9071

Brigatinib in ALK+ crizotinib-refractory non–small cell lung cancer: Final results of the Phase 1/2 and Phase 2 (ALTA) trials

Scott N. Gettinger,[1] Rudolf M Huber,[2] Dong-Wan Kim,[3] Lyudmila Bazhenova,[4] Karin Holmskov Hansen,[5] Marcello Tiseo,[6] Corey J. Langer,[7] Luis G. Paz-Ares Rodríguez,[8] Howard L. West,[9] Karen L. Reckamp,[9] Glen J. Weiss,[10] Egbert F. Smit,[11] Maximilian J. Hochmair,[12] Sang-We Kim,[13] Myung-Ju Ahn,[14] Edward S. Kim,[9] Harry J.M. Groen,[15] Joanna Pye,[16] Florin Vranceanu,[16] D. Ross Camidge[17]

[1]Yale Cancer Center, New Haven, CT, USA; [2]University Hospital of Munich, Thoracic Oncology Centre Munich, Munich, Germany; [3]Seoul National University Hospital, Seoul, South Korea; [4]University of California San Diego Moores Cancer Center, La Jolla, CA, USA; [5]Odense University Hospital, Odense, Denmark; [6]Medical Oncology Unit, University Hospital of Parma, Parma, Italy; [7]University of Pennsylvania Abramson Cancer Center, Philadelphia, PA, USA; [8]Hospital Universitario, Madrid, Spain; [9]City of Hope Comprehensive Cancer Center, Duarte, CA, USA; [10]MiRanostics Consulting, Oro Valley, AZ, USA; [11]Thoracic Oncology Service, Netherlands Cancer Institute, Amsterdam, the Netherlands; [12]Karl Landsteiner Institute of Lung Research and Pulmonary Oncology, Department of Respiratory and Critical Care Medicine, Krankenhaus Nord, Vienna, Austria; [13]Asan Medical Center, Seoul, South Korea; [14]Samsung Medical Center, Seoul, South Korea; [15]University of Groningen and University Medical Center Groningen, Groningen, the Netherlands; [16]Millennium Pharmaceuticals, Inc., Cambridge, MA, USA, a wholly owned subsidiary of Takeda Pharmaceutical Company Limited; [17]University of Colorado Cancer Center, Aurora, CO, USA

Introduction

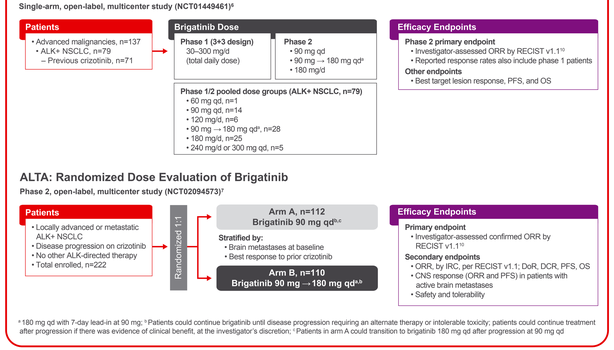
- Treatment with anaplastic lymphoma kinase (ALK) inhibitors is standard for ALK-rearrangement–positive (ALK+) metastatic non–small cell lung cancer (NSCLC)[1]
- Crizotinib, the first ALK tyrosine kinase inhibitor (TKI) approved for ALK+ NSCLC, demonstrated better efficacy than platinum-based doublet chemotherapy (median progression-free survival [PFS], 10.9 months vs 7.0 months) in patients with treatment-naive ALK+ NSCLC,[2] although most patients eventually develop progressive disease on crizotinib[3]
- Mechanisms of TKI resistance include acquisition of secondary mutations in ALK, amplification of the ALK fusion gene, and upregulation of bypass signaling pathways[4]
- Brigatinib is a next-generation ALK TKI that has potent and broad activity against ALK resistance mutations[5]
- The main results from the phase 1/2 study and a phase 2 randomized study (ALTA) of brigatinib were previously reported[6,7]
- In patients with crizotinib-refractory ALK+ NSCLC, brigatinib 180 mg qd with 7-day lead-in at 90 mg demonstrated a systemic objective response rate (ORR) of 56% and an intracranial ORR of 67% in patients with measurable baseline brain metastases, with an acceptable safety profile[7,8]
- Results of these trials supported the initial approval of brigatinib in the US in 2017 for the treatment of patients with ALK+ NSCLC who have progressed on or are intolerant to crizotinib

Objective

- To report long-term efficacy and safety results from the final analyses of the phase 1/2 and phase 2 (ALTA) trials of brigatinib, completed >5 years and >4 years, respectively, after the last patients enrolled

Methods

Figure 1. Study Design



[a]180 mg qd with 7-day lead-in at 90 mg; [b]Patients could continue brigatinib until disease progression requiring an alternate therapy or intolerable toxicity; patients could continue treatment after progression if there was evidence of clinical benefit, at the investigator's discretion; [c]Patients in arm A could transition to brigatinib 180 mg qd after progression at 90 mg qd

Results

Table 1. Demographics and Baseline Characteristics

		Phase 1/2 Study	ALTA	
		Patients With ALK+ NSCLC n=79	Arm A 90 mg qd n=112	Arm B 90 mg → 180 mg qd[a] n=110
Median age (range), y		54 (29, 83)	51 (18, 82)	57 (20, 81)
Sex, %	Female	49	55	58
Race, %	White, Asian, Other	82, 13, 5	64, 35, 1	69, 27, 4
ECOG performance status, %	0, 1, 2	34, 65, 1	28, 64, 5	41, 51, 8
Histologic type of NSCLC, %	Adenocarcinoma, Squamous, Other	94, 3, 4	96, 2, 3	98, 1, 1
Brain metastases at baseline, %		63	71	67
Prior chemotherapy, %		72	74	74
Prior crizotinib, %		90	100	100

Note: Percentages may not sum to 100% due to rounding; [a]180 mg qd with 7-day lead-in at 90 mg

- The phase 1/2 study was completed on February 18, 2020, with median (range) follow-up of 27.7 (0.2–88.3) months among the 79 ALK+ NSCLC patients; 10 patients were still receiving brigatinib up to study end, which was 5.6 years after the last patient enrolled
- ALTA was completed on February 27, 2020, with median follow-up of 19.6 (0.1–62.8) months in arm A and 28.3 (0.1–66.8) months in arm B; 10 patients in arm A and 17 patients in arm B were still on brigatinib up to study end, which was 4.4 years after the last patient enrolled

Table 2. Phase 1/2 Study: Investigator-Assessed Systemic Objective Response in Patients With ALK+ NSCLC

	Patients With ALK+ NSCLC			Patients With ALK+ NSCLC and Prior Crizotinib		
	All Doses[a] n=79	90 mg→180 mg qd[b] n=28	180 mg/d[c] n=25	All Doses n=71	90 mg→180 mg qd[b] n=25	180 mg/d[c] n=23
Confirmed ORR, % (95% C)	67 (56–77)	79 (59–92)	68 (47–85)	63 (51–75)	76 (55–91)	65 (43–84)
Confirmed CR, %	10	14	8	7	12	9
Confirmed PR, %	57	64	60	56	64	57
DCR, % (95% CI)	89 (80–95)	89 (72–98)	80 (59–93)	87 (77–94)	88 (69–98)	78 (56–93)
Median time to response in confirmed responders, mo (range)	(n=53) 1.9 (1.2–29.4)	(n=22) 1.9 (1.2–6.0)	(n=17) 1.9 (1.6–29.4)	(n=45) 1.8 (1.2–29.4)	(n=19) 1.8 (1.2–6.0)	(n=15) 1.9 (1.6–29.4)
KM[d] estimated median DoR in confirmed responders, mo (95% CI)	14.9 (9.9–29.5)	14.8 (7.9–33.3)	20.4 (7.6–44.5)	14.5 (9.0–22.1)	14.8 (7.9–25.1)	20.4 (7.5–51.6)

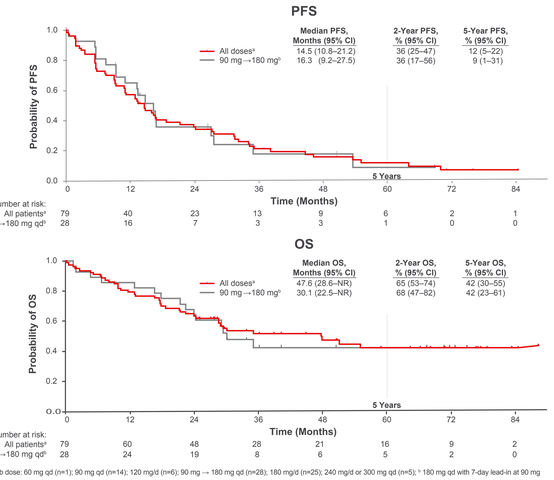
[a]Brigatinib dose: 60 mg qd (n=1); 90 mg qd (n=14); 120 mg/d (n=6); 90 mg → 180 mg qd (n=28); 180 mg/d (n=25); 240 mg/d or 300 mg qd (n=5); [b]180 mg qd with 7-day lead-in at 90 mg; [c]90 mg bid or 180 mg qd; [d]Kaplan-Meier methods were used to estimate DoR

Table 3. ALTA: Systemic and Intracranial Objective Response in Patients With Crizotinib-Refractory ALK+ NSCLC

	Investigator-Assessed		IRC-Assessed	
	Arm A 90 mg qd	Arm B 90 mg →180 mg qd[a]	Arm A 90 mg qd	Arm B 90 mg →180 mg qd[a]
All patients	(n=112)	(n=110)	(n=112)	(n=110)
Confirmed ORR, % (95% CI)	46 (36–55)	57 (48–67)	52 (42–61)	56 (47–66)
Confirmed CR, %	2	5	6	7
Confirmed PR, %	44	53	46	49
DCR, % (95% CI)	81 (73–88)	86 (79–92)	78 (69–85)	84 (75–90)
Median time to response in confirmed responders, mo (range)	(n=51) 1.8 (1.7–11.1)	(n=63) 1.9 (1.0–35.0)	(n=58) 1.8 (1.6–37.8)	(n=62) 1.9 (1.0–23.4)
KM[b] estimated median DoR in confirmed responders, mo (95% CI)	12.0 (9.2–19.4)	13.8 (10.8–17.6)	19.4 (9.2–24.9)	15.7 (13.6–22.1)
Patients with measurable CNS metastases at baseline per IRC			(n=26)	(n=18)
Confirmed intracranial ORR, % (95% CI)	—	—	50 (30–70)	67 (41–87)
Confirmed intracranial CR, %	—	—	8	0
Confirmed intracranial PR, %	—	—	42	67
Intracranial DCR, % (95% CI)	—	—	85 (65–96)	83 (59–96)
Median intracranial DoR in confirmed responders, mo (95% CI)	—	—	(n=13) 9.4 (3.7–NR)	(n=12) 16.6 (3.7–NR)

[a]180 mg qd with 7-day lead-in at 90 mg; [b]Kaplan-Meier methods were used to estimate DoR

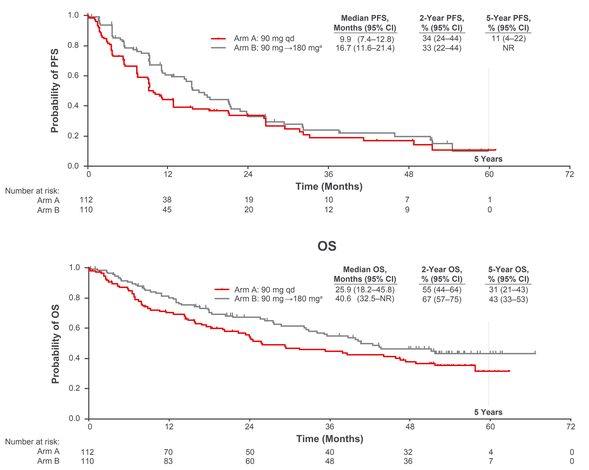
Figure 2. Phase 1/2 Study: Investigator-Assessed Systemic PFS and OS in Patients With ALK+ NSCLC



[a]Brigatinib dose: 60 mg qd (n=1); 90 mg qd (n=14); 120 mg/d (n=6); 90 mg → 180 mg qd (n=28); 180 mg/d (n=25); 240 mg/d or 300 mg qd (n=5); [b]180 mg qd with 7-day lead-in at 90 mg

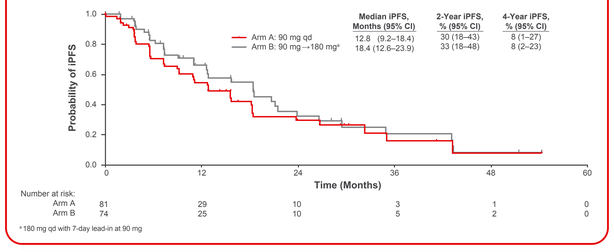
- Among the 71 patients with ALK+ NSCLC previously treated with crizotinib, median PFS was 13.4 months (95% CI: 9.2–16.7), median OS was 30.1 months (95% CI: 21.4–55.0), and 5-year probability of OS was 35%
- For the 8 patients with crizotinib-naive ALK+ NSCLC (90 mg qd, n=1; 90 mg→ 180 qd, n=3; other doses, n=4), all of whom had confirmed objective responses on brigatinib, median PFS was 34.2 months (95% CI: 7.4–63.9) and all 8 patients were alive 2 years after the first dose

Figure 3. ALTA: IRC-Assessed Systemic PFS and OS in Patients With Crizotinib-Refractory ALK+ NSCLC



[a]180 mg qd with 7-day lead-in at 90 mg

Figure 4. ALTA: IRC-Assessed Intracranial PFS in Patients With Any Baseline Brain Metastases per IRC



[a]180 mg qd with 7-day lead-in at 90 mg

Table 4. Most Common Treatment-Related Adverse Events

	Phase 1/2 Study		ALTA			
TRAEs of Any Grade in ≥15% or Grade ≥3 in >3% of Patients	Patients With ALK+ NSCLC[a] (n=79)		Arm A: 90 mg qd (n=109)		Arm B: 90 mg→180 mg qd[b] (n=110)	
	Any Grade, %	Grade ≥3, %	Any Grade, %	Grade ≥3, %	Any Grade, %	Grade ≥3, %
Diarrhea	48	1	17	0	35	0
Nausea	51	1	26	0	34	1
Increased blood CPK	16	5	17	6	34	14
Fatigue	39	3	12	1	20	0
Vomiting	20	0	15	0	19	0
Increased lipase	30	18	11	6	18	8
Muscle spasms	19	0	9	0	19	0
Increased AST	28	3	11	0	18	3
Hypertension	16	8	7	5	18	6
Increased amylase	27	5	12	2	16	2
Increased ALT	18	3	11	0	13	4
Cough	15	1	3	0	10	0
Dyspnea	15	3	7	0	7	0
Increased blood insulin	15	0	0	0	1	0
Hypophosphatemia	15	5	0	0	1	1

[a]Brigatinib doses: 60 mg qd (n=1); 90 mg qd (n=14); 120 mg/d (n=6); 90 mg → 180 mg qd (n=28); 180 mg/d (n=25); 240 mg/d or 300 mg qd (n=5); [b]180 mg qd with 7-day lead-in at 90 mg

Table 5. Dose Modifications Due to Adverse Events (AEs)

	Phase 1/2 Study	ALTA	
	Patients With ALK+ NSCLC[a] (n=79)	Arm A: 90 mg qd (n=109)	Arm B: 90 mg →180 mg qd[b] (n=110)
Dose reduction due to any AE, n (%)	10 (13)	9 (8)	36 (33)
Dose interruption due to any AE, n (%)	47 (59)	53 (49)	67 (61)
Discontinuation due to any AE, n (%)	8 (10)	4 (4)	14 (13)
Median dose intensity, mg/d	174	90	169

[a]Brigatinib dose: 60 mg qd (n=1); 90 mg qd (n=14); 120 mg/d (n=6); 90 mg → 180 mg qd (n=28); 180 mg/d (n=25); 240 mg/d or 300 mg qd (n=5); [b]180 mg qd with 7-day lead-in at 90 mg

- Deaths occurring within 30 days of last dose of brigatinib:
  - Phase 1/2 study: 15 patients with ALK+ NSCLC
    - 2 deaths possibly related to brigatinib treatment (unexpected death on day 568; sepsis on day 541)
  - ALTA: 36 patients (22 in arm A; 14 in arm B)
    - One death possibly related to brigatinib treatment (sudden death on day 3 in arm B)

Summary

- Brigatinib showed sustained long-term activity and PFS in the final analyses of the phase 1/2 and phase 2 (ALTA) trials
- Among the 79 ALK+ NSCLC patients in the phase 1/2 study, with median follow-up of 28 months and 5.6 years since the last patient enrolled, the confirmed ORR per investigators was 67%, with median DoR of 14.9 months
  - Median PFS was 14.5 months in all patients and 34.2 months in crizotinib-naive patients; median OS was 47.6 months in all patients, with 5-year OS probability of 42%
  - 10 patients were still receiving brigatinib up to study end
- In ALTA, the approved dosing regimen (180 mg qd with 7-day lead-in at 90 mg; arm B) was associated with numerically higher ORR, PFS, and OS than the 90-mg daily dose (arm A)
  - With median follow-up of 28.3 months and 4.4 years after the last patient enrolled, the approved dosing regimen (arm B) demonstrated a confirmed ORR by IRC of 56%, with median DoR of 15.7 months, median IRC-assessed PFS of 16.7 months, median OS of 40.6 months, and 5-year OS probability of 43%
  - 10 patients in arm A and 17 patients in arm B were still on brigatinib up to study end
- Brigatinib intracranial activity was maintained in patients with baseline brain metastases
  - The intracranial ORR by IRC was 67% in patients with measurable CNS lesions, with median intracranial DoR of 16.6 months; median intracranial PFS was 18.4 months in patients with any baseline brain metastases
- The safety profile of brigatinib was consistent with previous reports, with no new safety concerns noted

References

1. NCCN Clinical Practice Guidelines in Oncology. Non-Small Cell Lung Cancer v4.2021. March 3, 2021. Available at https://www.nccn.org/professionals/physician_gls/default.aspx. Accessed April 15, 2021. **2.** Solomon BJ, Mok T, Kim DW, et al. First-line crizotinib versus chemotherapy in ALK-positive lung cancer. *N Engl J Med* 2014;371:2167-2177. **3.** Solomon BJ, Cappuzzo F, Felip E, et al. Intracranial efficacy of crizotinib versus chemotherapy in patients with advanced ALK-positive non-small-cell lung cancer: Results from PROFILE 1014. *J Clin Oncol* 2016;34:2858-2865. **4.** Gainor JF, Dardaei L, Yoda S, et al. Molecular mechanisms of resistance to first- and second-generation ALK inhibitors in ALK-rearranged lung cancer. *Cancer Discov.* 2016;6:1118–1133. **5.** Hoy SM. Brigatinib: A review in ALK-inhibitor naïve advanced ALK-positive NSCLC. *Drugs* 2021;81:267-275. **6.** Gettinger SN, Bazhenova LA, Langer CJ, et al. Activity and safety of brigatinib in ALK-rearranged non-small-cell lung cancer and other malignancies: A single-arm, open-label, phase 1/2 trial. *Lancet Oncol* 2016;17:1683-1696. **7.** Kim DW, Tiseo M, Ahn MJ, et al. Brigatinib in patients with crizotinib-refractory anaplastic lymphoma kinase-positive non-small-cell lung cancer: a randomized, multicenter phase II trial. *J Clin Oncol* 2017;35:2490-2498. **8.** Camidge DR, Kim DW, Tiseo M, et al. Exploratory analysis of brigatinib activity in patients with anaplastic lymphoma kinase-positive non-small-cell lung cancer and brain metastases in two clinical trials. *J Clin Oncol* 2018;36:2693-2701. **9.** Huber RM, Hansen KH, Paz-Ares Rodríguez L, et al. Brigatinib in crizotinib-refractory ALK+ NSCLC: 2-year follow-up on systemic and intracranial outcomes in the phase 2 ALTA trial. *J Thorac Oncol* 2020;15:404-415. **10.** Eisenhauer EA, Therasse P, Bogaerts J, et al. New response evaluation criteria in solid tumours: Revised RECIST guideline (version 1.1). *Eur J Cancer.* 2009;45:228-247.

Abbreviations

AE, adverse event; ALK, anaplastic lymphoma kinase; ALK+, ALK gene rearranged; ALT, alanine aminotransferase; AST, aspartate aminotransferase; bid, twice daily; CI, confidence interval; CNS, central nervous system; CPK, creatine phosphokinase; CR, complete response; DCR, disease control rate; DoR, duration of response; ECOG, Eastern Cooperative Oncology Group; iPFS, intracranial progression-free survival; IRC, independent review committee; KM, Kaplan-Meier; NR, not reached; NSCLC, non–small cell lung cancer; ORR, objective response rate; OS, overall survival; PFS, progression-free survival; PR, partial response; qd, once daily; RECIST, Response Evaluation Criteria in Solid Tumors; TRAE, treatment-related adverse event; TKI, tyrosine kinase inhibitor

Acknowledgments

The authors would like to thank the patients, their families, and their caregivers; the investigators and their team members at each study site; and colleagues from ARIAD Pharmaceuticals, Inc., Cambridge, MA, USA, a wholly owned subsidiary of Takeda Pharmaceutical Company Limited. Professional medical writing assistance was provided by Lela Creutz, PhD, and Lauren Gallagher, RPh, PhD, of Peloton Advantage, LLC, an OPEN Health company, Parsippany, NJ, USA, and funded by Millennium Pharmaceuticals, Inc., Cambridge, MA, USA, a wholly owned subsidiary of Takeda Pharmaceutical Company Limited.

Disclosures

SNG: Research funding (Ariad/Takeda, BMS, Roche/Genentech, NextCure, Iovance); **RMH:** Honoraria (ARIAD, AstraZeneca, Bayer, Boehringer Ingelheim, Bristol-Myers Squibb, Pfizer, Roche), consulting or advisory role (BeiGene, Boehringer Ingelheim, Bristol-Myers Squibb, Celgene, Clovis Oncology, Eli Lilly, Novartis, Roche, Sanofi), research funding (AstraZeneca); **DWK:** Research funding to institution (Alpha Biopharma, Amgen, AstraZeneca/Medimmune, Boehringer Ingelheim, Daiichi-Sankyo, Hanmi, Janssen, Merus, Mirati Therapeutics, MSD, Novartis, Ono Pharmaceutical, Pfizer, Roche/Genentech, Takeda, TP Therapeutics, Xcovery, Yuhan), travel/accommodation support (Amgen, Daiichi-Sankyo); **LAB:** Stock and other ownership interests (Epic Sciences), consulting or advisory role (ARIAD, AstraZeneca, Bristol-Myers Squibb, Genentech/Roche, Novartis, Blueprint Medicines, BeyondSpring, G1 Therapeutics, Bayer, Boehringer Ingelheim, Regeneron, Merck, Johnson & Johnson, Daiichi Sankyo, Neuvogen), research funding (BeyondSpring); **KHH:** No relationships to report; **MT:** Speakers' bureau or advisory role (AstraZeneca, BMS, Boehringer Ingelheim, MSD, Takeda), research grants (AstraZeneca, Boehringer Ingelheim); **CJL:** Honoraria (Bristol-Myers Squibb, Eli Lilly, Roche/Genentech, AstraZeneca, Takeda, Merck), consulting or advisory role (Abbott, ARIAD, AstraZeneca, Bayer/Onyx, Bristol-Myers Squibb, Cancer Support Community, Celgene, Clarient, Clovis Oncology, Eli Lilly, Merck, Gilead, Roche/Genentech, Takeda, Pfizer, Novocure), research funding (Advantagene, ARIAD, Celgene, Clovis Oncology, GlaxoSmithKline, Inovio, Merck, Roche/Genentech, Lilly, Trizell), other relationship (Amgen, Lilly, Peregrine Pharmaceuticals, Syntai); **LGPAR:** Leadership role (Genomica, ALTUM Sequencing), speakers' bureau (MSD Oncology, BMS, Roche/Genentech, Pfizer, Lilly, AstraZeneca, Merck Serono), travel, accommodations, expenses (Roche, AstraZeneca, MSD, BMS, Pfizer, Takeda), other (Novartis, Ipsen, Pfizer, SERVIER, Sanofi, Roche, Amgen, Merk), honoraria (Roche/Genentech, Lilly, Pfizer, BMS, MSD, AstraZeneca, Merck Serono, PharmaMar, Novartis, Celgene, Amgen, Sanofi, Ipsen, Servier, Bayer, Blueprint Medicines, Mirati Therapeutics, Takeda), research funding (BMS, AstraZeneca, PharmaMar, Kura Oncology, MSD); **HLW:** Consulting or advisory role (AstraZeneca, Merck, Roche/Genentech, Takeda), speakers' bureau (Takeda, Merck, AstraZeneca), honoraria (AstraZeneca, Genentech/Roche, Merck, Takeda); **KLR:** Consulting/advisory role (Amgen, Takeda, AstraZeneca, Boehringer Ingelheim, Calithera Biosciences, Seattle Genetics, Tesaro, Genentech, Blueprint Medicines, Daiichi Sankyo/Lilly, EMD Serono, Janssen Oncology, Lilly, Merck KGaA), research funding (all to institution: AbbVie, ACEA Biosciences, Adaptimmune, ARIAD, Boehringer Ingelheim, Bristol-Myers Squibb, Genentech/Roche, GlaxoSmithKline, Guardant Health, Janssen Oncology, Loxo, Pfizer, Seattle Genetics, Xcovery, Zeno Pharmaceuticals, Calithera Biosciences, Elevation Oncology); **GJW:** Employment (SOTIO, LLC), former employment (Unum Therapeutics), consulting or advisory role (Paradigm, Vionics, Circulogene Theranostics, GLG, Angiex, Guidepoint Global, Spring Bank, Imaging Endpoints, IBEX Medical Analytics, Genomic Health, Gossamer Bio), travel, accommodations, expenses (Cambridge Healthtech Institute, GlaxoSmithKline), stock and other ownership interests (Circulogene Theranostics, Unum Therapeutics, Exact Sciences, Cogent Biosciences); **EFS:** Consulting or advisory role (Eli Lilly, AstraZeneca, Boehringer Ingelheim, Roche/Genentech, BMS, Merck KGaA, MSD Oncology, Takeda, Bayer, Novartis, Daiichi Sankyo, Seattle Genetics), research funding (AstraZeneca, Bayer, Boehringer Ingelheim, Roche/Genentech, BMS); **MJH:** Honoraria (AstraZeneca, Bristol-Myers Squibb, Boehringer Ingelheim, Roche, Takeda, MSD); **SWK:** No relationships to disclose; **MJA:** Honoraria (AstraZeneca, MSD, Lilly, Takeda), consulting or advisory role (AstraZeneca, Boehringer Ingelheim, MSD, Lilly, Takeda, Alpha Pharmaceutical); **ESK:** Consulting or advisory role (AstraZeneca, Boehringer Ingelheim, Pfizer, Merck, Takeda, Roche/Genentech), honoraria (AstraZeneca, Boehringer Ingelheim, Pfizer, Merck, Takeda, Roche/Genentech), travel, accommodations, expenses (AstraZeneca, Boehringer Ingelheim, Takeda, Genentech/Roche, Pfizer, Merck), research funding (Boehringer Ingelheim, Merck, Ignyta, Genetech/Roche); **HJMG:** Consulting or advisory role (BMS, Eli Lilly, Novartis, Roche/Genentech, AstraZeneca), research funding (Roche, Boehringer Ingelheim); **JP:** Employment (Takeda); **FV:** Employment (Takeda); **DRC:** Honoraria (AstraZeneca, Takeda, Roche/Genentech, Daiichi Sankyo (ILD adjudication committee), Bio-Thera DSMB, Ribon Therapeutics, BMS, Inivata, Abbvie, Apollomics, Elevation Oncology, EMD Serono, Helsinn Therapeutics, Lilly, Nuvalent, Inc., Seattle Genetics, Turning Point Therapeutics)

Email address for questions or comments: Scott.Gettinger@yale.edu

For an e-Print, scan this QR code.

Presented at the 57th Annual Meeting (Virtual) of the American Society of Clinical Oncology (ASCO) June 4–8, 2021