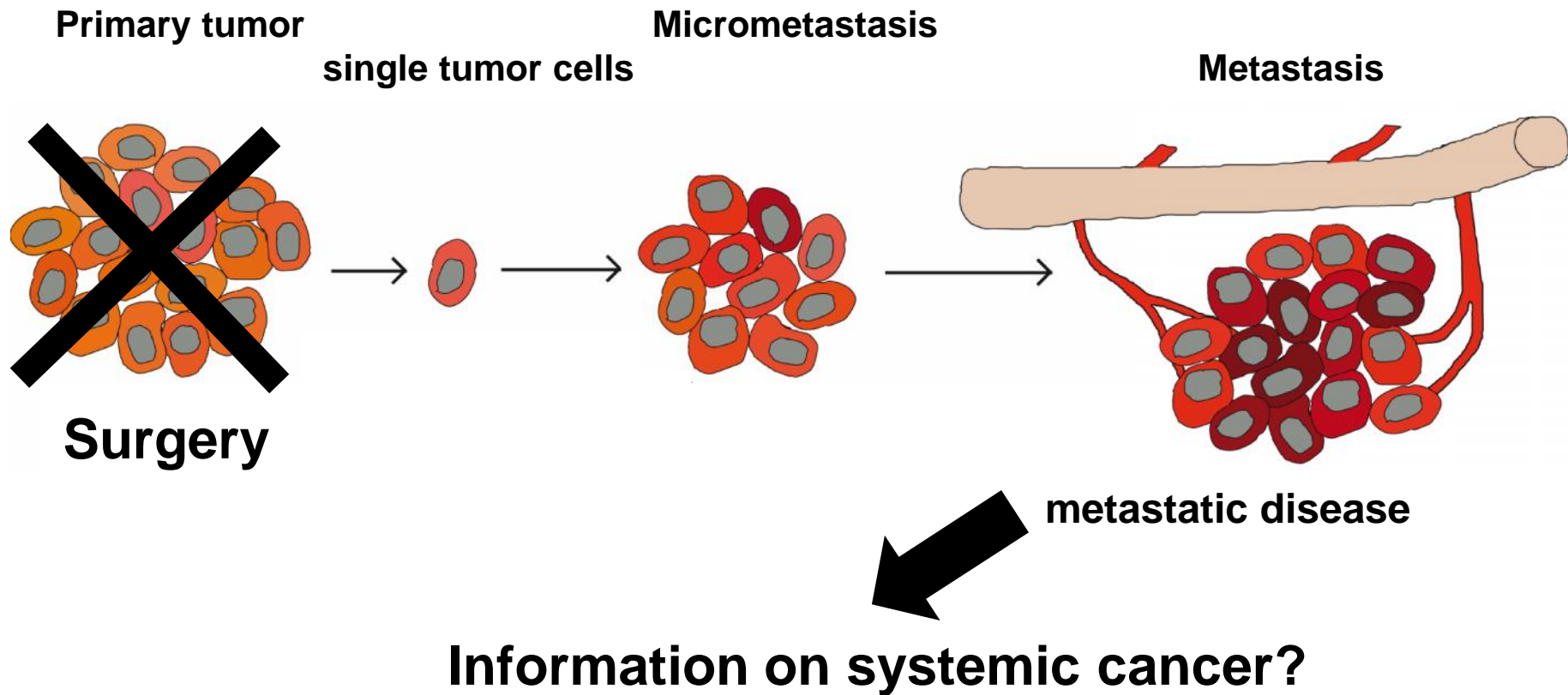


Cellular heterogeneity is the basis for therapy resistance

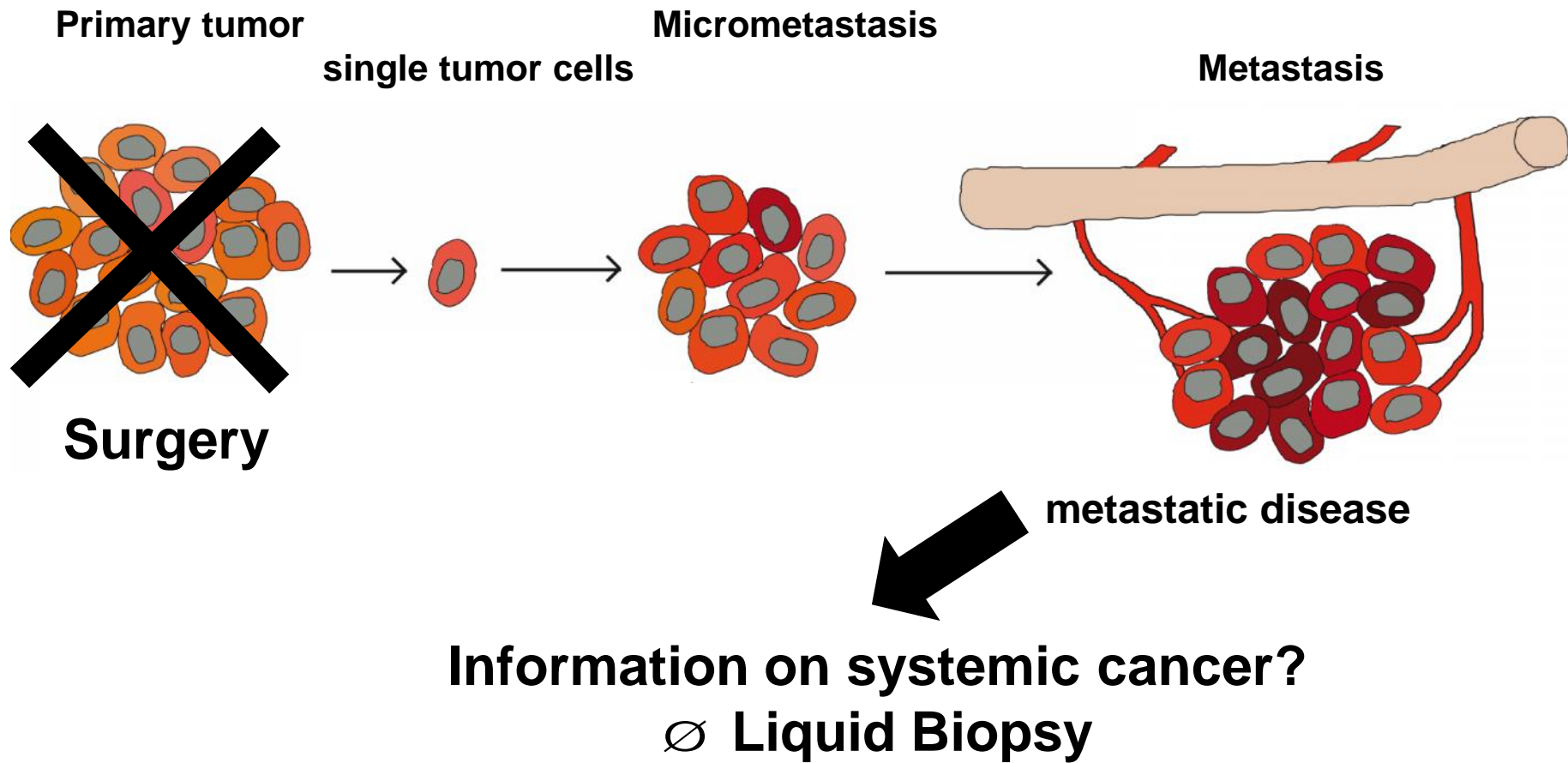
Selection for resistant, aggressive subclones by applied therapies

Polzer and Klein, Nat Med 2013

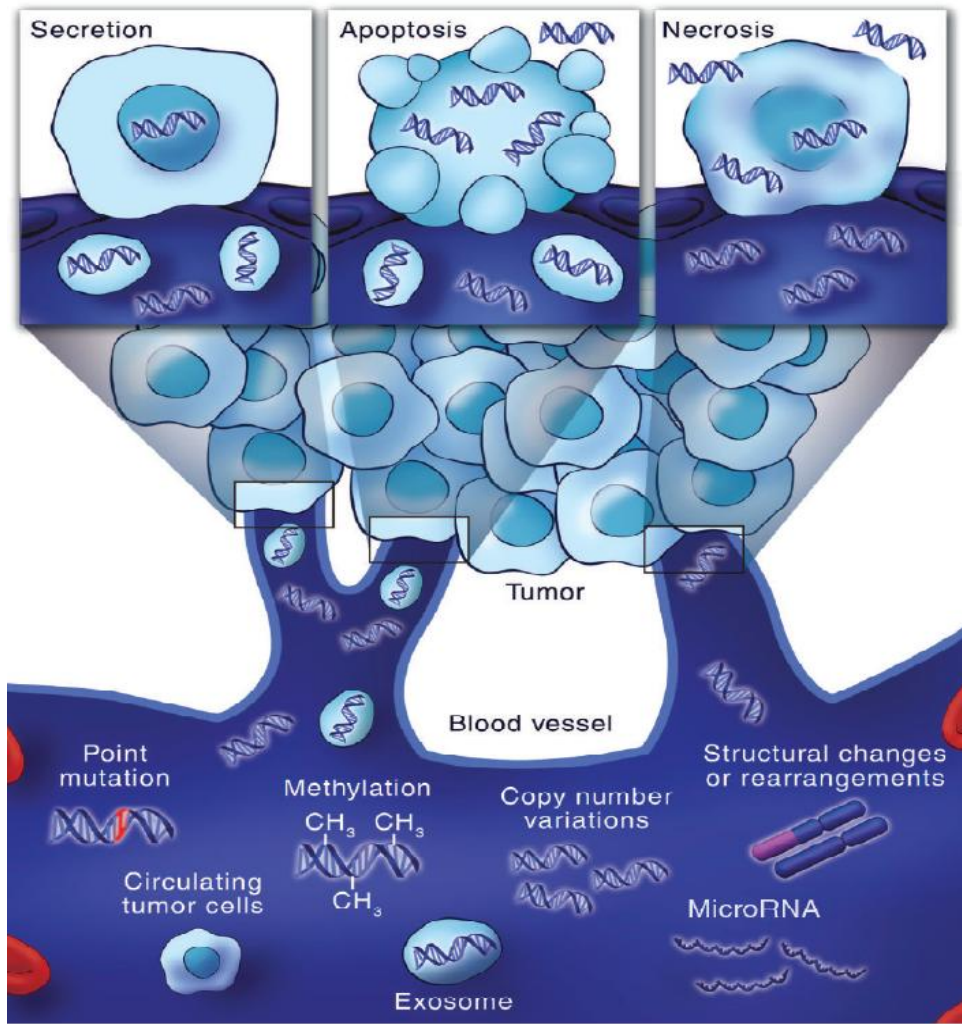
Personalized cancer therapy



Personalized cancer therapy



Concept of liquid biopsy



Information on systemic cancer in a simple blood test

- Circulating tumor cells (CTCs)
- Circulating tumor DNA (ctDNA)
- miRNA (and other RNAs)
- Extracellular vesicles (e.g. exosomes)

Diaz and Bardelli, JCO 2014

Analysis of circulating tumor cells

1. Enrichment for CTC



2. Detection of CTC



3. Isolation of single CTC



4. Whole Genome amplification (WGA)



5. Unbiased molecular analysis



e.g.
CellSearch®

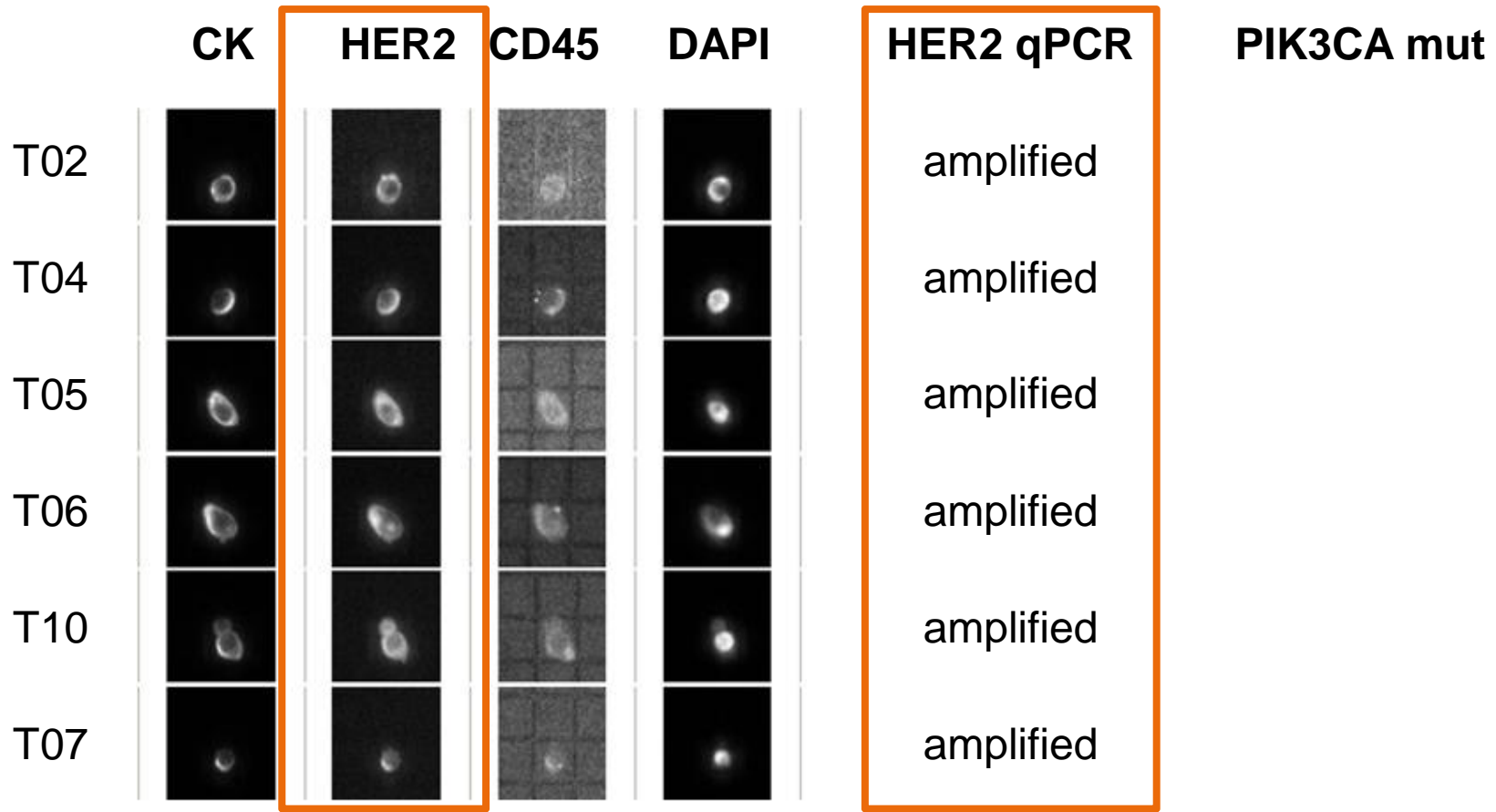
e.g.
DepArray™



Ampli1™
WGA

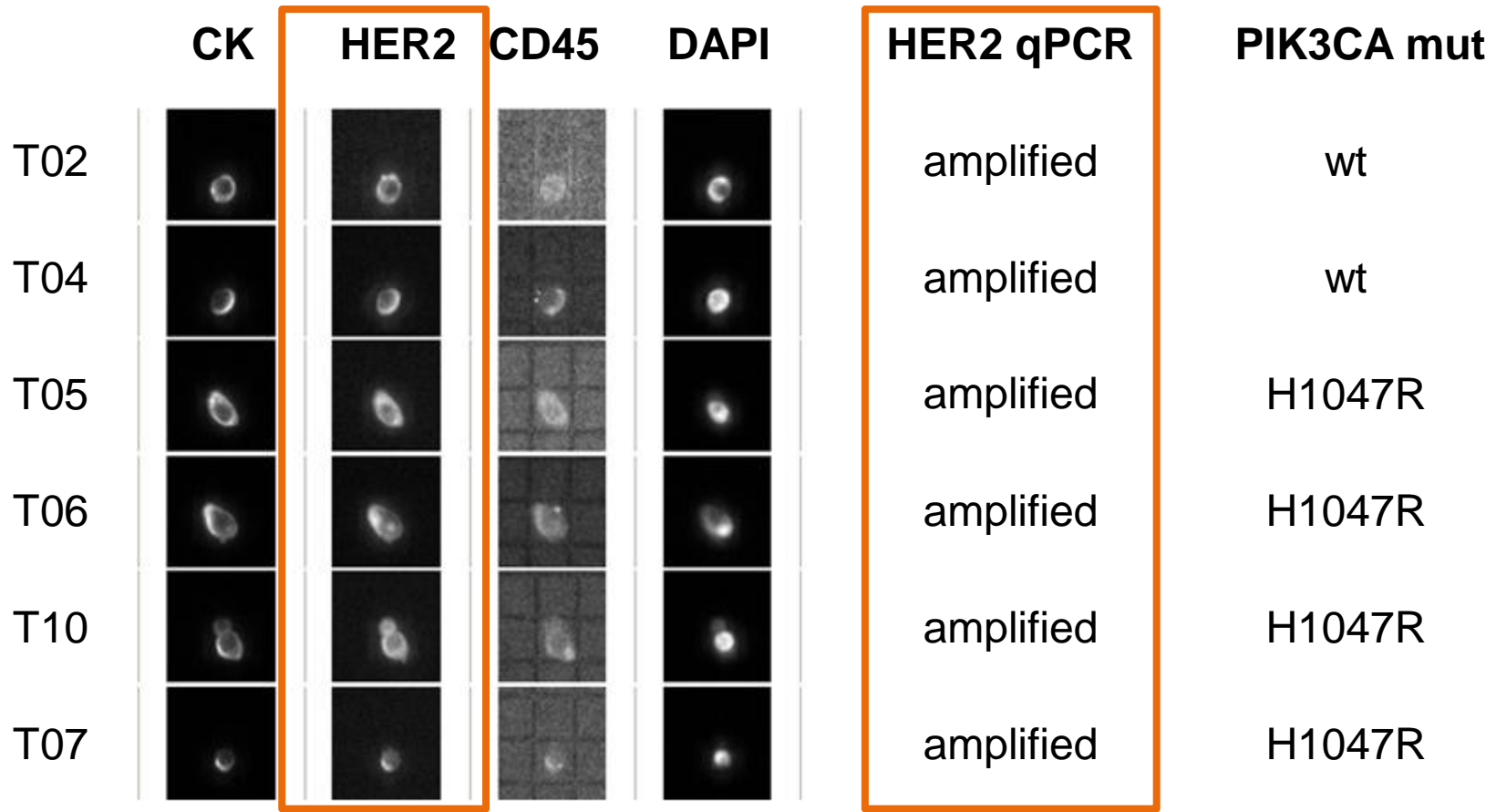
Molecular heterogeneity in breast cancer

Patient MU09 Primary Her2 negative, CTC count 42 (Veridex)

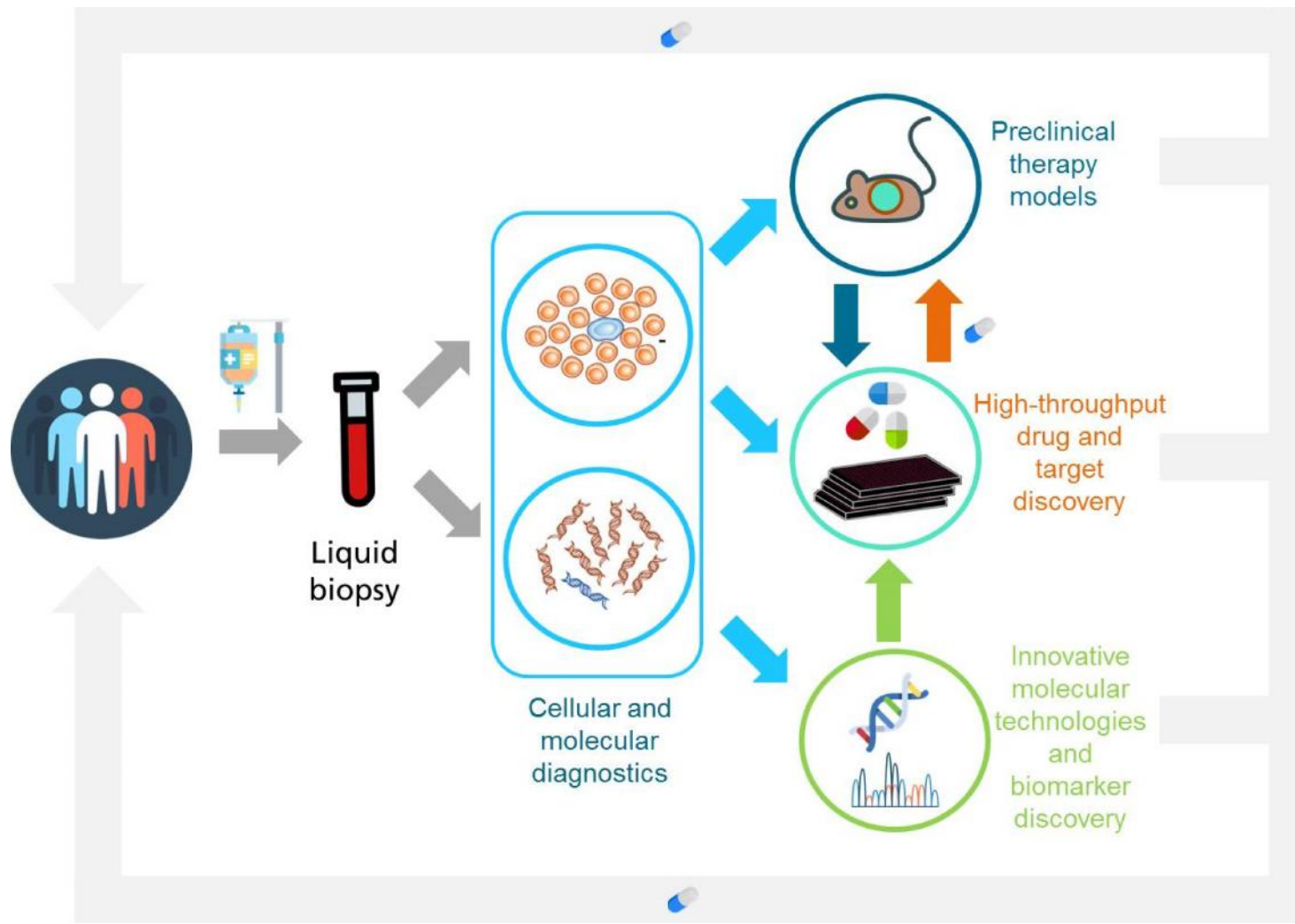


Molecular heterogeneity in breast cancer

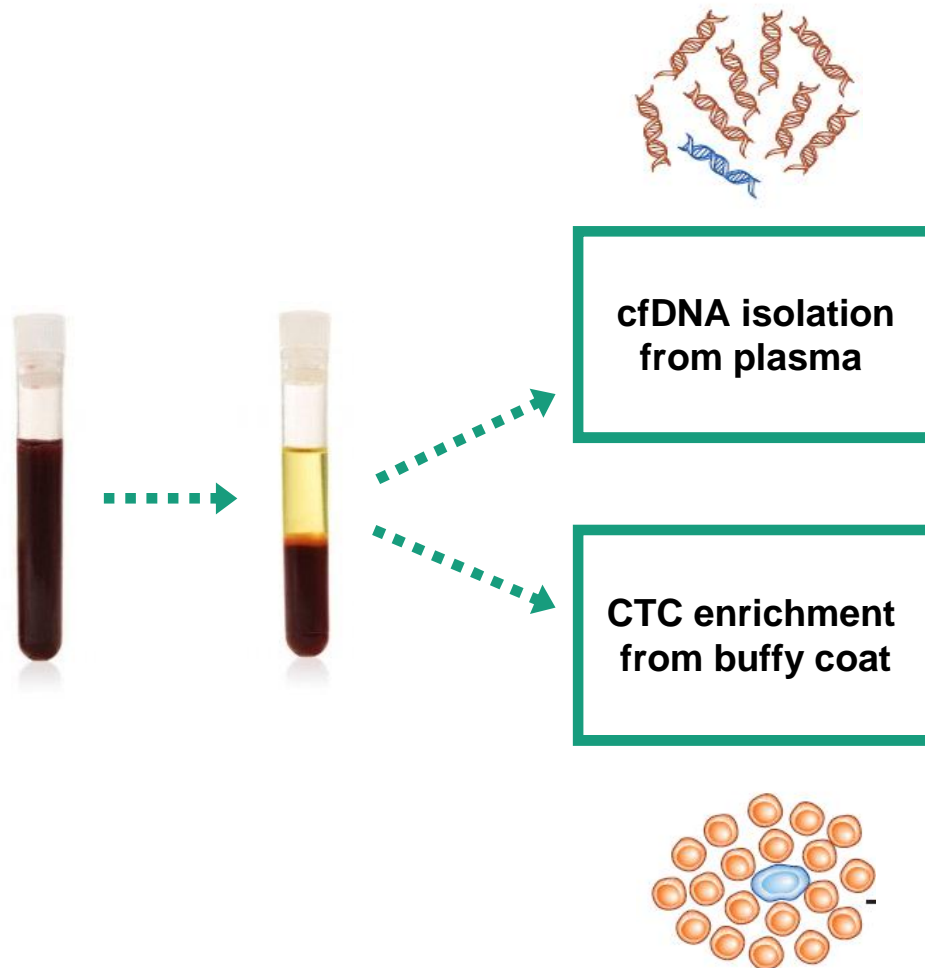
Patient MU09 Primary Her2 negative, CTC count 42 (Veridex)



Liquid biopsy platform at ITEM-R

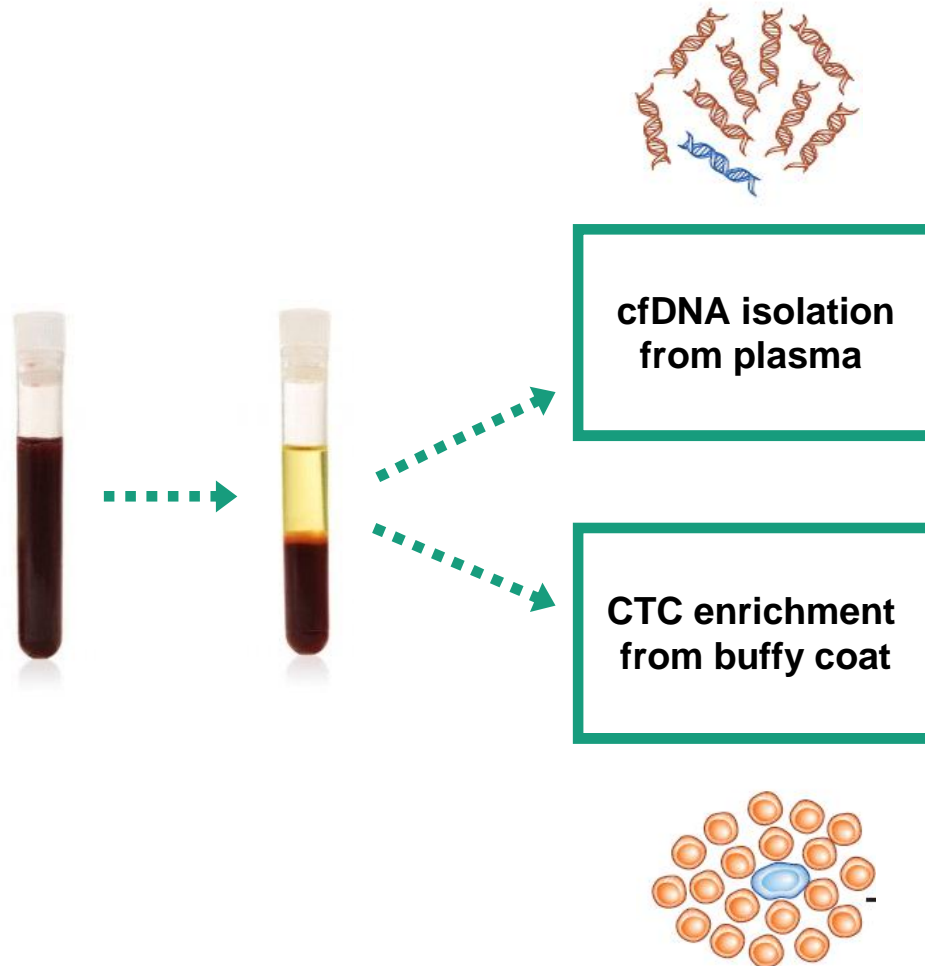


Comprehensive liquid biopsy concept



**Expertise in
preanalytical workflows and
sample logistics
for liquid biopsy studies**

Comprehensive liquid biopsy concept

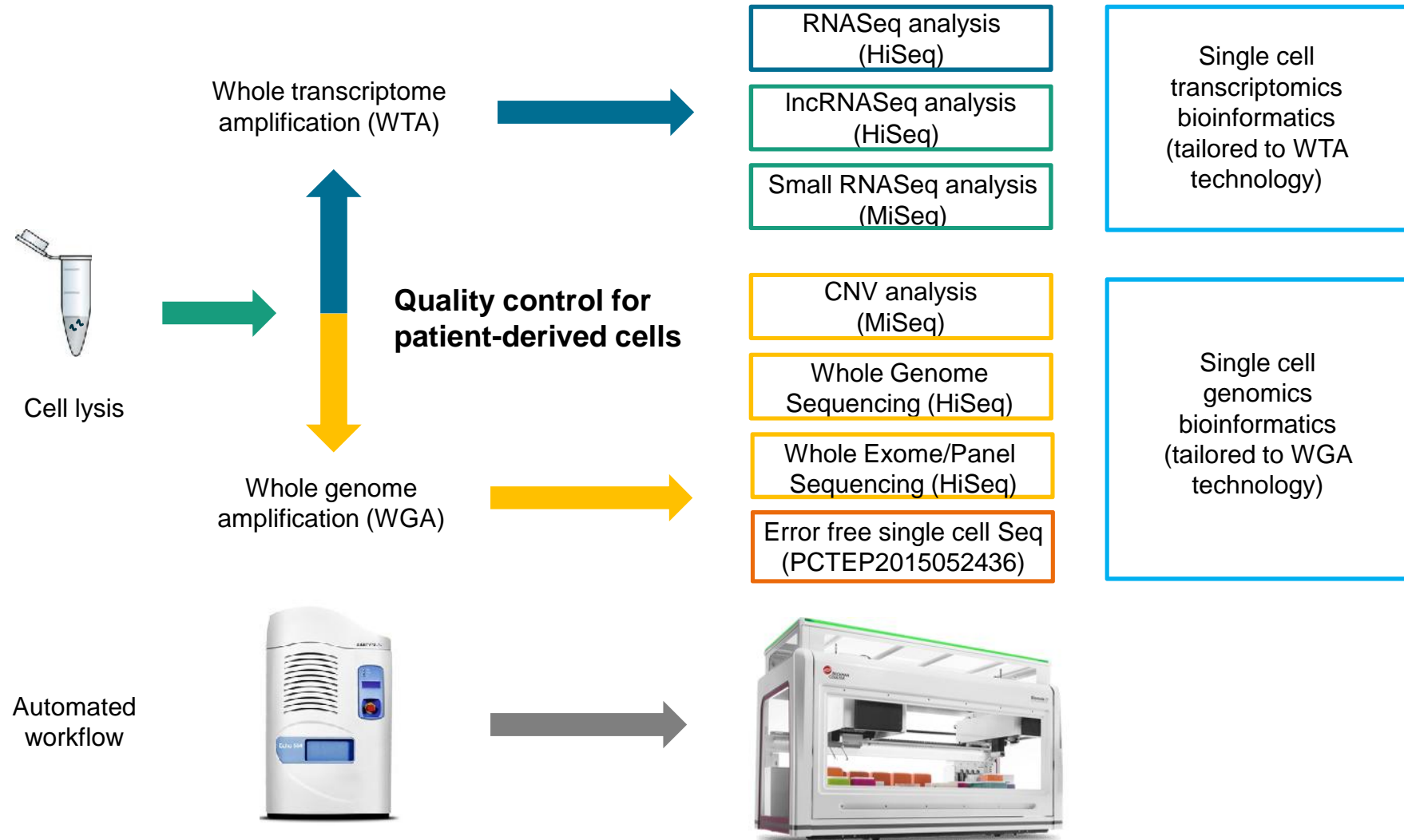


Expertise in preanalytical workflows and sample logistics for liquid biopsy studies

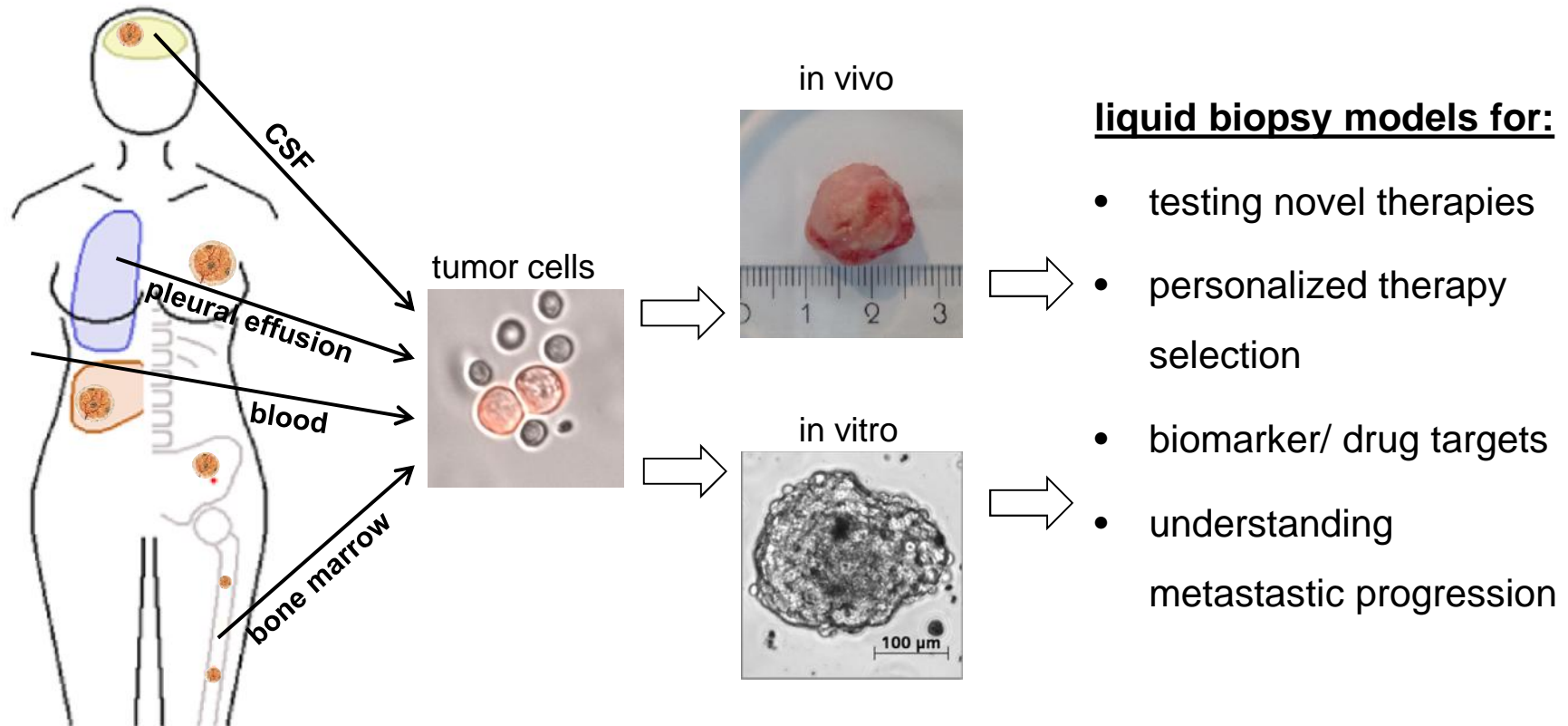
Protocols available for

- customized strategies (e.g. epitope based/marker-free)
- High blood volumes (50-100 ml, leukapheresis)
- Other body fluids (e.g. bone marrow, cerebro-spinal fluid) and organs (e.g. lymph nodes)

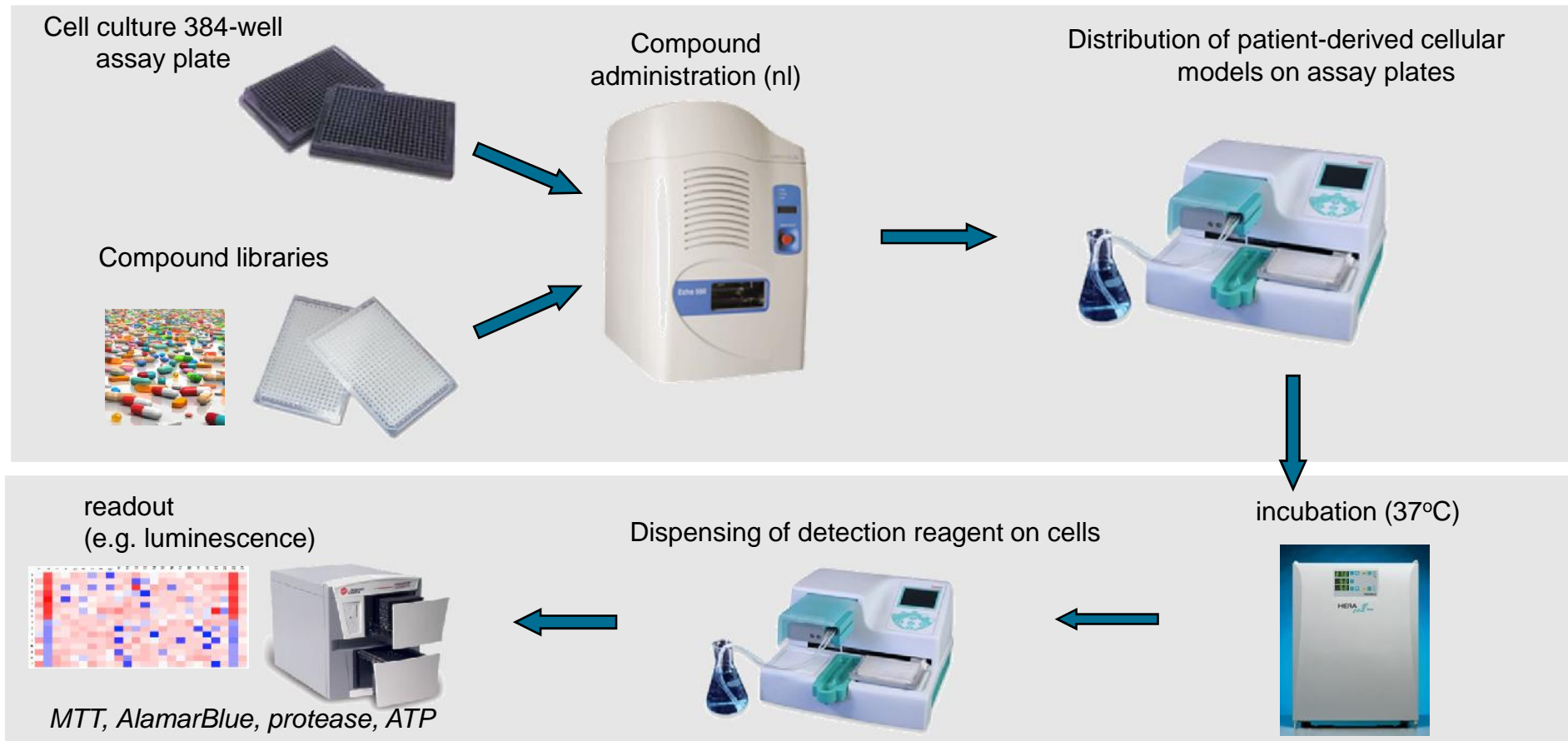
Molecular analysis of single cells of patients



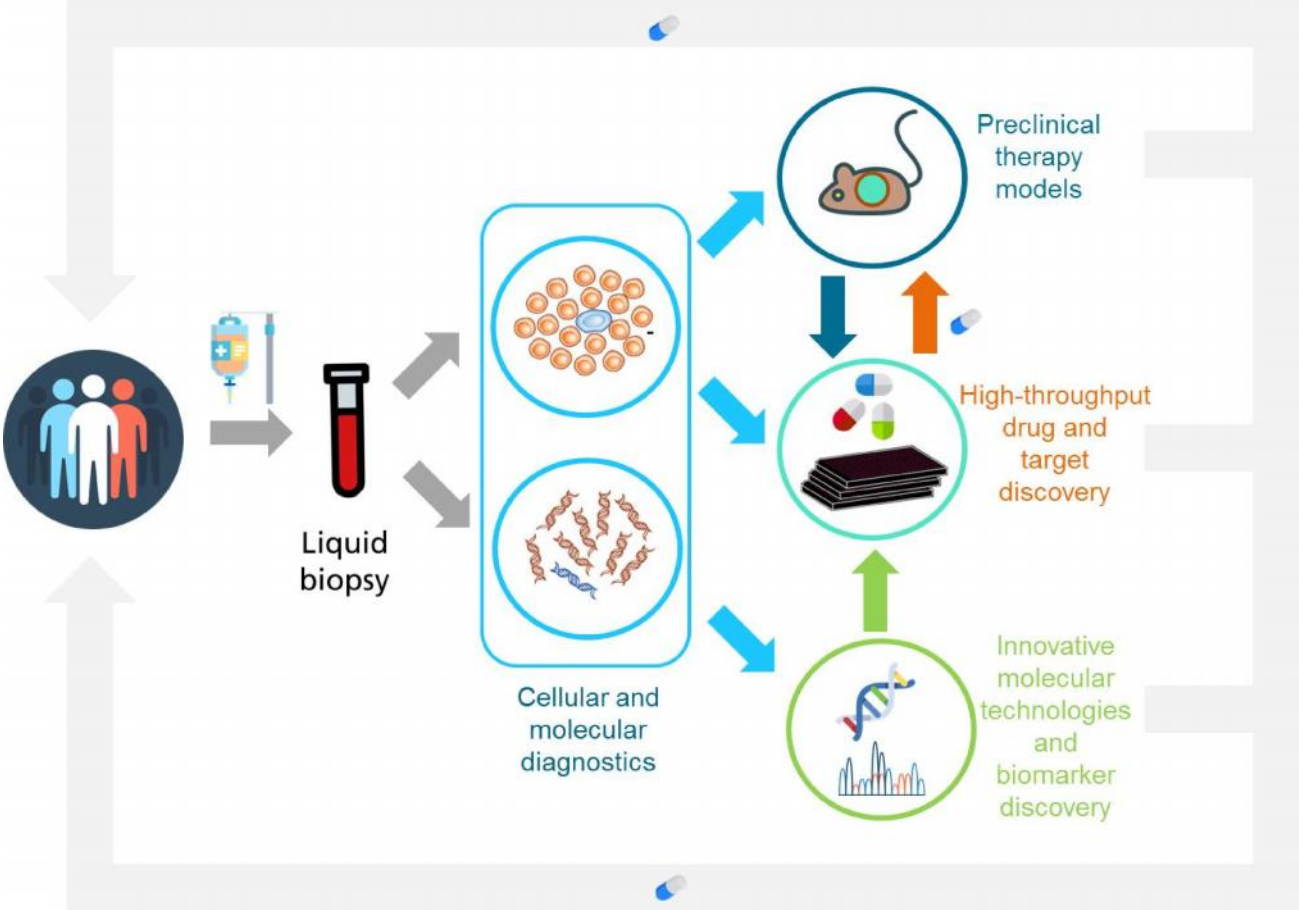
Preclinical models from liquid biopsy samples



High-throughput screening of compounds in patient-derived cell models



ITEM-R - your premium partner for liquid biopsy solutions in a clinical context



Poster Z9

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