



Novel Advances in Colorectal Cancer Other Than Immunotherapy

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March 2, 2024

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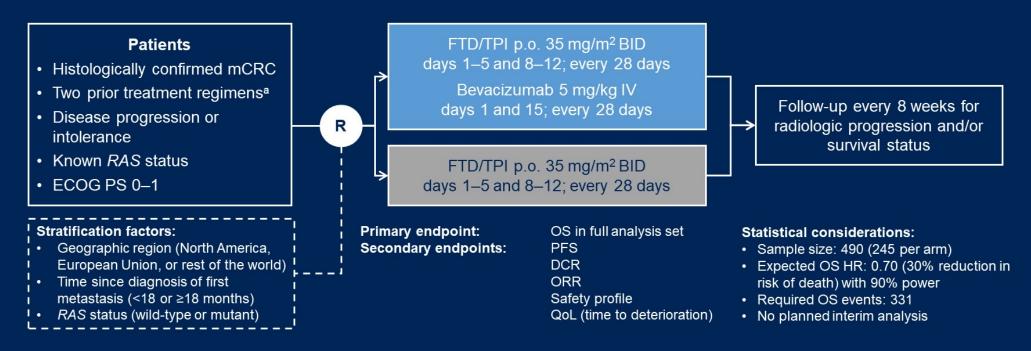


Discussion Points

- Historic pivotal trials in 2023
- Molecular subsets
- The role of ctDNA

SUNLIGHT study design

An open-label, randomized, phase 3 study in patients with refractory mCRC (NCT04737187)



^a Prior treatment must have included a fluoropyrimidine, irinotecan, oxaliplatin, an anti-VEGF monoclonal antibody (not necessarily bevacizumab), and/or an anti-EGFR monoclonal antibody for patients with RAS wild-type and could have included (neo)adjuvant chemotherapy if disease had recurred during treatment or within 6 months of the last administration of (neo)adjuvant therapy. BID, twice daily; DCR, disease control rate; ECOG PS, Eastern Cooperative Oncology Group performance status; EFGR, epidermal growth factor receptor; FTD/TPI, trifluridine/tipiracil; HR, hazard ratio; IV, intravenous; mCRC, metastatic colorectal cancer; ORR, objective response rate; OS, overall survival; PFS, progression-free survival; p.o., orally; QoL, quality of life; R, randomization; VEGF, vascular endothelial growth factor.

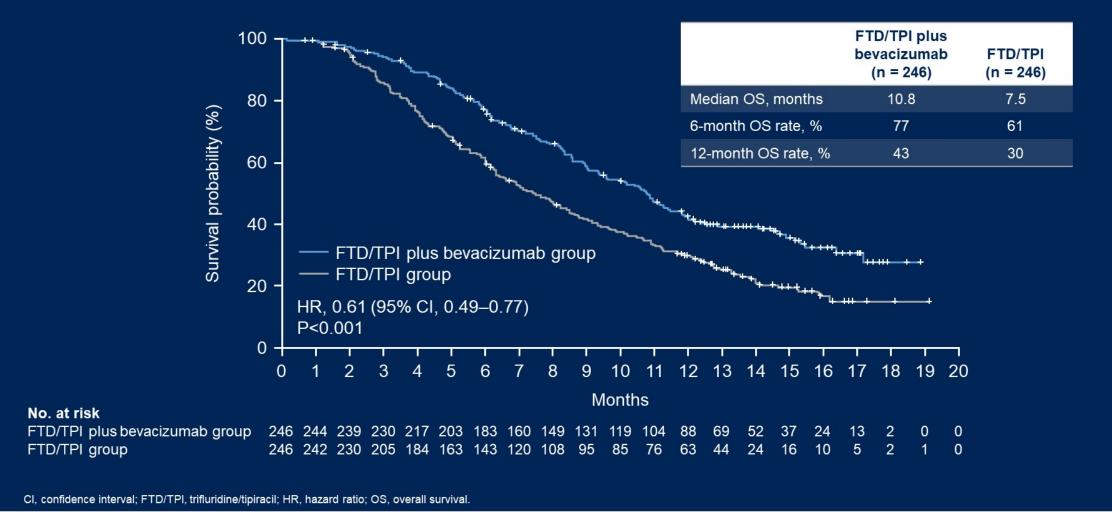
Key baseline characteristics

Characteristic		FTD/TPI plus bevacizumab (n = 246)	FTD/TPI (n = 246)
Age	Median (range), years	62 (20–84)	64 (24–90)
	<65 years, n (%)	146 (59)	129 (52)
	≥65 years, n (%)	100 (41)	117 (48)
Sex, n (%)	Male	122 (50)	134 (55)
Region	European Union	158 (64)	157 (64)
	North America	8 (3)	8 (3)
	Rest of the world	80 (33)	81 (33)
Primary tumor localization, n (%)	Right	62 (25)	77 (31)
	Left	184 (75)	169 (69)
Time from diagnosis of first metastasis to randomization, ^a n (%)	<18 months	104 (42)	105 (43)
	≥18 months	142 (58)	141 (57)
RAS status, ^a n (%)	Mutant	171 (70)	170 (69)
	Wild-type	75 (31)	76 (31)
Prior treatment with bevacizumab, n (%)	No	68 (28)	70 (29)
	Yes	178 (72)	177 (72)
ECOG PS, n (%)	0	119 (48)	106 (43)
	1	127 (52)	139 (57)
	2	0	1 (0.4) ^b

^a As documented in the Interactive Web Response System set for randomization. ^b Patient had an ECOG PS of 1 at randomization but was assessed as having an ECOG PS of 2 on day 1, cycle 1. ECOG PS, Eastern Cooperative Oncology Group performance status; FTD/TPI, trifluridine/tipiracil.

Tabarnero et al: NEJM 2023

OS in full analysis set (primary endpoint)

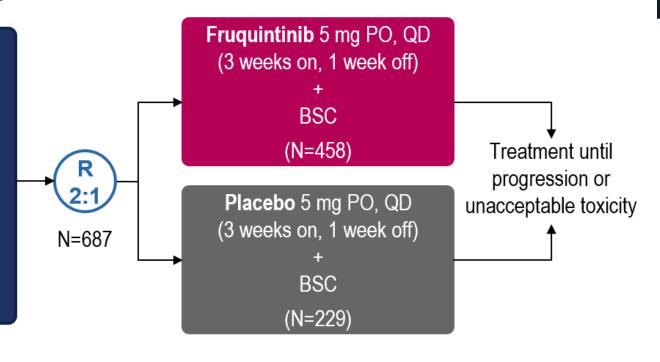


Tabarnero et al: NEJM 2023

FRESCO-2 Study Design

Patient Eligibility

- Prior treatment with fluoropyrimidine-, oxaliplatin- and irinotecan-based chemotherapy, an anti-VEGF biological therapy, and, if RAS wild type, an anti-EGFR therapy
- Progression on, or intolerance to, TAS-102 and/or regorafenib
- Prior treatment with an immune checkpoint inhibitor or BRAF inhibitor if indicated



Stratification Factors

- Prior therapy (TAS-102 vs regorafenib vs TAS-102 and regorafenib)
- RAS mutational status (wild-type vs mutant)
- Duration of metastatic disease (≤18 months vs >18 months)

Mechanism of action: Highly selective oral tyrosine kinase inhibitor of VEGFRs-1, -2, and -3

Note: To ensure the patient population is reflective of clinical practice, the number of patients treated with prior regorafenib was limited to 344 patients (50%)

Dasari et al: Lancet, 2023

Patient and Disease Characteristics

ITT Population

Enrollment: Sep 2020 to Dec 2021

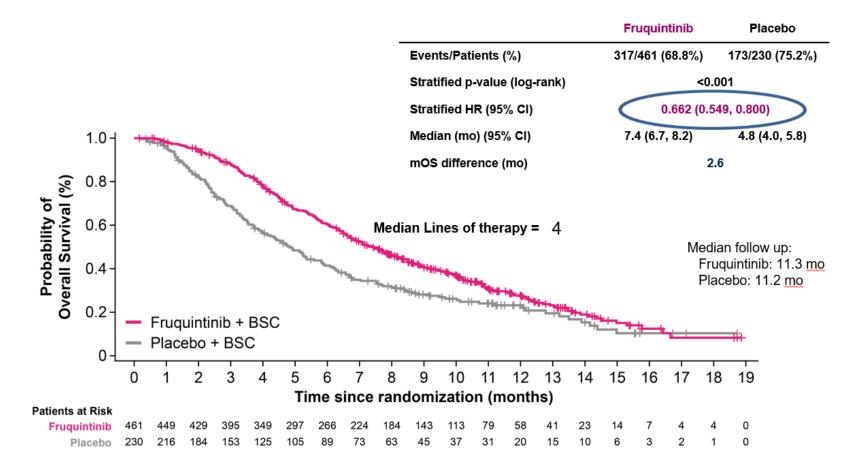
Data Cutoff: 24 June 2022

Character	istic, n (%)	Fruquintinib (N=461)	Placebo (N=230)	Characteristic,	n (%)	Fruquintinib (N=461)	Placebo (N=230)
Age, y	Median (range) ≥ 65	64 (25, 82) 214 (46.4)	64 (30, 86) 111 (48.3)	Duration of metastatic disease	≤ 18 mo > 18 mo	37 (8.0) 424 (92.0)	13 (5.7) 217 (94.3)
Sex	Female Male	216 (46.9) 245 (53.1)	90 (39.1) 140 (60.9)	RAS status	WT Mutant	170 (36.9) 291 (63.1)	85 (37.0) 145 (63.0)
Region	North America Europe Asia Pacific	82 (17.8) 329 (71.4) 50 (10.8)	42 (18.3) 166 (72.2) 22 (9.6)	BRAF V600E mutation	No Yes Other/Unknown	401 (87.0) 7 (1.5) 5 (11.5)	198 (86.1) 10 (4.3) 22 (9.6)
ECOG PS	0	196 (42.5) 265 (57.5)	102 (44.3) 128 (55.7)	Number of previous treat Median ≤3	4 ((3–6)	4 (3–6) 4 (28%)
Primary site at 1st diagnosis	Colon left Colon right Colon left and right Colon unknown Rectum only	192 (41.6) 97 (21.0) 4 (0.9) 25 (5.4) 143 (31.0)	92 (40.0) 53 (23.0) 2 (0.9) 13 (5.7) 70 (30.4)	>3 Previous therapies VEGF inhibitor OEGFR inhibitor Immune checkpoint inhibitor BRAF inhibitor	336 (145 (180 (tor 21 (9 ((73%) 16 (97%) 22 (39%) 8 (5%) 1 (2%)	1 (96%) 8 (38%) 1 (5%) 7 (3%)
Liver metastases	Yes	339 (73.5)	156 (67.8)	Previous trifluridine-tipir Trifluridine-tipiracil Regorafenib	240	(52%) 12	1 (53%) 8 (8%)
				Both	0 181 ((39%) 9	1 (40%)

Dasari et al: Lancet, 2023

FRESCO-2: A global phase 3 multiregional clinical trial evaluating the efficacy and safety of <u>fruquintinib</u> in patients with refractory mCRC

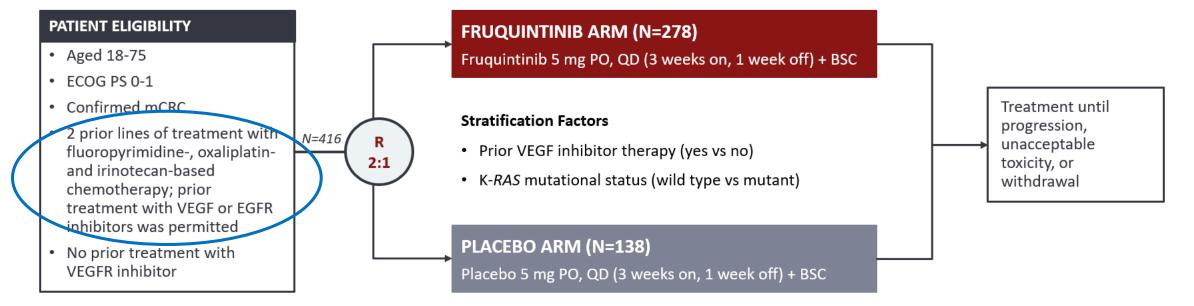
(FDA Approved 11/2023: 3rd line setting based on FRESCO and FRESCO2 trials)



Dasari et al: Lancet, 2023

FRESCO (NCT02314819): Study Design

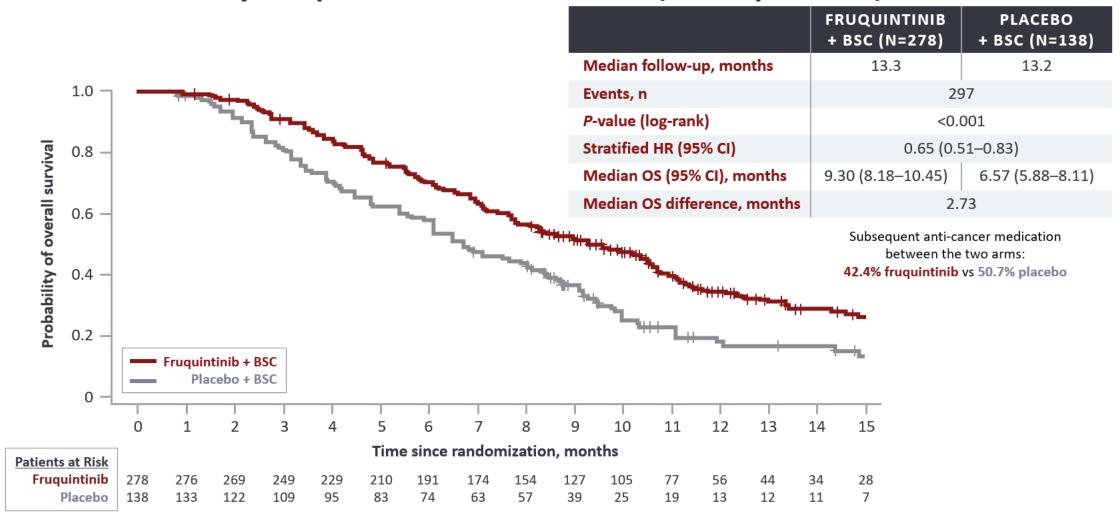
Phase 3, Conducted in China



Primary endpoint	Secondary endpoints		Statistical assumptions
Overall survival	KeyProgression-free survivalORRDCR	Other • DOR • Safety	 Sample size ~400 patients (280 OS events) would provide 80% power to detect a difference in OS with a HR of 0.70 at a 2-sided P value of 0.05 Median OS assumption in the placebo arm is 6.3 months and median OS in fruquintinib arm is 9.0 months

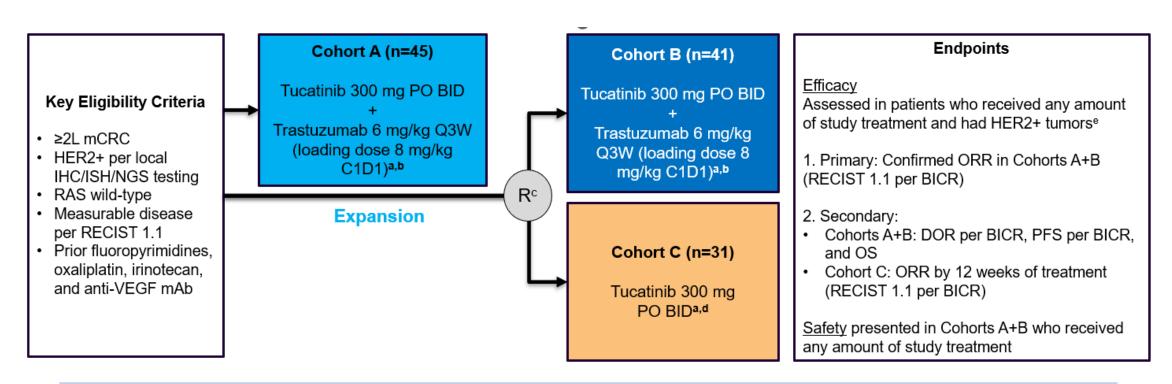
Li et al: Jama, 2018

FRESCO: Primary Endpoint – Overall Survival (ITT Population)



Molecular Subsets in mCRC

Moutaineer-02



MOUNTAINEER began as a US Investigator-Sponsored Trial and initially consisted of a single cohort (Cohort A) and was expanded globally to include patients randomised to receive tucatinib + trastuzumab (Cohort B) or tucatinib monotherapy (Cohort C)

Strickler et al: NEJM, 2023

Tucatinib + Trastuzumab: Efficacy Outcomes

	Tucatinib + Trastuzumab Cohorts A+B
Responses	n=84
Best overall response per BICR ^a , n (%)	
CR	3 (3.6)
PR	29 (34.5)
SD ^b	28 (33.3)
PD	22 (26.2)
Not available ^c	2 (2.4)
cORR per BICR, % (95% CI) ^d	38.1 (27.7, 49.3)
cORR per Investigator, % (95% CI) ^d	42.9 (32.1, 54.1)
Median time to objective response per BICRe, months (range)	2.1 (1.2, 9.8)
DCR ^f per BICR, n (%)	60 (71.4)
Median DOR per BICR, months (95% CI)	12.4 (8.5, 20.5)

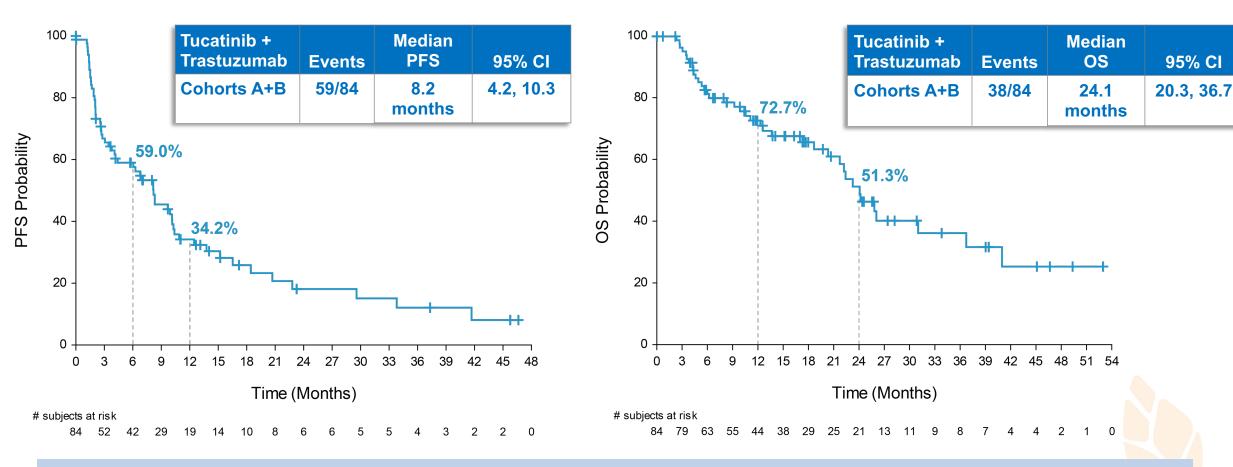
a Confirmed best overall response assessed per RECIST 1.1; b Includes SD and non-CR/non-PD; c Includes patients with no post-baseline response assessment and patients whose disease assessments are not evaluable; d Two-sided 95% exact confidence interval, computed using the Clopper-Pearson method (1934); e Time from the start of study treatment (Cohort A) or date of randomisation (Cohort B) to the first documentation of objective response (CR or PR that is subsequently confirmed); f Defined as sum of CR, PR, and SD

BICR, blinded independent central review; cORR, confirmed objective response rate; CR, complete response; DCR, disease control rate; PD, progressive disease; PR, partial response; RECIST, Response Evaluation Criteria in Solid Tumors; SD, stable disease.

Tucatinib + Trastuzumab: PFS and OS

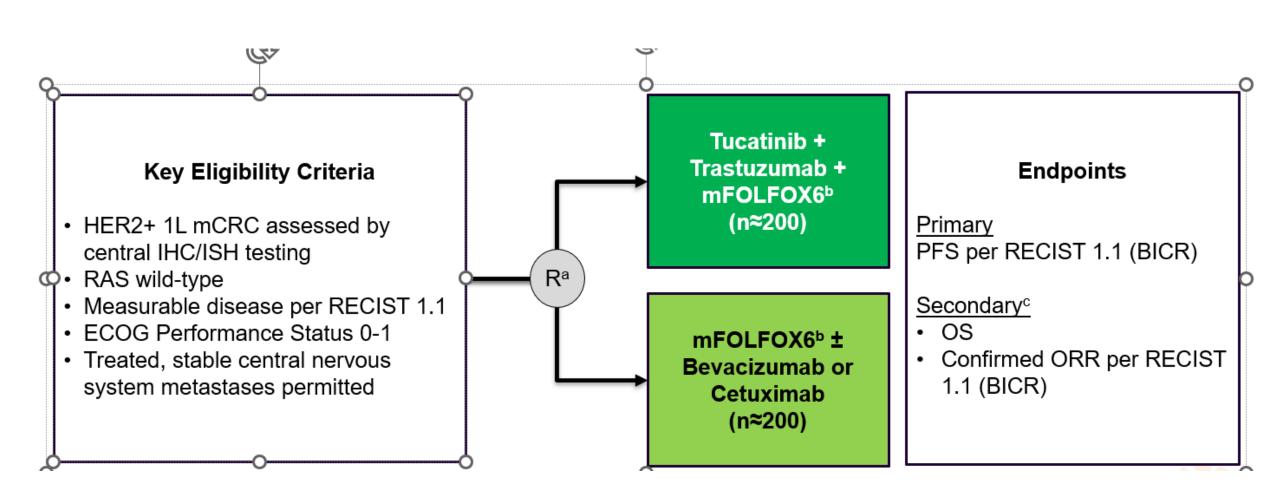
Progression-free Survival per BICR

Overall Survival



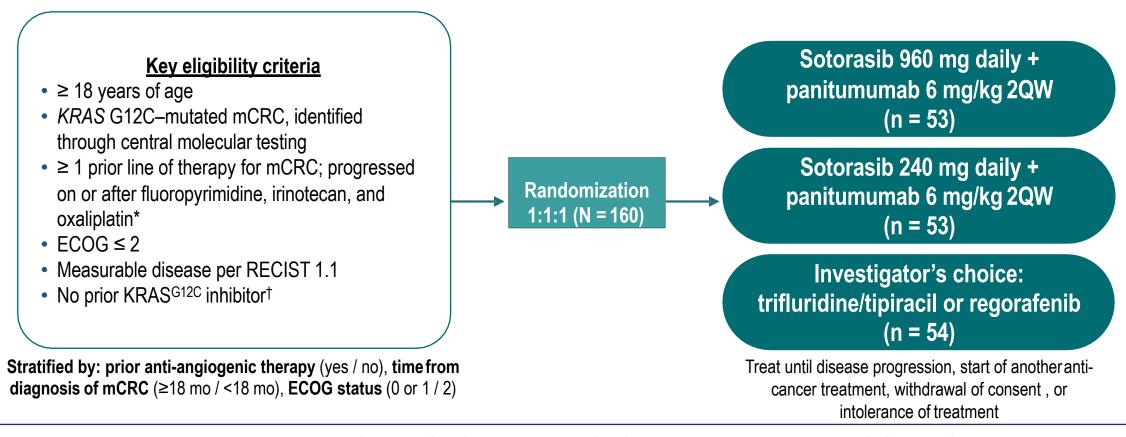
Median follow-up for Cohorts A+B was 20.7 months (IQR, 11.7, 39.0)

Mountaineer - 03



CodeBreaK 300 Phase 3 Study Design

Global, randomized, open-label, active-controlled study of sotorasib + panitumumab in mCRC (NCT05198934)

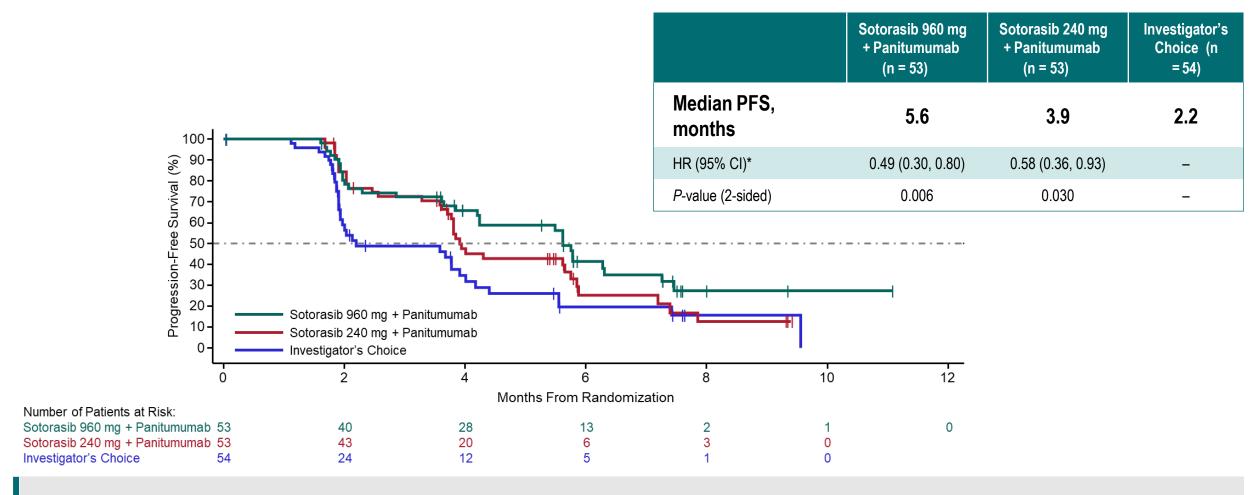


Primary endpoint: PFS by BICR (measured by CT / MRI and assessed by RECIST v1.1) **Key secondary endpoints:** OS, ORR

*Patients deemed by the investigator not to be candidates for fluoropyrimidine, irinotecan, or oxaliplatin may still be eligible if ≥ 1 prior line of therapy was received for metastatic disease and trifluridine and tipiracil and/or regorafenib were deemed MADRID tale very patients with prior treatment with trifluridine and tipiracil and with regorafenib were excluded, where the investigator's choice would be these agents.

2QW, except weeks, busy, brinded independent central review; CT, computed tomography; ECOG, Eastern Cooperative Oncology Group; KRAS, Kirsten rat sarcoma; mCRC, metastatic colorectal cancer; MRI, magnetic resonance imaging; OS, overall survival; ORR, objective response rate; PFS, progression-free survival; RECIST, Response Evaluation Criteria in Solid Tumors.

Primary Endpoint: PFS in Intent-to-Treat Population



After a median follow-up of 7.8 months, sotorasib (960 mg and 240 mg) in combination with panitumumab significantly improved PFS by BICR versus investigator's choice

Activity Outcomes

Response by BICR	Sotorasib 960 mg + Panitumumab (n = 53)	Sotorasib 240 mg + Panitumumab (n = 53)	Investigator's Choice (n = 54)
ORR, % (95% CI)* [†]	26 (15.3–40.3)	6 (1.2–15.7)	0 (0–6.6)
Complete response, n (%)	1 (2)	0	0
Partial response, n (%)	13 (25)	3 (6)	0
Stable disease, n (%)	24 (45)	33 (62)	25 (46)
Progressive disease, n (%)	12 (23)	13 (25)	17 (31)
Not evaluable / not done, n (%)	3 (6)	2 (4)	11 (20)
DCR, % (95% CI)*	72 (57.7–83.2)	68 (53.7–80.1)	46 (32.6–60.4)

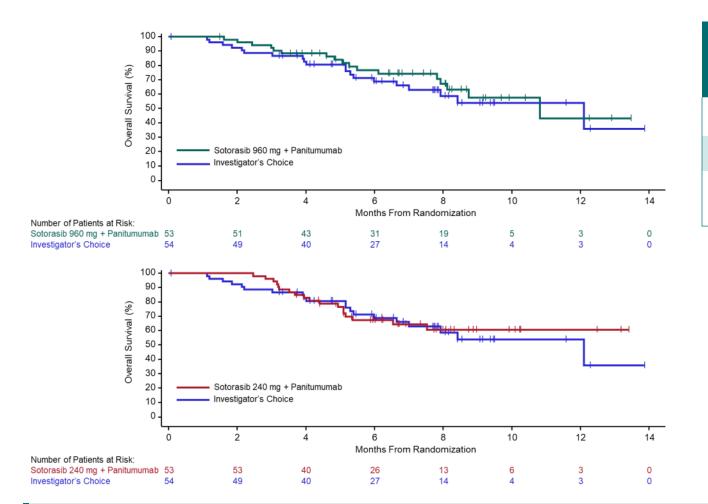
ORR and DCR by BICR were higher with sotorasib (960 mg and 240 mg) + panitumumab versus investigator's choice

The intention-to-treat analysis set included all patients who underwent randomization.

^{*95%} CIs were estimated using the Clopper-Pearson method. BICR, blinded independent central review; DCR, disease control rate; ORR, objective response rate

[†]Two patients (4%) in the 240 mg arm and 1 patient (2%) in the investigator's choice arm had non-complete response/non-progressive disease; these patients had BICR assessed non-target disease only

Overall Survival



	Sotorasib 960 mg + Panitumumab (n = 53)	Sotorasib 240 mg + Panitumumab (n = 53)	Investigator's Choice (n = 54)
HR (95% CI)*	0.77 (0.41, 1.45)	0.91 (0.48, 1.71)	-
Deaths, n (%)	17 (32)	18 (34)	20 (37)
Median follow-up, months (95% CI)	8.1 (6.7, 8.7)	7.7 (6.2, 8.3)	7.8 (6.5, 8.5)

Overall survival data were not mature at data cutoff, with 55 (34%) deaths observed



Survival rates were estimated using the Kaplan-Meier method.

*HR is sotorasib 960 mg + panitumumab / investigator's choice therapy, or sotorasib 240 mg + panitumumab / investigator's choice therapy. HR, hazard ratio.

The role of ctDNA in CRC

ASCO Gastrointestinal Cancers Symposium

Circulating tumor DNA (ctDNA) dynamics in colorectal cancer (CRC) patients with molecular residual disease: Updated analysis from GALAXY study in the CIRCULATE-JAPAN

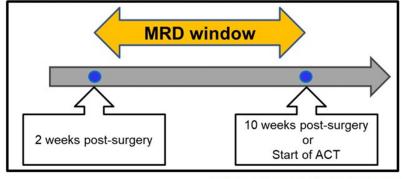
Presenting Author: Hiroki Yukami, MD, PhD

Co-authors: Yoshiaki Nakamura, Saori Mishima, Koji Ando, Hideaki Bando, Jun Watanabe, Keiji Hirata, Naoya Akazawa, Masataka Ikeda, Mitsuru Yokota, Kentaro Kato, George Laliotis, Vasily N. Aushev, Adham A. Jurdi, Minetta C. Liu, Daisuke Kotani, Eiji Oki, Ichiro Takemasa, Takeshi Kato, Takayuki Yoshino

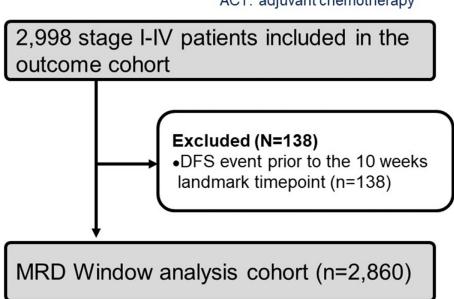
Cancer Chemotherapy Center, Osaka Medical and Pharmaceutical University, Takatsuki, Japan; Department of Gastroenterology and Gastrointestinal Oncology, National Cancer Center Hospital East, Kashiwa, Japan; Department of Colorectal Surgery, National Cancer Center Hospital East, Chiba, Japan; Department of Surgery, Gastroenterological Center, Yokohama City University Medical Center, Kanagawa, Japan; The Committee of Hereditary Colorectal Cancer of the Japanese Society for Cancer of the Colon and Rectum, Tokyo, Japan; Department of Gastroenterological Surgery, Sendai City Medical Center Sendai Open Hospital, Sendai, Japan; Division of lower GI surgery, Department of Gastroenterological Surgery, Hyogo Medical University, Nishinomiya, Japan; Department of General Surgery, Kurashiki Central Hospital, Okayama, Japan; Department of Surgery, Teine-Keijinkai Hospital, Sapporo, Japan; National Cancer Center Hospital East, Kashiwa, Japan; Center Hospital, Osaka, Japan; Division of Drug and Diagnostic Development Promotion, Department for the Promotion of Drug and Diagnostic Development, National Cancer Center Hospital East, Kashiwa, Japan

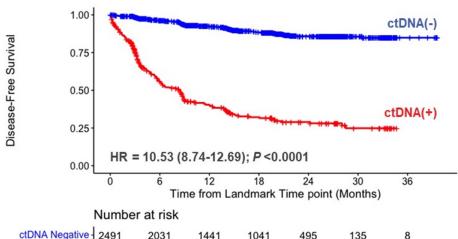
Yukami et al: ASCO GI, 2024

DFS according to status in the MRD window in all stage



ACT: adjuvant chemotherapy





Numbe	er at risk					
ctDNA Negative 2491	2031	1441	1041	495	135	8
ctDNA Positive - 369	165	98	59	35	13	0

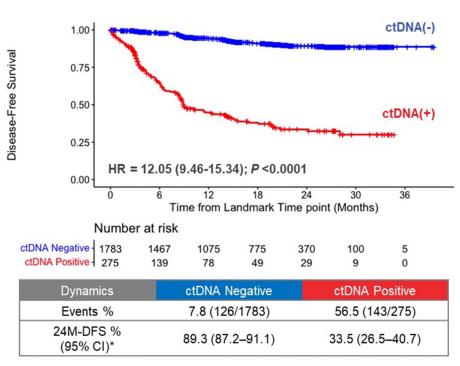
ctE	DNA status	Negative	Positive
E	Events %	9.4 (235/2491)	58.8 (217/369)
	M-DFS % 95% CI)*	85.9 (83.9–87.7)	28.9 (23.4–34.8)

*DFS % from landmark time point

MRD window: 2-10 weeks post surgery, prior to start of any adjuvant therapy - Landmark 10 weeks post-surgery

ctDNA-positive in the MRD window is predictive inferior DFS

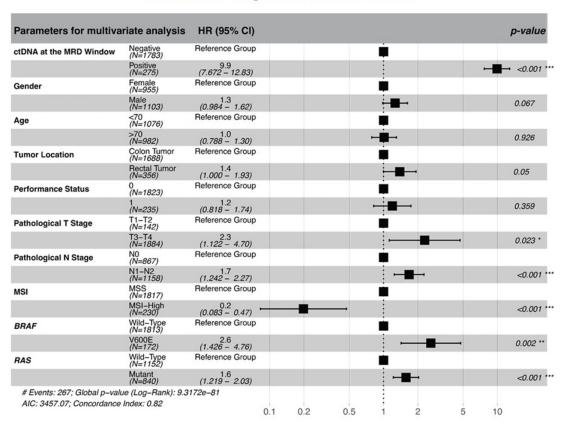
DFS according to status in the MRD window in pStage II/III



*DFS % from landmark time point

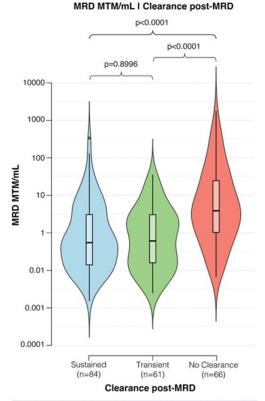
MRD window: 2-10 weeks post surgery, prior to start of any adjuvant therapy - Landmark 10 weeks post-surgery

Multivariate Regression Model for DFS



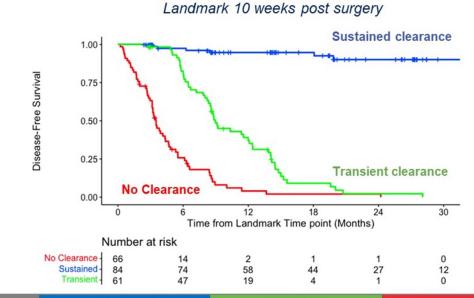
ctDNA-positive in the MRD window is predictive of inferior DFS (pStage II/III)

DFS according to ctDNA clearance in Patients with ctDNA positive in the MRD window



Group	Median MRD MTM/mL
Sustained	0.61
Transient	0.53
No Clearance	3.89

^{*}P values from Wilcoxon rank-sum test

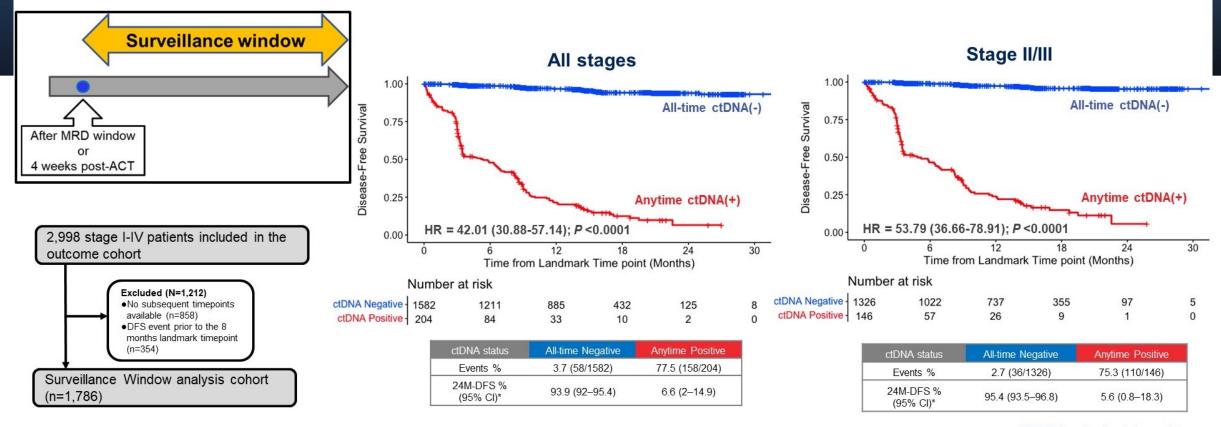


ctDNA Clearance	Sustained Clearance	Transient Clearance	No Clearance
Events %	7.1 (6/84)	85.2 (52/61)	89.4 (59/66)
Median DFS months (95% CI)	NR	9 (8.5–12.4)	3.5 (3.2–4.7)
24M-DFS % (95% CI)*	90.1 (78.6–95.6)	2.3 (0.02–10.3)	2 (0.02–9.2)
HR	Reference	25.13	87.08
95% CI	Not applicable	10.57–59.73	36.14–209.84
Р	Not applicable	<0.0001	<0.0001

*DFS % from landmark time point

Sustained clearance indicates superior DFS compared to Transient or No clearance

DFS according to ctDNA status in the Surveillance window

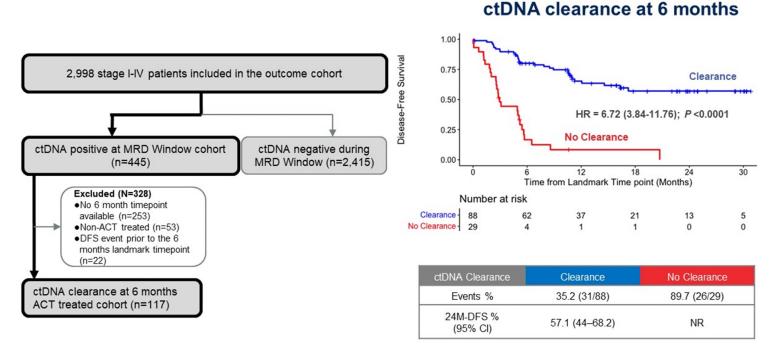


*DFS % from landmark time point

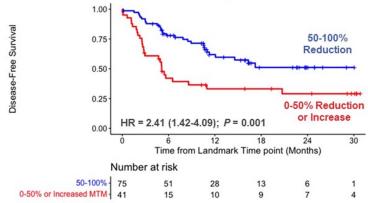
- Surveillance window starts from 4 weeks post-ACT or at the end of MRD window if patient had no ACT, until the last follow up or relapse.
- Landmark 8 months post-surgery (2 months for ACT initiation + 6 months of ACT duration)

ctDNA-positive in the surveillance window is predictive of inferior DFS

Clearance and reduction in MTM/mL at 6 months in ACT treated patients



Positive at the MRD window to 6 months MTM/mL Reduction | ACT-treated



ctDNA Clearance	50-100% Reduction	0-50% Reduction or Increas
Events %	38.7 (29/75)	65.9 (27/41)
24M-DFS % (95% CI)	51.1 (36.4–64.1)	29 (15–44.6)

*DFS % from landmark time point

Landmark 6 months post-surgery

ctDNA clearance and MTM/mL reduction on ACT is an indicator of treatment efficacy and results in better outcomes



Advancing Research. Improving Lives.™

Phase II results of circulating tumor DNA as a predictive biomarker in adjuvant chemotherapy in patients with stage II colon cancer: NRG-GI005 (COBRA) phase II/III study

Van K. Morris¹, Greg Yothers², Scott Kopetz¹, Shannon L. Puhalla³, Peter C. Lucas², Atif Iqbal⁴, Patrick M Boland⁵, Dustin A. Deming⁶, Aaron J. Scott⁷, Howard J Lim⁸, Theodore S. Hong⁹, Norman Wolmark², Thomas J. George¹⁰

¹The University of Texas -- MD Anderson Cancer Center; ²NSABP Foundation, Inc.; ³UPMC Hillman Cancer Center, University of Pittsburgh School of Medicine; ⁴Baylor College of Medicine; ⁵Rutgers Cancer Institute of New Jersey; ⁶University of Wisconsin; ⁷University of Arizona Cancer Center; ⁸BC Cancer - Vancouver, University of British Columbia; ⁹Massachusetts General Hospital Cancer Center, Harvard Medical School; ¹⁰UF Health Cancer Center, Gainesville, FL



January 20, 2024



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Morris et al: ASCO GI 2024

NRG-GI005 (COBRA) Study Schema

Resected stage IIA colon cancer for which the physician decides no adjuvant chemotherapy (i.e., "suitable for active surveillance")

Arm 1

Standard of care (active surveillance)

All patients were followed with radiographic restaging assessments every 6 months.

Arm 2
Assay-directed therapy

ctDNA detected ctDNA NOT detected

Chemotherapy (mFOLFOX6

or CAPOX) x 6 months

Active surveillance

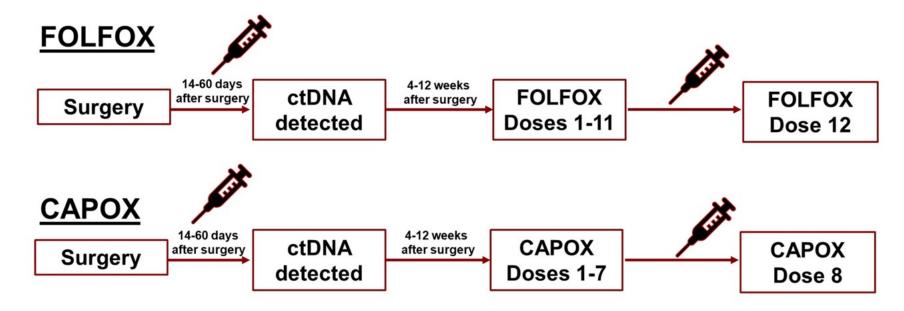


Abstract 433174: NRG-GI005 (COBRA)

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Morris et al: ASCO GI 2024

Treatment schema: Arm 2 "ctDNA detected"

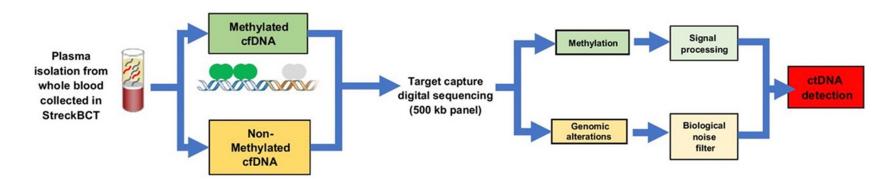


The 6-month timepoint was collected two weeks after prior dose of chemotherapy/ immediately prior to the administration of the last dose of chemotherapy.

NRG Abstract 433174: NRG-Gl005 (COBRA)

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ctDNA assay



- Guardant LUNAR assay was selected for NRG GI005 through an open RFA and peer-reviewed process as a tissue-agnostic assay that incorporates mutation/genomic and methylation/epigenomic markers alike for detection of ctDNA.
- Guardant LUNAR had undergone previous clinical and analytic validation:
 - In a previously reported cohort of 70 patients with stage I-IV colorectal cancer, sensitivity and specificity for were 56% and 95% (100% for those with one year of follow-up), respectively, when drawn one month after completion of definitive therapy.
 - Adding epigenomic profiling improved sensitivity relative to mutation calling alone by 25%.

Parikh A et al, Clin Cancer Res 2021



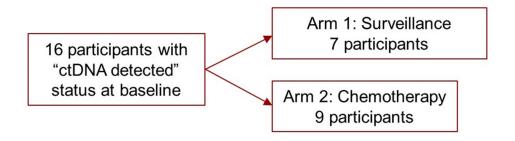
Abstract 433174: NRG-GI005 (COBRA)

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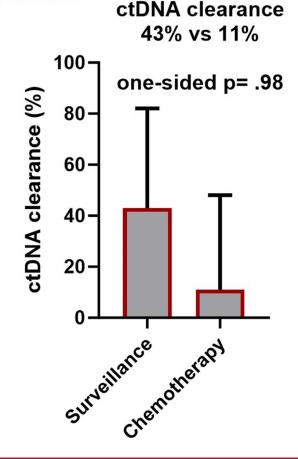
Morris et al: ASCO GI 2024

Phase II Endpoint Analysis: ctDNA(+) baseline participants

 Among 596 participants with baseline ctDNA status available, ctDNA(+) detection was observed in 33 (5.54%).



- Clearance of ctDNA at 6 months among ctDNA(+) participants at baseline was observed in:
 - Arm 1 (surveillance): 3 of 7 (43%, 95% CI 10 82%) participants
 - Arm 2 (chemotherapy): 1 of 9 patients (11%, 95% CI 0.3 48%) participants
- Because the 1-sided Fisher's Exact Test yields p = 0.98 exceeded 0.35, H_o was not rejected, and the decision rule calls for early stopping due to futility.





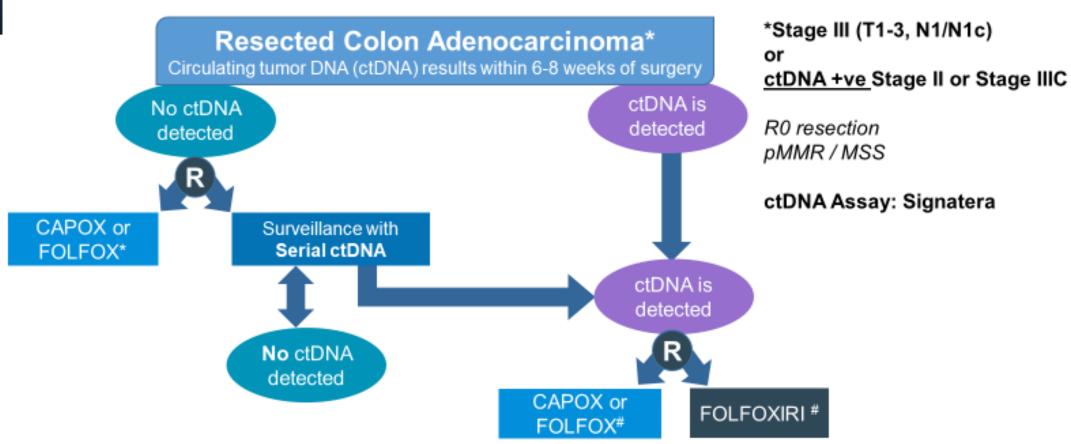
Abstract 433174: NRG-GI005 (COBRA)

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Pls:

Arvind Dasari (MDACC – NRG) Christopher Lieu (UCCC – SWOG)

NRG-GI008

^{*:} Duration and regimen per physician discretion

^{#: 6} months duration

Conclusions:

- Molecular testing should be conducted in all patients
- COBRA demonstrates the challenges in an evolving field.
 - ctDNA remains exploratory but demonstrates the impact on prognosis