Multidisciplinary Approaches to Cancer Symposium

Debate: ctDNA Should Be Incorporated Into Active Management of Colorectal Cancer Patients ~ Focus: Pro argument

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Disclosures

- Consultant for Agenus, Astellas, AstraZeneca, Bayer, BostonGene, Daiichi Sankyo, Eli Lilly, Elicio Therapeutics, Foundation Medicine, Guardant Health, Illumunia, Merck, Natera, Neogenomics, Regeneron, SAGA Diagnostics, SeaGen, Taiho, Tempus, Xilio
- Founder of Precision BioSciences
- Grant/Research for Agenus, Merck, Novartis; and Scientific Board Advisor for Elicio Therapeutics

This presentation and/or comments will be free of any bias toward or promotion of the above referenced companies or their product(s) and/or other business interests.

This presentation and/or comments will provide a balanced, non-promotional, and evidence-based approach to all diagnostic, therapeutic and/or research related content.

This presentation has been peer-reviewed and no conflicts were noted.

Cultural Linguistic Competency (CLC) & Implicit Bias (IB)

STATE LAW:

The California legislature has passed Assembly Bill (AB) 1195, which states that as of July 1, 2006, all Category 1 CME activities that relate to patient care must include a cultural diversity/linguistics component. It has also passed AB 241, which states that as of January 1, 2022, all continuing education courses for a physician and surgeon **must** contain curriculum that includes specified instruction in the understanding of implicit bias in medical treatment.

The cultural and linguistic competency (CLC) and implicit bias (IB) definitions reiterate how patients' diverse backgrounds may impact their access to care.

EXEMPTION:

Business and Professions Code 2190.1 exempts activities which are dedicated solely to research or other issues that do not contain a direct patient care component.

The following CLC & IB components will be addressed in this presentation:

- *Utility of ctDNA testing/liquid biopsies across cultures, and in terms of young onset colorectal cancer, assessing/weighing its impact across patients from all backgrounds. Highlighting commonalities and differences among individuals in this patient population. And challenges and needs that would be appropriate to address*
- *Highlighting disparities and access when it comes to young onset colorectal cancer.*

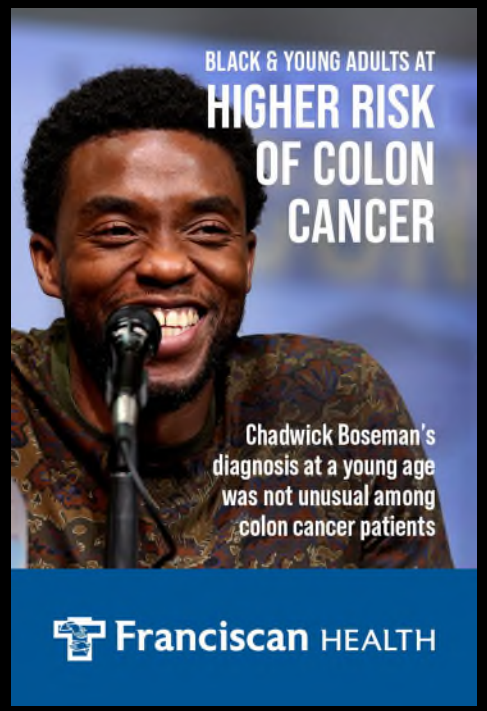
“Liquid Biopsies are an integral part of my standard of care for delivering personalized care for our patients with cancer”

SECTIONS HOME SEARCH

The New York Times

WELL | LIVE

More Young People Are Dying of Colon Cancer



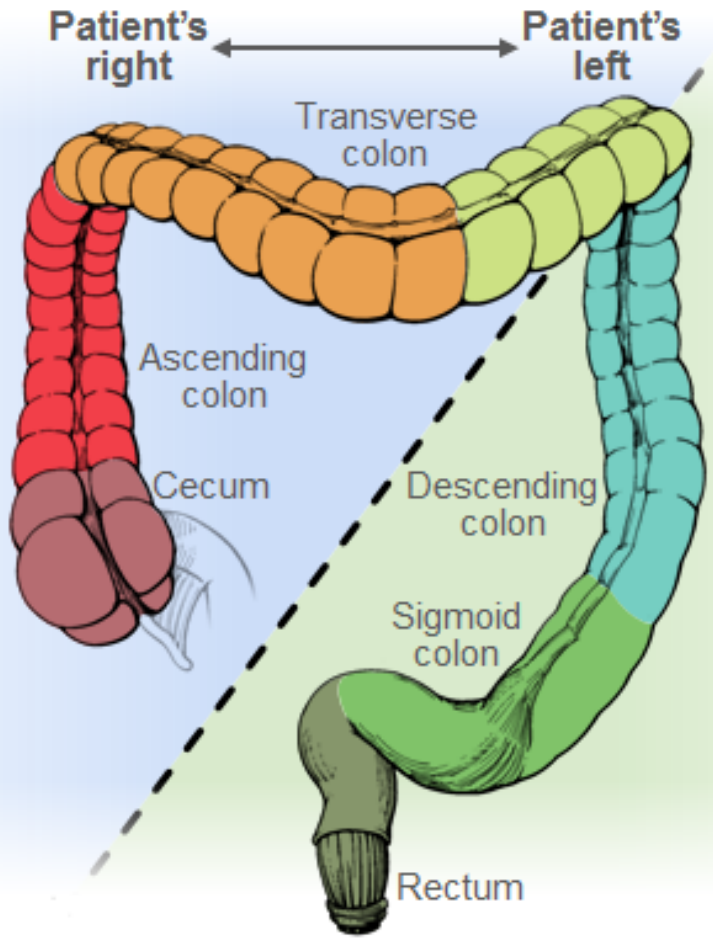
RIGHT vs. LEFT

MIDGUT DERIVATIVE

- ↑ females
- ↑ sessile serrated lesions
- ↑ mucinous tumors

Overall WORSE prognosis

- ↑ CIMP-high
- ↑ BRAF
- ↑ MSI-high
- ↑ CMS-1-MSI immune tumors
- ↑ CMS-3-metabolic tumors
  (↑ KRAS)



HINDGUT DERIVATIVE

- ↑ males

Overall BETTER prognosis

- ↑ CMS-4-MSI mesenchymal
- ↑ CMS-2-canonical distally
- ↑ TP53
- ↑ APC

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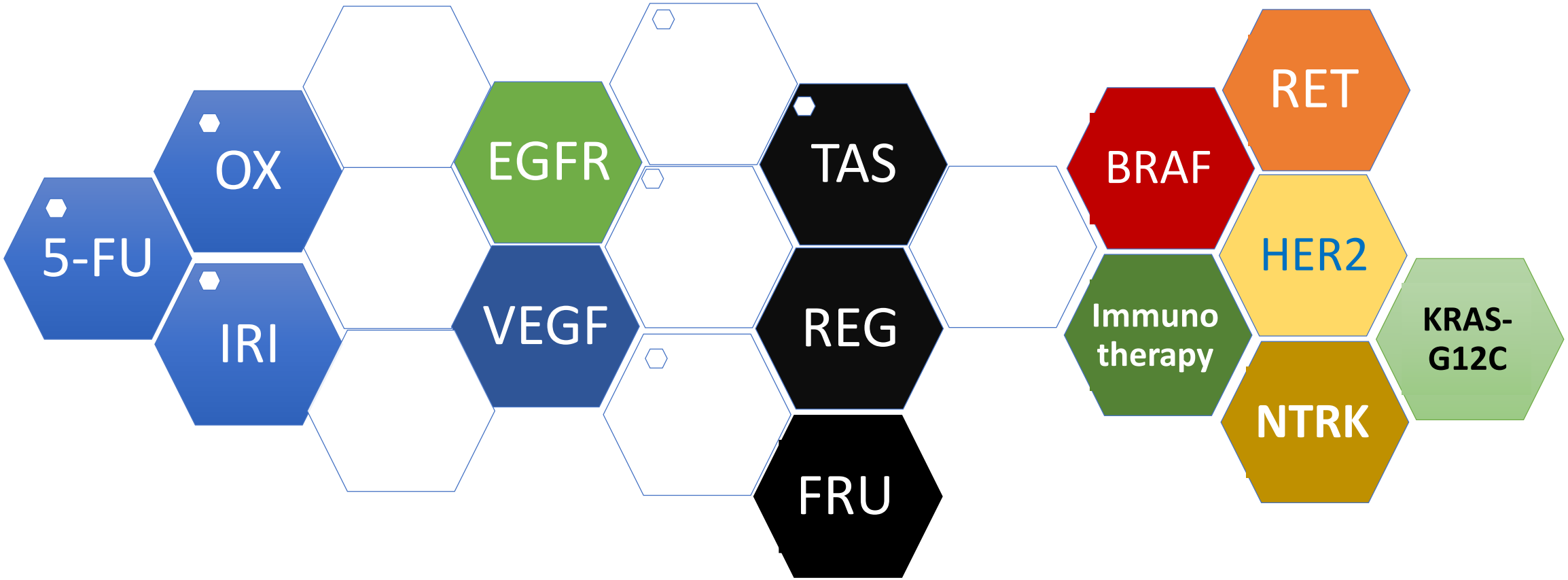
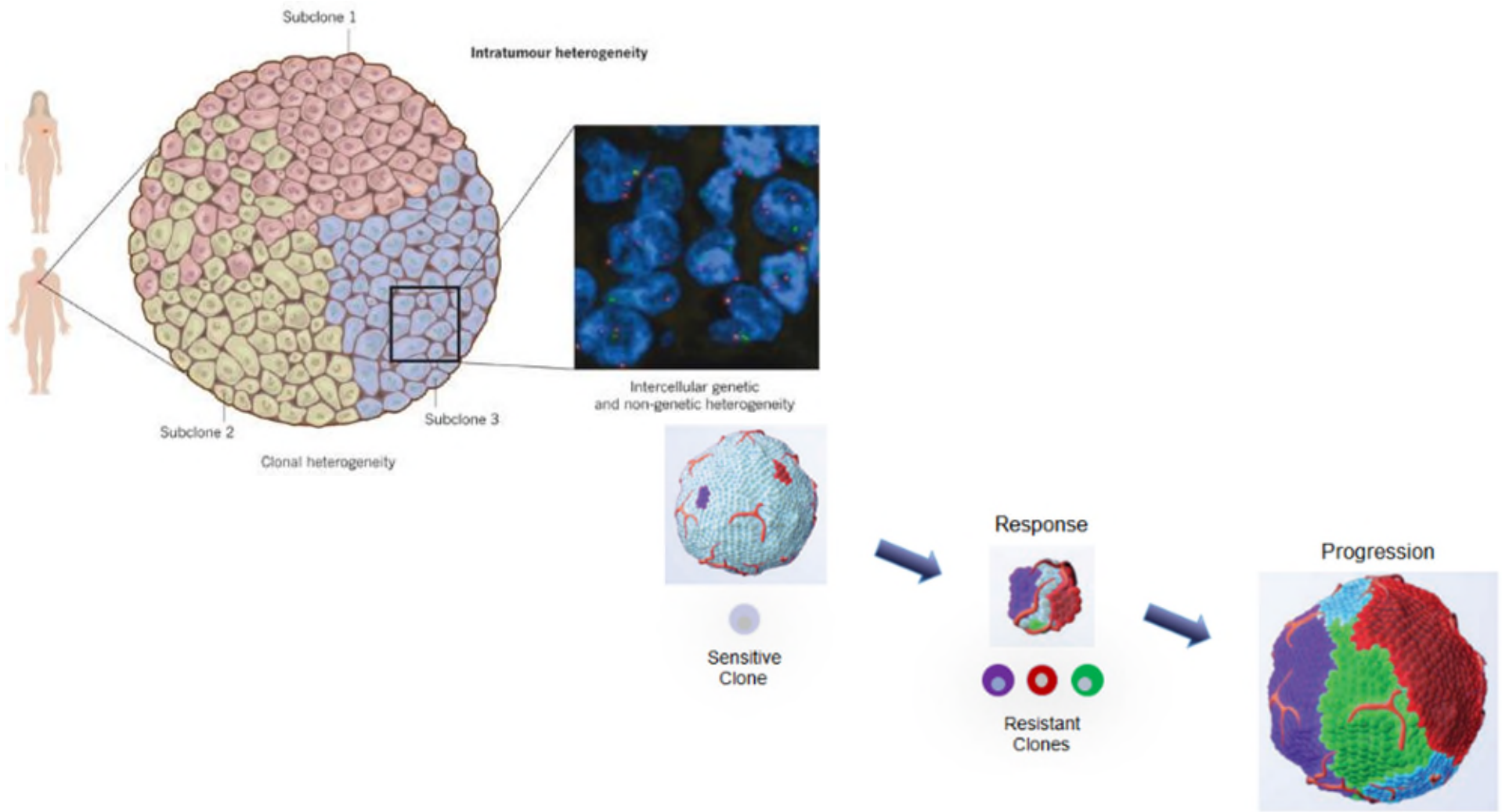
Kasi PM et al. Colorectal Cancer. Lancet Oct 2019.

Treatment options for patients with mCRC

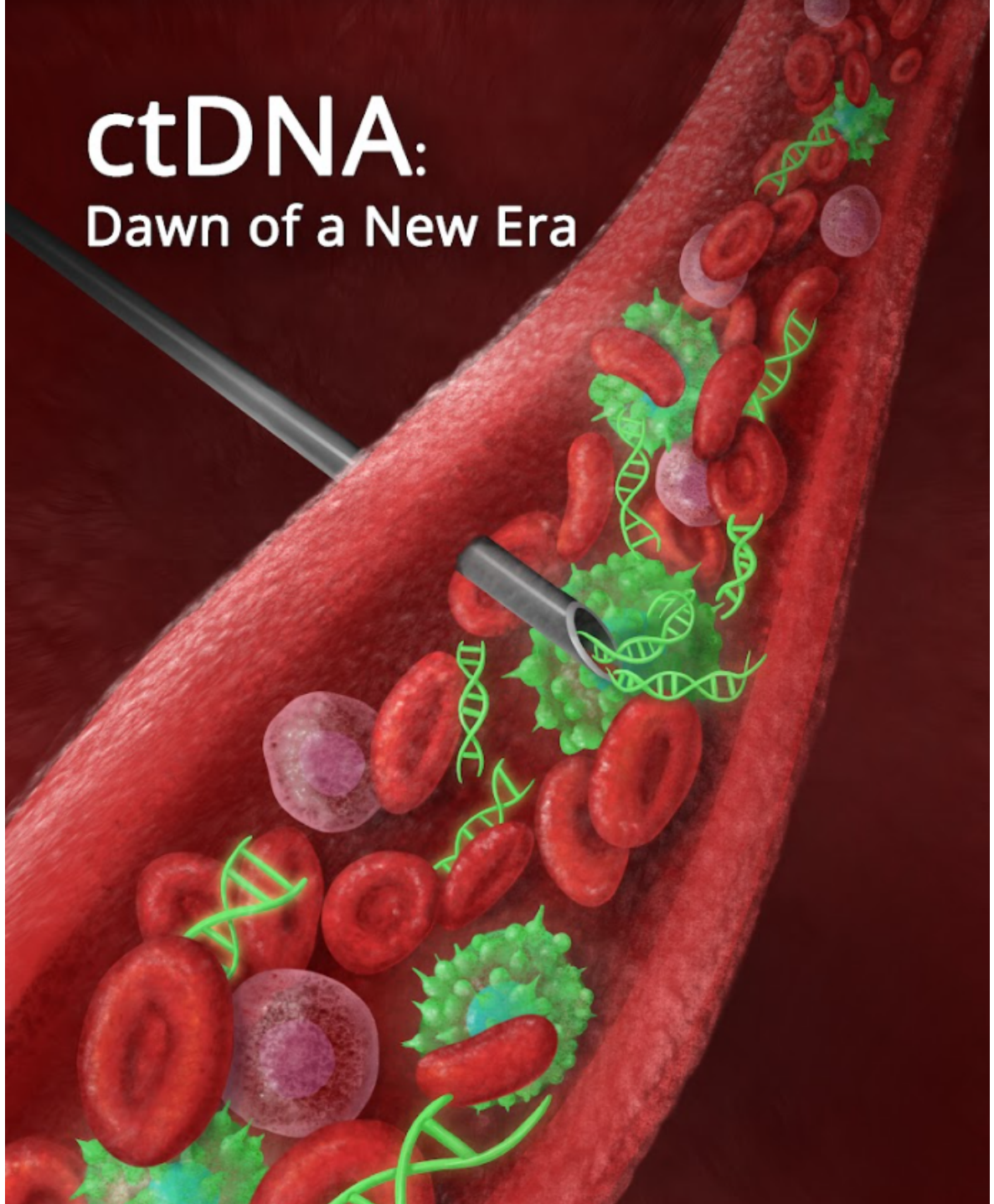


Kasi PM et al. Colorectal Cancer. Lancet Oct 2019.

Intratumoral and temporal heterogeneity



Burrell RA, et al. *Nature.* 2013;501:338.
Misale S, et al. *Cancer Discov*. 2014;4:1269.



ctDNA: Dawn of a New Era

Location	Available On Demand
Time	Sat, Jun 4, 2022 | 9:00 AM – 10:30 AM EDT
Track(s)	Special Sessions

2022 ASCO® ANNUAL MEETING
ADVANCING EQUITABLE CANCER CARE THROUGH INNOVATION

Liquid Biopsies

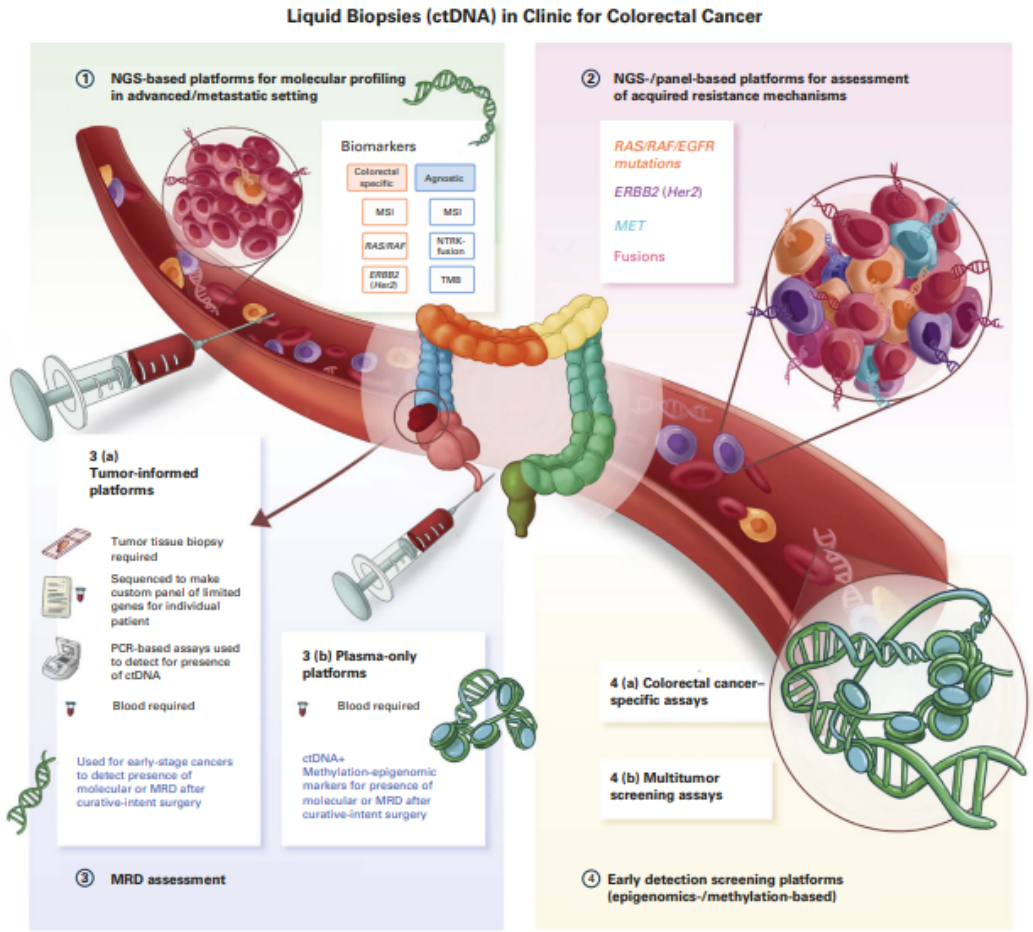
⇈Precision Medicine

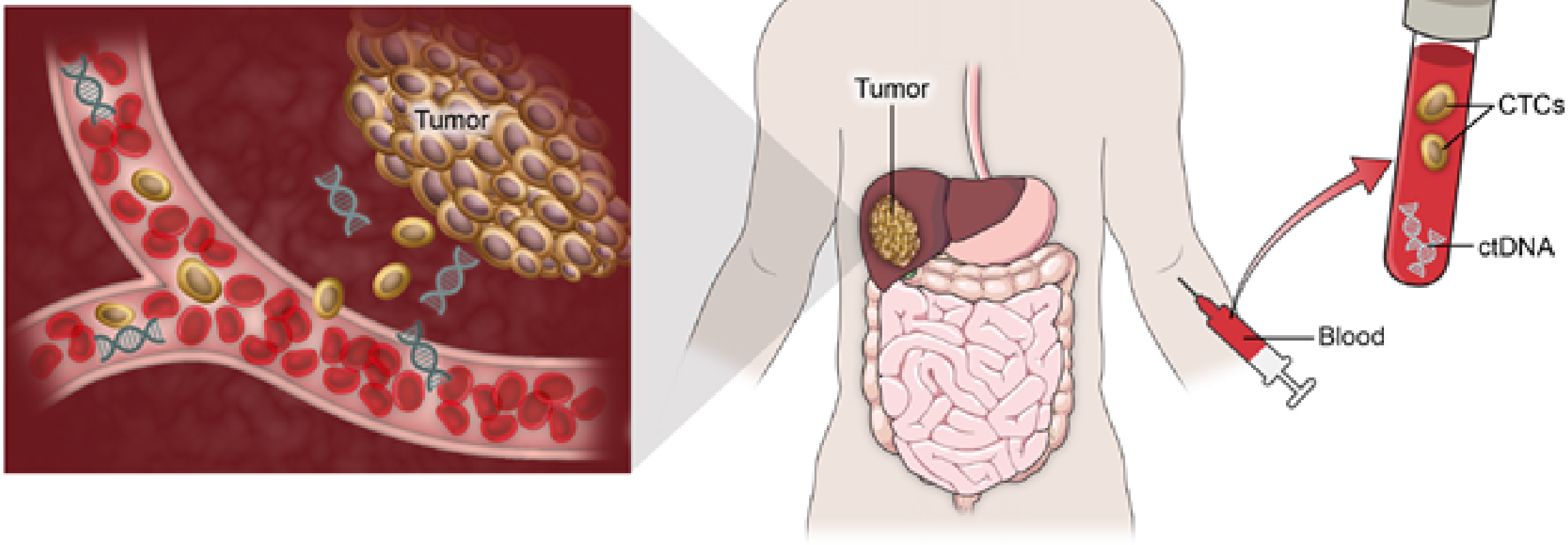
SPECIAL SERIES: PRECISION MEDICINE AND IMMUNOTHERAPY IN GI MALIGNANCIES

Using Circulating Tumor DNA in Colorectal Cancer: Current and Evolving Practices

Midhun Malla, MD, MS[1]; Jonathan M. Loree, MD, MS[2]; Pashtoon Murtaza Kasi, MD, MS[3]; and Aparna Raj Parikh, MD[4]

Journal of Clinical Oncology®
An American Society of Clinical Oncology Journal





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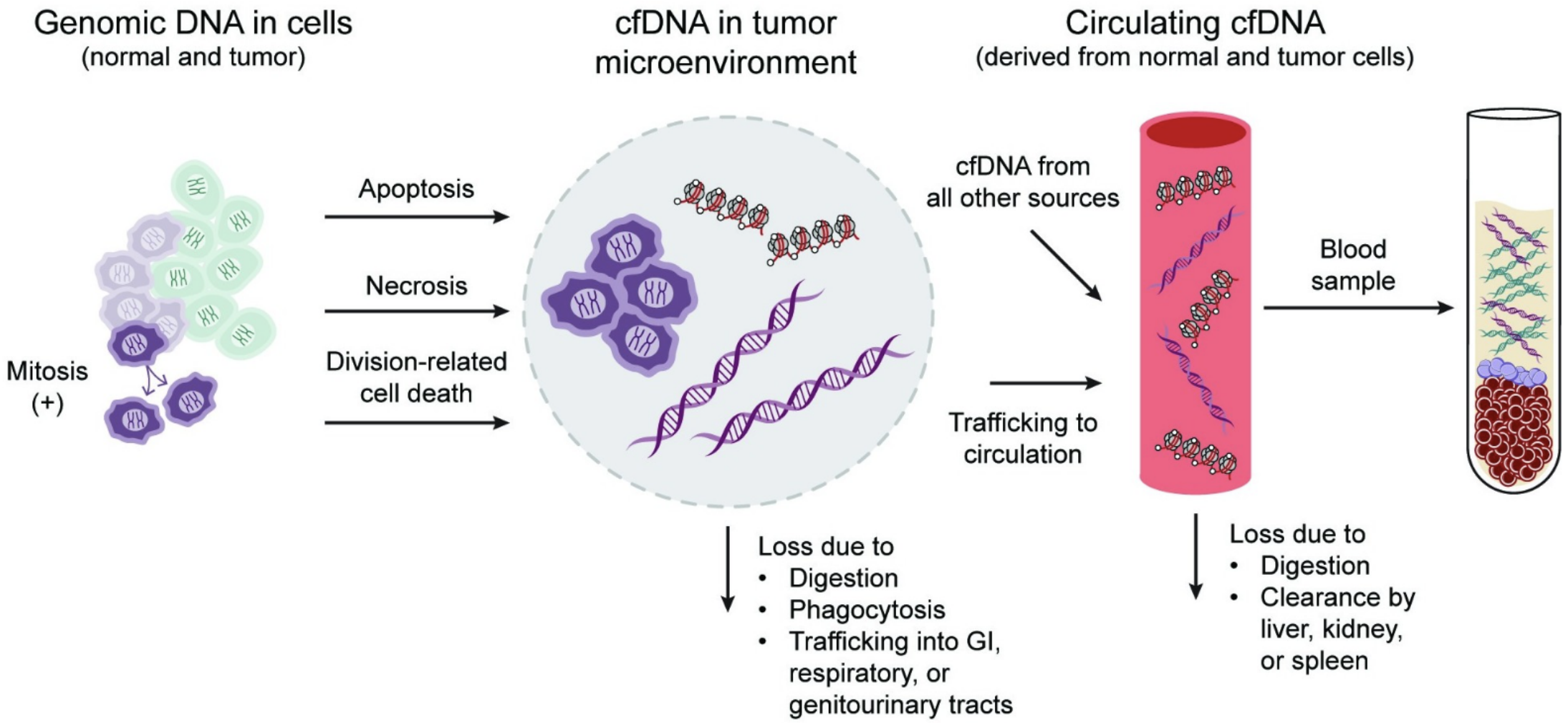
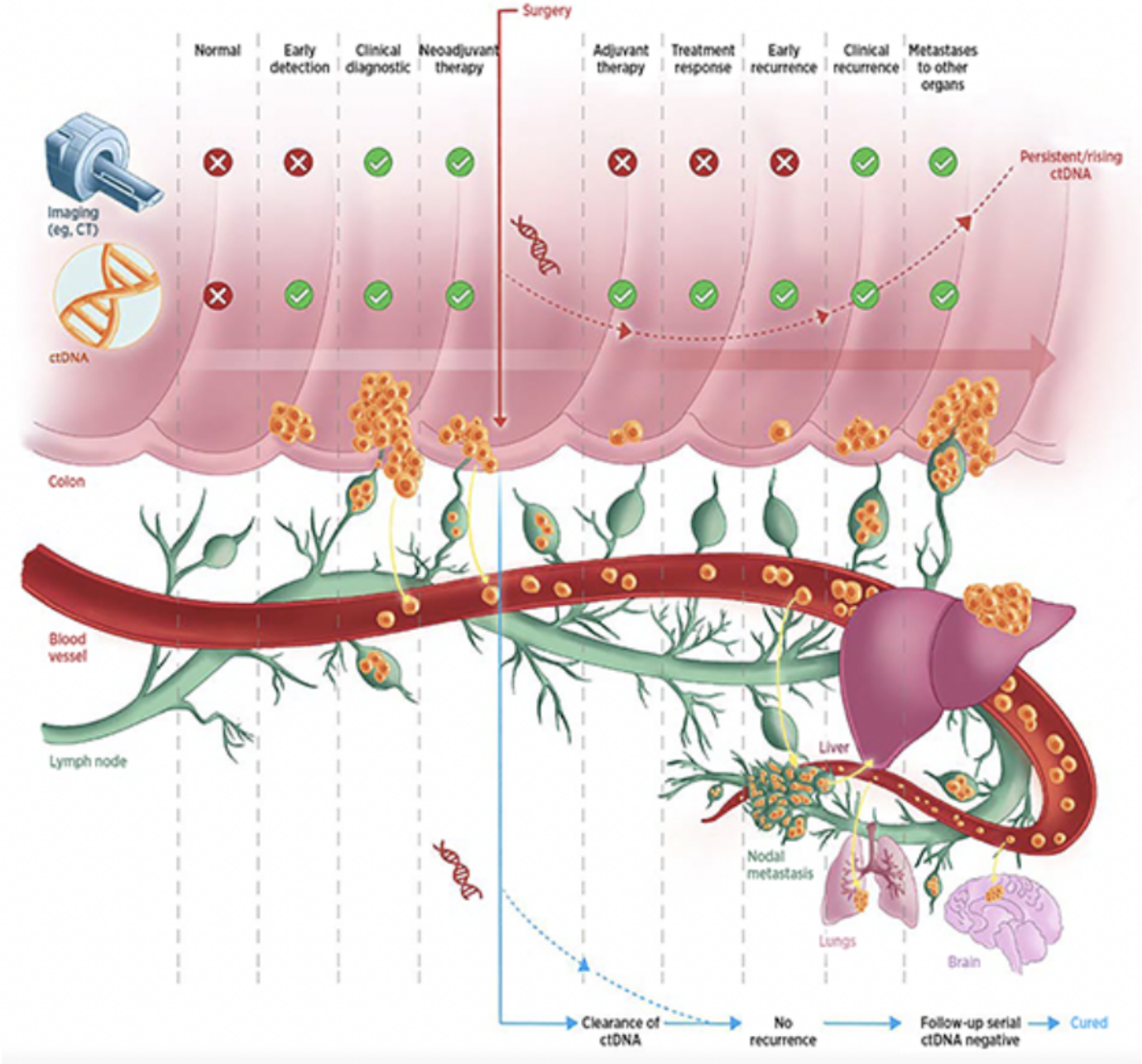
Depiction of origin and fates of circulating tumor DNA relative to cell-free DNA



Bredno, J. et al, 2021. Clinical correlates of circulating cell-free DNA tumor fraction. PLOS ONE 16, e0256436.



- Diagnosis
- Minimal Residual Disease
- Treatment Response
- Acquired Resistance

ASCO Daily News®

Kasi PM. ctDNA Assays: Exploring Their Clinical Use in Oncology Care. January 2022. ASCO Daily News.

1 ctDNA – liquid biopsies for genotyping

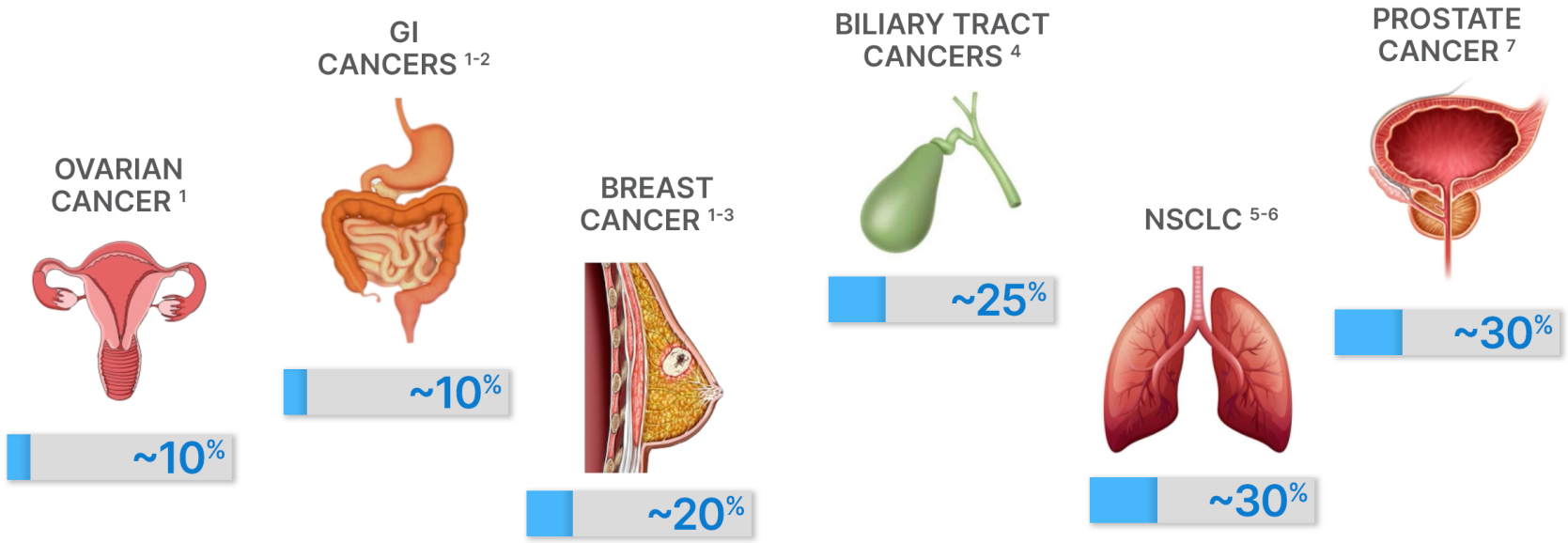
- "Blood-based Next Generation Sequencing (NGS) panels for determination of RAS/RAF-status, HER2-amplification, and rare actionable mutations and fusions."

National Comprehensive Cancer Network®

Version 4. 2025.
Colon Cancer.

Opportunities for Precision Medicine are Missed Up to 30% of the Time

Frequency of tissue insufficiency



GI = gastrointestinal, NSCLC = non-small cell lung cancer

1. Zehir A, Benayed R, Shan RH, et al. *Nat Med*. 2017;23(6):703-713; 2. Nakamura Y, Taniguchi H, Ikeda M, et al. *Nat Med*. 2020;26(12):1859-1846; 3. Meric-Bernstam F, Brusco L, Shaw K, et al. *J Clin Oncol*. 2015;33(25):2753-2762; 4. Lamarca A, Kapacee Z, Breeze M, et al. *J Clin Med*. 2020;9(9):2854; 5. Hagemann IS, Devarakonda S, Lockwood CM, et al. *Cancer*. 2015;121(4):631-639; 6. Aggarwal C, Thompson JC, Black TA, et al. *JAMA Oncol*. 2019;5(2):173-180; 7. Hussain M, Corcoran C, Sibilla C, et al. *Clin Cancer Res*. 2022;28(8):1518-1530.

1

1st line Anti-EGFR therapy selection

- **Selection** of the patient for anti-EGFR – tissue
  - LEFT
  - RAS-wildtype
  - BRAF-wildtype
  - HER2-negative
- Role for **liquid biopsies (YES)**

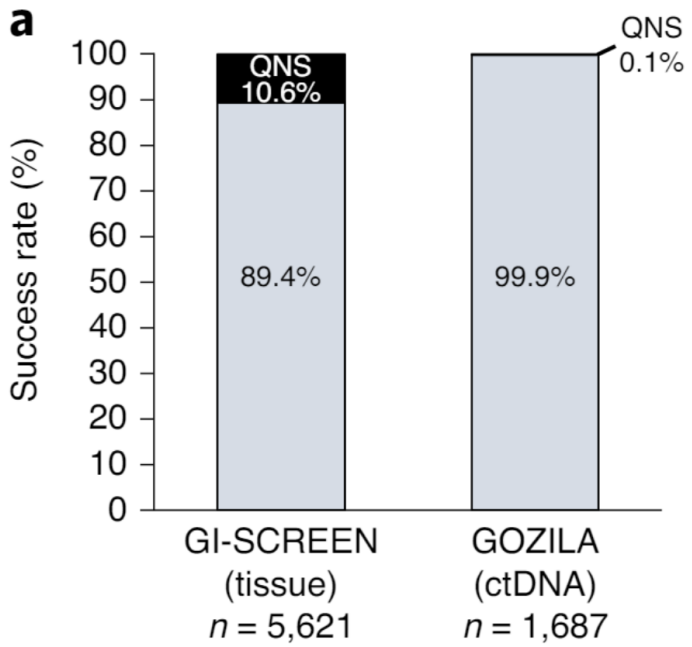
	Anti-EGFR OS (months)	Anti-VEGF OS (months)
NCDB	**42.9**	27.5
CALGB 80405	**39.3**	32.6
PEAK	**43.4**	32.0
FIRE-3	**38.3**	28.0
PARADIGM	**37.9**	34.7
PARADIGM (ctDNA hyper-selected)	**42.1**	35.5

Shitara K et al.
Negative hyperselection of patients with RAS wild-type metastatic colorectal cancer for panitumumab: A biomarker study of the phase III PARADIGM trial.
DOI: 10.1200/JCO.2023.41.4_suppl.11 Journal of Clinical Oncology 41, no. 4_suppl (February 01, 2023)

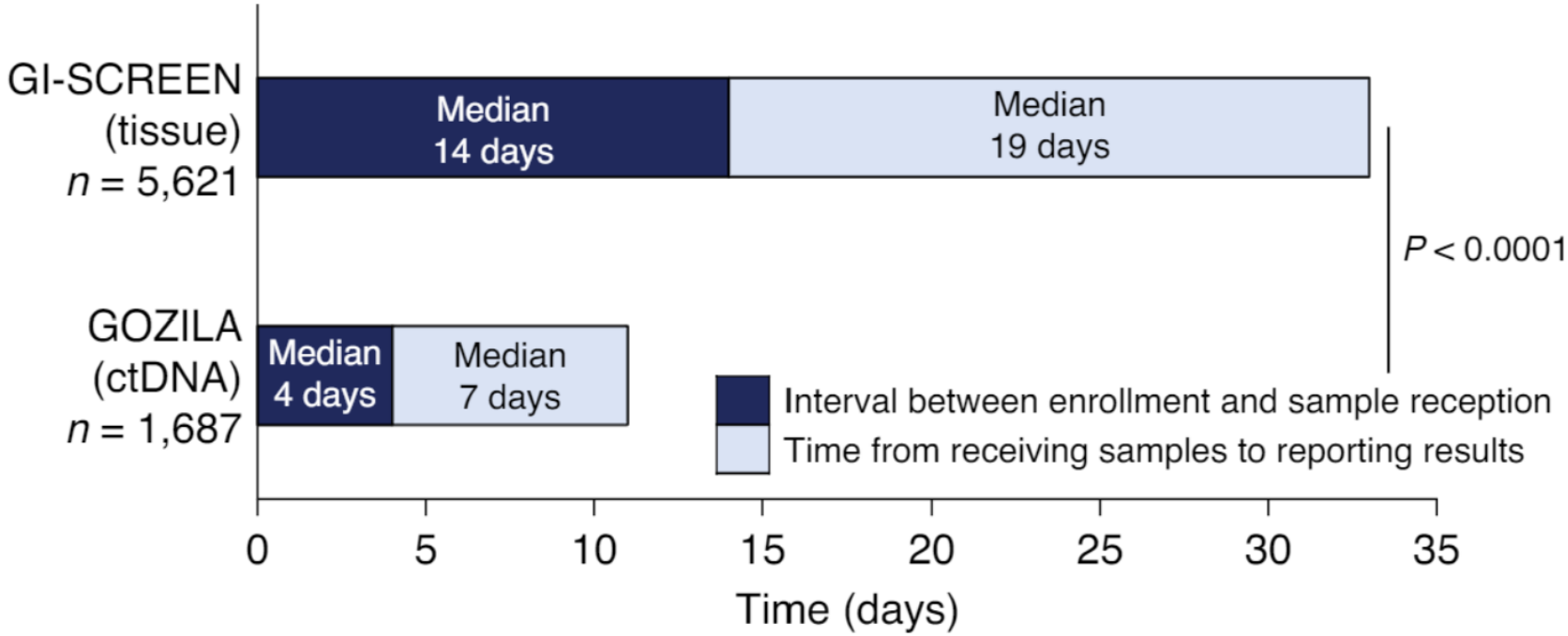
1 Potential Advantages of Using ctDNA Assays to Assess Actionable Mutations

- Analysis of trial enrolment of patients with advanced GI cancers using ctDNA sequencing (GOZILA, n = 1687) vs tumor tissue sequencing (GI-SCREEN, n = 5621)

Quantity Not Sufficient



Turnaround time



Turnround time

Nakamura. Nat Med. 2020;26:1859.

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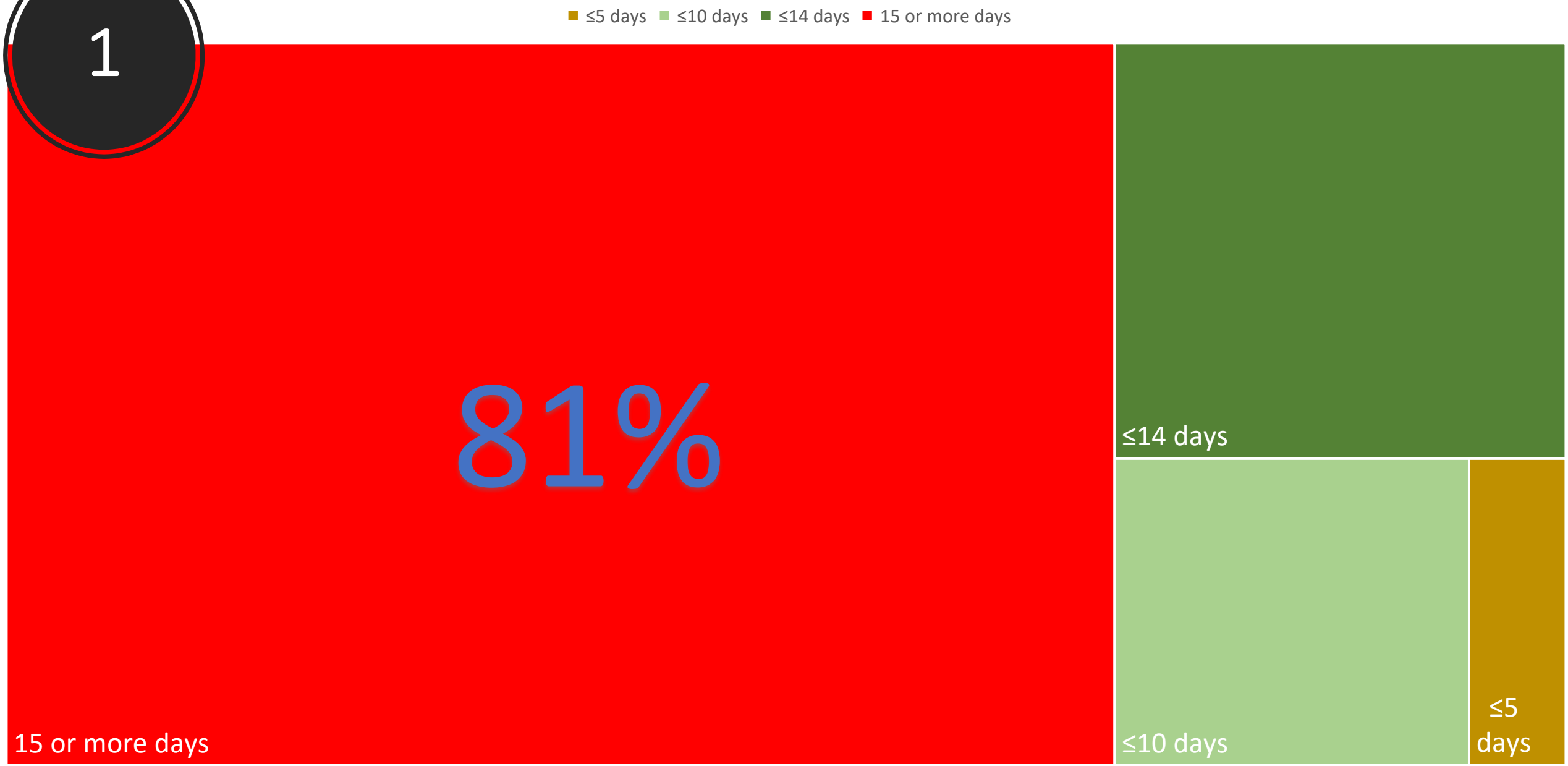
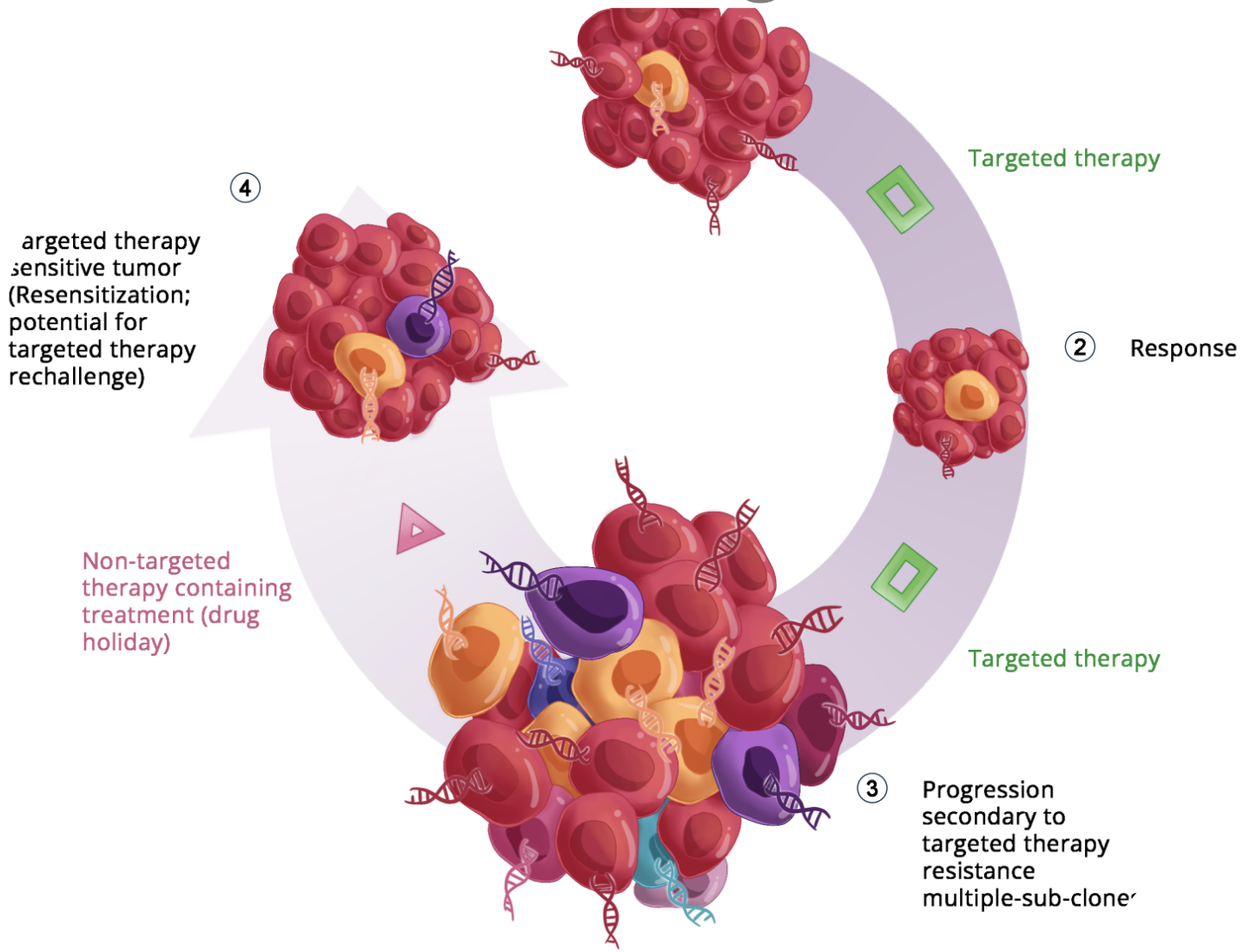
RAS-testing and turnaround times



Sangaré L, Delli-Zotti K, Florea A, Rehn M, Benson AB, Lowe KA. An evaluation of *RAS* testing among metastatic colorectal cancer patients in the USA. Future Oncol. 2021 May;17(13):1653-1663. PMID: 33629919.

2 ctDNA – for EGFR-rechallenge

- **Resensitization or Rechallenge for anti-EGFR therapy (cetuximab or panitumumab)**

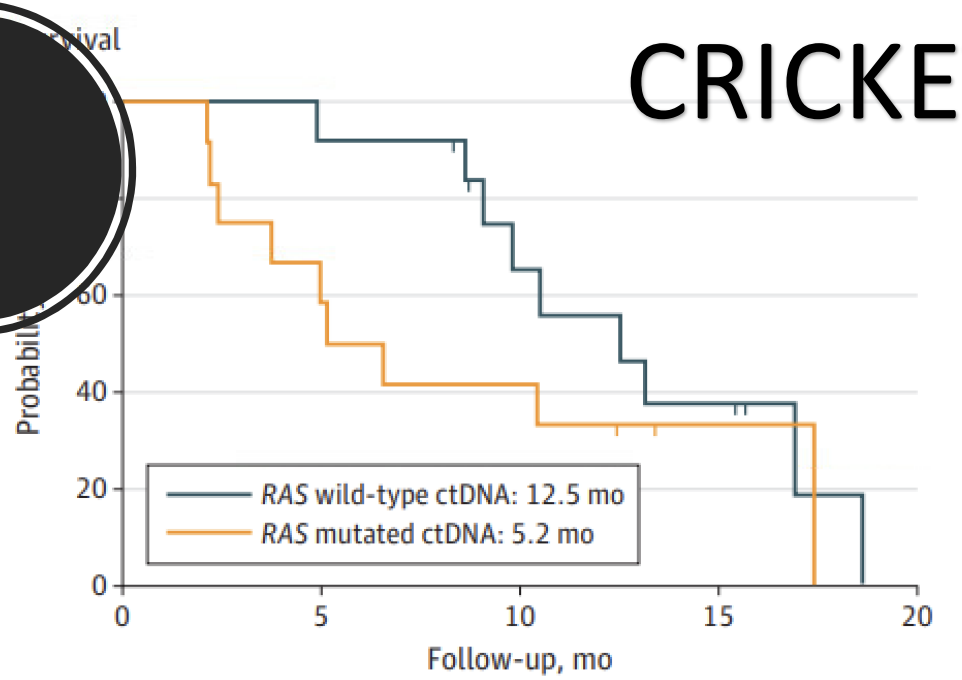


ASCO Daily News®

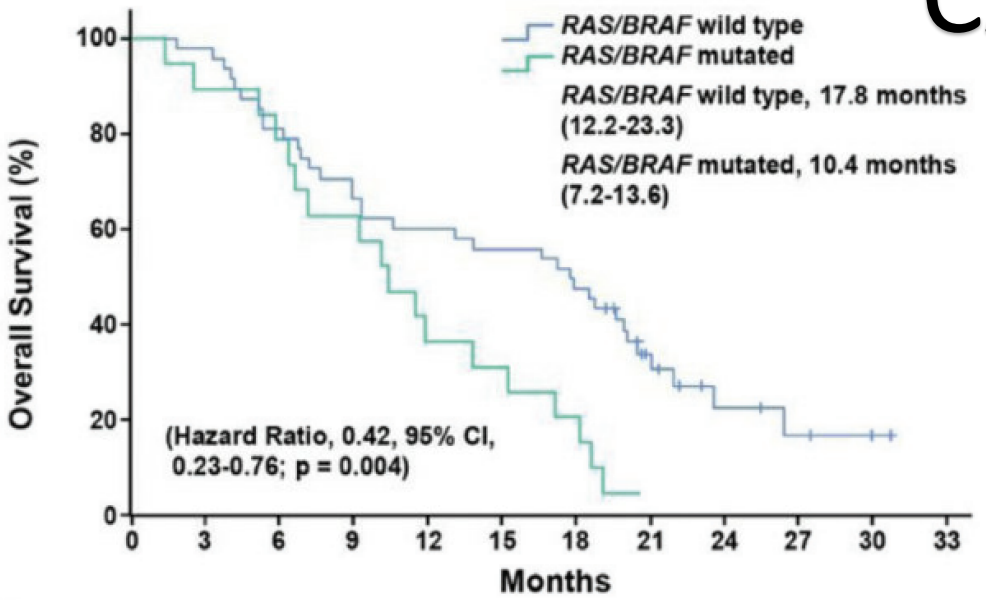
Kasi PM. ctDNA Assays: Exploring Their Clinical Use in Oncology Care. January 2022. ASCO Daily News.

2

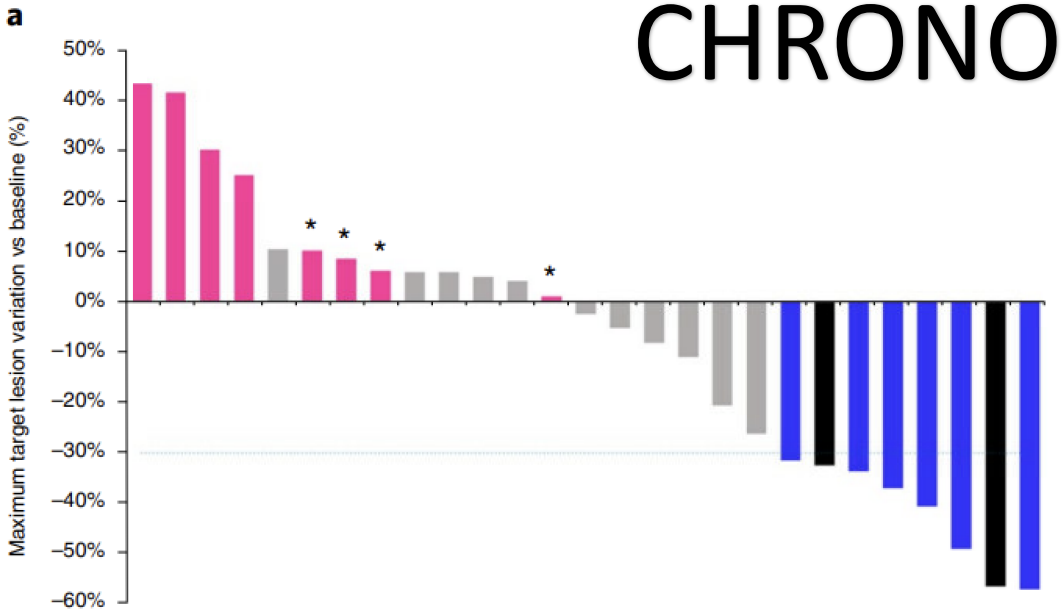
CRICKET



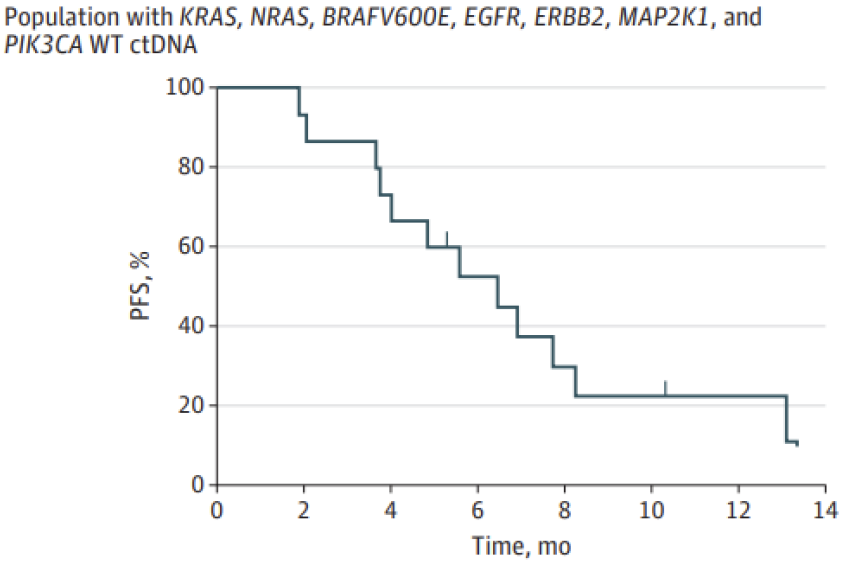
CAVE



CHRONOS



VELO



Ciardiello D. Anti-EGFR Rechallenge in Patients With Refractory ctDNA RAS/BRAF wt Metastatic Colorectal Cancer: A Nonrandomized Controlled Trial. JAMA Netw Open. 2024 Apr 1;7(4):e245635.

3 ctDNA as a rapid surrogate of tumor response

ctDNA as a rapid surrogate of tumor response

- ctDNA clearance or decrease associated with progression-free survival and overall survival.

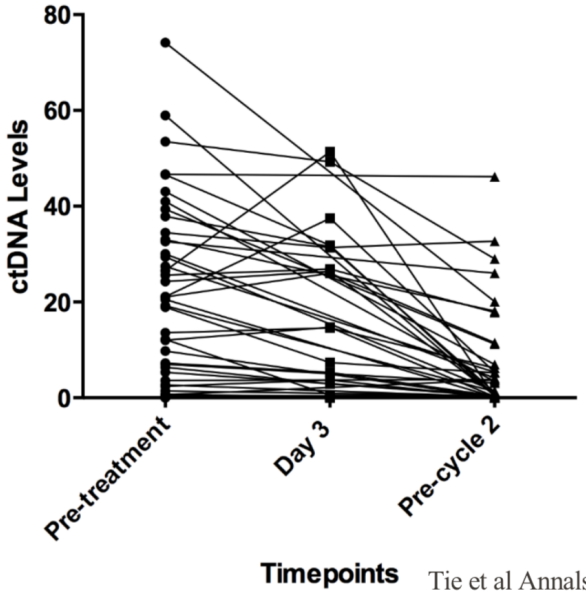
Half-life of ctDNA in circulation is measured in minutes/hours

Protein markers (CEA) may have half-life of days, with post-treatment spikes

Similar findings also seen in urinary ctDNA.

Husain et al CCR '17

ctDNA levels fall >90% in 2 weeks in responding CRC patients

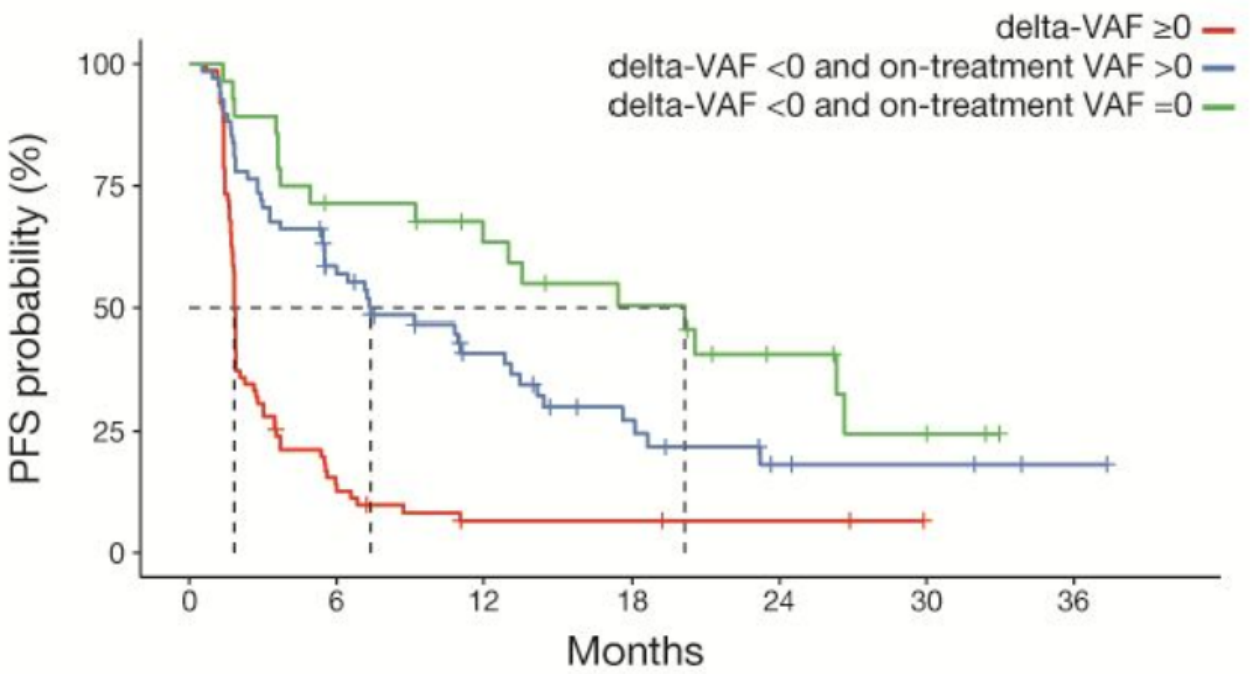


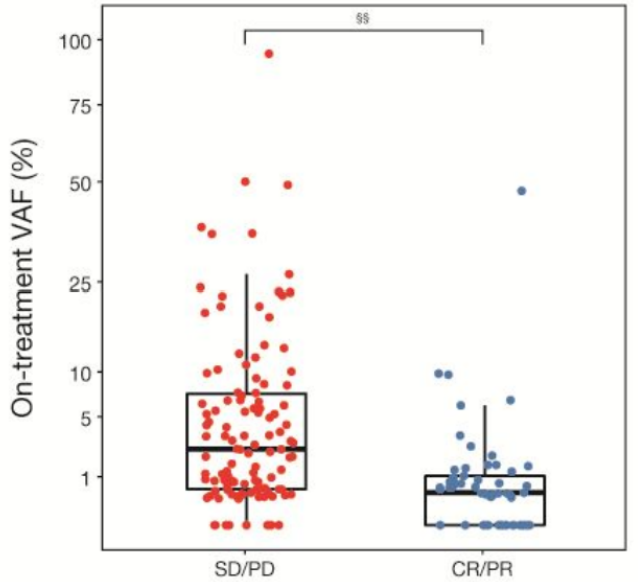
Tie et al Annals Oncology '15

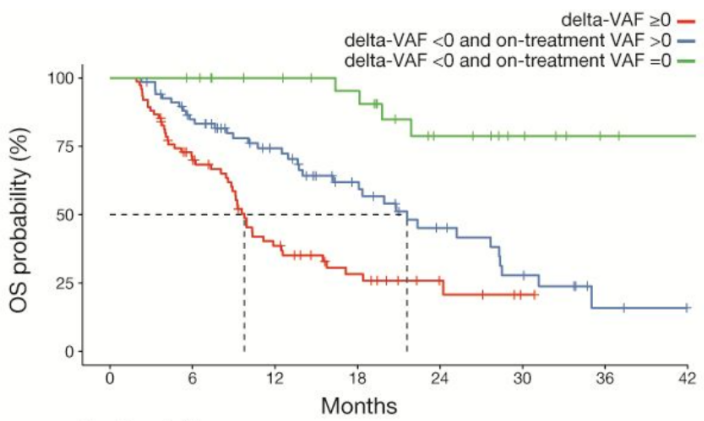
3

CANCER DISCOVERY

August 14, 2020







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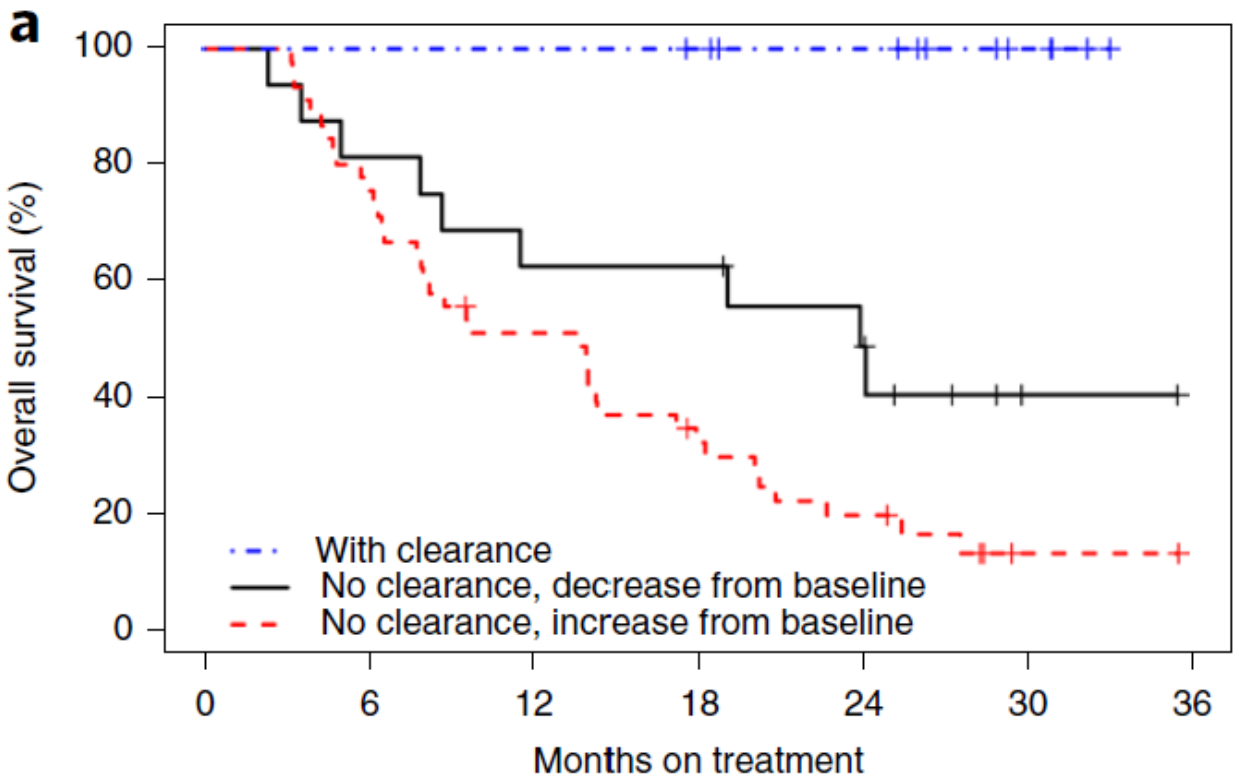
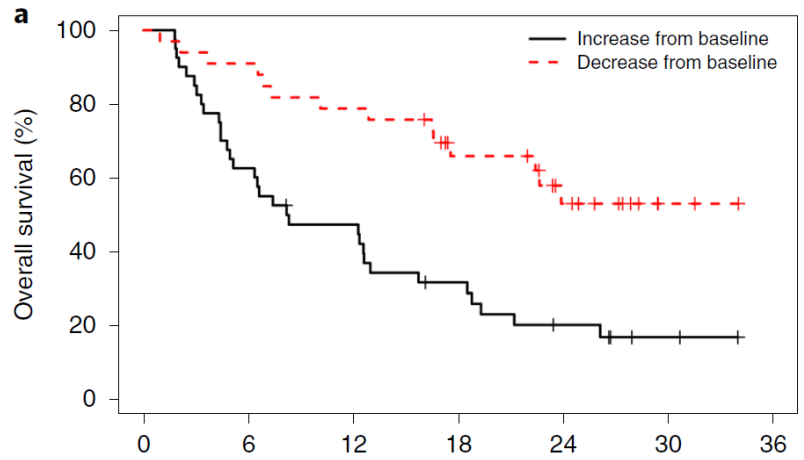
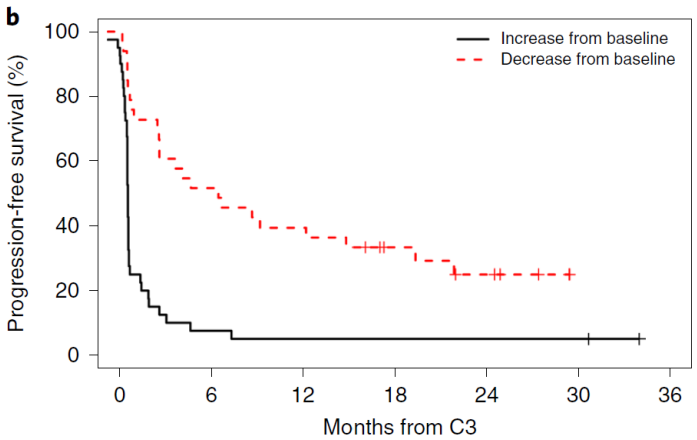
nature cancer

03 August 2020







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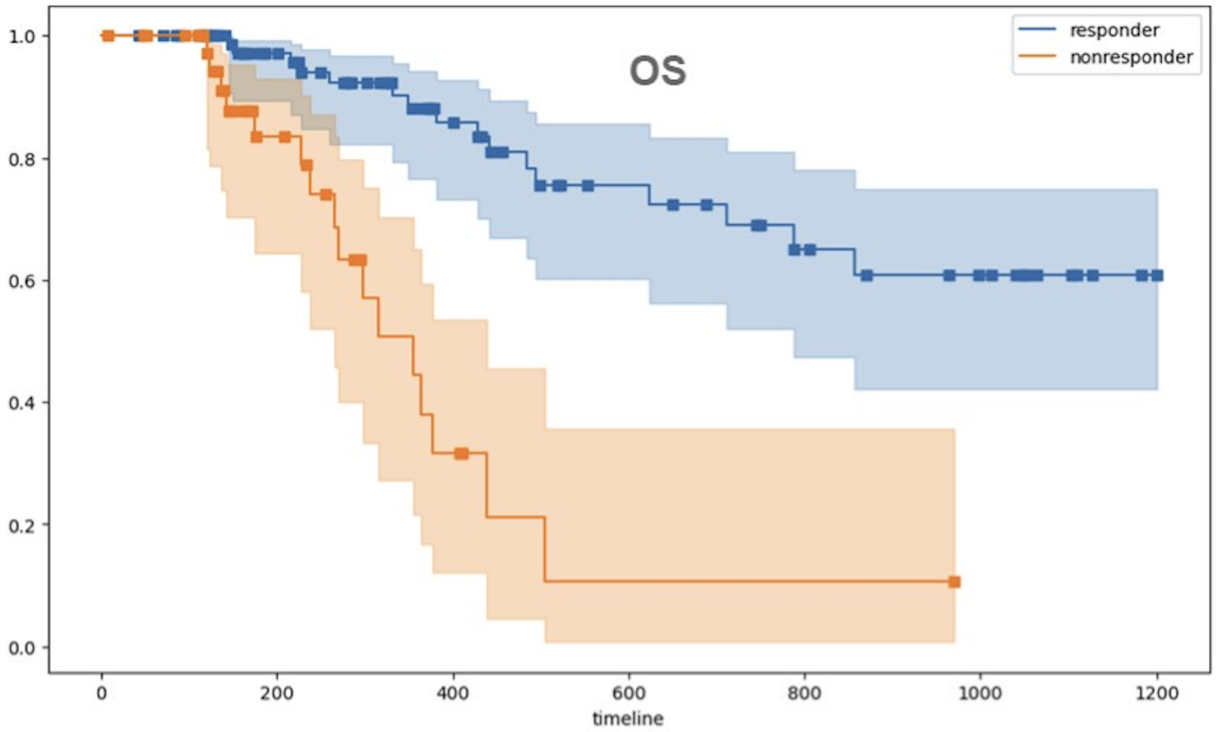
ctDNA response assessment and survival



Clinical outcome	Cohort	MR category	Median in months [CI]
OS	Chemotherapy	non-responder	11.8 [8.7-14.6]
		responder	**NR [26.3-NR]**
	All regimens	non-responder	17.8 [10.5-23.4]
		responder	**NR [23.7-NR]**
TTNT	Chemotherapy	non-responder	5.8 [4.0-7.5]
		responder	**10.3 [7.3-NR]**
	All regimens	non-responder	6.1 [4.5-7.6]
		responder	10.1 [8.2-16.1]

Kasi PM, ASCO GI, 2023. J Clin Oncol 41, 2023 (suppl 4; abstr 246).

3

ASCO Daily News®

Kinetics of Liquid Biopsies in Predicting Response to Immunotherapy

October 1, 2020

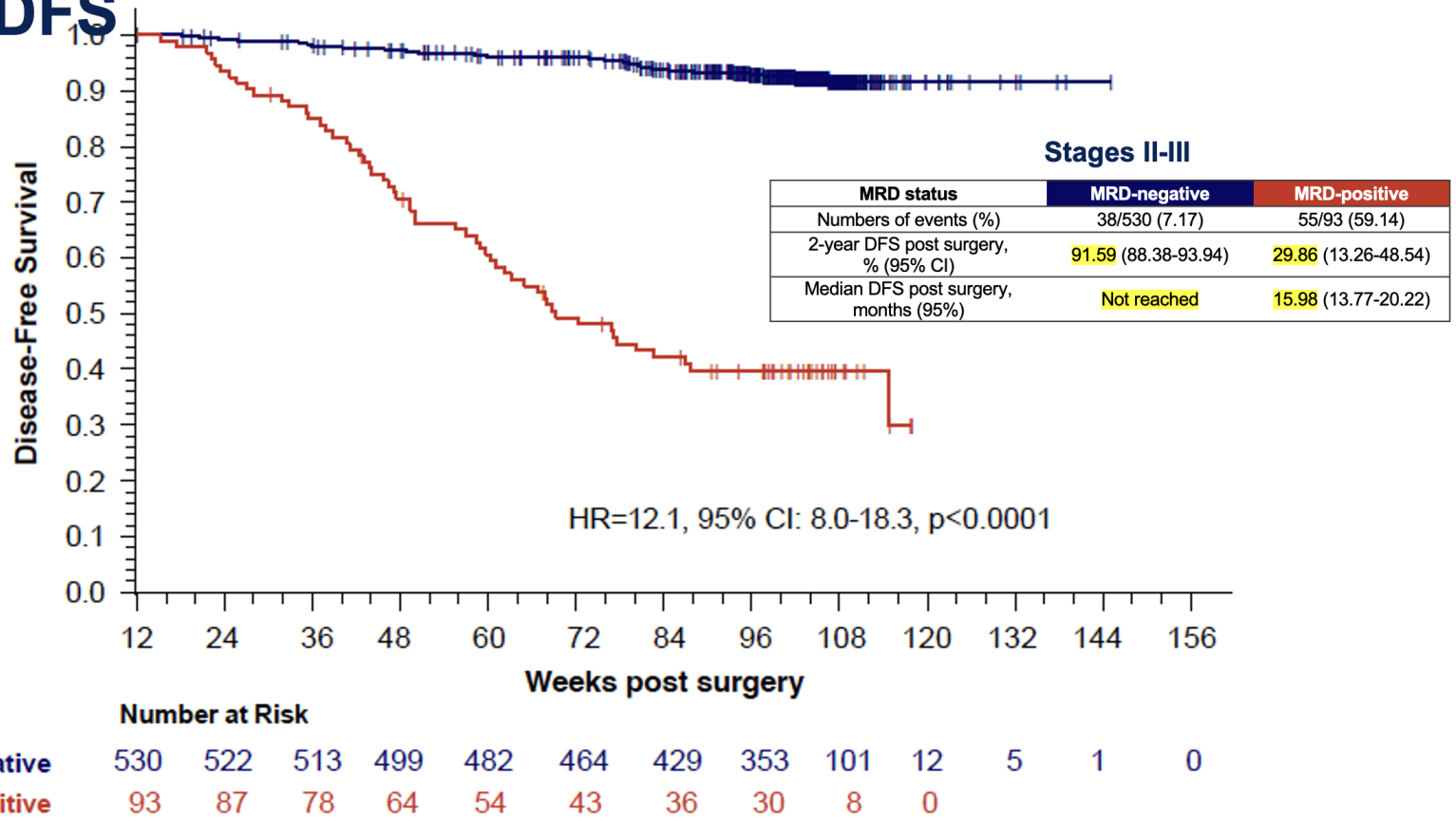
Pashtoon M. Kasi, MD, MS

@pashtoonkasi

4 ctDNA for minimal residual disease assessment

- ctDNA has emerged as the strongest predictor of disease free and overall survival.

ctDNA-positivity at MRD time point is predictive of inferior DFS



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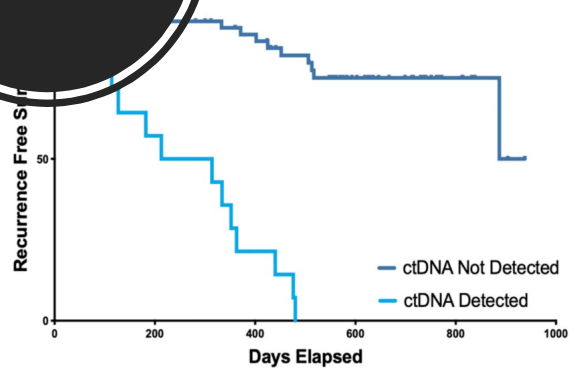
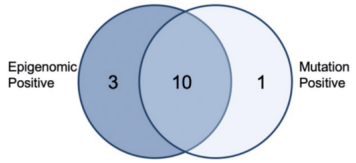
Prediction of relapse post-SOC in CRC

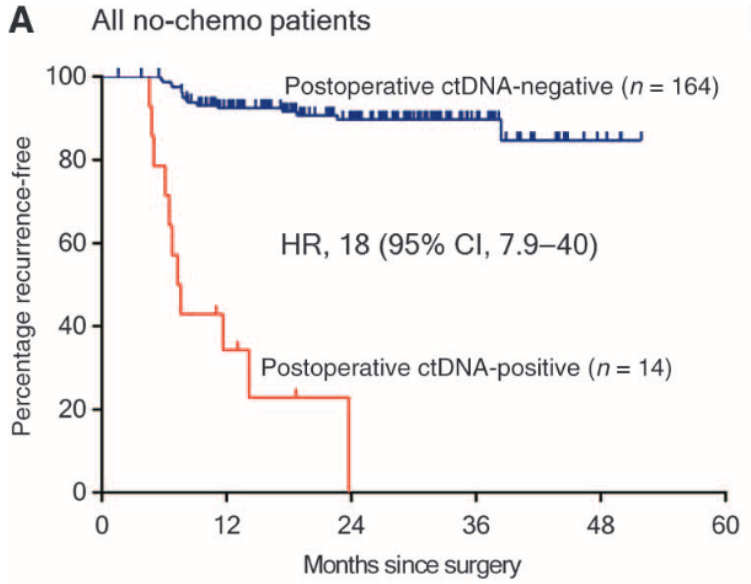




Assay Performance by Analysis		
	Genomic (N)	Integrated Genomic and Epigenomic (N)
PPV (N of patients with ctDNA detected who recurred)	100% (11 / 11)	100% (14 / 14)
NPV (N of patients with ctDNA not detected who were recurrence free)	72% (42 / 58)	76% (42 / 55)
Sensitivity for recurrence within one year of surgery	56% (9 / 16)	69% (11 / 16)
Specificity for recurrence within one year of surgery	96% (51 / 53)	94% (50 / 53)

MASSACHUSETTS GENERAL HOSPITAL CANCER CENTER

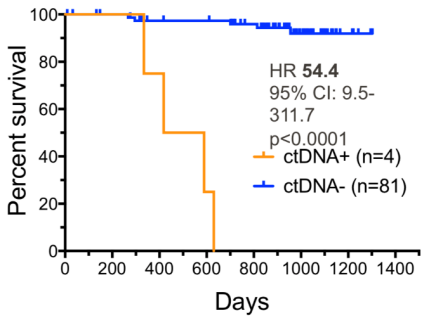
Parikh et al ASCO '19 #3602; Slide courtesy of Ryan Corcoran



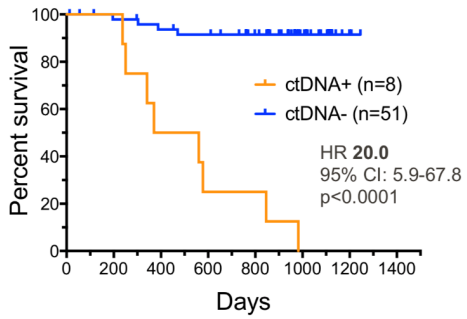
NGS Assay

Assay with 197 genes; at least one mutation detected 99.3% of tumor tissue
57% sensitivity for recurrence; 100% specificity

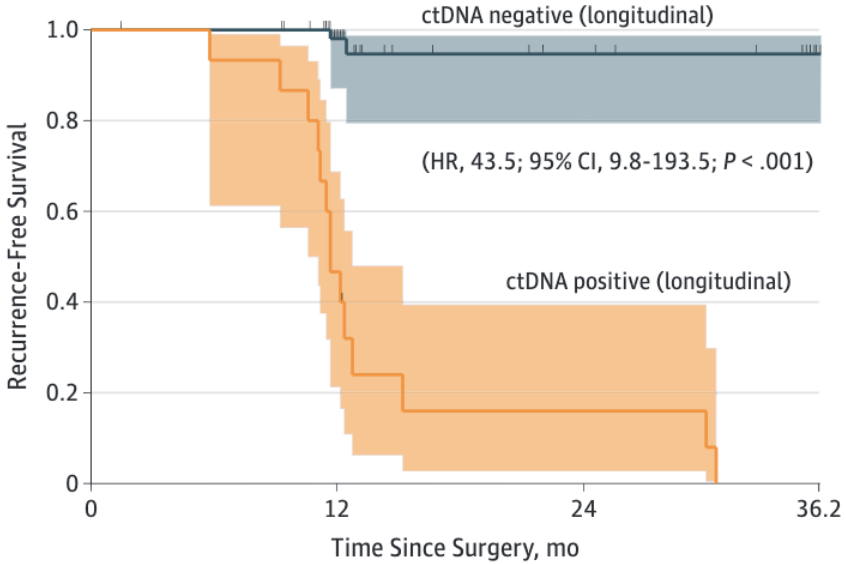
Stage II (5% prevalence of ctDNA+)



Stage III (16% prevalence of ctDNA+)



Diehn et al ASCO '17



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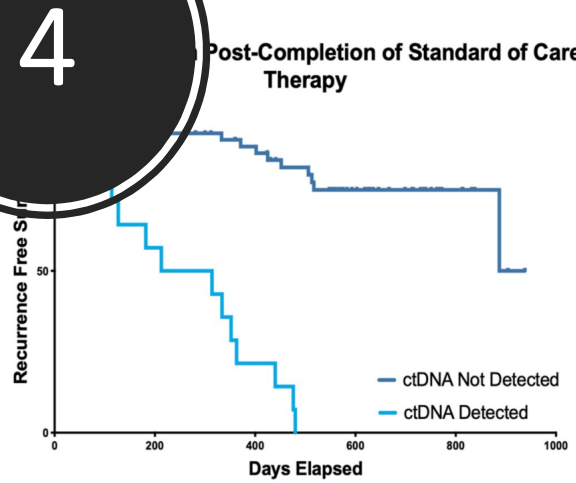

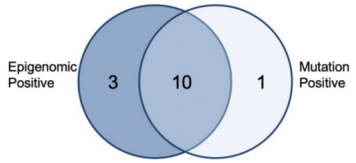

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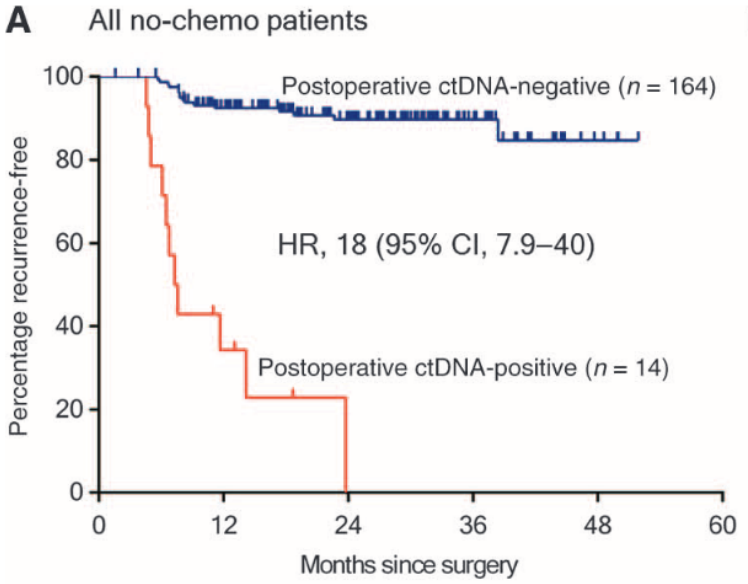
Parikh et al ASCO '19 #3602; Slide courtesy of Ryan Corcoran



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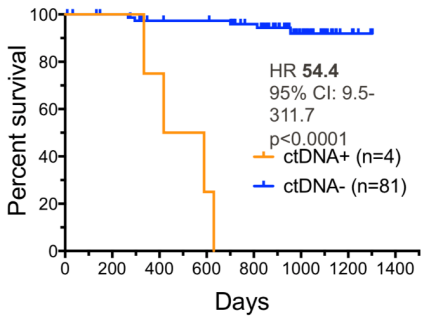

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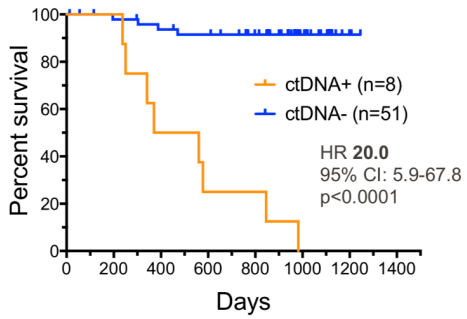
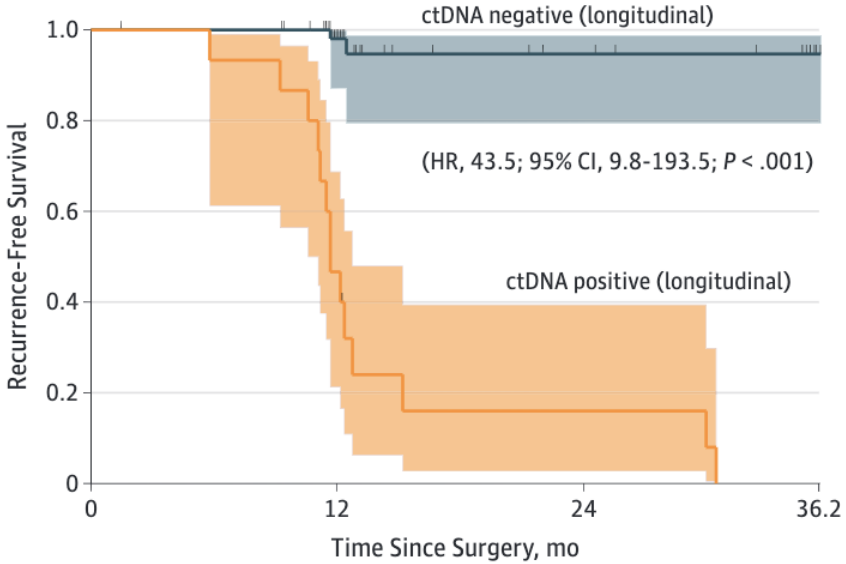
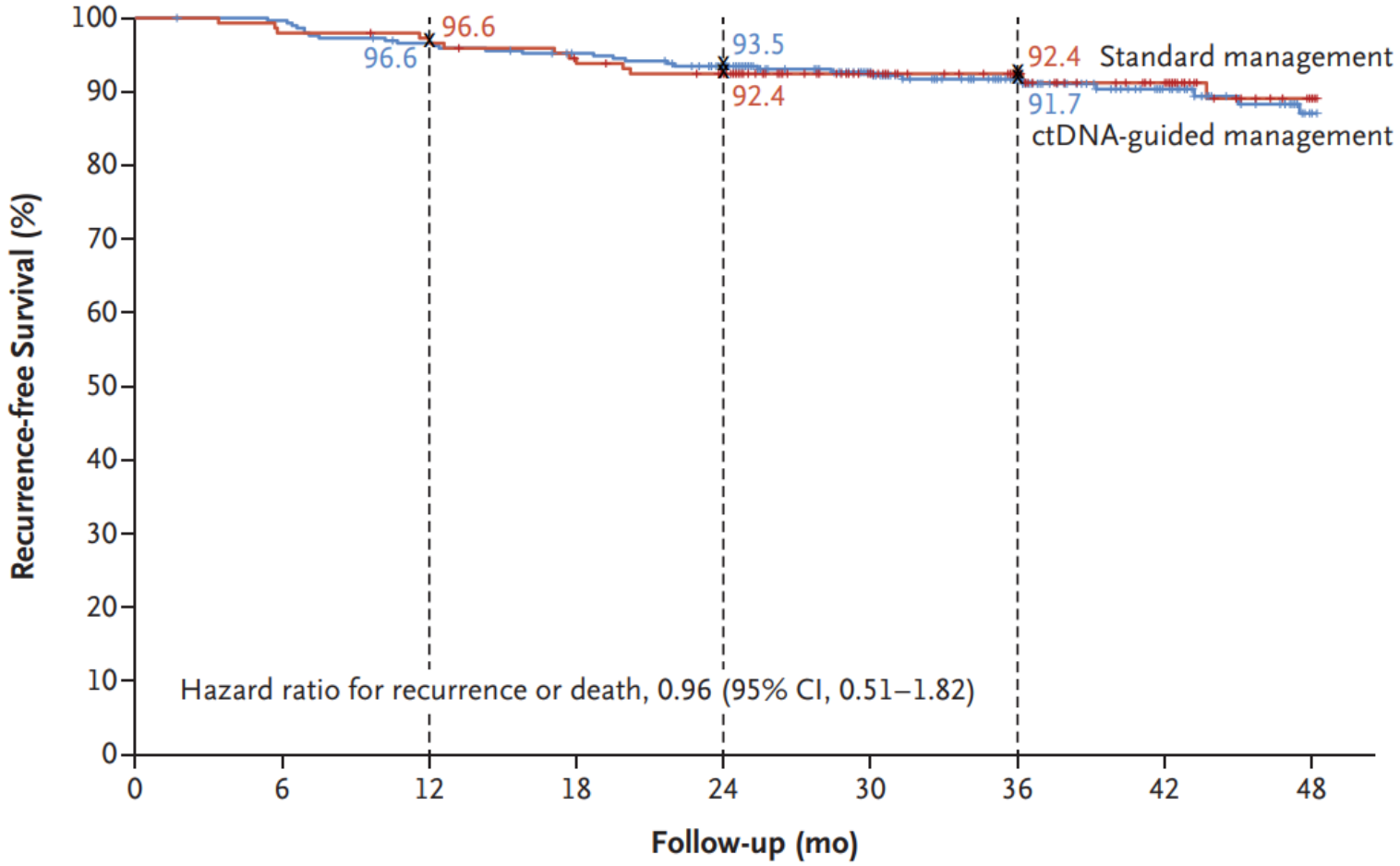


Diehn et al ASCO '17



4

B Kaplan–Meier Estimates of Recurrence-free Survival



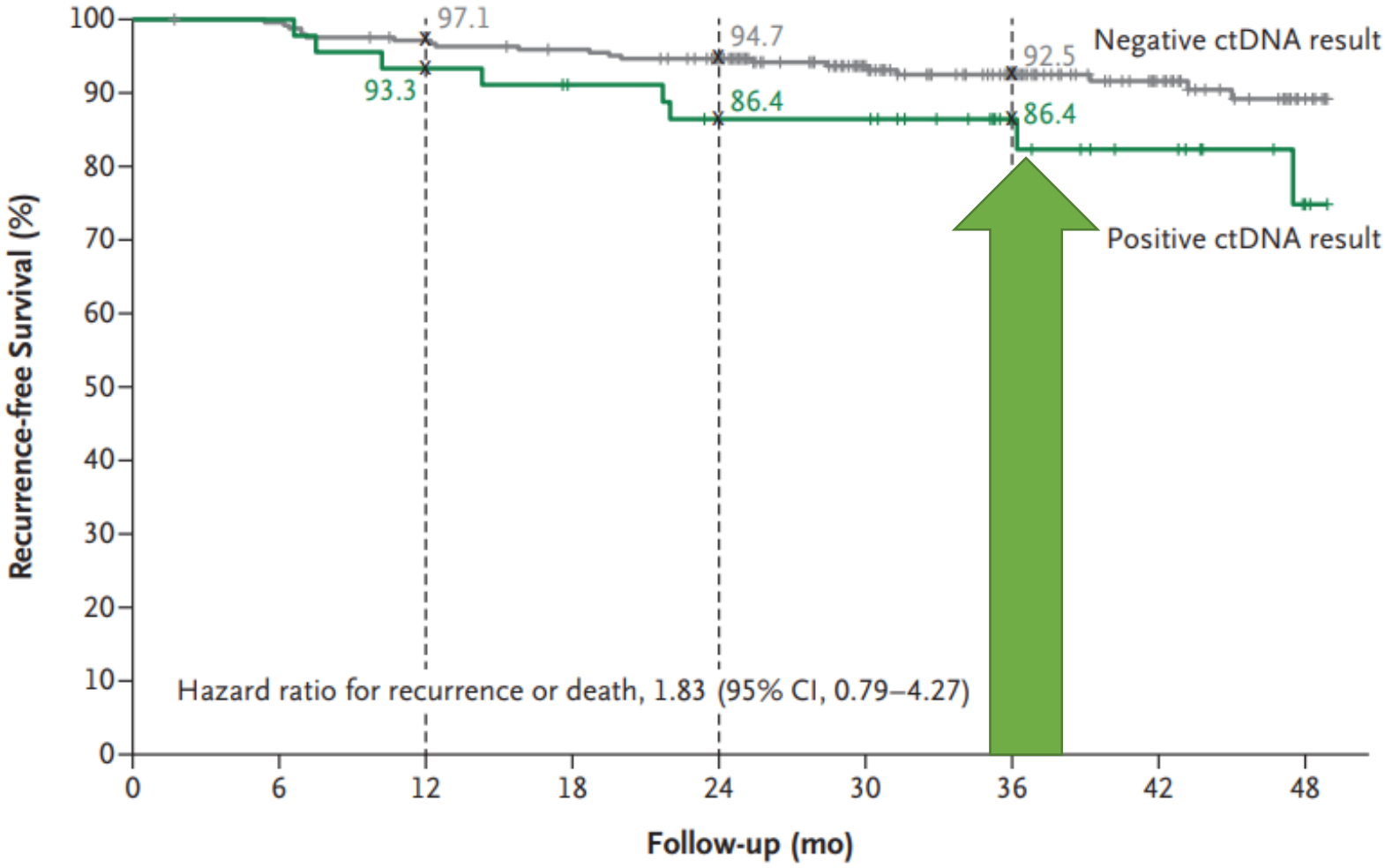
No. at Risk

Standard management	147	144	142	136	128	97	78	57	33
ctDNA-guided management	294	292	281	273	259	207	155	109	64

The NEW ENGLAND JOURNAL of MEDICINE

Tie et al. June 16, 2022
N Engl J Med 2022; 386:2261-2272

4



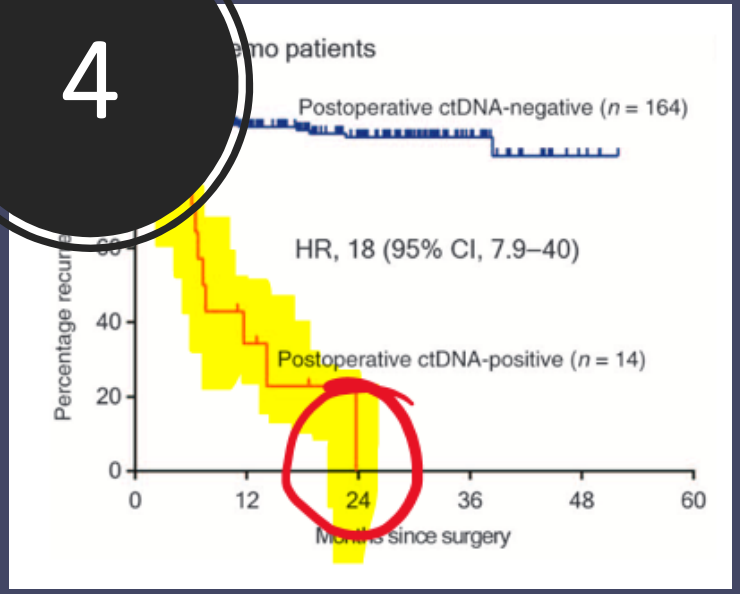
The NEW ENGLAND JOURNAL of MEDICINE

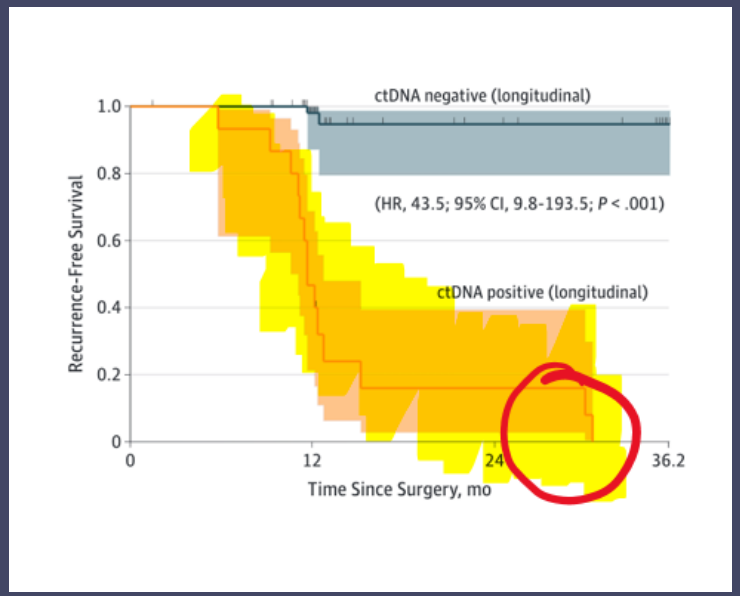
Tie et al. June 16, 2022
N Engl J Med 2022; 386:2261-2272

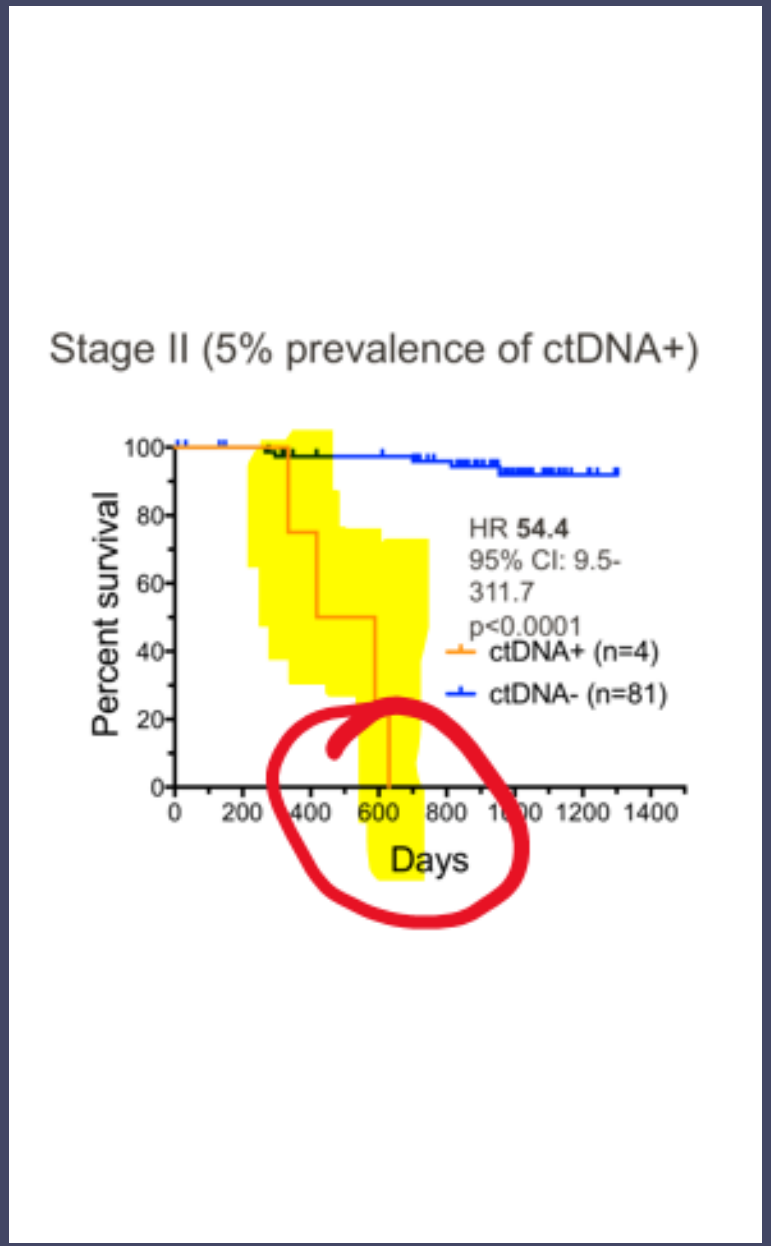
No. at Risk

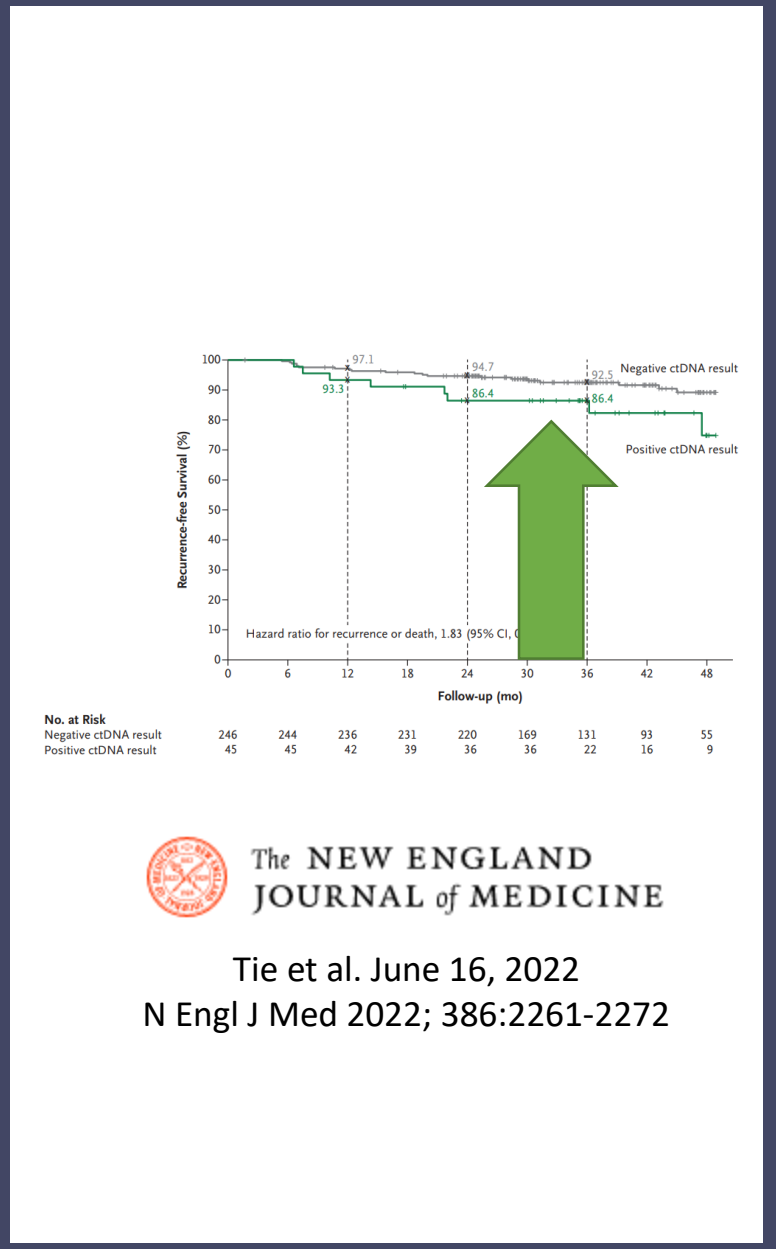
Negative ctDNA result	246	244	236	231	220	169	131	93	55
Positive ctDNA result	45	45	42	39	36	36	22	16	9

4









The NEW ENGLAND JOURNAL of MEDICINE

Tie et al. June 16, 2022
N Engl J Med 2022; 386:2261-2272

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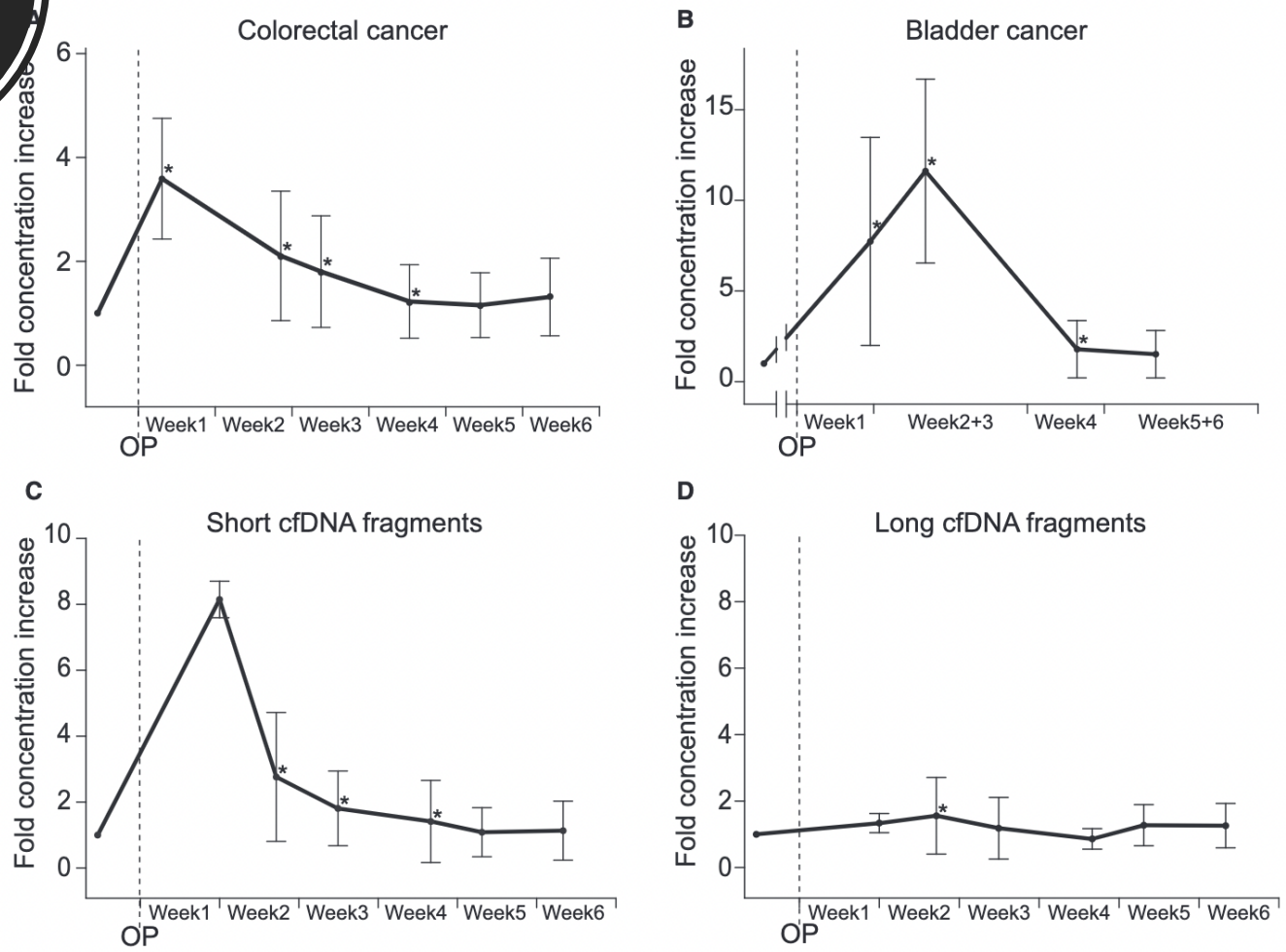


Surgical trauma induced **cfDNA** affects **ctDNA** detection

Henriksen TV. **The effect of surgical trauma on circulating free DNA levels in cancer patients-implications for studies of circulating tumor DNA**. Mol Oncol. 2020 Aug;14(8):1670-1679.

4

Timing is key

Finding the needle in the haystack

Immediate post-operative period – bigger haystack

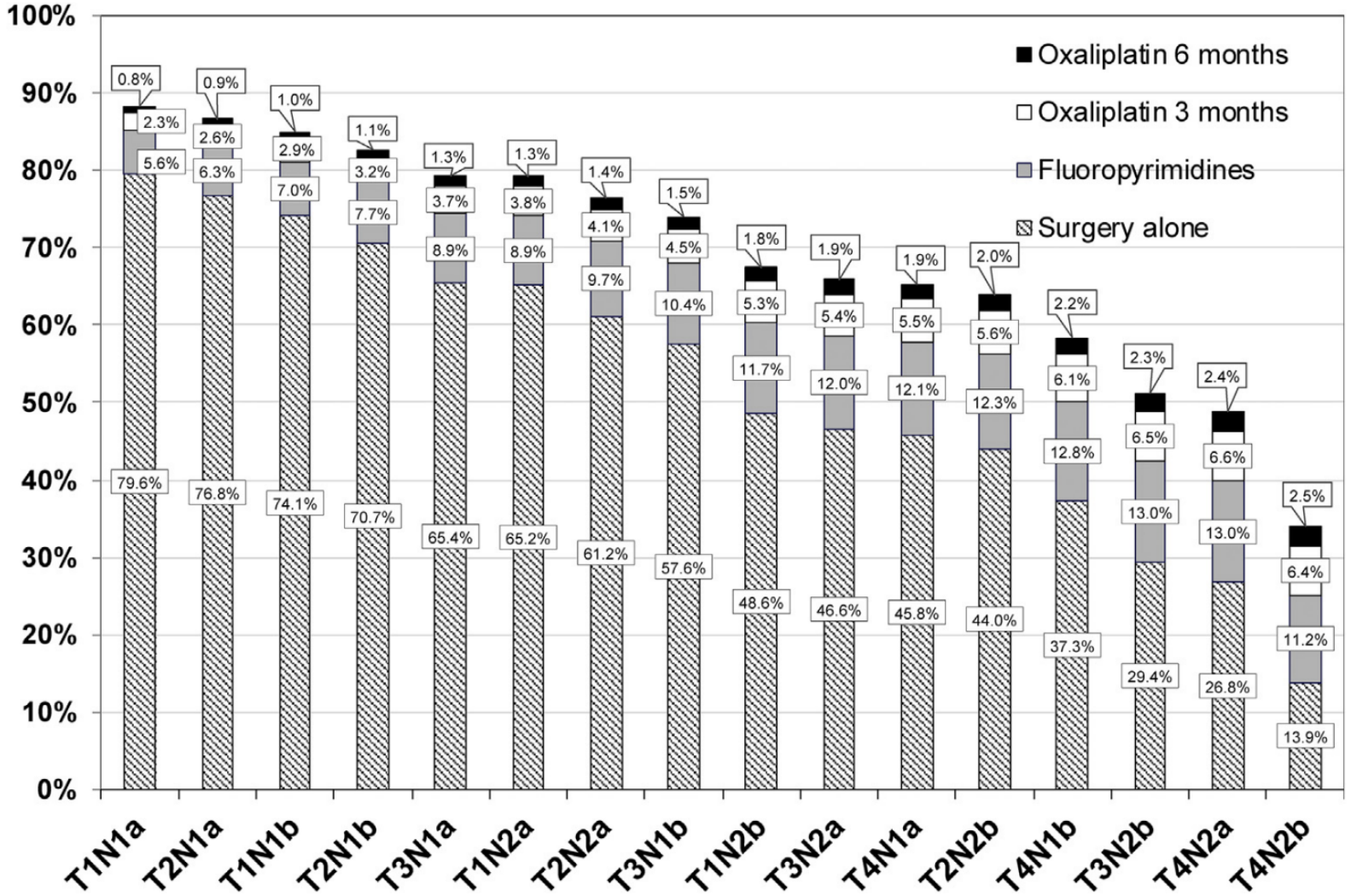


Fig. 2. Predicted 5-year DFS in the 16 prognostic sub-stages within stage III treated with surgery alone (dashed bar, HR = 0.7); fluoropyrimidine alone (light grey bar, HR = 0.78); oxaliplatin-based doublet for 3 months (white bar, HR = 0.93), oxaliplatin-based doublet for 6 months (black bar).

4

T4

High risk

Node positive

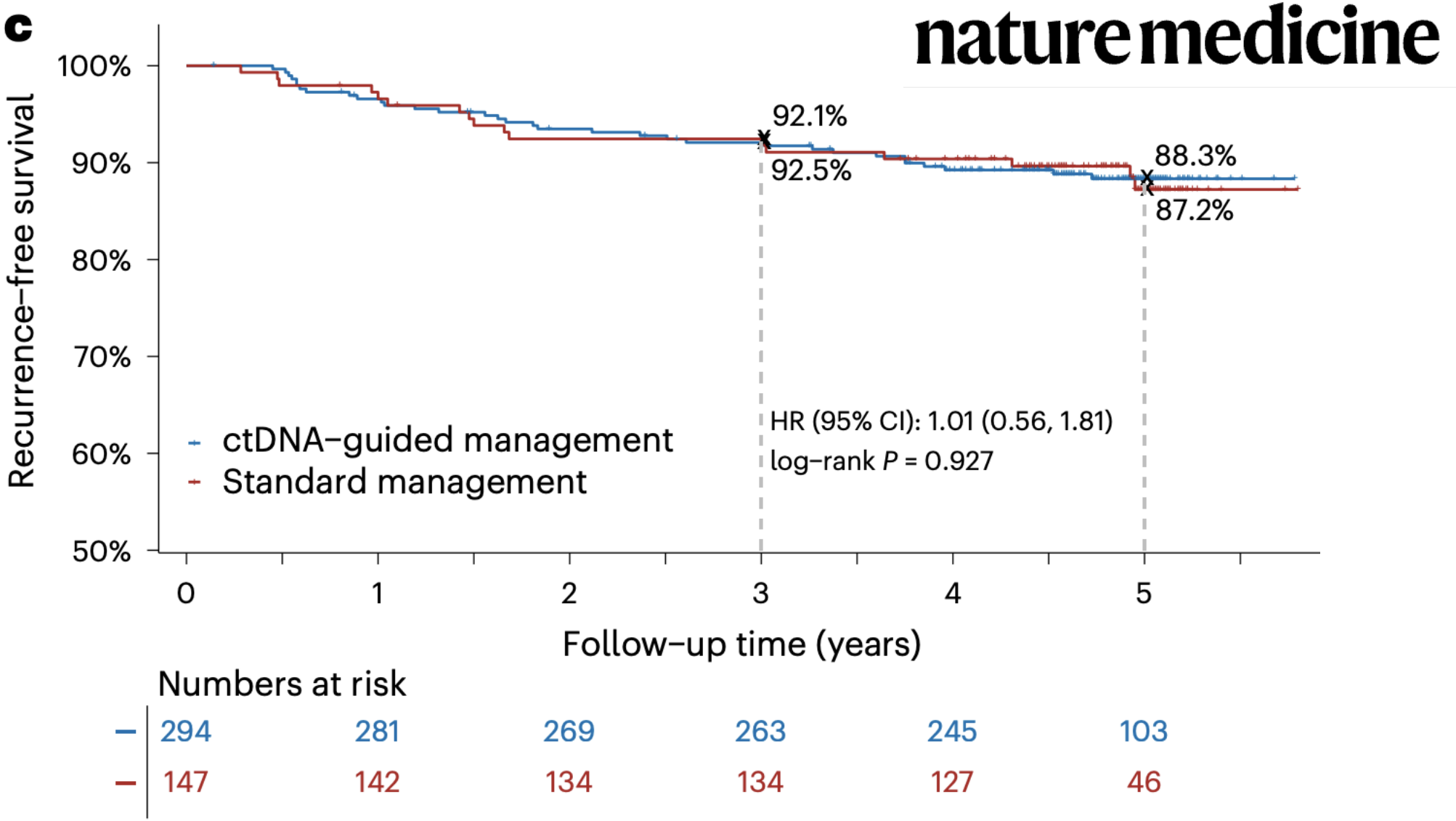
N2

+

MSI-High

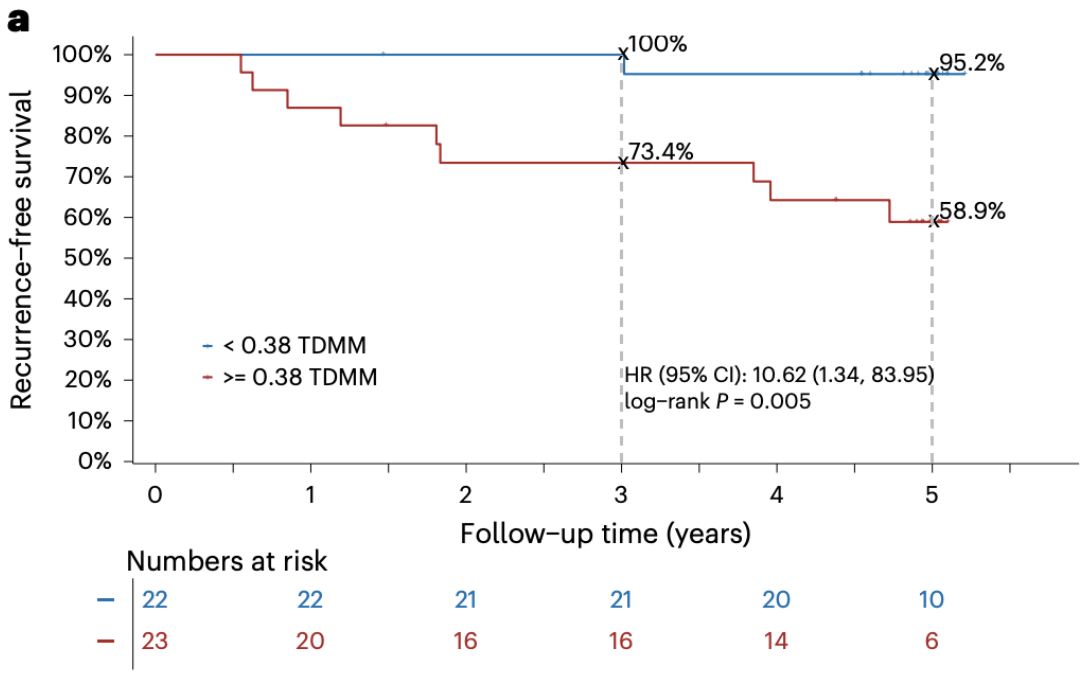
Mismatch repair deficiency

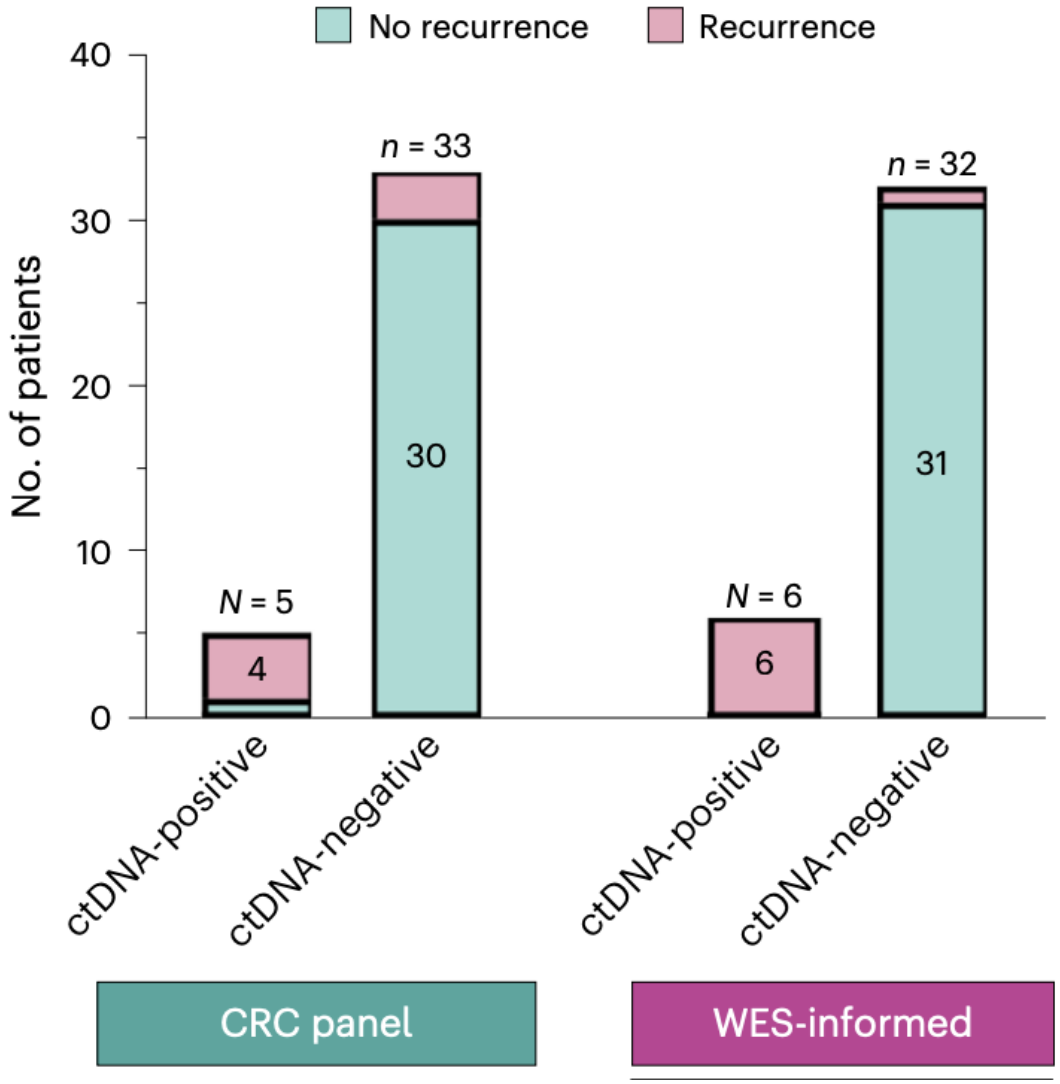
4


c
nature medicine
Recurrence–free survival
100%
90%
80%
70%
60%
50%
92.1%
92.5%
88.3%
87.2%
ctDNA–guided management
Standard management
HR (95% CI): 1.01 (0.56, 1.81)
log–rank P = 0.927
0
1
2
3
4
5
Follow–up time (years)
Numbers at risk
294 281 269 263 245 103
147 142 134 134 127 46

4

nature medicine





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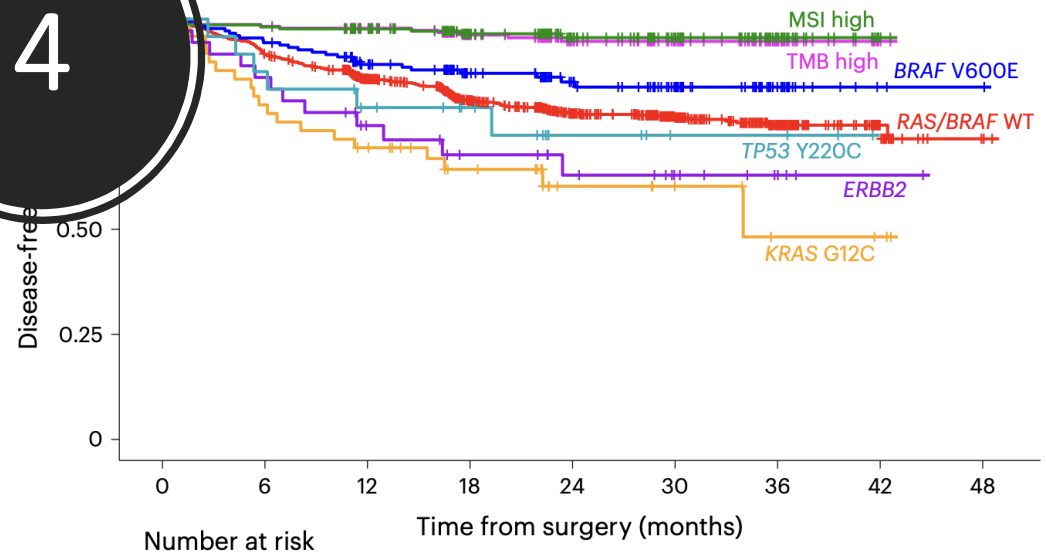
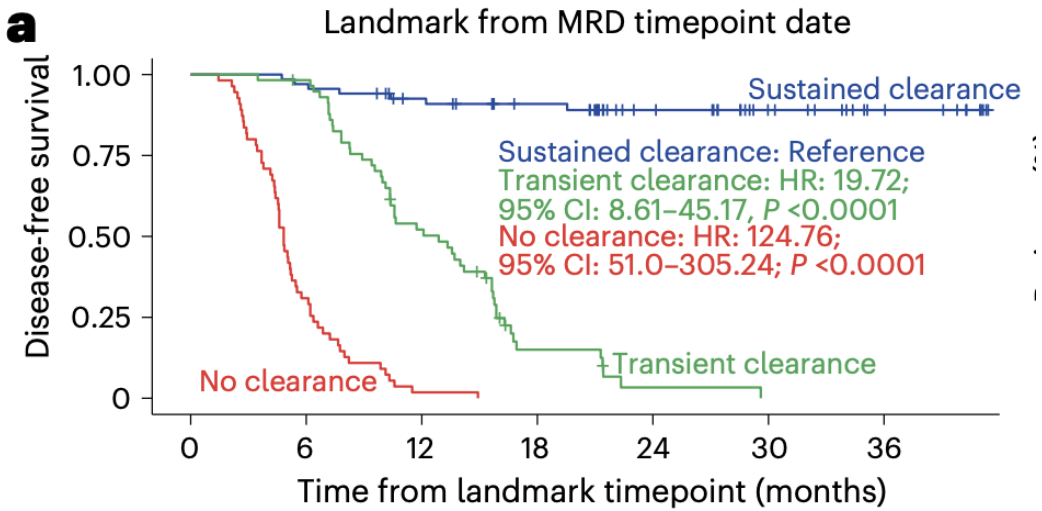
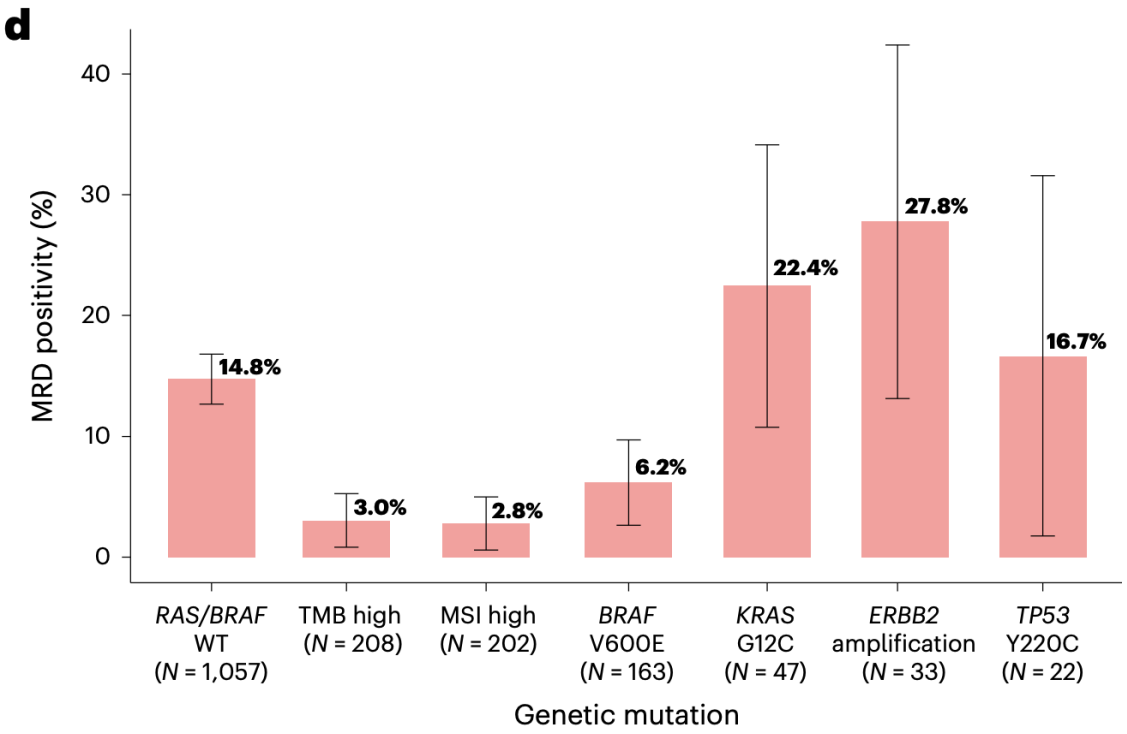
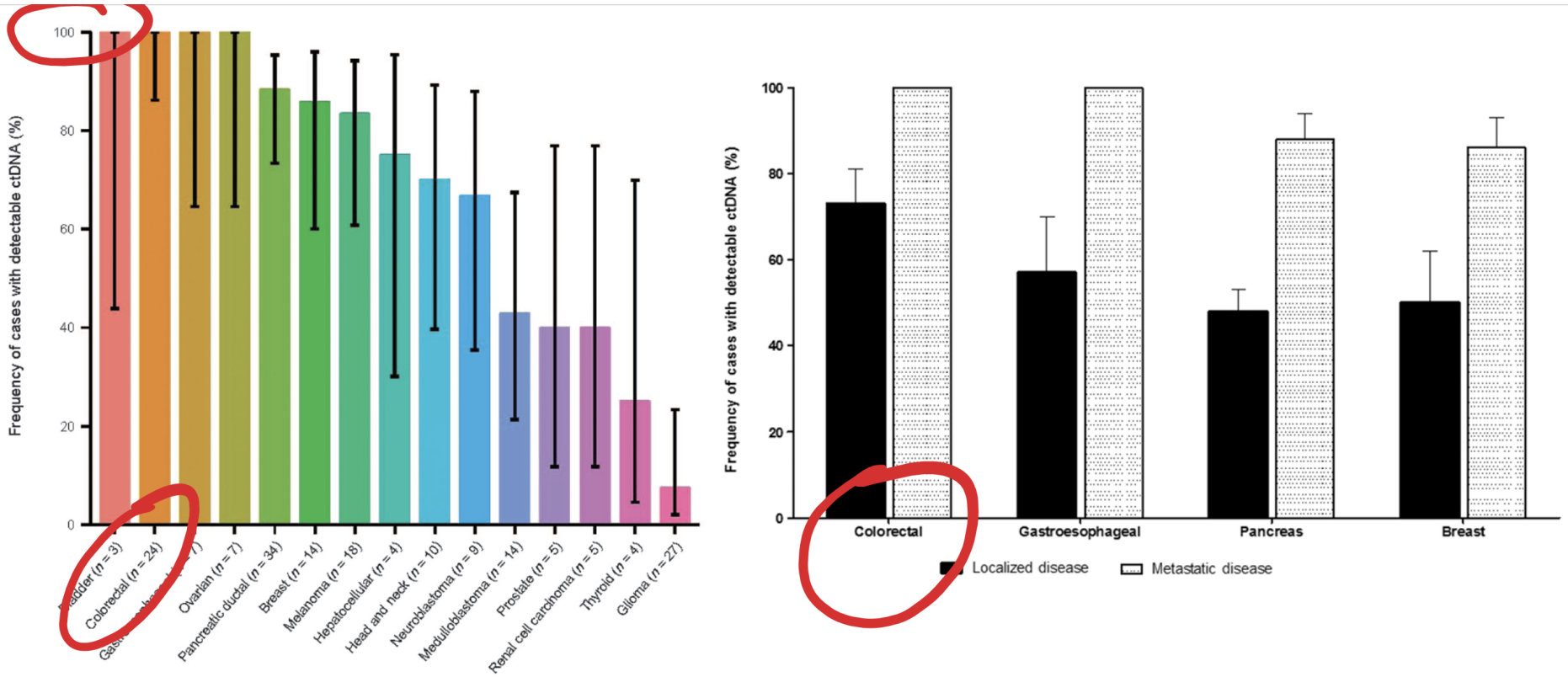

MSI high
TMB high
BRAF V600E
RAS/BRAF WT
TP53 Y220C
ERBB2
KRAS G12C
Disease-free
0.50
0.25
0
0
6
12
18
24
30
36
42
48
Number at risk
Time from surgery (months)


a
Landmark from MRD timepoint date
Disease-free survival
1.00
0.75
0.50
0.25
0
Sustained clearance
Sustained clearance: Reference
Transient clearance: HR: 19.72;
95% CI: 8.61–45.17, P <0.0001
No clearance: HR: 124.76;
95% CI: 51.0–305.24; P <0.0001
Transient clearance
No clearance
0
6
12
18
24
30
36
Time from landmark timepoint (months)


d
MRD positivity (%)
40
30
20
10
0
14.8%
3.0%
2.8%
6.2%
22.4%
27.8%
16.7%
RAS/BRAF WT (N = 1,057)
TMB high (N = 208)
MSI high (N = 202)
BRAF V600E (N = 163)
KRAS G12C (N = 47)
ERBB2 amplification (N = 33)
TP53 Y220C (N = 22)
Genetic mutation

5 Why is colorectal a posterchild for liquid biopsies?

- Cannot forget biology; high-shedders versus low shedders.



(Bettegowda, Sausen et al. 2014)

5

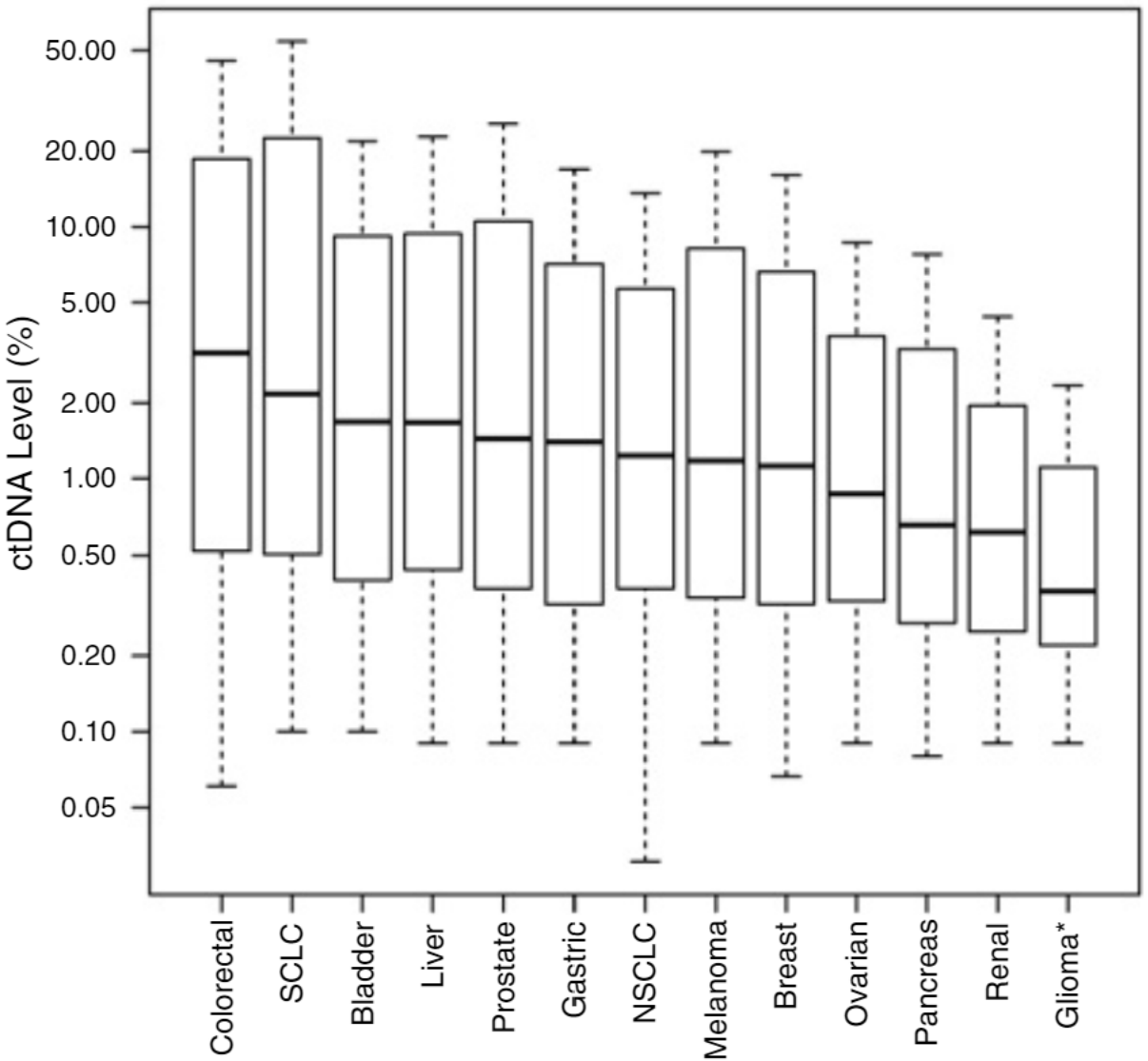
Clinical Cancer Research

The Landscape of Actionable Genomic Alterations in Cell-Free Circulating Tumor DNA from 21,807 Advanced Cancer Patients

Oliver A. Zill[1], Kimberly C. Banks[1], Stephen R. Fairclough[1], Stefanie A. Mortimer[1], James V. Vowles[1], Reza Mokhtari[1], David R. Gandara[2], Philip C. Mack[2], Justin I. Odegaard[1], Rebecca J. Nagy[1], Arthur M. Baca[1], Helmy Eltoukhy[1], Darya I. Chudova[1], Richard B. Lanman[1], and AmirAli Talasaz[1]

Clinical Cancer Research

August 2018
Volume 24, Issue 15



Zill OA, et al. *Clin Cancer Res*. 2018;24:3528.

@pashtoonkasi

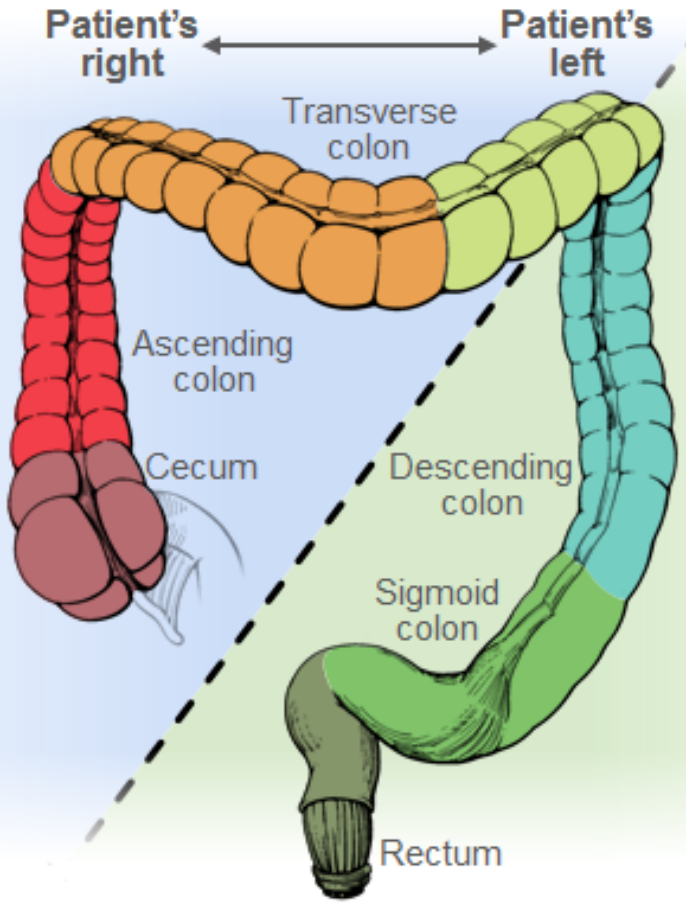
5 RIGHT vs. LEFT

MIDGUT DERIVATIVE

- females
- sessile serrated lesions
- mucinous tumors

Overall WORSE prognosis

- CIMP-high
- BRAF
- MSI-high
- CMS-1-MSI immune tumors
- CMS-3-metabolic tumors
- (KRAS)



HINDGUT DERIVATIVE

- males

Overall BETTER prognosis

- CMS-4-MSI mesenchymal
- CMS-2-canonical distally
- TP53
- APC

EGFR → RAS → $BRAF^{V600E}$ → MEK → ERK

@pashtoonkasi

Kasi PM et al. Colorectal Cancer. Lancet Oct 2019.

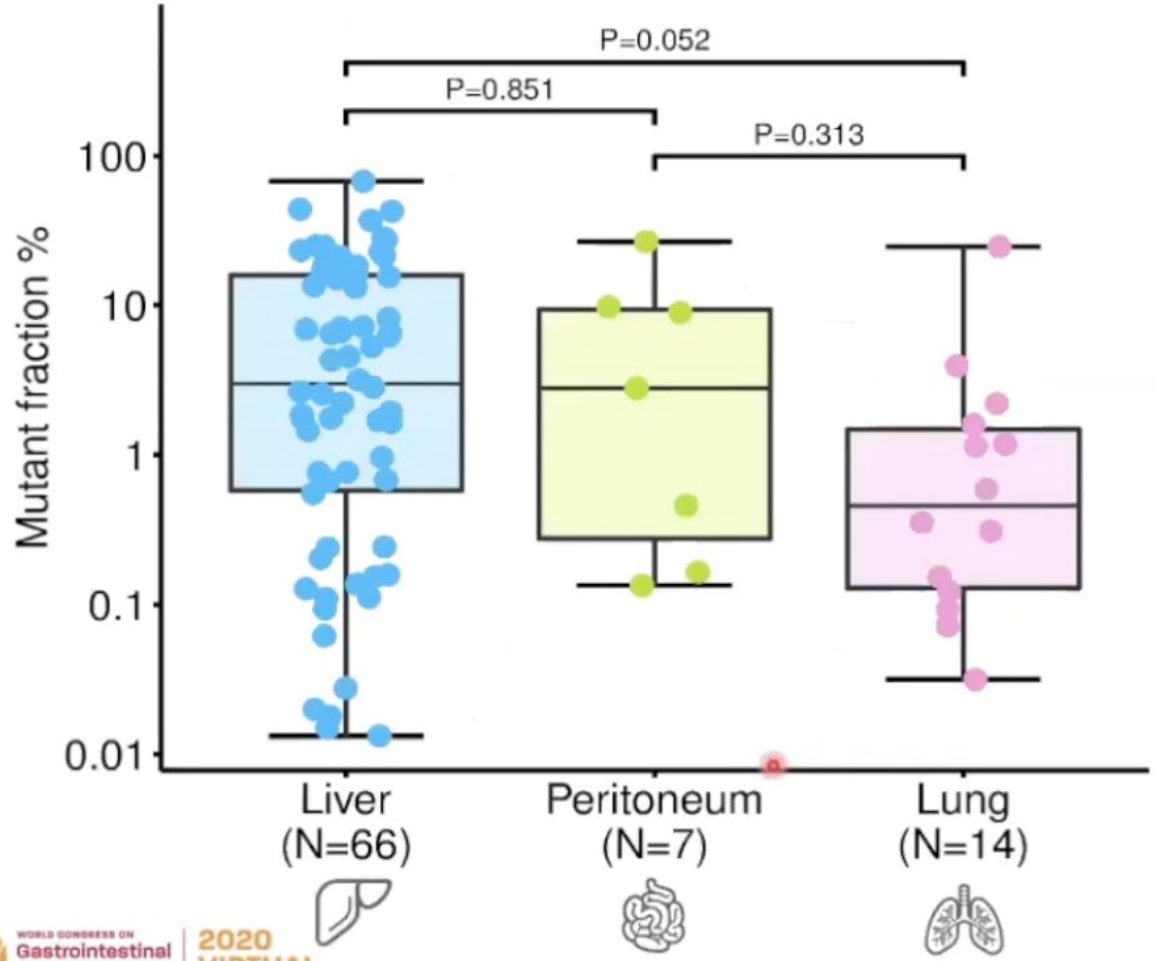
5

Lee J, et al: Multimodal circulating tumor DNA (ctDNA) colorectal neoplasia detection assay for asymptomatic and early-stage colorectal cancer (CRC). ***Journal of Clinical Oncology*** *39:3536-3536,* ***2021***

5

DNA excretion from each metastatic site

Among cases with *RAS* mutation by plasma-BEAMing (n=87)*



		Tissue		Total
		MT	WT	
Plasma	MT	79	8	87
	WT	25	112	137
Total		104	120	224

* Excluding the cases with *RAS* wild type by plasma assay

**derived from Kruskal-Wallis test with Holm method

ESMO World Congress on Gastrointestinal Cancer 2020 VIRTUAL

5

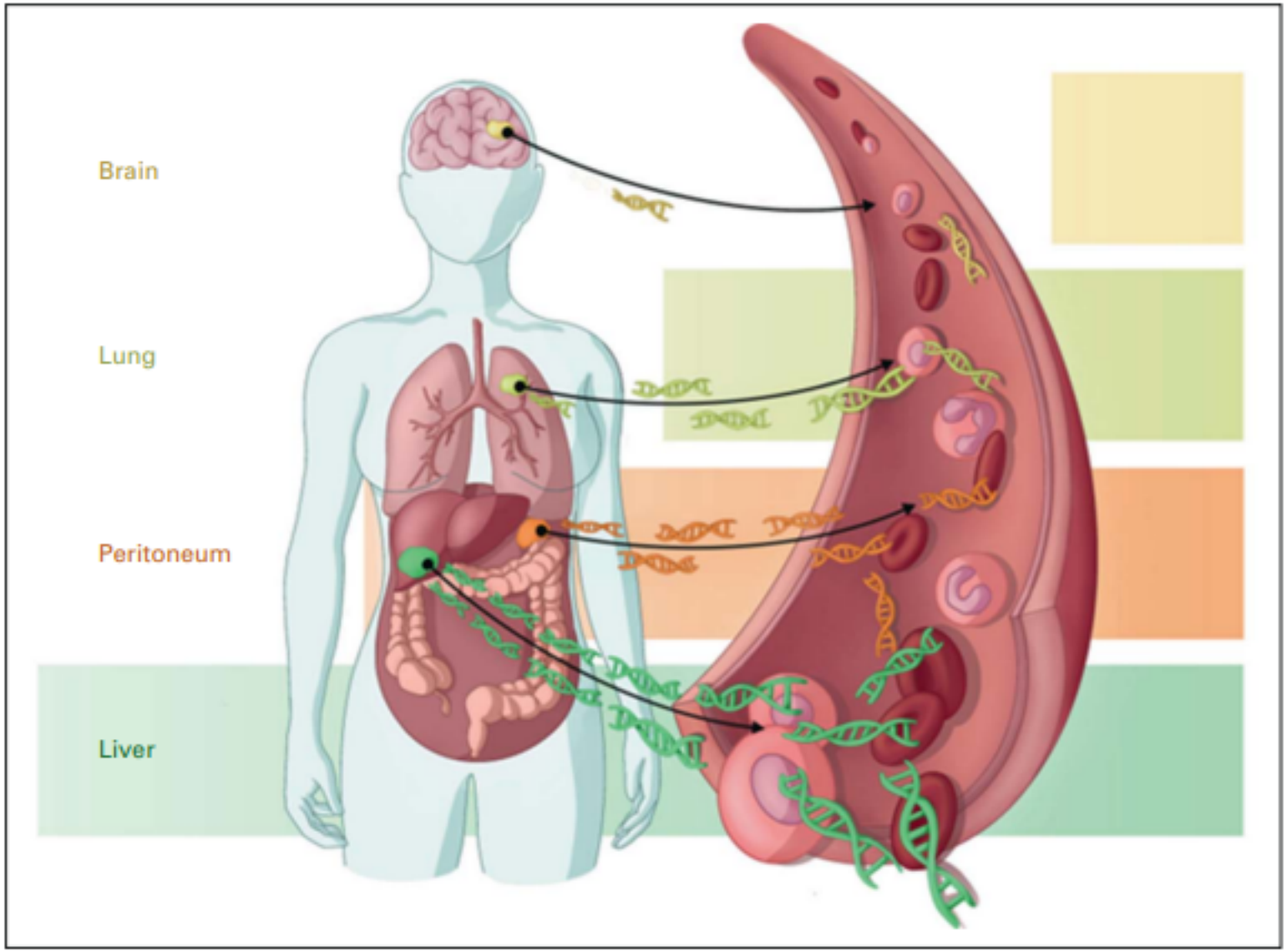
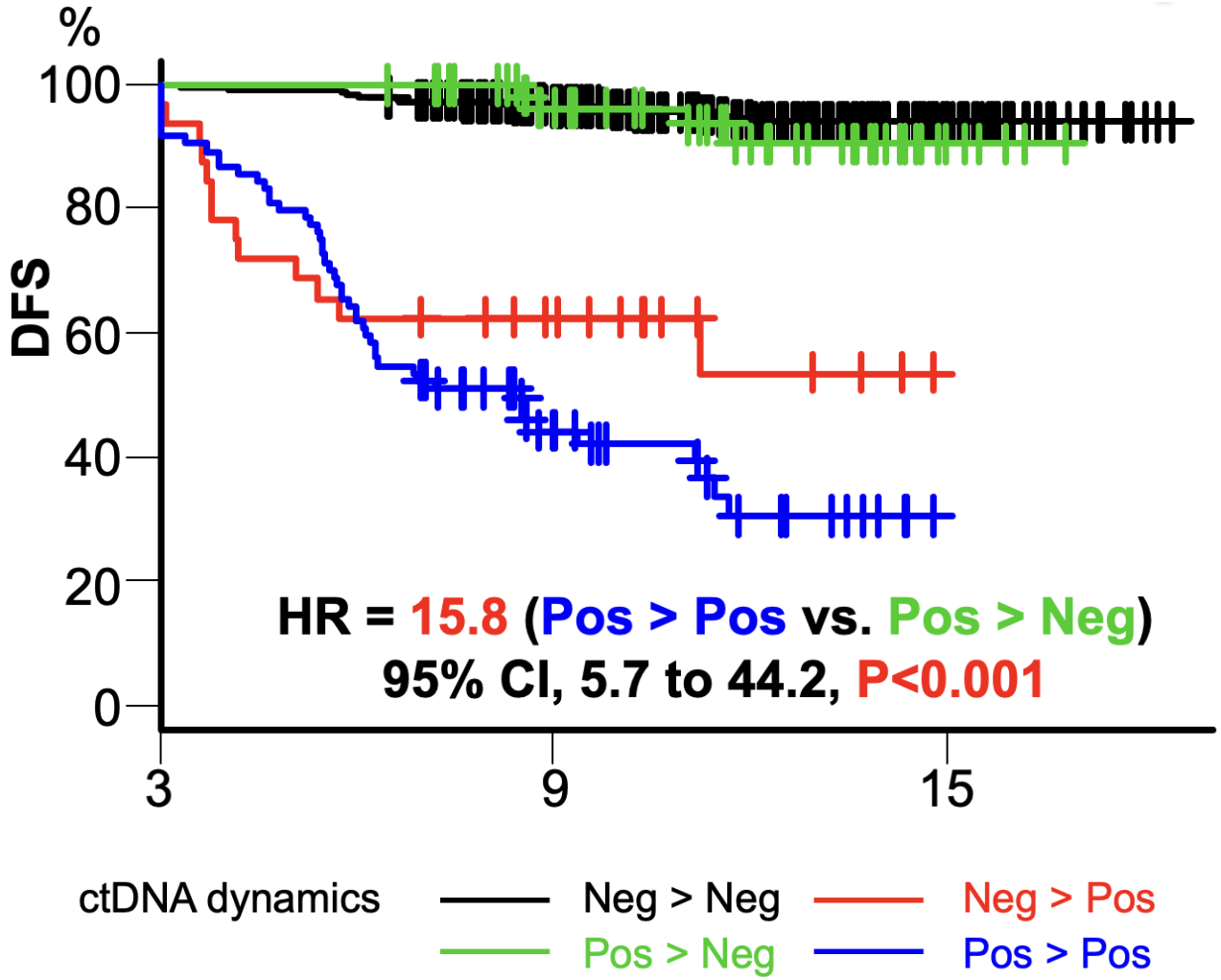


FIG 1. Shedding and amount of detectable circulating tumor DNA varies by location of metastatic site. Liver metastases appear to shed the most DNA, followed by the peritoneum and lung.

Kasi PM, Fehringer G, Aleshin A, Kopetz S. Reply to F. Dayyani et al. **JCO Precis Oncol**. 2022 Jul;6:e2200275. doi: 10.1200/PO.22.00275. PMID: 35834757.

6 Beyond prognostic; is it predictive?

- Opening up clinical trial opportunities for both escalation and de-escalation.
- CIRCULATE-US



6 Beyond prognostic; is it predictive?

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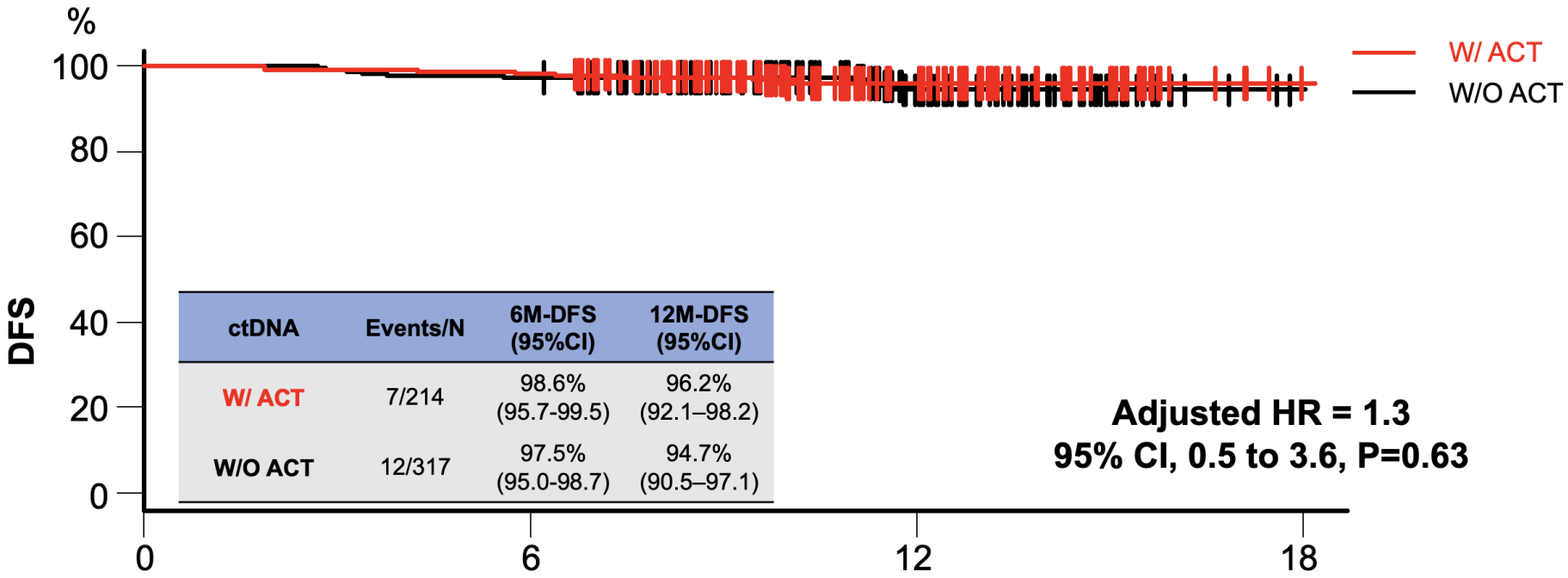
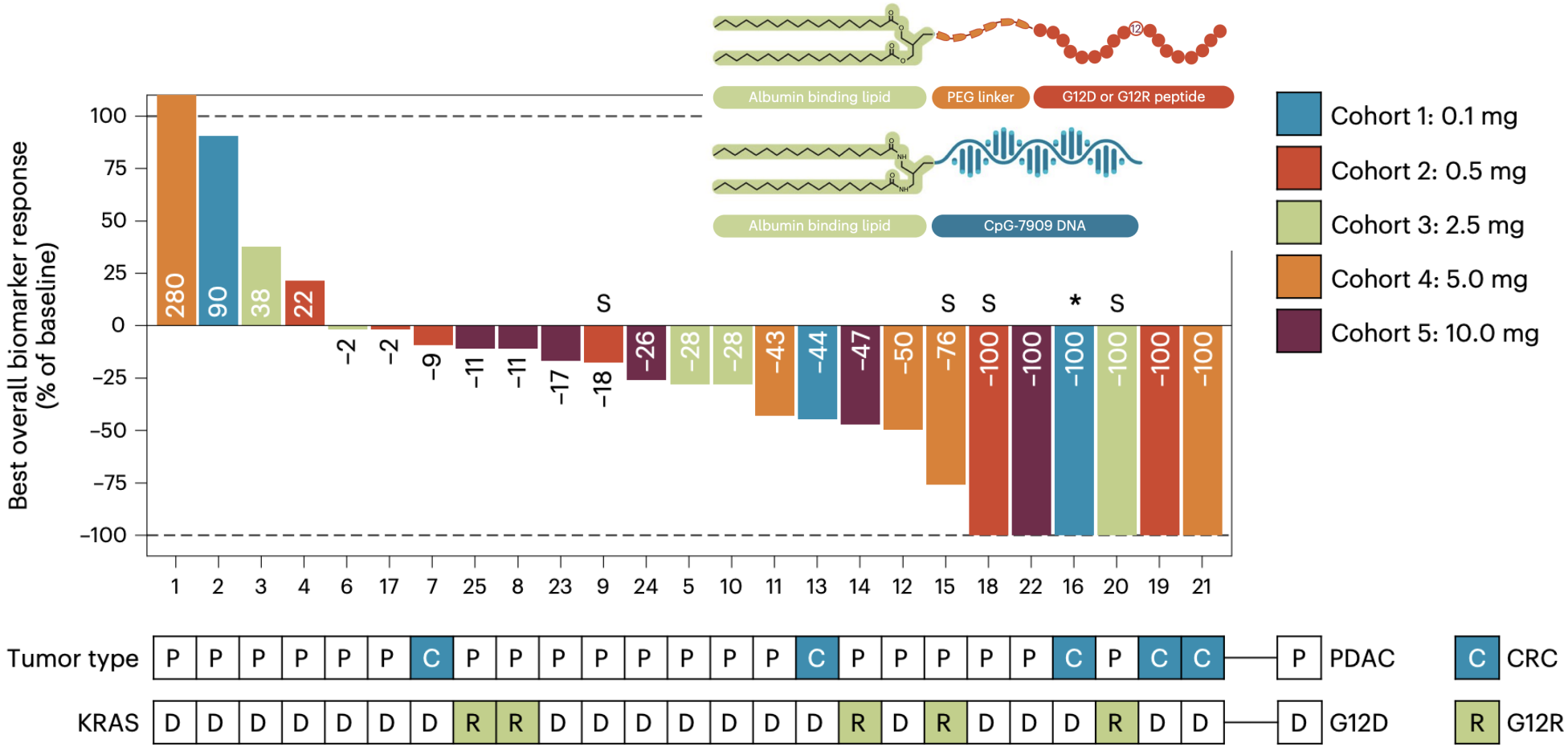
- CIRCULATE-US



ctDNA	Events/N	6M-DFS (95%CI)	12M-DFS (95%CI)
W/ ACT	7/214	98.6% (95.7-99.5)	96.2% (92.1–98.2)
W/O ACT	12/317	97.5% (95.0-98.7)	94.7% (90.5–97.1)

7 Innovative clinical trial designs

- Pairing with novel therapeutics



Lymph-node-targeted, mKRAS-specific amphiphile vaccine in pancreatic and colorectal cancer: the phase 1 AMPLIFY-201 trial. *Nat Med*. 2024;30(2):531-542
Lymph node-targeted, mKRAS-specific amphiphile vaccine in pancreatic and colorectal cancer: phase 1 AMPLIFY-201 trial final results. *Nat Med*. August 11, 2025.

7

Surgery

Molecular Recurrence

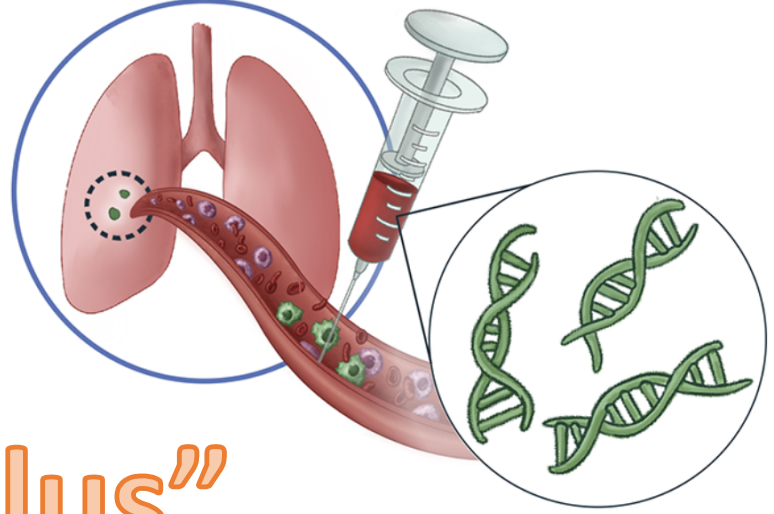
ctDNA detectable at varying limits based on shedding and organs involved

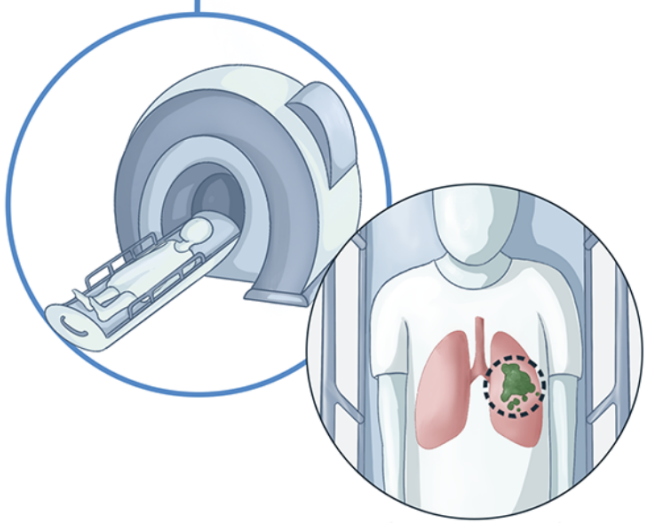
Clinical / Radiographic Recurrence

Micrometastases in various organs (eg, lung present, but not initially detectable on scans)

Adjuvant Therapy

9 - 12 months





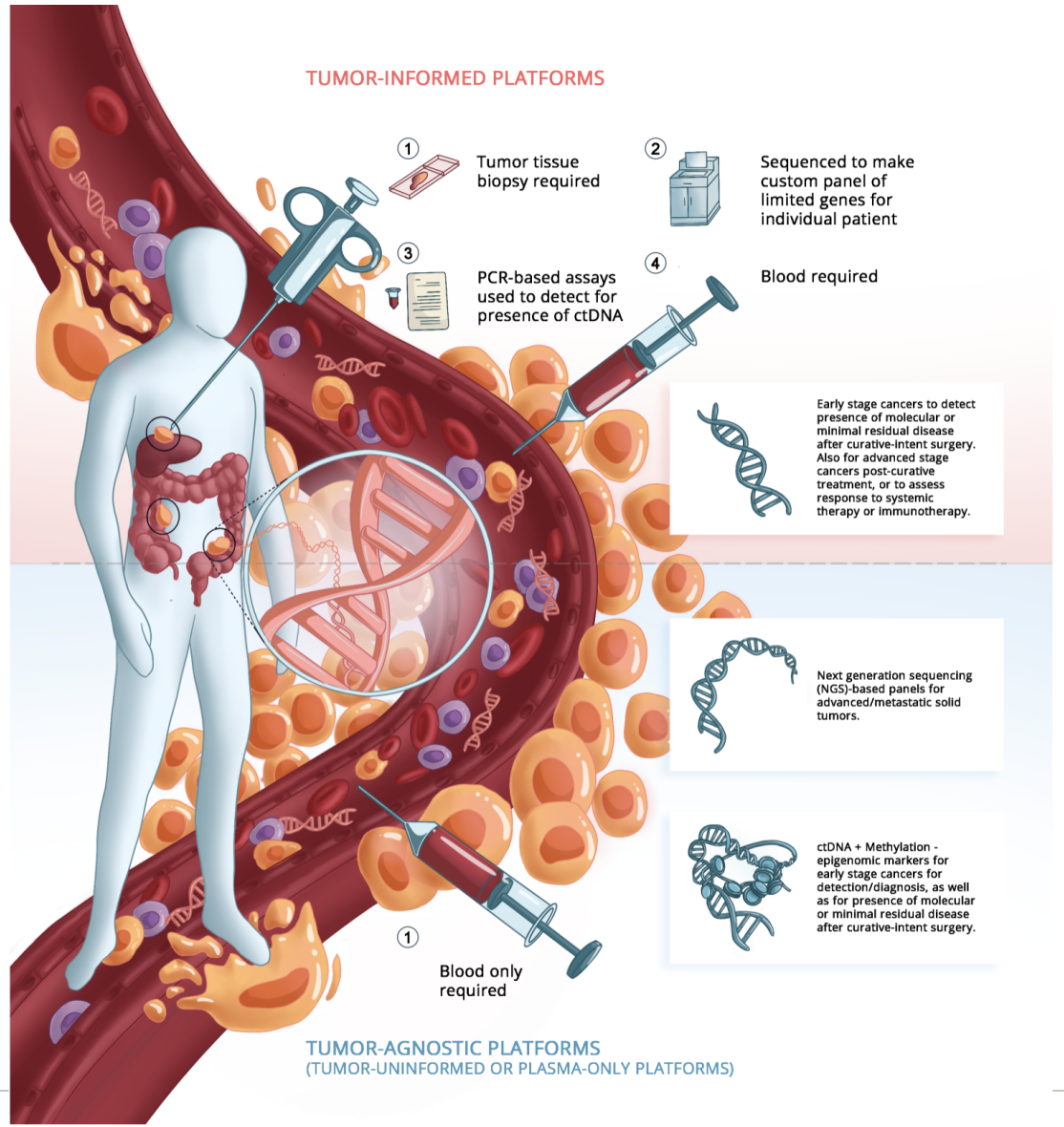
"Adjuvant-plus"

ASCO Daily News®

Kasi PM. Utility and Debate of Liquid Biopsy Assays in Surveillance Setting. March 2023. ASCO Daily News.

8 Multiple assay options

- Pros and Cons
- Plasma-only versus tumor-informed
- Whole-exome versus whole genome based assays



ASCO Daily News®

Kasi PM. ctDNA Assays: Exploring Their Clinical Use in Oncology Care. January 2022. ASCO Daily News.

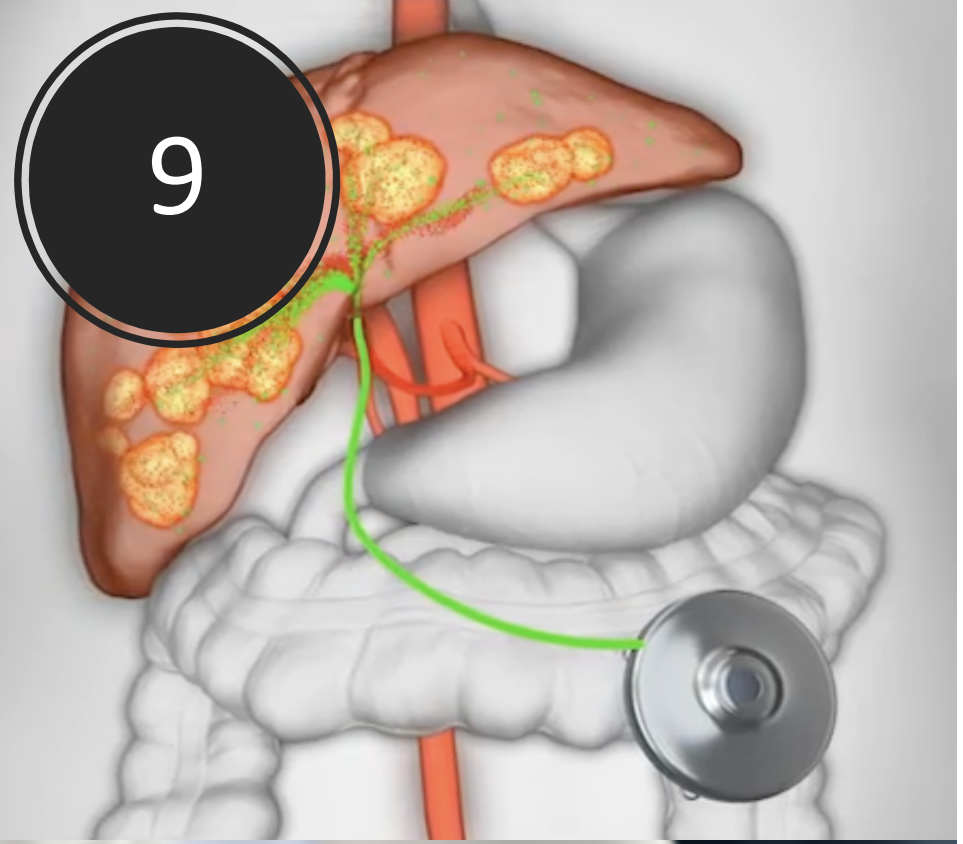
9 Ability to quantify and measure

- Improving sensitivity of current assays
- Different lenses looking at cancer

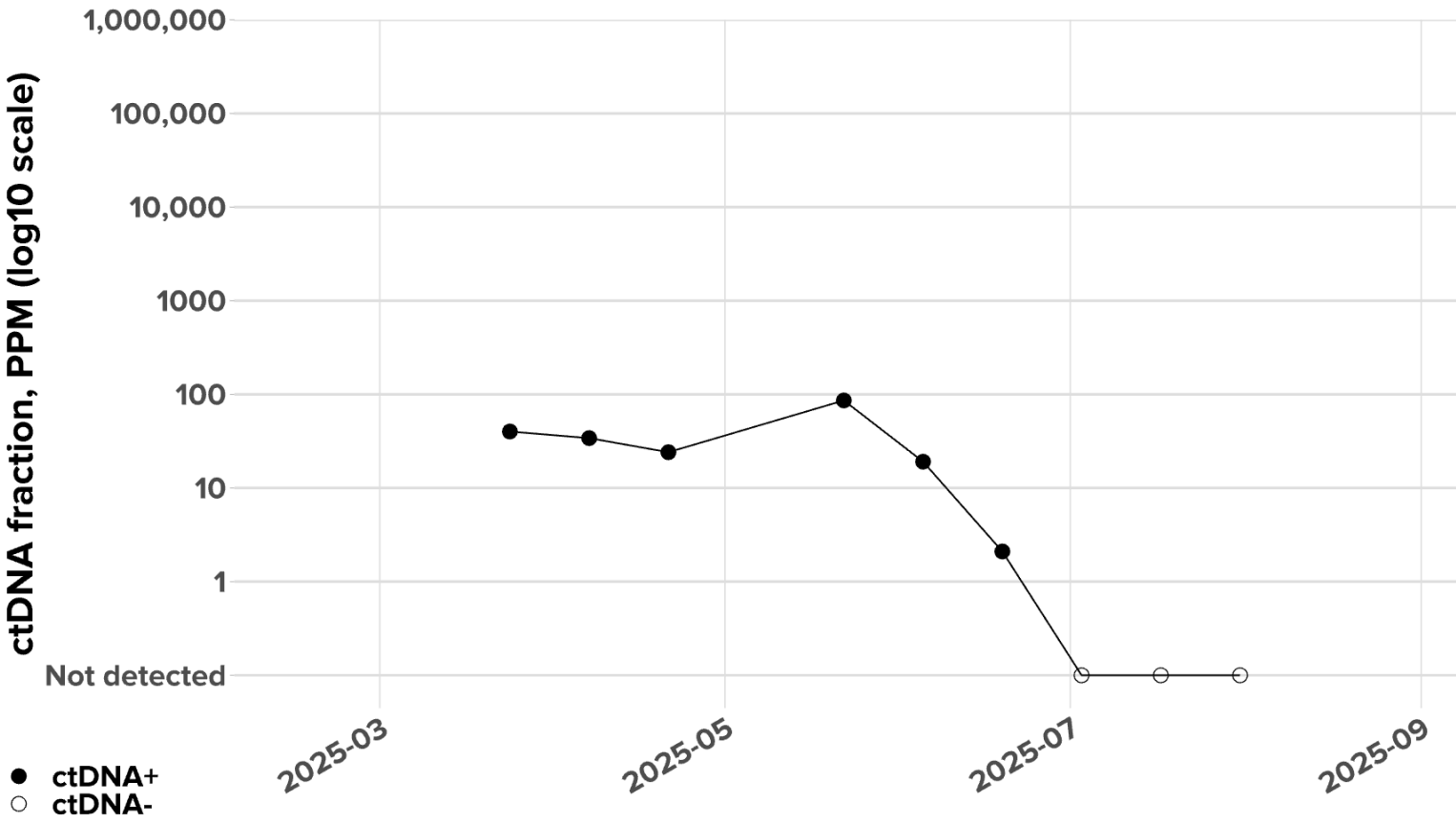
Units of Measurement

VAF%	MTM	PPM
• Variant Allele Fraction	• Mean Tumor Molecules/ml	• Parts per million
VAF represents the percentage of sequencing reads that support a specific variant allele relative to the total number of reads at that genomic locus	Absolute measurement Focuses on the number of target molecules in a given volume	Relative measurement Focuses on the ratio of ctDNA molecules containing MRD targets out of the total cfDNA molecules measured (ctDNA + normal cfDNA)

1.67 parts per million (PPM) = 1.67×10^{-6} tumor fraction = 0.000167% VAF



Longitudinal results

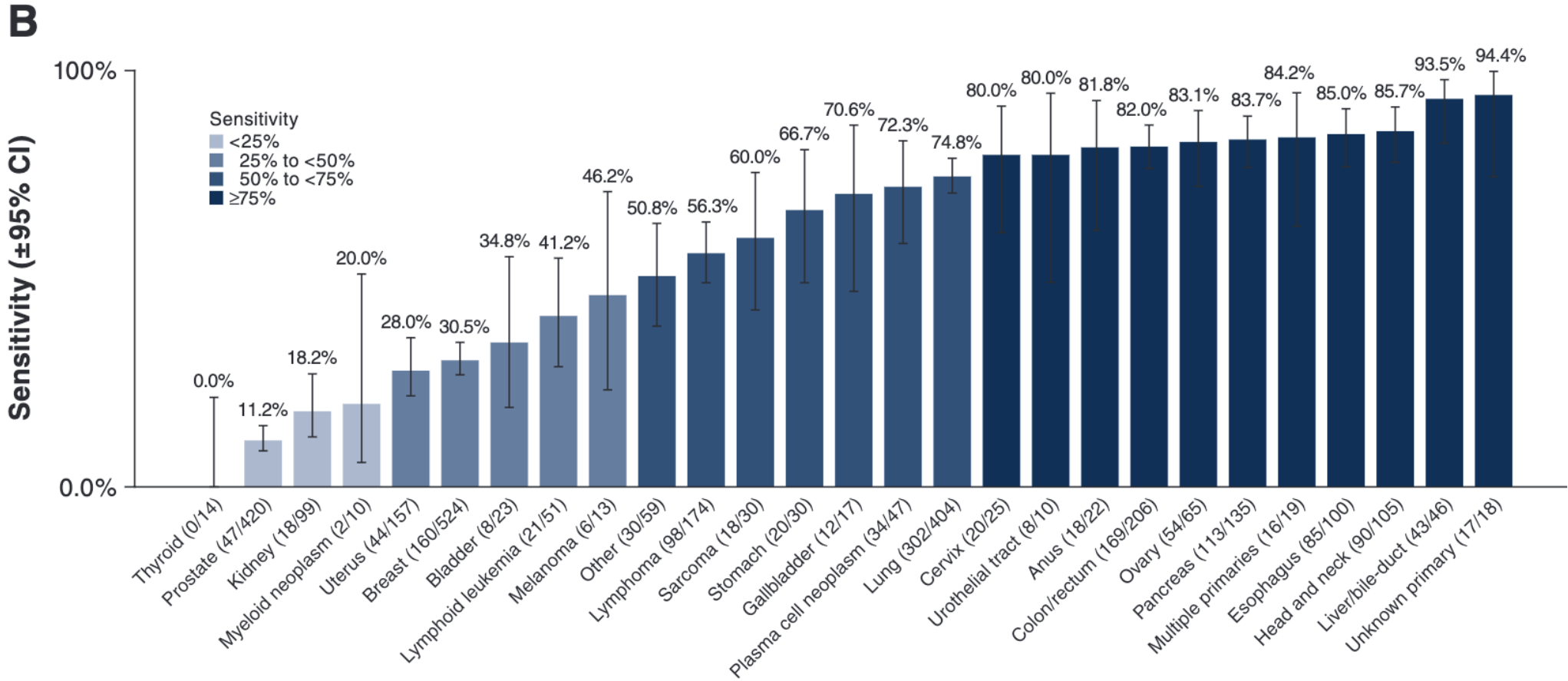


Result History

2025-07-31	**Not detected**	Not applicable
2025-07-17	**Not detected**	Not applicable
2025-07-03	**Not detected**	Not applicable
2025-06-19	**Detected**	2 PPM
2025-06-05	**Detected**	19 PPM
2025-05-22	**Detected**	86 PPM
2025-04-21	**Detected**	24 PPM
2025-04-07	**Detected**	34 PPM
2025-03-24	**Detected**	40 PPM

10 Screening and Early Detection

- Colorectal Cancer specific tests
- Multi-Cancer Early Detection (MCED) assays



Klein EA, et al. Clinical validation of a targeted methylation-based multi-cancer early detection test using an independent validation set. ***Annals of Oncology 2021****;32(9):1167-77*

Screening and Early Detection

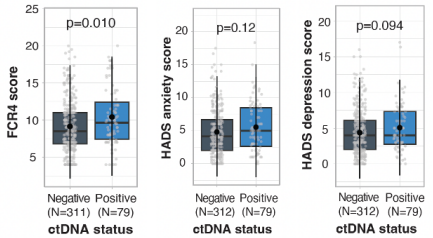
- Colorectal Cancer specific tests
- Multi-Cancer Early Detection (MCED) assays

Lee J, et al: Multimodal circulating tumor DNA (ctDNA) colorectal neoplasia detection assay for asymptomatic and early-stage colorectal cancer (CRC). ***Journal of Clinical Oncology*** *39:3536-3536,* ***2021***

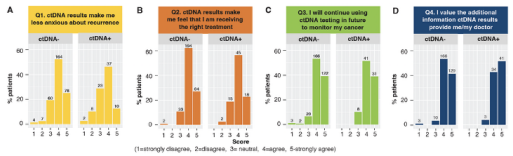
Patient's voice

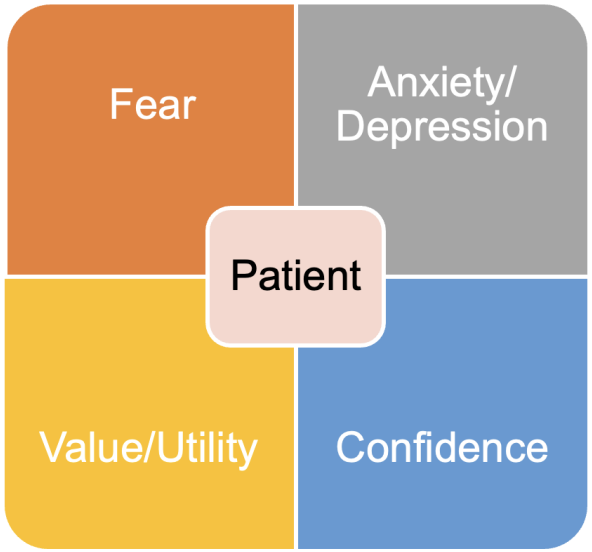
- Perceived utility

Perceived utility of ctDNA testing and dimensions of well-being



~1130 responses from 413 patients





73% reported ctDNA results reduced anxiety about cancer recurrence

87% felt they were receiving the right treatment after receiving their results

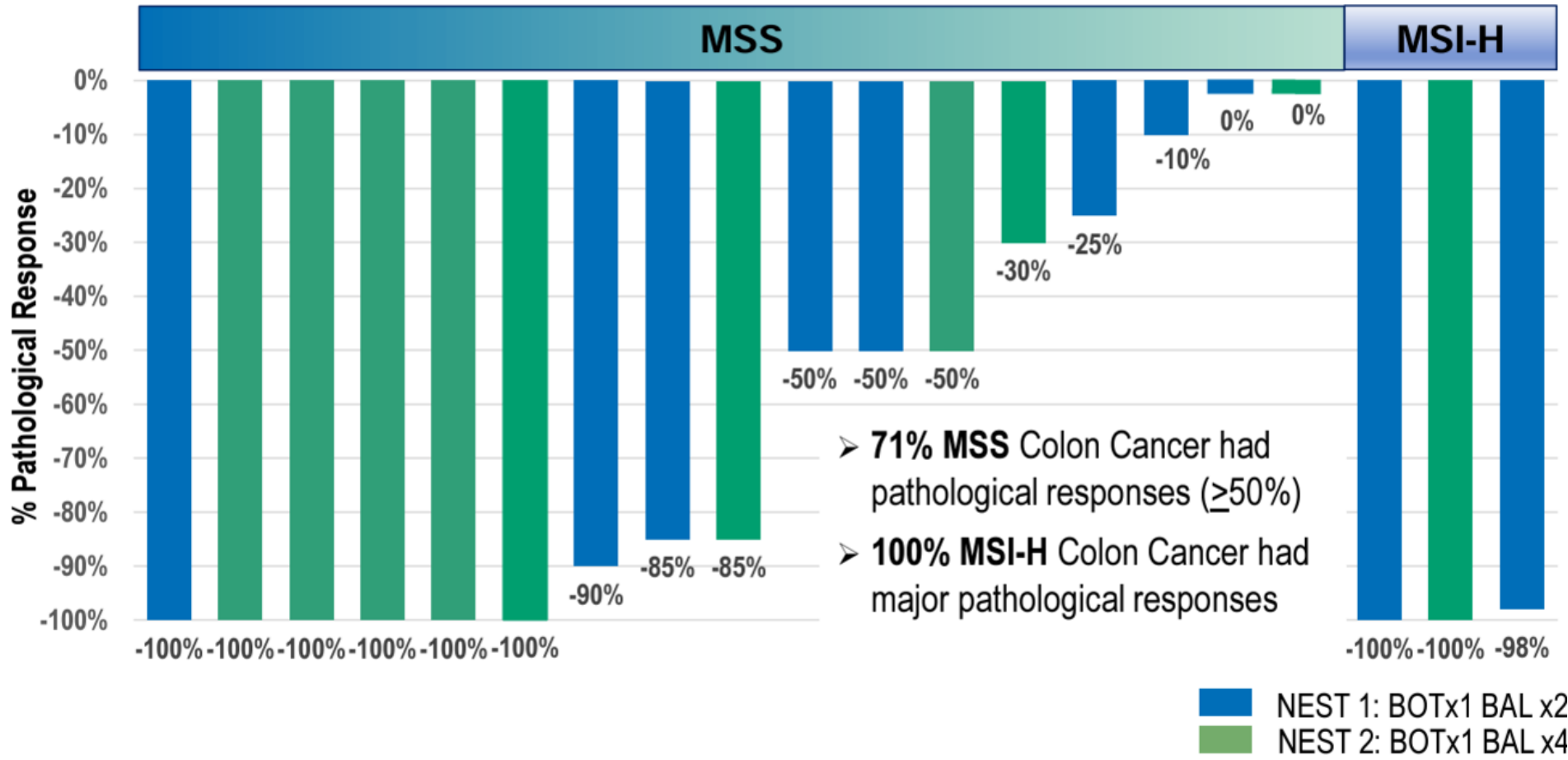
92% would continue using the ctDNA test to monitor cancer

96% valued the additional information received from ctDNA results

Kasi PM, et al. Poster Session C, Abstract ID: 54

Neoadjvuant paradigm shift

- Organ Preservation anc increasing the proportion of patients who can be cured.



Kasi, P.M. et al. 8MO Neoadjuvant botensilimab (BOT) plus balstilimab (BAL) in resectable mismatch repair proficient and deficient colorectal cancer: NEST-1 clinical trial. Annals of Oncology, Volume 35, S5 - S6.

Neoadjvuant paradigm shift

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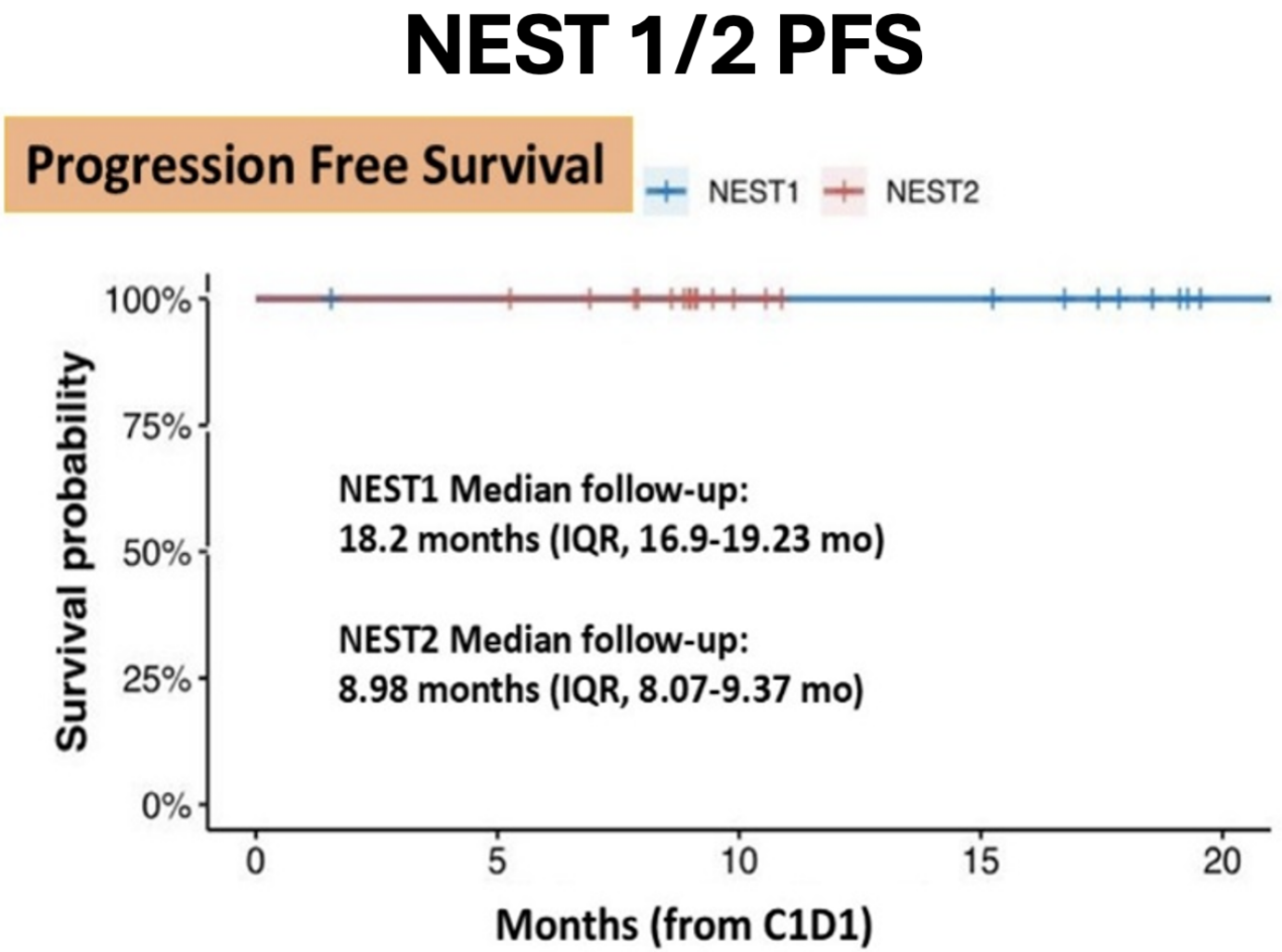

Kasi, P.M. et al. 8MO Neoadjuvant botensilimab (BOT) plus balstilimab (BAL) in resectable mismatch repair proficient and deficient colorectal cancer: NEST-1 clinical trial. Annals of Oncology, Volume 35, S5 - S6.

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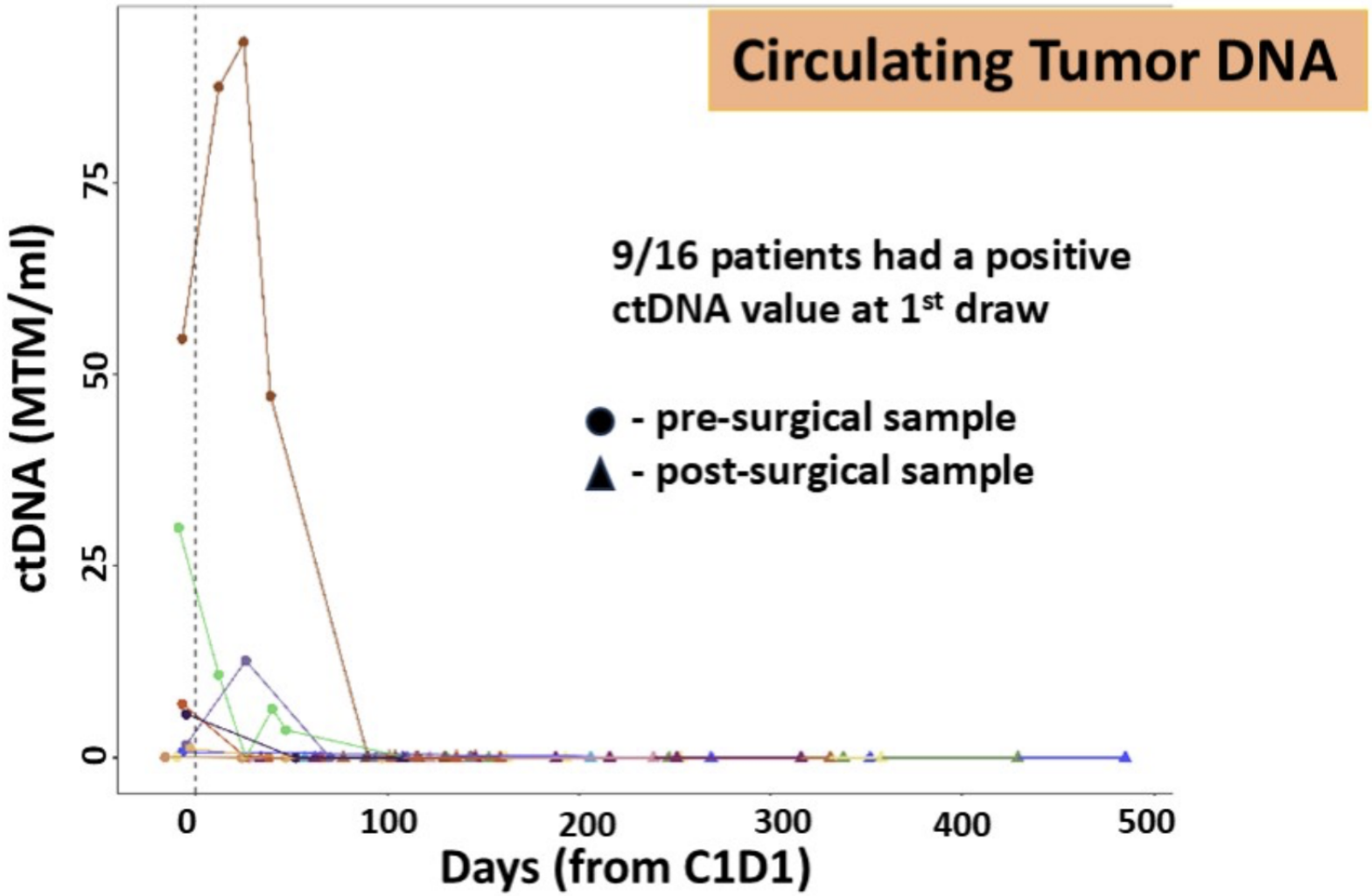


Kasi, P.M. et al. 8MO Neoadjuvant botensilimab (BOT) plus balstilimab (BAL) in resectable mismatch repair proficient and deficient colorectal cancer: NEST-1 clinical trial. Annals of Oncology, Volume 35, S5 - S6.

12

Oncogene

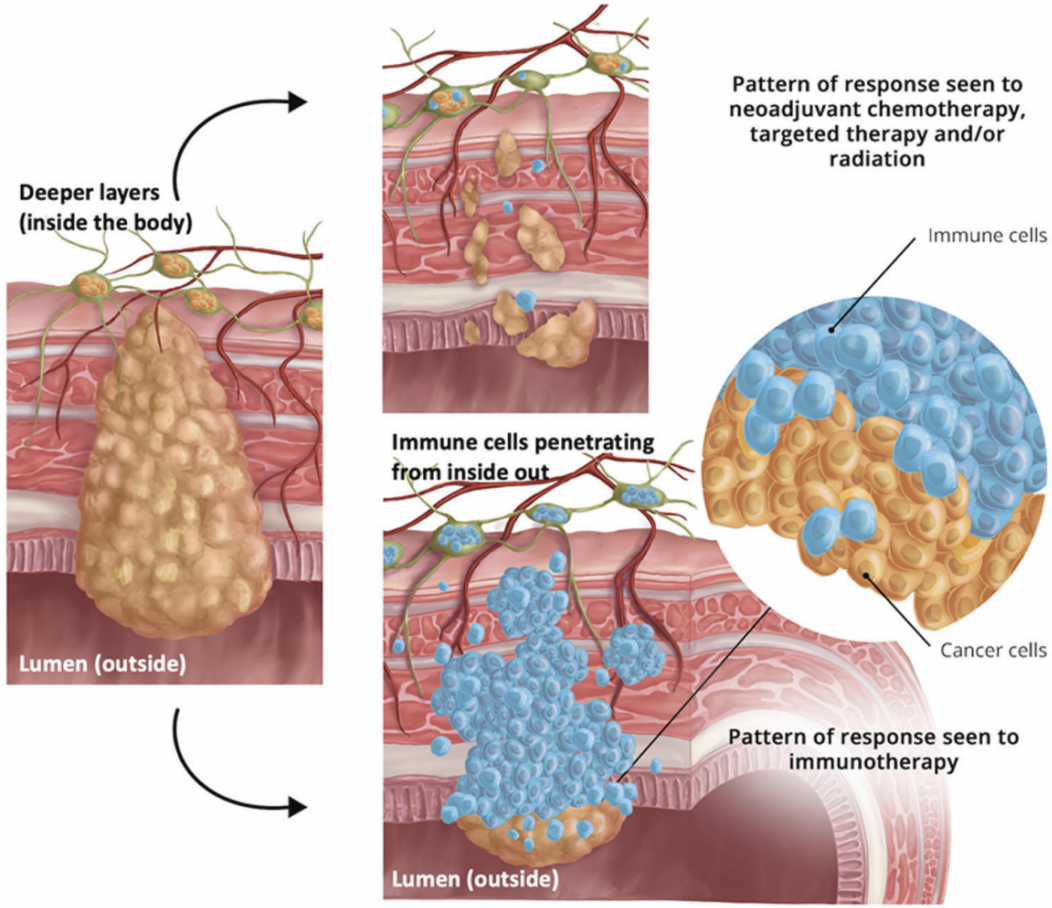
www.nature.com/onc

ARTICLE OPEN

Check for updates

Neoadjuvant botensilimab plus balstilimab response pattern in locally advanced mismatch repair proficient colorectal cancer

Pashtoon Murtaza Kasi[1✉], Manuel Hidalgo[1], Mehraneh D. Jafari[2], Heather Yeo[2,3], Lea Lowenfeld[2], Uqba Khan[1], Alana T. H. Nguyen[1], Despina Siolas[1], Brandon Swed[1], Jini Hyun[1], Sahrish Khan[1], Madeleine Wood[1], Benjamin Samstein[2], Juan P. Rocca[2], Allyson J. Ocean[1], Elizabeta C. Popa[1], Daniel H. Hunt[2], Nikhil P. Uppal[1], Kelly A. Garrett[2], Alessio Pigazzi[2], Xi Kathy Zhou[3], Manish A. Shah[1] and Erika Hissong[4]



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EDITORS' PICK

New Drug Combo Shows Promising Results Against Early Stages Of Colorectal Cancer

Pathologist Erika Hissong (L) and Oncologist Pashtoon Kasi (R) were two of the scientists involved in a new study demonstrating efficacy of a new immunotherapy against colorectal cancer. WEILL-CORNELL MEDICINE

A combination immunotherapy developed by biotech company Agenus administered before surgery destroyed over 80% of a tumor before it was removed.

12

Journal of Clinical Oncology®
An American Society of Clinical Oncology Journal

doi: 10.1200/JCO.21.02615.
PMID: 35839443.

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Using Circulating Tumor DNA in Colorectal Cancer: Current and Evolving Practices

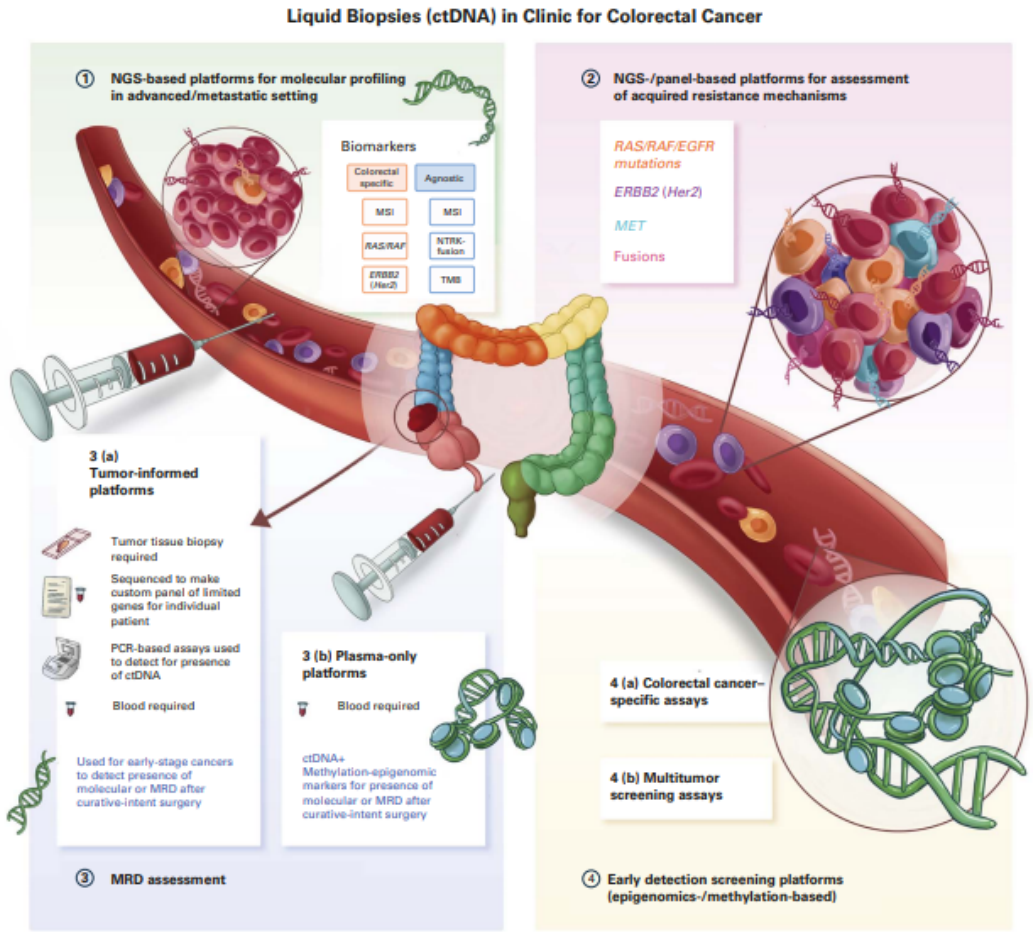
Midhun Malla, MD, MS[1]; Jonathan M. Loree, MD, MS[2]; Pashtoon Murtaza Kasi, MD, MS[3]; and Aparna Raj Parikh, MD[4]

THE LANCET

doi: 10.1016/S0140-6736(19)32319-0.
PMID: 31631858.

Colorectal cancer

Evelien Dekker, Pieter J Tanis, Jasper L A Vleugels, Pashtoon M Kasi, Michael B Wallace



Multidisciplinary Approaches to Cancer Symposium

Debate: ctDNA Should Be Incorporated Into Active Management of Colorectal Cancer Patients ~ Focus: Pro argument

Pashtoon Murtaza Kasi, MD, MS

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