

Scientific Innovation Driving Precision Medicine

GARRET HAMPTON - VP Oncology Biomarker Development, Genentech
Bay Area Council | Delivering on the Promise of Personalized Medicine
February 25 2016

Personalized Health Care [PHC] is a cornerstone of the Genentech / Roche strategy

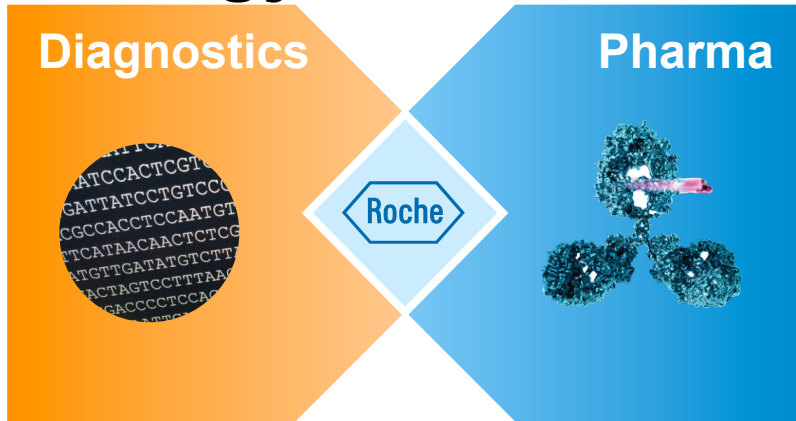
Our understanding of complex diseases is changing medical practice and how we develop new medicines

New paradigms for molecular diagnoses of cancers are emerging

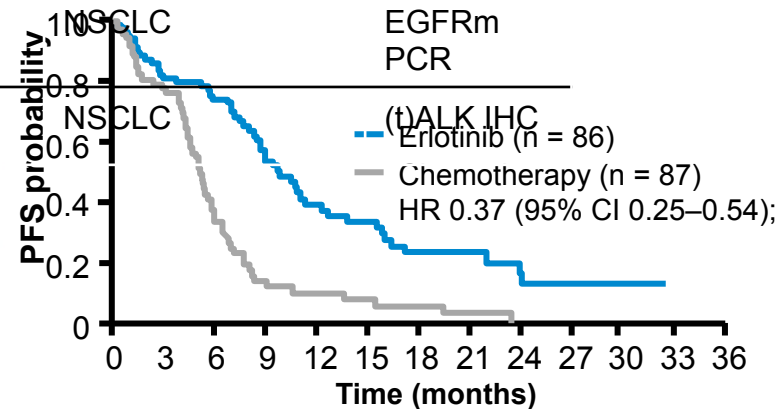
Conclusions

Personalized Healthcare

A cornerstone of the Genentech / Roche strategy



Molecule	Indication	CDx
Herceptin	Her2+ breast cancer	Her2 IHC
Kadcyla	Her2+ breast cancer	Her2 IHC
Perjeta	Her2+ breast cancer	Her2 IHC
Vemurafenib	Melanoma	BRAFm PCR
Tarceva	NSCLC	EGFRm PCR



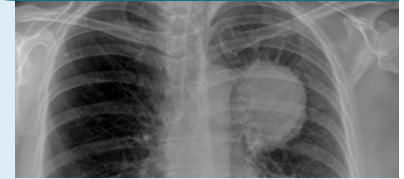
60% of pipeline projects are being developed with companion or complimentary diagnostic

New opportunities and challenges

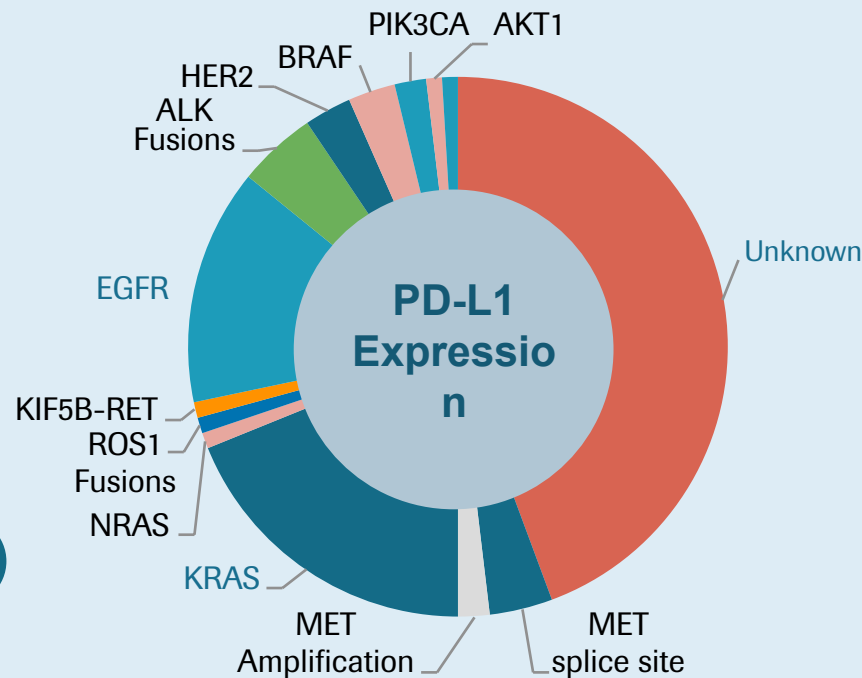
Clinical Decisor 3



4 Clinical Monitoring



Molecular tests e.g., EGFR; ALK 2

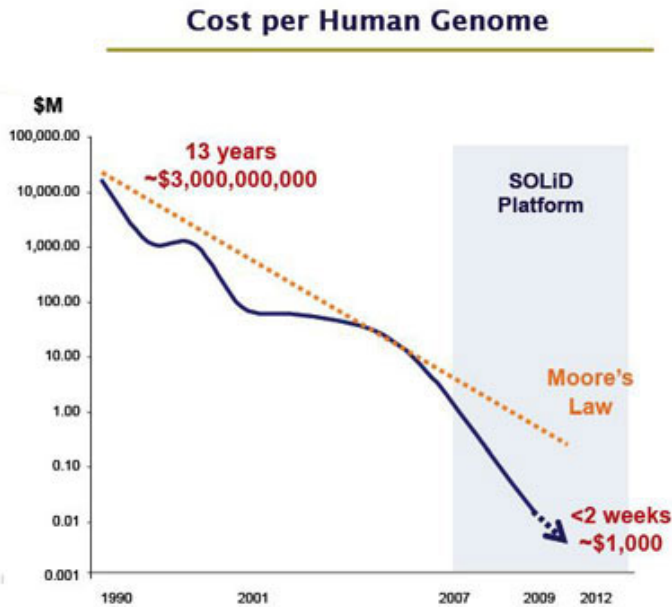


1 Patient



- Fundamental shift to comprehensive diagnostics
- Fundamental shift in evidence of therapeutic benefit

Evolving medical practice Comprehensive diagnostics are becoming a reality for s



Actionable biomarkers in 95% of patients profiled

MI PROFILE
MOLECULAR INTELLIGENCE TUMOR REPORT

FINAL REPORT

PATIENT
Name: Thorne, Eder
Date of Birth: 01-March-1947
Sex: Male
Case Number: INSL-111111
Diagnosis: Adenocarcinoma, unspecified lung type

SPECIMEN INFORMATION
Primary Tumor Site: Thoracic, RDS
Specimen Site: Lower lobe, lung
Specimen ID: NC 12345 VZ
Specimen Collected: 03-March-2014
Completion of Testing: 03-March-2014

ORDERED BY
Ordering Physician, MD
The Cancer Center
123 Main Street
Springfield, VT 05155
(724) 656-7890

Therapies with Potential Benefit

epidermal growth factor receptor tyrosine kinase inhibitors	gemtuzumab	pancreatin
docetaxel, nab-paclitaxel	trastuzumab	

Therapies with Potential Lack of Benefit

kinase inhibitors	androgen receptor inhibitors	platinum
abiraterone, docetaxel, goserelin, ipilimumab, mitomycin	androgen receptor inhibitors: enzalutamide, apalutamide, enzalutamide, enzalutamide	platinum: cisplatin, carboplatin, paclitaxel, docetaxel, nab-paclitaxel

Indicates Clinical Trial Opportunity • 297 Chemotherapy Trials • 148 Targeted Therapy Trials

Navigate among therapies with potential benefit

Identify therapies that may not have been considered

Determine drugs with potential lack of benefit

Utilize the Clinical Trials Connector to match biomarkers with open clinical trials through IMI Portal

Average of 25 potentially clinically relevant results reported per patient

Sample report for illustrative purposes only. Not for clinical use.



Memorial Sloan-Kettering Cancer Center
The Best Cancer Care. Anywhere.



FoundationOne Report

FOUNDATIONONE Patient Name: Report Date: Report Type: Lung Adenocarcinoma

TUMOR TYPE: LUNG ADENOCARCINOMA

Genomic Alterations Identified

- MET amplification
- CCND1 amplification
- KRAS G12V
- MYC amplification
- TP53 R273L
- CARD11 N184S

Additional Disease-relevant Genes with No Reportable Alterations Detected

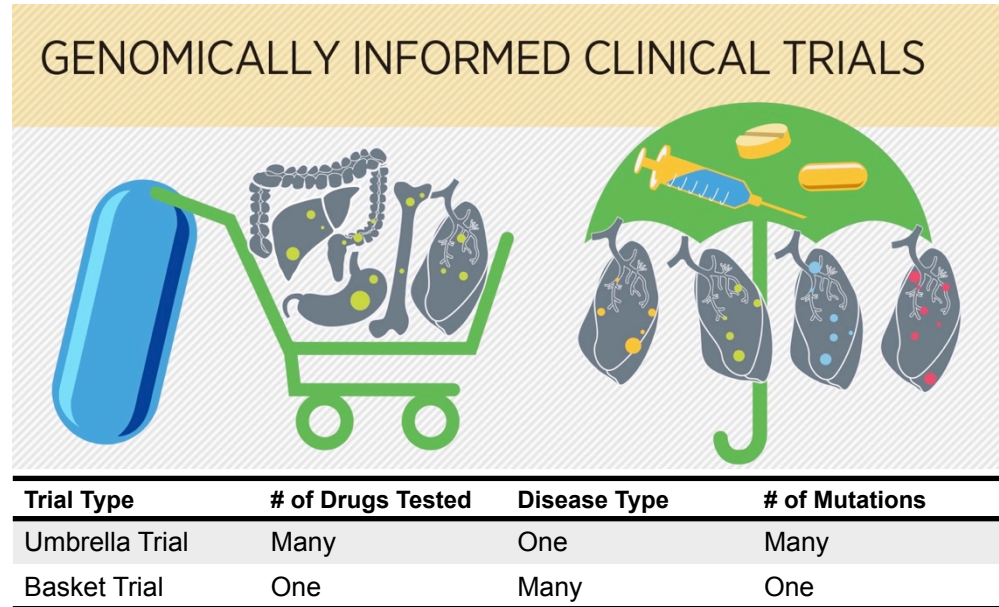
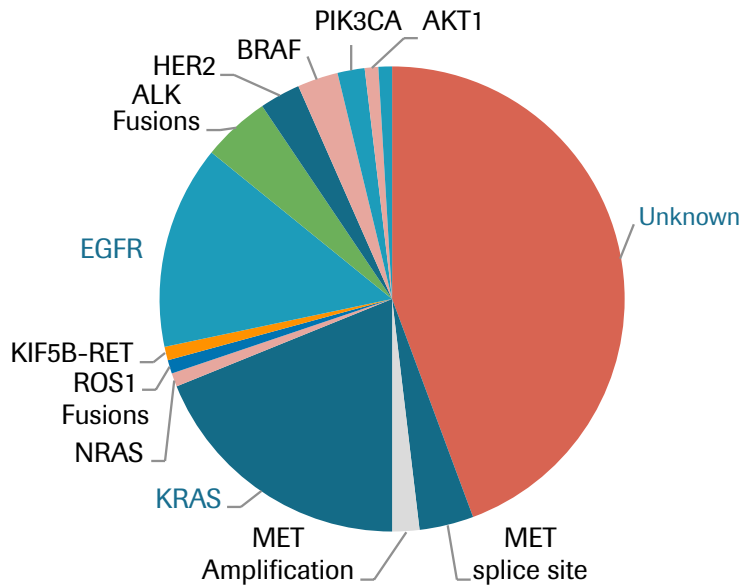
- EGFR

Therapeutic Implications

- Crizotinib, METI

New clinical trial designs

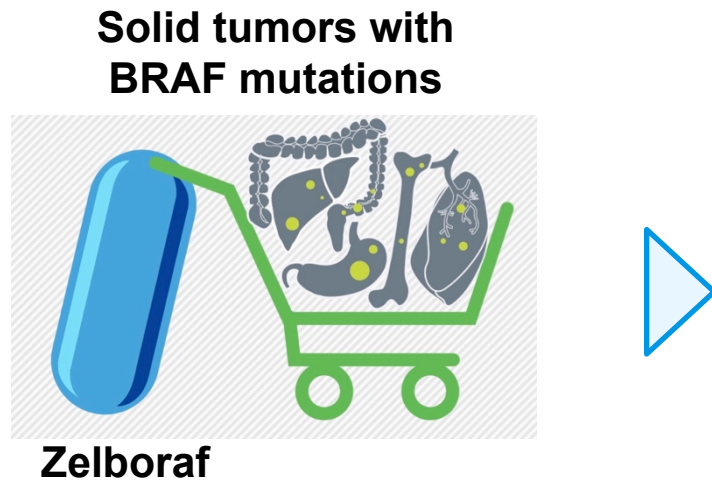
Evidence of benefit in small populations



Basket and umbrella trials are much better for developing precision medicines than traditional randomized trials

Zelboraf BRAF V600 VE-Basket Study

Histology independent basket trial



	N	RR
NSCLC	20	42 %
Cholangio Ca.	8	13 %
All Others	19	37 %
ECD/LCH*	26	60 %
Anapl. Thyroid	7	29 %
Breast	NS	-
Ovarian	NS	-
Myeloma	9	22 %
Colorectal	10	0%

V
V+C

Updated from Hyman et al. N Engl J Med 2015; 373:726

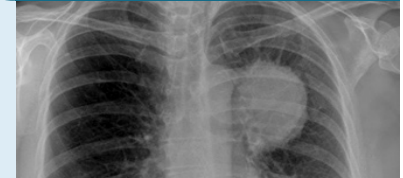
*ECD Erdheim Chester Disease, LCH Langerhans' cell histiocytosis; ** Zelboraf + cetuximab

New opportunities and challenges

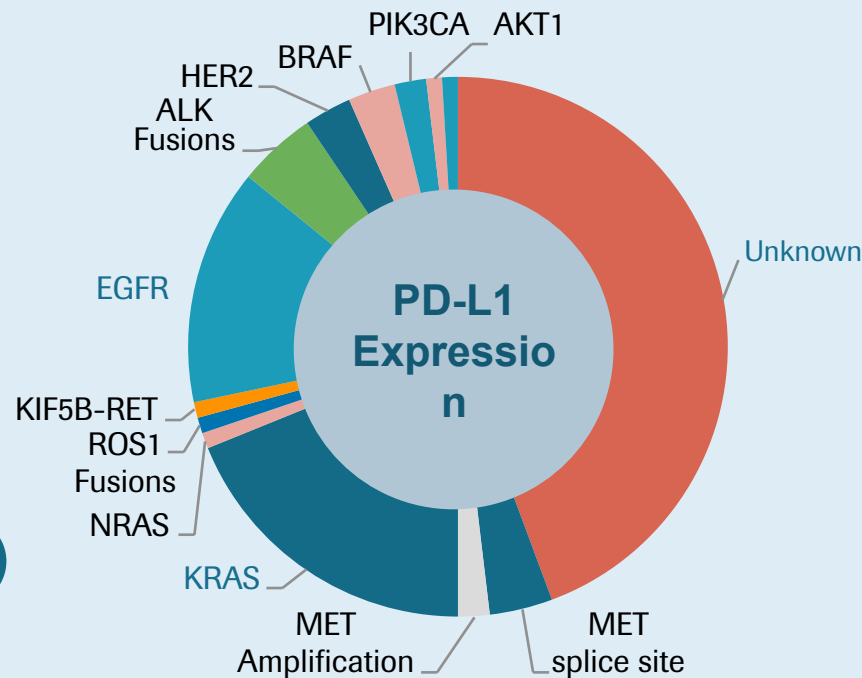
Clinical Decision 3



4 Clinical Monitoring



Molecular tests e.g., EGFR; ALK 2



1 Patient

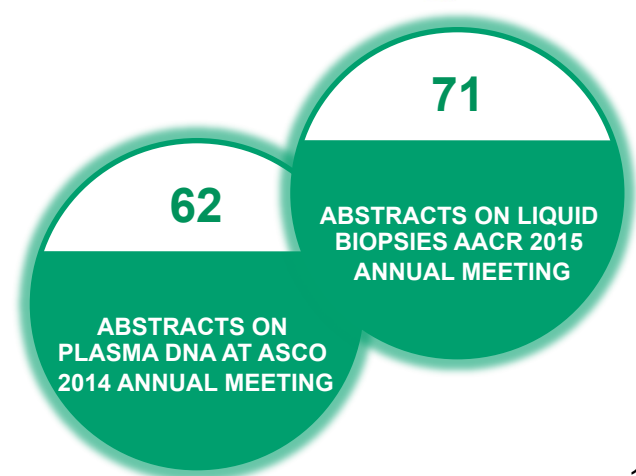
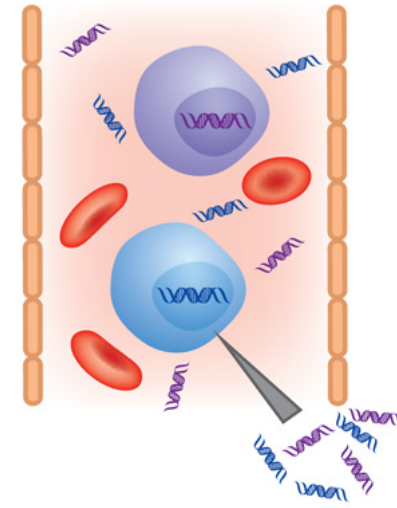
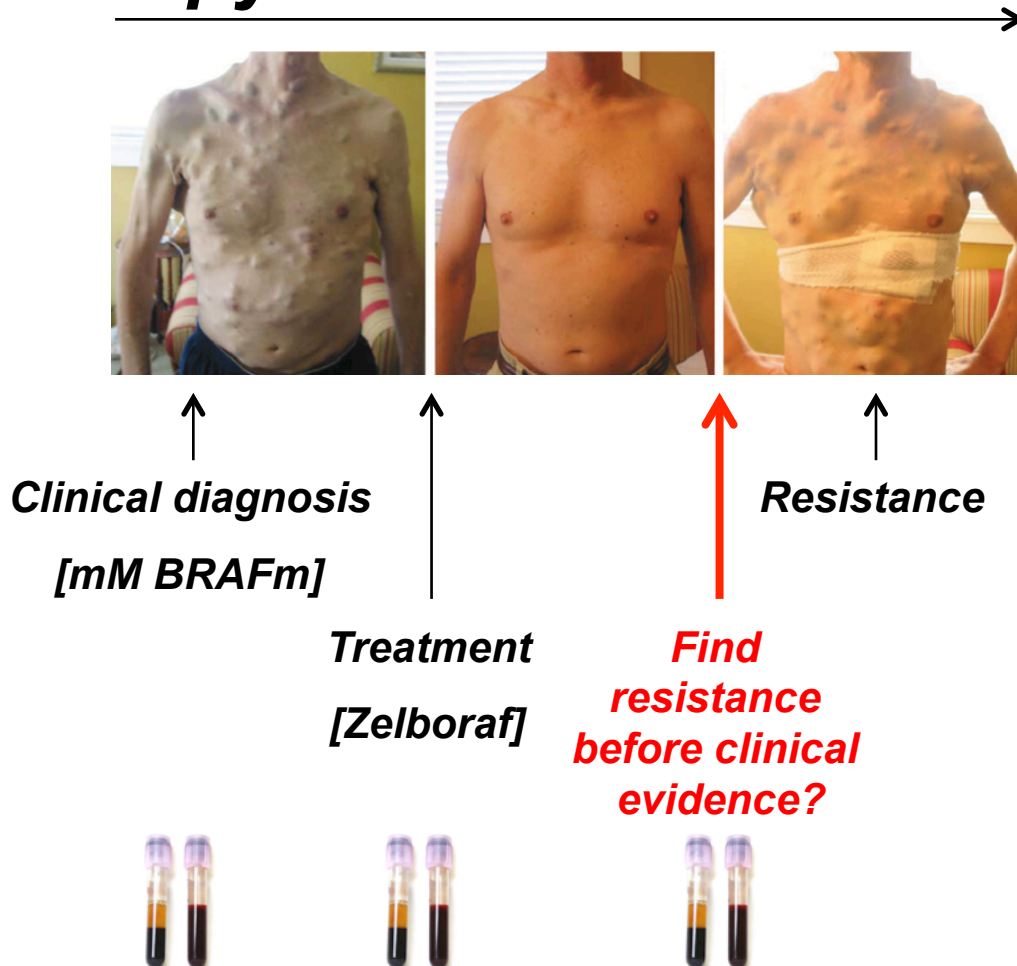


- Often limited tissue = no ability to identify “actionable” mutations
- Monitoring is cumbersome and time is critical

Resistance to therapy

Can we identify earlier and adapt therapy?

Time →



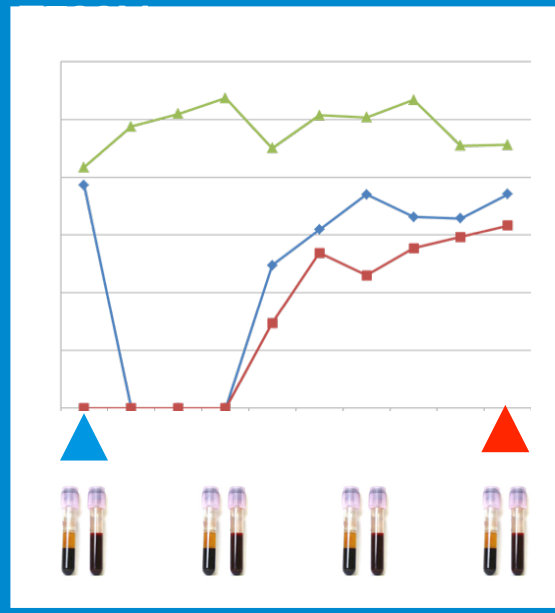
Comprehensive diagnosis and monitoring

Blood-based tools to identify and monitor patients

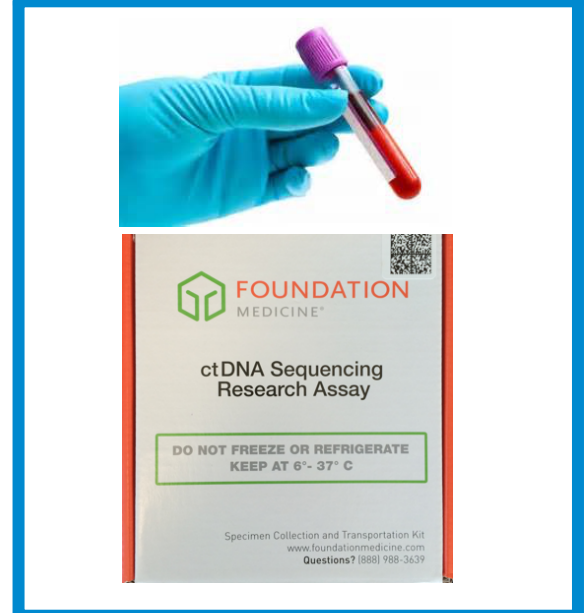
Liquid (blood) biopsies at diagnosis



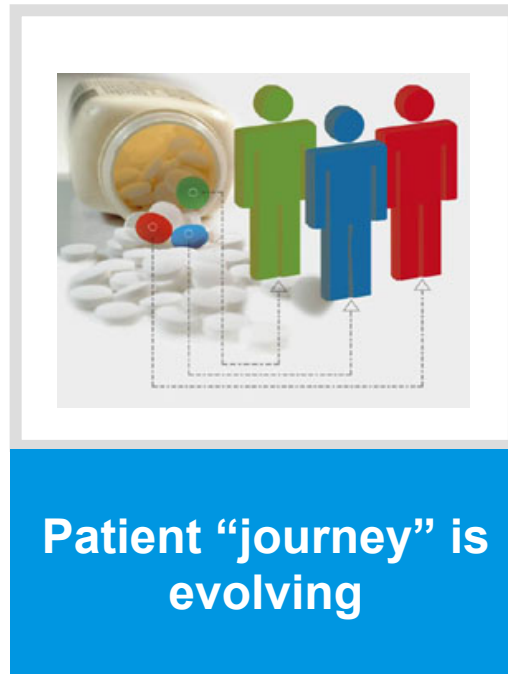
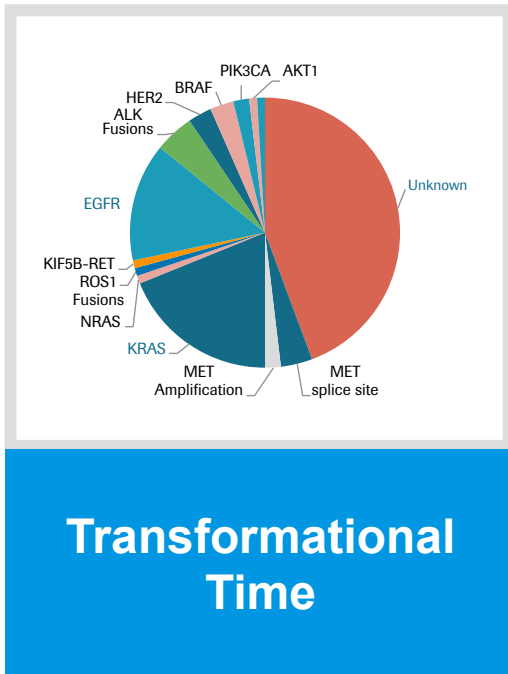
Liquid biopsies during treatment e.g. EGFR



Co-development of a cfDNA product with FMI



Conclusions



Doing now what patients need next