

# Next Generation Diagnostic Approaches: From Arrays to Next Gen Sequencing – Will Data Points Lead Us to the Cure?

## Moderator

Colin Hill, Chief Executive Officer, President & Chairman, *GNS Healthcare*

## Panelists

Michael J. Pellini, MD, President & Chief Executive Officer, *Foundation Medicine*

Donald Bergstrom, MD, PhD, Associate VP and Global Head, Translational and Experimental Medicine, *Sanofi Oncology*

Brad Gray, President and Chief Executive Officer, NanoString

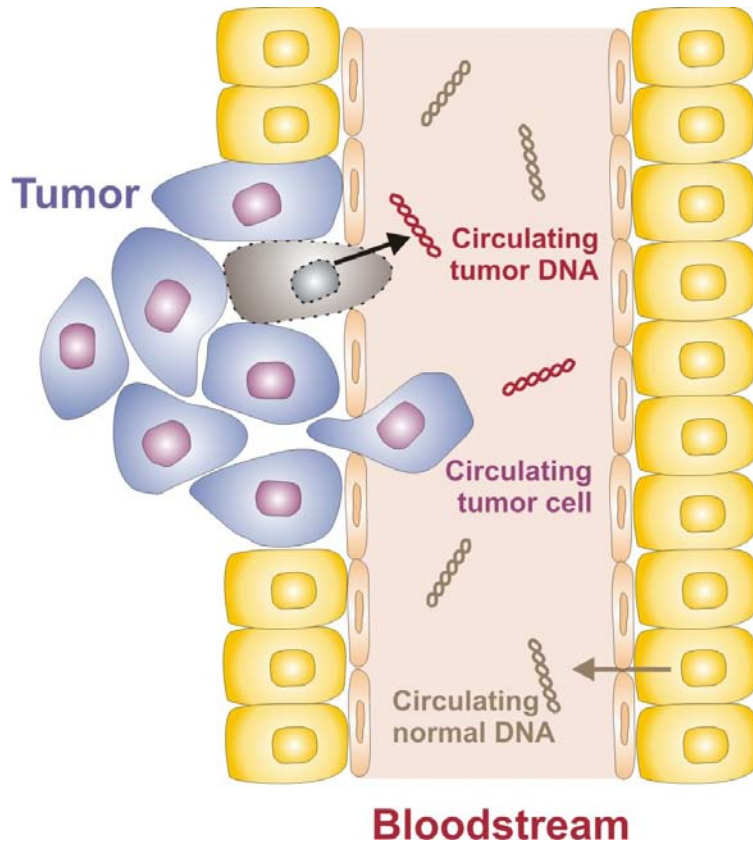
Frank Diehl, PhD, Chief Scientific Officer and Managing Director, *Inostics GmbH*

The logo features the words "CANCER" and "PROGRESS" in a bold, black, sans-serif font. "CANCER" is positioned above "PROGRESS". Below "PROGRESS" is the tagline "by Defined Health" in a smaller, italicized, black font. The text is overlaid on a large, light blue, abstract oval shape that is tilted diagonally.

**CANCER**  
**PROGRESS**  
*by Defined Health*

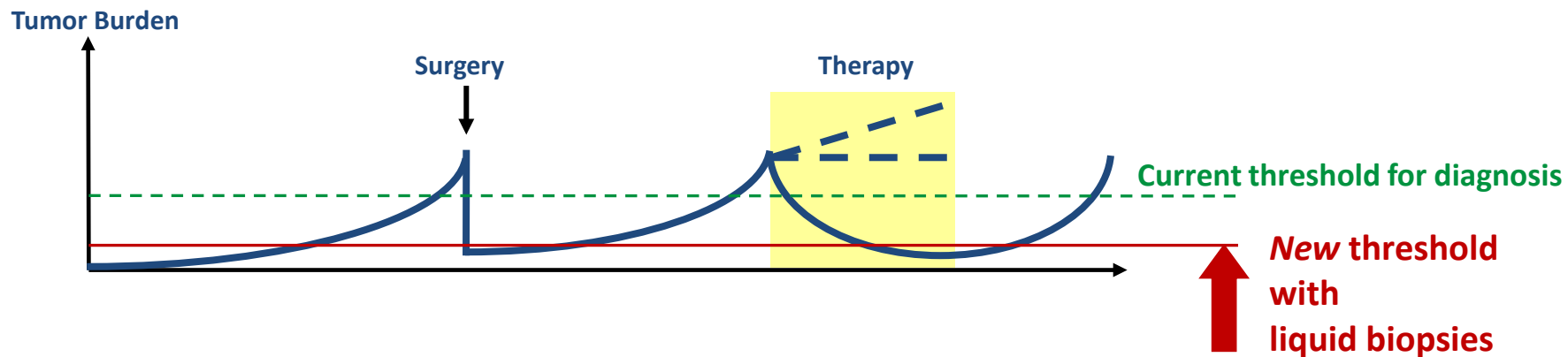
# Liquid Biopsy – Blood-based molecular testing

Panel member: Frank Diehl, Chief Scientific Officer, Inostics



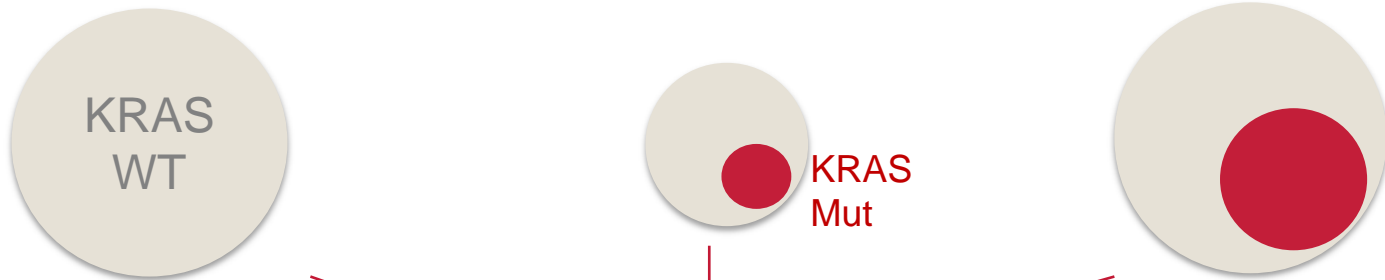
- Circulating tumor DNA (ctDNA) is cell-free DNA released from a tumor into the bloodstream
- ctDNA  $\neq$  CTCs
- Origin: Necrotic or apoptotic tumor cells
- Concentration: 1 to >50,000 Molecules / mL blood (0.01% to 60% of total DNA)
- Nature: Histone bound, <120 bp
- Clearance: Kidney  $\rightarrow$  Urin
- Markers: Mutations, methylation, translocations, copy number variations

# Application of non-invasive molecular testing

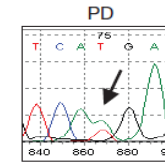
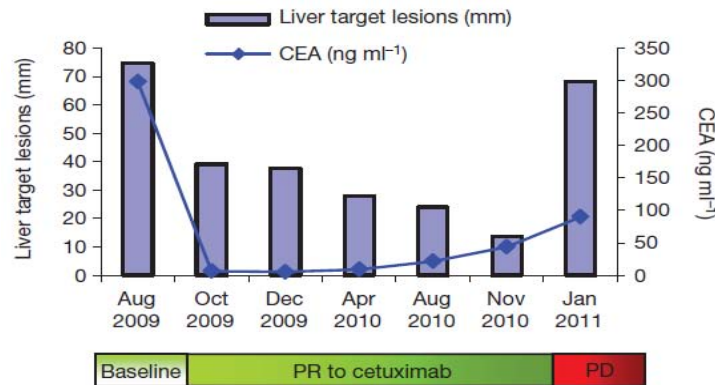
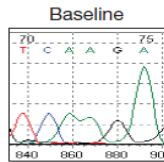


- Sensitivity limitation overcome by BEAMing Digital PCR
- Quantification of circulating tumor DNA allow measuring of tumor dynamics
- Non-invasive real-time monitoring of the systemic tumor genotype

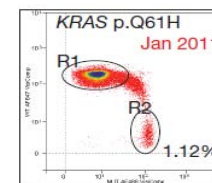
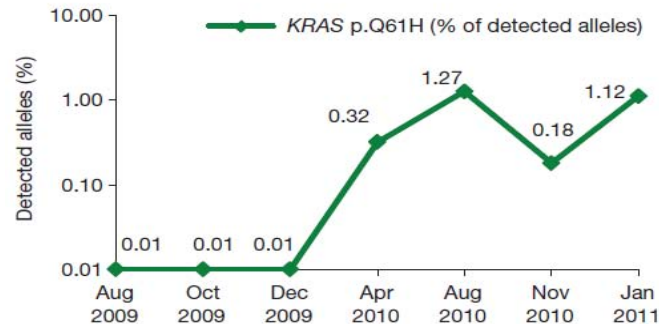
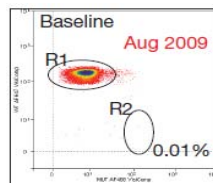
# Monitoring Resistance to anti-EGFR therapy



TISSUE



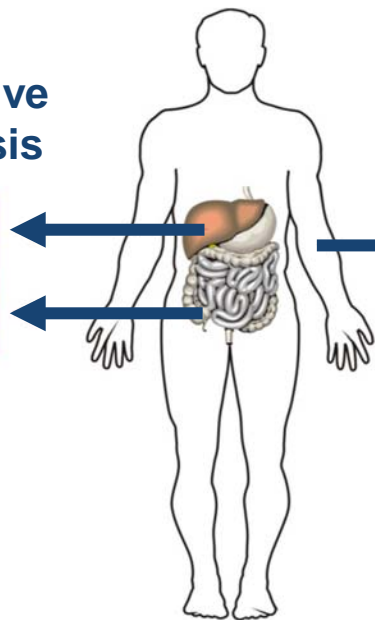
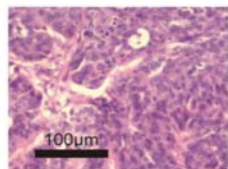
PLASMA



Misale et al. Nature 2012  
Diaz et al. Nature 2012

# Future of blood-based molecular testing

Comprehensive  
Tissue Analysis

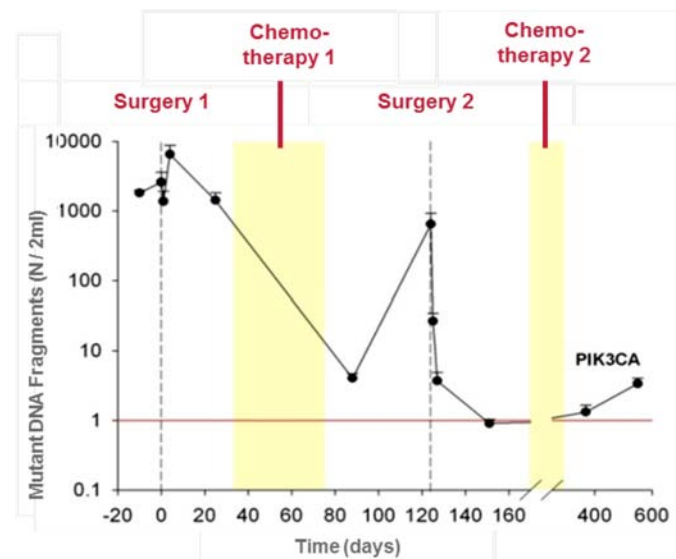


Comprehensive  
Blood Analysis



Individualized  
Blood Analysis

Selection of individual markers



Leary *et al.* *Sci Transl Med.* 2012  
Leary *et al.* *Sci Transl Med.* 2010  
Diehl *et al.* *Nature Medicine* 2008

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