Best of ASCO 2019: Lung and Genitourinary Cancers

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2019 Best of ASCO: Genitourinary Cancers

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August 28, 2019

- *Research Funding*: Merck, GeneCentric, Bristol-Myers Squibb, X4 Pharmaceuticals

Disclosures

2019 in GU Cancers

- Kidney Cancer
  - First-line IO/VEGF combinations
  - "Adjuvant" pazopanib after metastasectomy
- Bladder Cancer
  - Post-platinum, post-checkpoint options
- Prostate Cancer
  - The explosion of options for hormone sensitive metastatic prostate cancer
  - M0 CRPC

KEYNOTE-426 Study Design

Key Eligibility Criteria

- Newly diagnosed or recurrent stage IV clear-cell RCC
- No previous systemic treatment for advanced disease
- Karnofsky performance status ≥70
- Measurable disease per RECIST v1.1
- Provision of a tumor sample for biomarker assessment
- Adequate organ function

R (1:1)

N = 432: Pembrolizumab 200 mg IV Q3W for up to 35 cycles + Axitinib 5 mg orally twice daily[a]

N = 429: Sunitinib 50 mg orally once daily for first 4 wks of each 6-wk cycle[b]

Stratification Factors

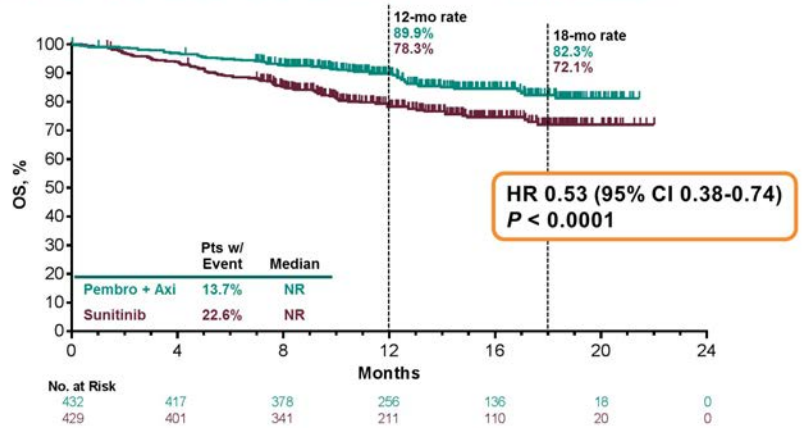
- IMDC risk group (favorable vs intermediate vs poor)
- Geographic region (North America vs Western Europe vs ROW)

End Points

- **Dual primary:** OS and PFS (RECIST v1.1, BICR) in ITT
- **Key secondary:** ORR (RECIST v1.1, BICR) in ITT
- **Other secondary:** DOR (RECIST v1.1), PROs, safety

[a]Axitinib dose could be increased to 7 mg, then 10 mg, twice daily if safety criteria were met; dose could be reduced to 3 mg, then 2 mg, twice daily to manage toxicity.
[b]Sunitinib dose could be decreased to 37.5 mg, then 25 mg, once daily for the first 4 wks of each 6-wk cycle to manage toxicity.
BICR, blinded independent central radiologic review; DOR, duration of response; PROs, patient-reported outcomes; ROW, rest of world.
KEYNOTE-426 is a randomized, open-label, phase 3 study (ClinicalTrials.gov identifier NCT02853331).

KEYNOTE-426: OS in the ITT Population

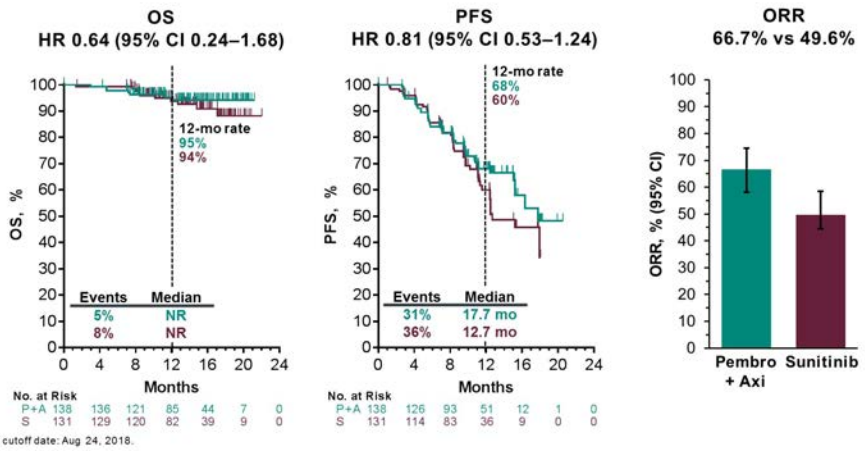


Pembrolizumab plus Axitinib for mRCC

- Other key findings from KEYNOTE-426[1]
  - PFS: HR 0.69 ($P < 0.001$)
  - ORR: 59.3% vs 35.7% ($P < 0.001$)
  - Benefit observed across subgroups, including the IMDC favorable, intermediate, and poor risk groups and in PD-L1–expressing and non-expressing tumors
  - Manageable safety profile
- Combination of pembrolizumab and axitinib approved by the FDA for first-line treatment of advanced RCC

Rini BI et al. *N Engl J Med* 2019;380:1116–27.

IMDC Favorable Risk: OS, PFS, and ORR



Data cutoff date: Aug 24, 2018.

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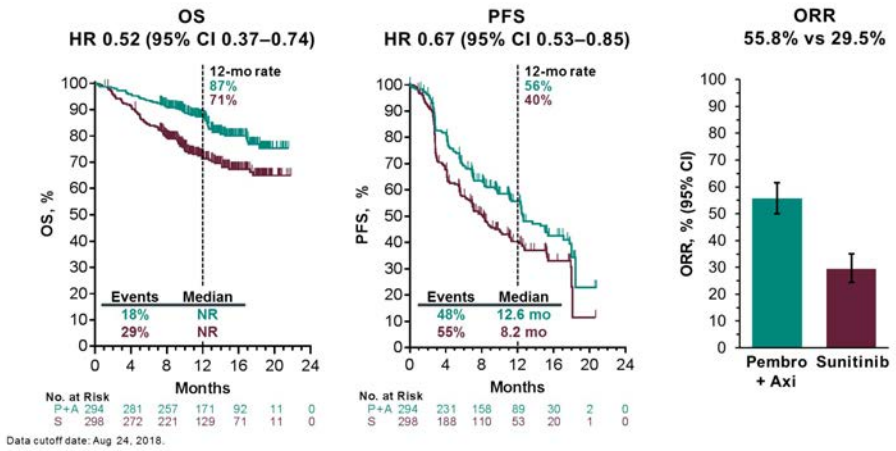
IMDC Intermediate/Poor Risk: OS, PFS, and ORR



Data cutoff date: Aug 24, 2018.

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JAVELIN Renal 101: study design

Key eligibility criteria

- Treatment-naive aRCC with a clear cell component
- ≥ 1 measurable lesion as defined by RECIST v1.1
- Tumor tissue available for PD-L1 staining
- ECOG PS 0 or 1

Stratification

- ECOG PS (0 vs 1)
- Geographic region (USA vs Canada/Western Europe vs ROW)

N = 886

R 1:1

Avelumab 10 mg/kg IV Q2W + Axitinib 5 mg PO BID (6-week cycle)

Sunitinib 50 mg PO QD (4 weeks on, 2 weeks off)

- **Primary objective**
  - To demonstrate the superiority of avelumab + axitinib compared with sunitinib for either PFS or OS in patients with PD-L1+ tumors

BID, twice per day; **ECOG PS**, Eastern Cooperative Oncology Group performance status; **IV**, intravenous; **OS**, overall survival; **PFS**, progression-free survival; **PO**, orally; **Q2W**, every 2 weeks; **QD**, once per day; **ROW**, rest of the world.

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JAVELIN Renal 101 efficacy summary[1]

	PD-L1+ group (N = 560)		Overall population (N = 886)	
	Avelumab + axitinib (N = 270)	Sunitinib (N = 290)	Avelumab + axitinib (N = 442)	Sunitinib (N = 444)
PFS per IRC				
Median, months	13.8	7.2	13.8	8.4
95% CI	11.1, NE	5.7, 9.7	11.1, NE	6.9, 11.1
Benefit vs sunitinib (HR; P value)	0.61; P < .0001	-	0.69; P = .0001	-
ORR per IRC, %	55.2	25.5	51.4	25.7
95% CI	49.0, 61.2	20.6, 30.9	46.6, 56.1	21.7, 30.0
PFS per investigator assessment				
Median, months	13.3	8.2	12.5	8.4
95% CI	9.8, NE	6.9, 8.5	11.1, 15.2	8.2, 9.7
Benefit vs sunitinib (HR; P value)	0.51; P < .0001	-	0.64; P < .0001	-
ORR per investigator assessment, %	61.9	29.7	55.9	30.2
95% CI	55.8, 67.7	24.5, 35.3	51.1, 60.6	25.9, 34.7

IRC, independent review committee; **NE**, not estimable; **ORR**, objective response rate.
Data cutoff date: June 20, 2018; median follow-up, 12.0 months (avelumab + axitinib) and 11.5 months (sunitinib).
1. Motzer RJ, et al. ESMO 2018:LBA6_PR.

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So which 1L treatment to pick?

	Pembrolizumab + Axitinib vs Sunitinib	Avelumab + Axitinib vs Sunitinib	Ipilimumab + Nivolumab vs Sunitinib
IMDC risk group			
Favorable	31.2%	21.4%	23%
Intermediate	56.2%	61.8%	61%
Poor	12.6%	16.2%	17%
PDL1 "positive"	60.5%	63.2%	63.2%
Overall survival			
HR for death	0.53	0.78	0.68
P value	<0.0001	0.14	<0.001
Median PFS (mo)			
Combo therapy	15.1	13.8	12.4
Sunitinib	11.1	8.4	12.3
ORR (%)	59.3%	51.4%	39.0%
CR (%)	5.8%	3.4%	10.2%
Median f/u (mo)	12.8	11.6	25.2

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Adapted from Escudier, NEJM 380;12 March 2

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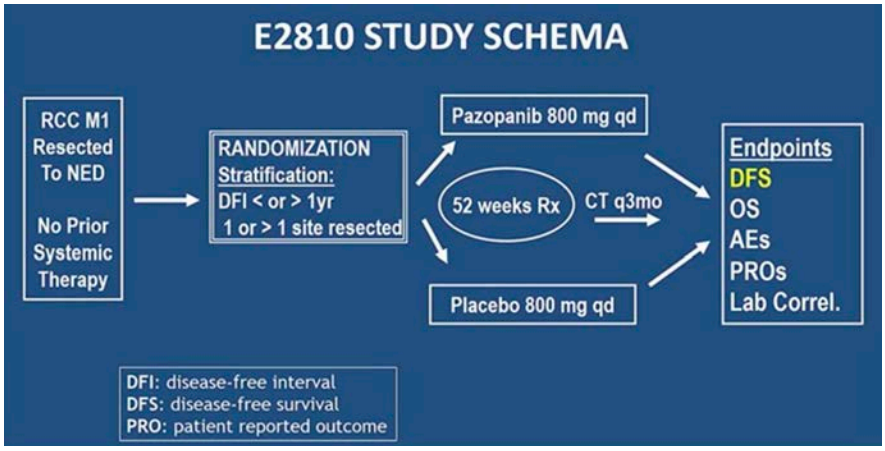
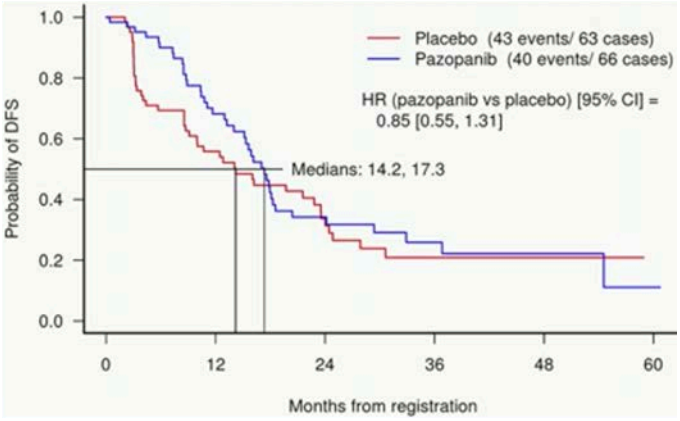


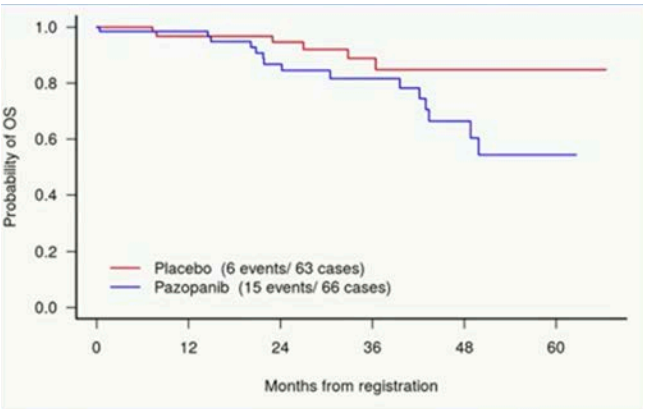
Pazopanib did not improve disease-free survival



Median follow-up 30 months

36 month DFS:
Pazopanib 26%
Placebo 22%

Overall survival by blinded treatment arm



Hazard Ratio for OS was 2.65 (1.02, 6.9) in favor of placebo (p=0.05)

EV-201: Single-Arm, Pivotal Phase 2 Trial

Screening and enrollment
51 global sites

Previously treated locally advanced or metastatic urothelial cancer

Cohort 1
Prior PD-1/L1 inhibitor and platinum-based therapy

Enrollment completed July 2018
N=128[1]

Cohort 2
Prior PD-1/L1 inhibitor, platinum naive, cisplatin ineligible

Enrollment ongoing

Enfortumab vedotin

1.25 mg/kg IV on days 1, 8, and 15 of each 28-day cycle

Primary endpoint:
ORR per RECIST v1.1 as determined by BICR

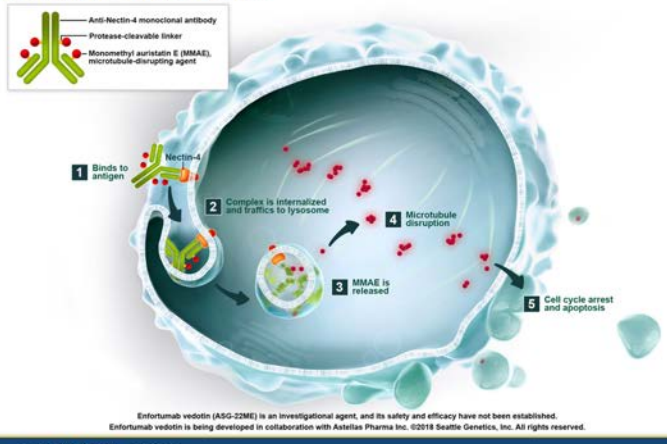
Select secondary endpoints:
DOR
PFS
OS
Safety

[1] 3 patients did not receive enfortumab vedotin treatment: one each due to clinical deterioration, patient decision, and low hemoglobin after enrollment

BICR=blinded independent central review; DOR=duration of response; ORR=objective response rate; OS=overall survival; PFS=progression-free survival

Enfortumab Vedotin: Nectin-4 Targeted Therapy

Proposed Mechanism of Action



Enfortumab vedotin (ASG-22ME) is an investigational agent, and its safety and efficacy have not been established.
Enfortumab vedotin is being developed in collaboration with Astellas Pharma Inc. ©2018 Seattle Genetics, Inc. All rights reserved.

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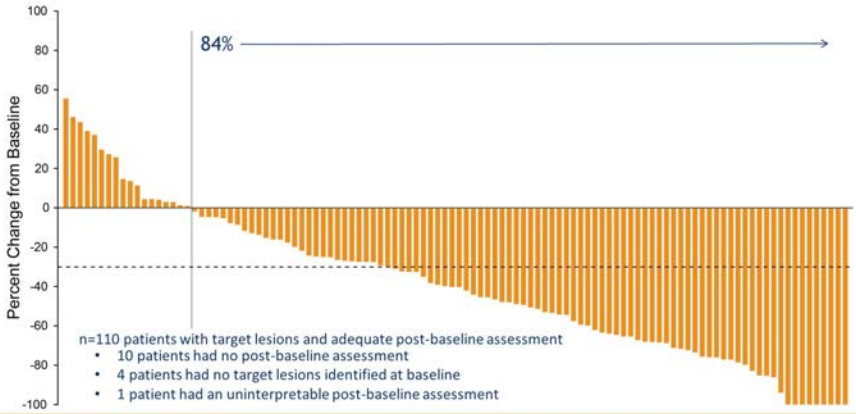
EV-201: Cohort 1 Change in Tumor Measurements per BICR



n=110 patients with target lesions and adequate post-baseline assessment
- 10 patients had no post-baseline assessment
- 4 patients had no target lesions identified at baseline
- 1 patient had an uninterpretable post-baseline assessment

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ENZAMET Treatment

STRATIFICATION

- Volume of metastases*
  - -High vs Low
- Planned Early Docetaxel
  - Yes vs No
- ECOG PS
  - - 0-1 vs 2
- Anti-resorptive therapy
  - -Yes vs No
- Comorbidities
  - ACE-27**: 0-1 vs 2-3
- Study Site

RANDOMIZE

ARM A: Testosterone Suppression + standard NSAA → Evaluate every 12 weeks → CRPC therapy at investigator's discretion at progression

ARM B: Testosterone Suppression + Enzalutamide (160 mg/d) → Evaluate every 12 weeks → Follow for time to progression and overall survival

- Prior to randomization testosterone suppression up to 12 weeks and 2 cycles of docetaxel was allowed.
- Intermittent ADT and cyproterone were not allowed
- NSAA: bicalutamide; nilutamide; flutamide
- *High volume: visceral metastases and/or 4 or more bone metastases (at least 1 beyond pelvis and vertebral column)
- **Adult Co-morbidity Evaluation-27

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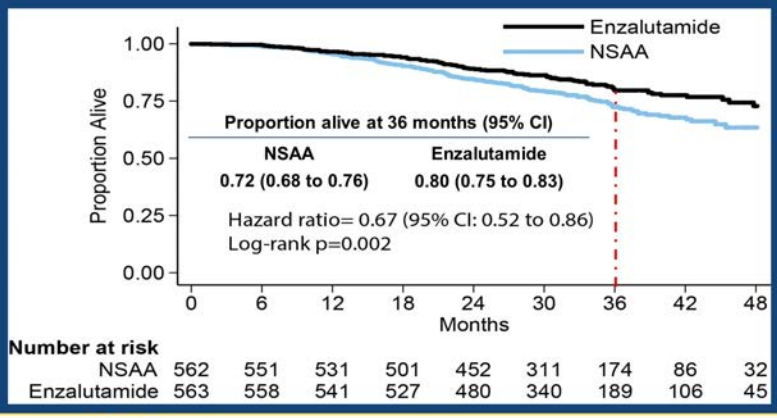
Primary endpoint: Overall survival



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11

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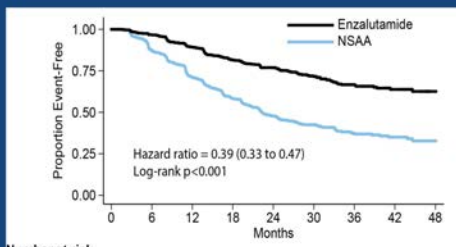
Secondary Endpoints: Progression-free survival (PCWG2)

Time to PSA rise, clinical progression or death



Number at risk

NSAA	562	486	395	322	249	161	78	44	17
Enzalutamide	563	543	500	455	411	269	146	77	34

Time to clinical progression
(imaging, symptoms, signs, change of therapy or death)

Number at risk

NSAA	562	512	418	346	272	182	96	50	17
Enzalutamide	563	547	507	468	424	284	156	84	36

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Abstract 5006

First Results From TITAN: a Phase 3 Double-Blind, Randomized Study of Apalutamide Versus Placebo in Patients With Metastatic Castration-Sensitive Prostate Cancer Receiving Androgen Deprivation Therapy

Kim N. Chi,[1] Neeraj Agarwal,[2] Anders Bjartell,[3] Byung Ha Chung,[4] Andrea Juliana Pereira de Santana Gomes,[5] Robert W. Given,[6] Álvaro Juárez Soto,[7] Axel S. Merseburger,[8] Mustafa Özgüroğlu,[9] Hirotsugu Uemura,[10] Dingwei Ye,[11] Kris Deprince,[12] Vahid Naini,[13] Jinhui Li,[13] Shinta Cheng,[14] Margaret K. Yu,[15] Ke Zhang,[13] Julie S. Larsen,[15] Sharon A. McCarthy,[14] Simon Chowdhury[16] on behalf of the TITAN investigators

[1]BC Cancer and Vancouver Prostate Centre, Vancouver, BC, Canada; [2]Huntsman Cancer Institute, University of Utah, Salt Lake City, UT; [3]Skåne University Hospital, Lund University, Malmö, Sweden; [4]Yonsei University College of Medicine and Gangnam Severance Hospital, Seoul, South Korea; [5]Liga Norte Riograndense Contra O Cancer, Natal, Brazil; [6]Urology of Virginia, Eastern Virginia Medical School, Norfolk, VA; [7]Hospital Universitario de Jerez de la Frontera, Cadiz, Spain; [8]University Hospital Schleswig-Holstein, Campus Lübeck, Lübeck, Germany; [9]Istanbul University-Cerrahpaşa, Cerrahpaşa School of Medicine, Istanbul, Turkey; [10]Kindai University Faculty of Medicine, Osaka, Japan; [11]Fudan University Shanghai Cancer Center, Shanghai, China; [12]Janssen Research & Development, Beerse, Belgium; [13]Janssen Research & Development, San Diego, CA; [14]Janssen Research & Development, Raritan, NJ; [15]Janssen Research & Development, Los Angeles, CA; [16]Guy's, King's, and St. Thomas' Hospitals, and Sarah Cannon Research Institute, London, UK

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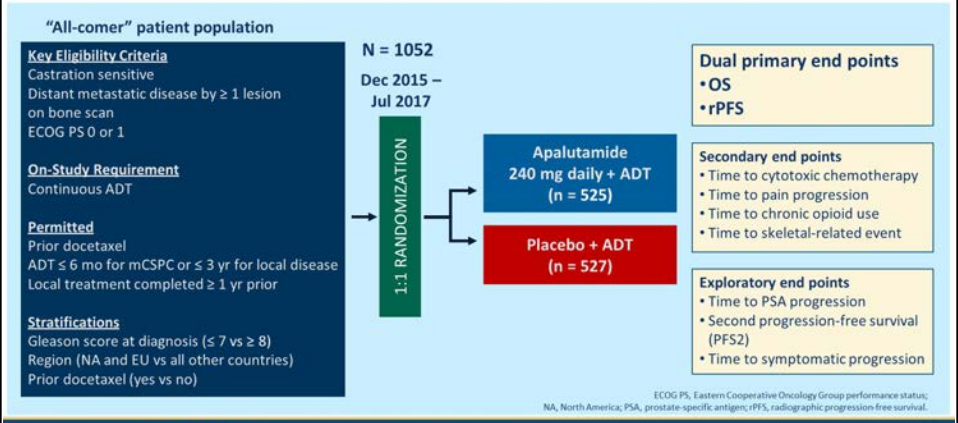
TITAN Study Design



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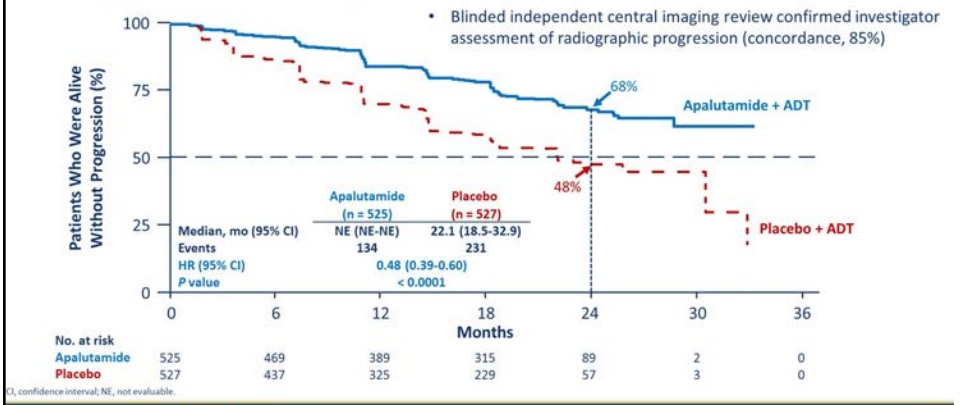
TITAN rPFS: Apalutamide Significantly Reduced Risk of Radiographic Progression or Death by 52%



CI, confidence interval; NE, not evaluable.

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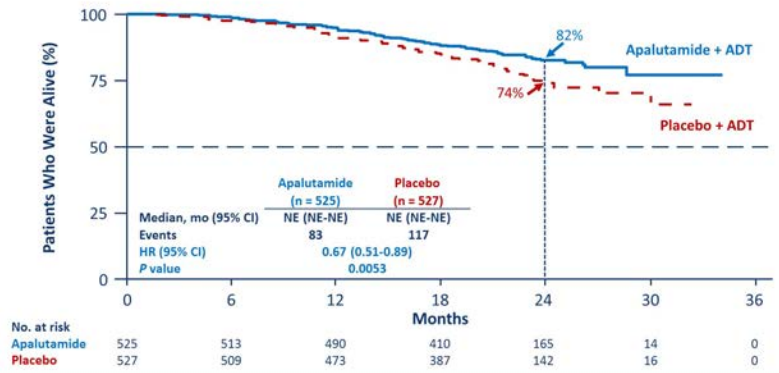
TITAN OS: Apalutamide Significantly Reduced the Risk of Death by 33%



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What to use in hormone sensitive disease?

	CHAARTED (docetaxel)	LATITUDE (abiraterone/P)	ENZAMET (enzalutamide)	TITAN (apalutamide)
High volume disease, %	66%	100%	%	
rPFS, HR (95%CI)	0.62 (0.5-0.8)	0.47 (0.4-0.6)		
OS, low vol disease, HR (95%CI)	1.04 (0.7-1.6)	N/A		
OS, HR (95%CI)	0.72 (0.6-0.9)	0.66 (0.6-0.8)		
Discontinuation rate for AE		12%		
Grade >=3% AE	29.6%	63% vs 48%		
QoL scores	Worse at 3mos, better at 12 mos	Better than placebo		

CHAARTED, Sweeney et al, NEJM 2015
Latitude, Fizazi et al NEJM 2017
Enzamet, 2019 ASCO Annual Meeting
Titan, 2019 ASCO Annual Meeting

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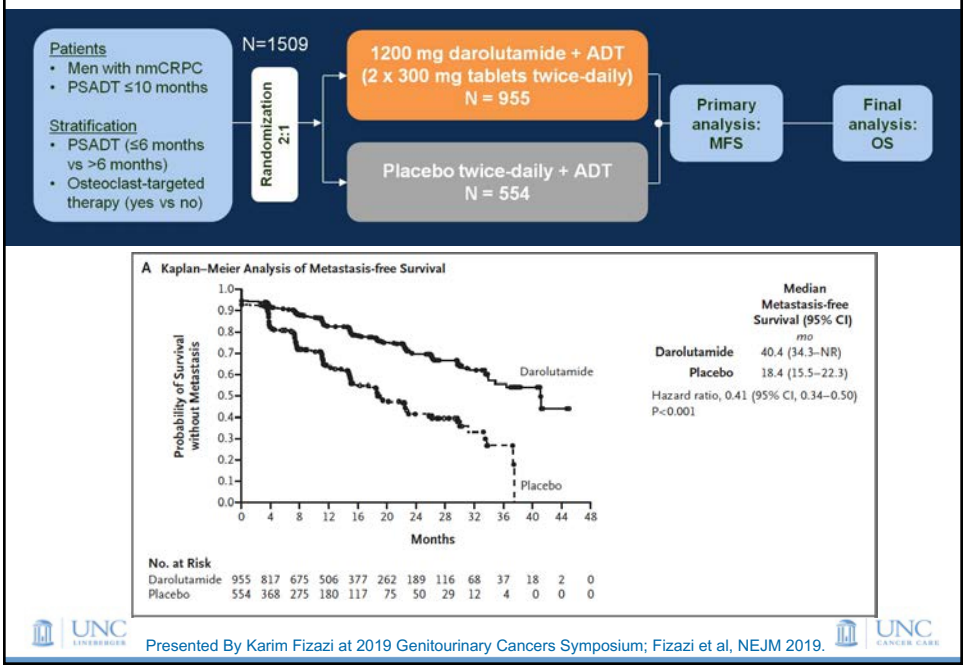
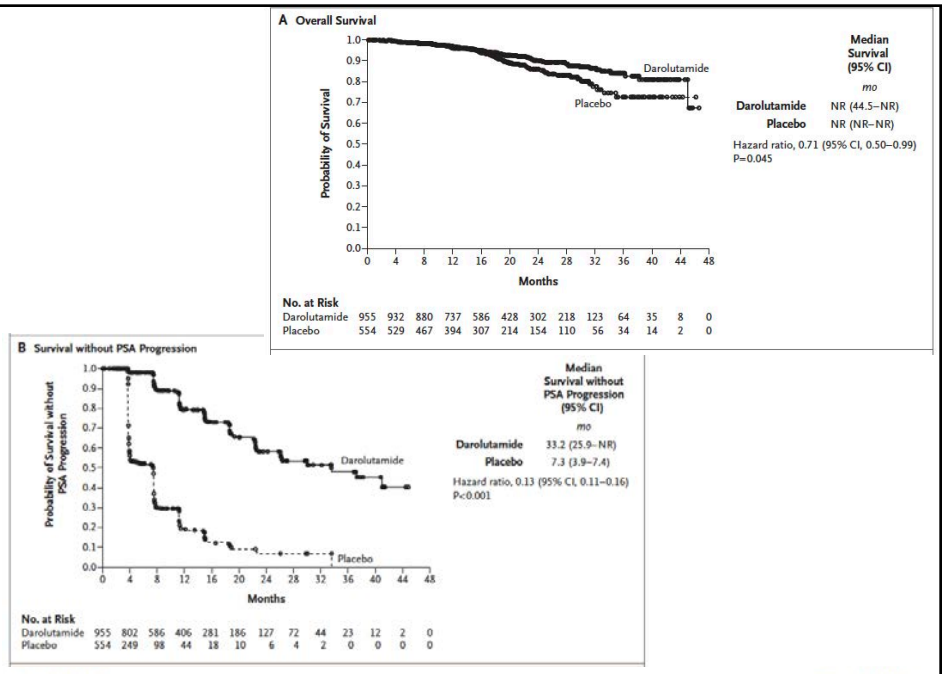
ARAMIS: Darolutamide in non-metastatic castration-resistant prostate cancer

- Androgen receptor inhibitor
- Structurally distinct from enza/apalutamide – less CNS toxicity since doesn't cross BBB and fewer drug interactions (not a CYP-inhibitor)
- Taken with food

Presented By Karim Fizazi at 2019 Genitourinary Cancers Symposium



Presented By Karim Fizazi at 2019 Genitourinary Cancers Symposium; Fizazi et al, NEJM 2019.



Fizazi et al, NEJM 2019

What to use in M0 CRPC?

	SPARTAN (apalutamide)	PROSPER (enzalutamide)	ARAMIS (darolutamide)
Median pre-trial PSA DT, mos	4.4	3.8	4.4
Metastasis free survival, mos	40.5 HR 0.28 (0.23-0.35)	36.6 HR 0.29 (0.24-0.35)	40.4 HR 0.41 (0.34-0.50)
Time to PSA progression, mos	NR HR 0.06 (0.05-0.08)	37.2 HR 0.07 (0.05-0.08)	33.2 HR 0.13 (0.11-0.16)
Overall survival	HR 0.70 (0.47-1.04)	HR 0.80 (0.58-1.09)	HR 0.71 (0.50-0.99)
Discontinuation rate for AE	11%	9%	9%
Grade >=3% AE	45% vs 34%	31% vs 23%	25% vs 20%

Note: Men with PSA DT of >10 months excluded from all these trials

SPARTAN, Smith et al, NEJM 2018
PROSPER, Hussain et al, NEJM 2018
ARAMIS, 2019 GU Cancers Symposium

LUNG CANCER INITIATIVE
of North Carolina
A NETWORK OF HOPE AND ACTION

Best of ASCO Thoracic 2019, For UNCCN

Jared Weiss
Associate Professor of Medicine, UNC
Section Chief of Thoracic and Head/Neck Oncology
Board Member, LCI
VP, Cancergrace

KEYNOTE-042 Study Design: Pembrolizumab vs. chemotherapy

Key Eligibility Criteria
- Untreated locally advanced or metastatic NSCLC of any histology
- PD-L1 tumor proportion score (TPS) ≥1%[a]
- No sensitizing *EGFR* or *ALK* alterations
- ECOG PS 0 or 1

Stratification Factors
- Region (east Asia vs rest of the world)
- PD-L1 TPS (≥50% vs 1-49%)

R (1:1)

N = 637 → Pembrolizumab 200 mg Q3W for up to 35 cycles

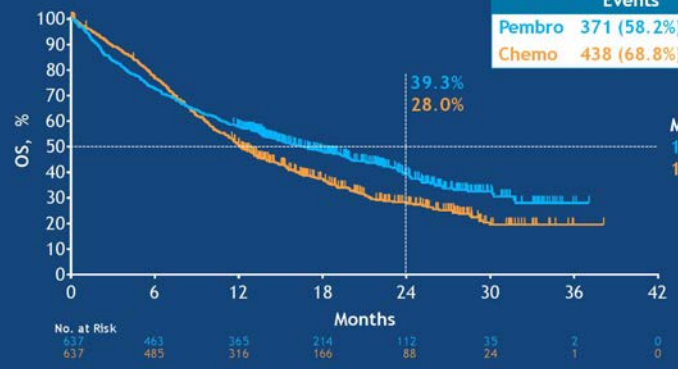
N = 637 → Carboplatin AUC 5 or 6 Q3W + Paclitaxel 200 mg/m² Q3W[b] OR Carboplatin AUC 5 or 6 Q3W + Pemetrexed 500 mg/m² Q3W[b] for up to 6 cycles

NO CROSSOVER ALLOWED!

Slide modified from Gilberto Lopes, AACR 2018

Keynote 42

Overall Survival: TPS ≥1%



	Events	HR (95% CI)	P
Pembro	371 (58.2%)	0.81 (0.71-0.93)	0.0018
Chemo	438 (68.8%)		

Median (95% CI)
16.7 mo (13.9-19.7)
12.1 mo (11.3-13.3)

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PRESENTED BY: Gilberto Lopes

Data cutoff date: Feb 26, 2018.

11

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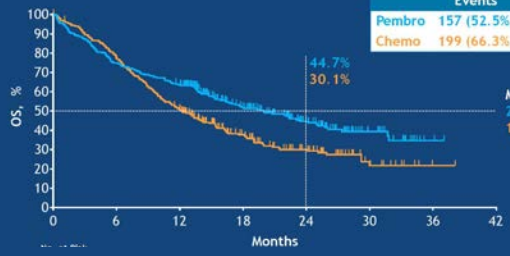
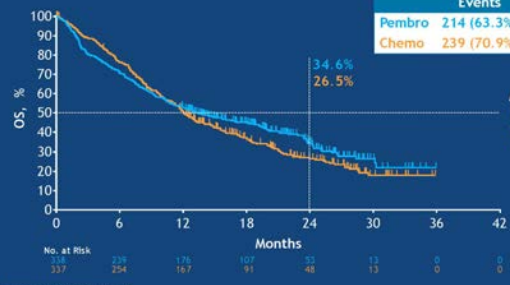
Overall Survival: TPS ≥50%



	Events	HR (95% CI)	P
Pembro	157 (52.5%)	0.69 (0.56-0.85)	0.0003
Chemo	199 (66.3%)		

Median (95% CI)
20.0 mo (15.4-24.9)
12.2 mo (10.4-14.2)

Overall Survival: TPS ≥1-49% (Exploratory Analysis[a])



	Events	HR (95% CI)
Pembro	214 (63.3%)	0.92 (0.77-1.11)
Chemo	239 (70.9%)	

Median (95% CI)
13.4 mo (10.7-18.2)
12.1 mo (11.0-14.0)

[a]No alpha allocated to this comparison.

Lopes, ASCO 2018

KEYNOTE-407 Study Design (NCT02775435)

Key Eligibility Criteria
- Untreated stage IV NSCLC with squamous histology
- ECOG PS 0 or 1
- Provision of a sample for PD-L1 assessment
- No symptomatic brain metastases
- No pneumonitis requiring systemic steroids

R (1:1)

Pembrolizumab 200 mg Q3W + Carboplatin AUC 6 Q3W + Paclitaxel 200 mg/m² Q3W OR nab-Paclitaxel 100 mg/m² Q1W for 4 cycles (each 3 wk) → Pembrolizumab 200 mg Q3W for up to 31 cycles

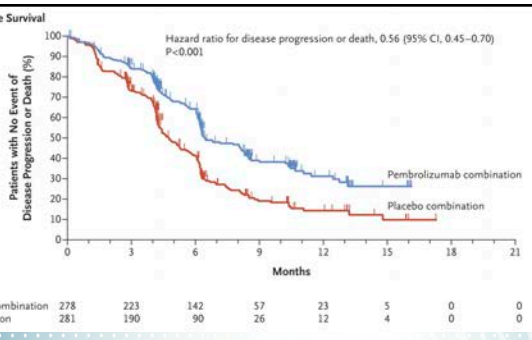
Placebo (normal saline) Q3W + Carboplatin AUC 6 Q3W + Paclitaxel 200 mg/m² Q3W OR nab-Paclitaxel 100 mg/m² Q1W for 4 cycles (each 3 wk) → Placebo (normal saline) Q3W for up to 31 cycles

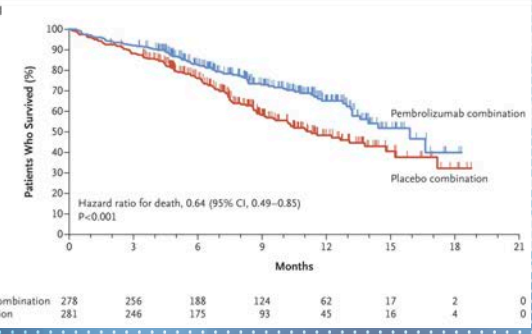
Stratification Factors
- PD-L1 expression (TPS[a] <1% vs ≥1%)
- Choice of taxane (paclitaxel vs nab-paclitaxel)
- Geographic region (east Asia vs rest of world)

End points
- Primary: PFS (RECIST v1.1, BICR) and OS
- Secondary: ORR and DOR (RECIST v1.1, BICR), safety

Optional Crossover[b] Pembrolizumab 200 mg Q3W for up to 35 cycles ← PD[b]

BICR, blinded independent central radiologic review. [a]Percentage of tumor cells with membranous PD-L1 staining assessed using the PD-L1 IHC 22C3 pharmDx assay. [b]Patients could crossover during combination therapy or monotherapy. To be eligible for crossover, PD must have been verified by BICR and all safety criteria had to be met.





Paz-Ares L et al. N Engl J Med 2018;379:2040-2051

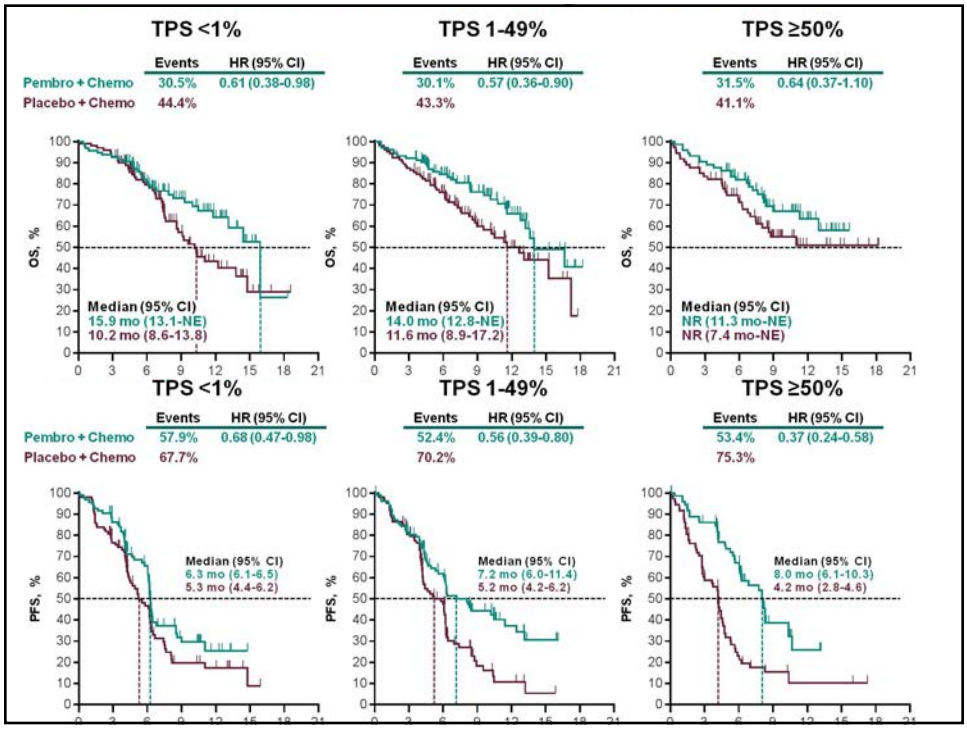


Table 3. Adverse Events of Interest in the As-Treated Population.*

Event	Pembrolizumab Combination (N=278)		Placebo Combination (N=280)	
	Any Grade	Grade 3, 4, or 5	Any Grade	Grade 3, 4, or 5
	number of patients (percent)			
Any event	80 (28.8)	30 (10.8)	24 (8.6)	9 (3.2)
Hypothyroidism	22 (7.9)	1 (0.4)	5 (1.8)	0
Hyperthyroidism	20 (7.2)	1 (0.4)	2 (0.7)	0
Pneumonitis	18 (6.5)	7 (2.5)†	6 (2.1)	3 (1.1)†
Infusion reaction	8 (2.9)	4 (1.4)	6 (2.1)	1 (0.4)
Colitis	7 (2.5)	6 (2.2)	4 (1.4)	3 (1.1)
Hepatitis	5 (1.8)	5 (1.8)	0	0
Severe skin reaction	5 (1.8)	3 (1.1)	1 (0.4)	1 (0.4)
Hypophysitis	3 (1.1)	2 (0.7)	0	0
Thyroiditis	3 (1.1)	1 (0.4)	0	0
Nephritis	2 (0.7)	2 (0.7)	2 (0.7)	2 (0.7)

Mean Change from BL in QLQ-C30

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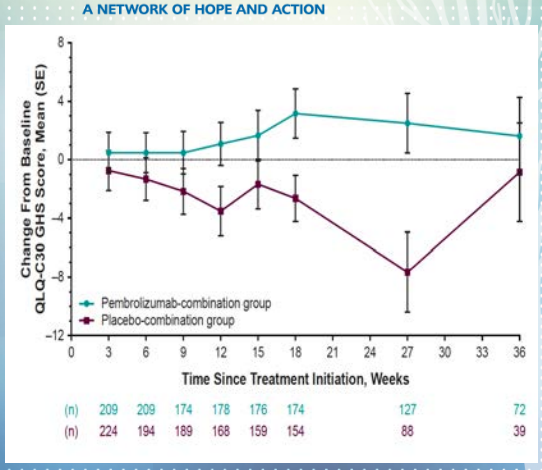

Mazieres, ESMO 2018

Pembrolizumab @ 5 years

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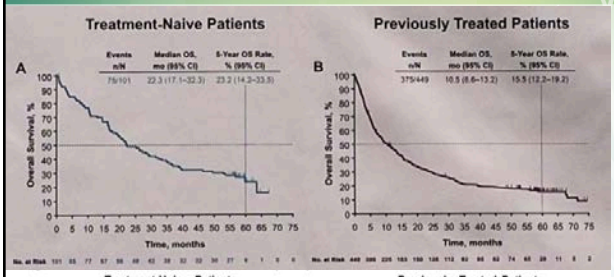
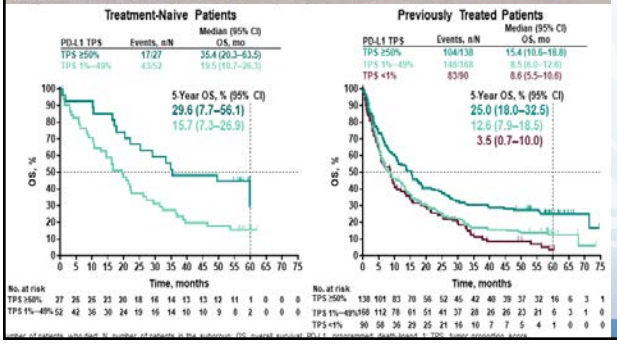




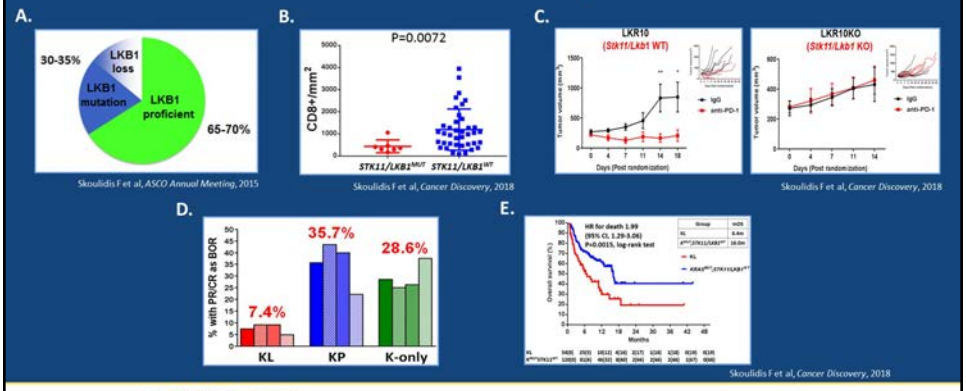
Hope, Summarized:

- 5y OS 15.5% in previously treated
- 5y OS 23.2% in 1L

Top: Garon, ASCO 2019
Bottom: Garon, Personal Comm.

Hope of Good Biomarkers, at last?

STK11/LKB1 genomic alterations are a mediator of the cold tumor immune microenvironment and a major driver of primary resistance to PD-1 axis blockade in non-squamous NSCLC



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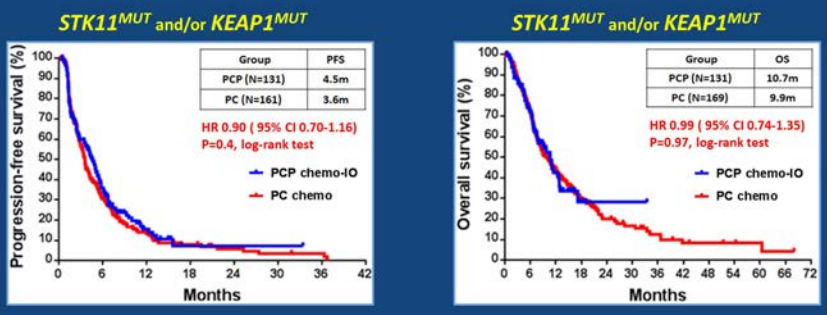
Lack of benefit from addition of pembrolizumab to CP chemotherapy in *STK11* and/or *KEAP1*-mutant non-squamous NSCLC



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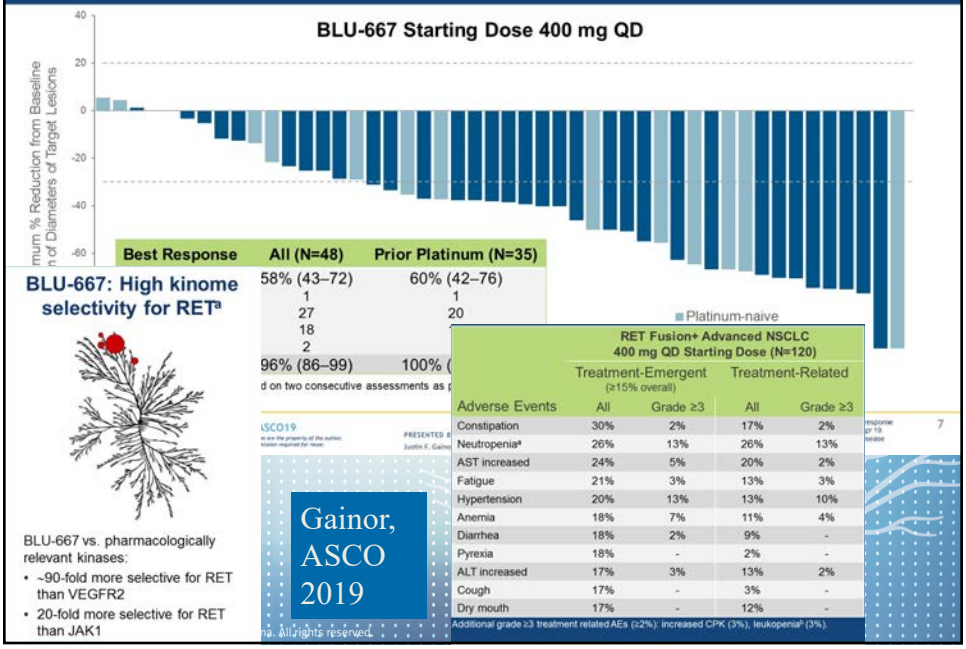
BLU-667 Demonstrates Substantial Antitumor Activity in RET Fusion+ Advanced NSCLC



Best Response	All (N=48)	Prior Platinum (N=35)
	58% (43–72)	60% (42–76)
	1	1
	27	20
	18	
	2	
	96% (86–99)	100% (

d on two consecutive assessments as p

BLU-667: High kinome selectivity for RET[a]

BLU-667 vs. pharmacologically relevant kinases:

- ~90-fold more selective for RET than VEGFR2
- 20-fold more selective for RET than JAK1

RET Fusion+ Advanced NSCLC 400 mg QD Starting Dose (N=120)

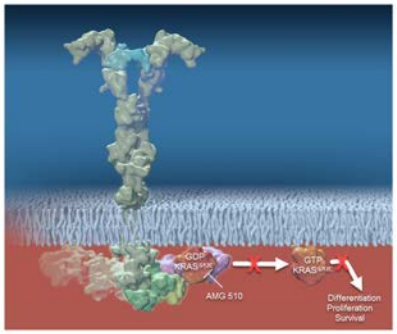
	Treatment-Emergent (≥15% overall)		Treatment-Related	
Adverse Events	All	Grade ≥3	All	Grade ≥3
Constipation	30%	2%	17%	2%
Neutropenia[a]	26%	13%	26%	13%
AST increased	24%	5%	20%	2%
Fatigue	21%	3%	13%	3%
Hypertension	20%	13%	13%	10%
Anemia	18%	7%	11%	4%
Diarrhea	18%	2%	9%	-
Pyrexia	18%	-	2%	-
ALT increased	17%	3%	13%	2%
Cough	17%	-	3%	-
Dry mouth	17%	-	12%	-

Additional grade ≥3 treatment related AEs (≥2%): increased CPK (3%), leukopenia[a] (3%).

Gainor, ASCO 2019

AMG 510 is a First in Class KRAS^{G12C} Inhibitor

- KRAS is a GTP-binding protein that links receptor tyrosine kinase activation to intracellular signaling [1,2]
- Mutation of KRAS favors the GTP-bound active state and constitutive activation of downstream effects (differentiation, proliferation, survival)[3]
- *KRAS^{G12C}* mutation has been identified as an oncogenic driver of tumorigenesis
- *KRAS^{G12C}* mutation is found in approximately 13% of lung cancer[4], 3% of colorectal (CRC)[5] and appendix cancer, and 1-3% of other solid tumors[6]
- Currently there is no approved therapy targeting this mutation
- AMG 510 is a novel, first in class, small molecule that specifically and irreversibly inhibits KRAS^{G12C} by locking it in an inactive GDP-bound state



GDP, guanosine diphosphate; GTP, guanosine triphosphate; KRAS, Kirsten rat sarcoma viral oncogene homolog; KRAS^{G12C}, KRAS protein with a G12C mutation at the protein level.

1. Prior IA, et al. *Cancer Res.* 2012;72:2457-2467.
2. Ostrem JM, et al. *Nat Rev Drug Discov.* 2016;15:771-785.
3. Ryan MB, et al. *Nat Rev Clin Oncol.* 2018;15:709-720.
4. Biernacka A, et al. *Cancer Genet.* 2016;209:195-198.
5. Neumann J, et al. *Pathol Res Pract.* 2009;205:858-862.
6. Zhou L, et al. *Med Oncol.* 2016;33:32.

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AMG510

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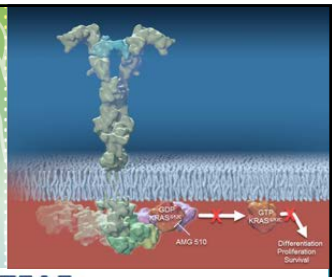


Patient Incidence of Treatment Related TEAE

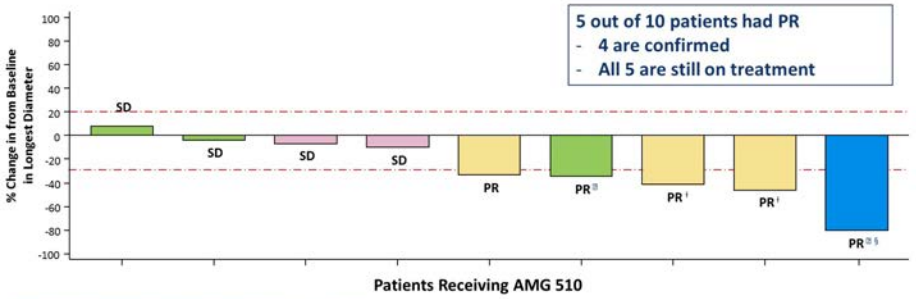
Adverse Event	Gr 1 n	Gr 2 n	Adverse Event	Gr 1 n	Gr 2 n
Diarrhea	3		Proteinuria		1
Decreased appetite	2		Dry mouth	1	
Nausea	2		Flatulence	1	
Elevated creatine phosphokinase	2		Vomiting	1	
Elevated or change in AST	1	1	Fatigue	1	
Elevated or change in ALT	1	1	WBC Decrease	1	
Elevated alkaline phosphatase	1	1	Pyrexia	1	
Cheilitis		1	Arthralgia	1	
Hyperkalemia		1	Hypokalemia	1	

Grade 3 Adverse Event	n
Anemia[a]	1
Diarrhea[b]	1

[a]Patient had grade 2 anemia at baseline
[b]Lasting 2 days

None of the 35 patients reported:
- DLTs
- Grade 4 related AEs
- Serious related AEs

NSCLC: Best Tumor Response* (n=10)



5 out of 10 patients had PR
- 4 are confirmed
- All 5 are still on treatment

* Based on local radiographic scans every 6 weeks using RESIST 1.1 criteria
1 patient had clinical progression prior to week 6 and is not on this graph
‖ Confirmed response
† 2 additional patients had confirmed PR post data cutoff
§ Patient had a CR of the target lesions at week 18, post data cutoff

Planned Dose: 180 mg | 360 mg | 720 mg | 960 mg

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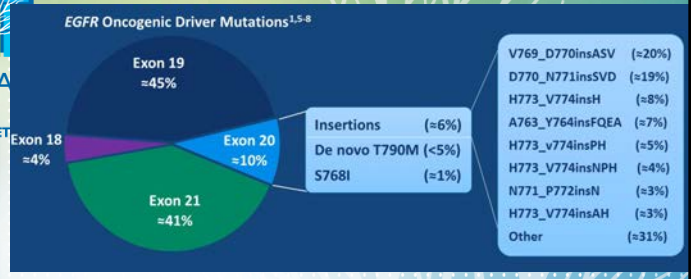
EGFR Exon 20



Treatment-Related AEs in Patients Treated With TAK-788

Any grade: ≥20% of all patients Grade ≥3: ≥3% of all patients	All Patients Treated at 160 mg qd[a] (n=72)		All Patients Treated at Any Dose[b] (N=137)	
	Any Grade, %	Grade ≥3, %	Any Grade, %	Grade ≥3, %
Diarrhea	85	18	74	12
Nausea	43	6	33	4
Rash	36	1	26	1
Vomiting	29	3	22	2
Decreased appetite	25	1	22	1
Stomatitis	18	4	14	3
Increased lipase	10	6	8	3
Increased amylase	8	4	8	3

TAK-788 Antitumor Activity in Patients With *EGFR* Exon 20 Insertions

Exon 20 Insertion Variant	No. of Patients	No. of Confirmed Responders, n	Confirmed ORR
769_ASV	5	2	40%
773_NPH	4	2	50%
Exact variant unknown	4	2	50%
Other	15	6	40%

- Median (range) best percent change: -32.5% (-100%, 26.3%)
- Three patients were excluded from the waterfall plot: 1 patient had nonmeasurable baseline target lesions, and 2 patients had no follow-up scans

IO, immuno-oncology therapy; PD, progressive disease.

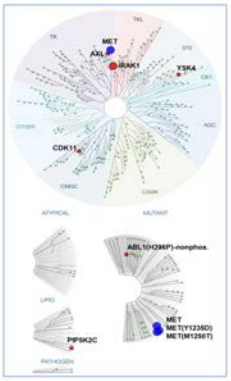
MET Del 14

Background

- *MET* exon 14 skipping mutations (*METΔex14*) are reported in 3–4% of patients with NSCLC[1-4] and associated with both poor prognosis and poor responses to standard therapies including immunotherapy.[5-9]
- Capmatinib is a highly selective *MET* inhibitor with *in vitro* and *in vivo* activity seen against preclinical cancer models with *MET* activation.[10]
- Capmatinib is the most potent inhibitor against MET compared to other inhibitors.[11]

	Capmatinib	Savolitinib	Tepotinib	Cabozantinib	Crizotinib
IC_{50} (nM)	**0.6**	2.1	3.0	7.8	22.5

- Preliminary efficacy data from the phase 2, multi-cohort, multicenter GEOMETRY mono-1 study showed **deep responses** with capmatinib irrespective of the line of treatment as well as **activity in the brain lesions** in patients with *METΔex14* mutated advanced NSCLC.[12]

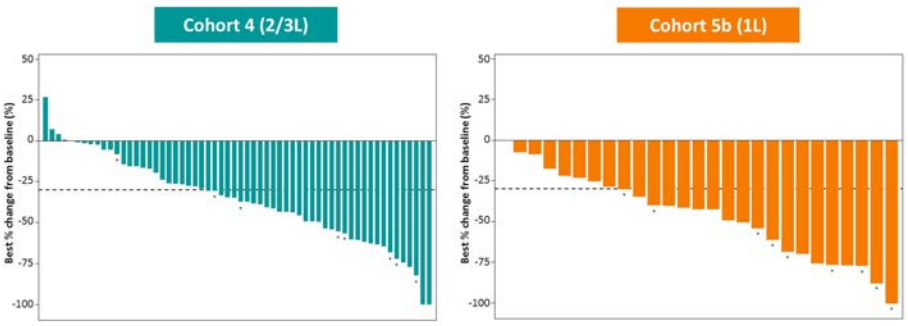


1. Gelsomino F, et al. *Cancers (Basel)*. 2014;6:2100-15; 2. Ma PC. *Cancer Discov*. 2015;5:802-5; 3. Reungwetwattana T, et al. *Lung Cancer*. 2017;103:27-37; 4. Tong JH, et al. *Clin Cancer Res*. 2016;22:3048-56; 5. Dimou A, et al. *PLoS One*. 2014; 9:e107677; 6. Guo B, et al. *PLoS One*. 2014;9:e99399; 7. Sabari JK, et al. *Ann Oncol*. 2018;29:2085-91; 8. Baba K, et al. *Thorac Cancer*. 2019;10:369-72; 9. Reis H, et al. *Clin Lung Cancer*. 2018;19:e441-e63; 10. Baltschukat, et al. *Clin Cancer Res*. 2019; Epub; 11. Fujino T, et al. WCLC 2018, Poster P1.13-41; 12. Wolf J, et al. *Ann Oncol*. 2018; 29(Suppl 8): Abstract LBA52

Capmatinib

Tumor shrinkage per BIRC

Deep responses observed in a majority of patients across both cohorts



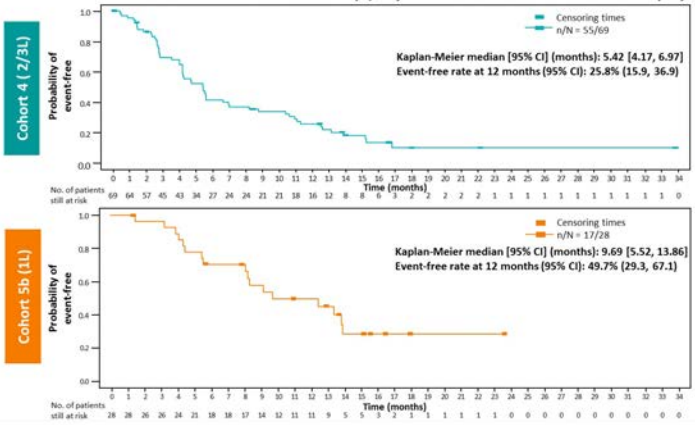
*patients still on-treatment

P

Capmatinib

Progression-free survival per BIRC

Median PFS was 5.42 months in Cohort 4 (2/3L) and 9.69 months in Cohort 5b (1L)



Median PFS per investigator was 4.80 months (95% CI: 4.11, 7.75) in Cohort 4 and 11.14 months (95% CI: 5.52, 15.24) in Cohort 5b 11

n is the number of events, N is the number of patients

Capmatinib

Safety summary

Favorable and manageable safety profile

Most common adverse events- treatment related (≥10%, all grades), n (%)	All Patients N = 334	
	All grades	Grade 3/4
Any	282 (84.4)	119 (35.6)
Peripheral edema	139 (41.6)	25 (7.5)
Nausea*	111 (33.2)	6 (1.8)
Increased blood creatinine†	65 (19.5)	0
Vomiting*	63 (18.9)	6 (1.8)
Fatigue	46 (13.8)	10 (3.0)
Decreased appetite*	42 (12.6)	3 (0.9)
Diarrhea	38 (11.4)	1 (0.3)

- Safety determined in the largest dataset of *MET* dysregulated‡ NSCLC patients (N=334).
- Median treatment exposure time: 14.9 weeks
- Capmatinib was well tolerated with few Grade 3/4 events [only 15 patients (4.5%) had Grade 4 events]
- Dose adjustment due to treatment related AE: 73 (21.9%)
- Discontinuation due to treatment related AE: 37 (11.1%)
  - Most frequent (≥ 1%): peripheral edema (n=6, 1.8%), pneumonitis (n= 5, 1.5%) and fatigue (n=5, 1.5%)
- Serious treatment related AEs: 43 (12.9%)

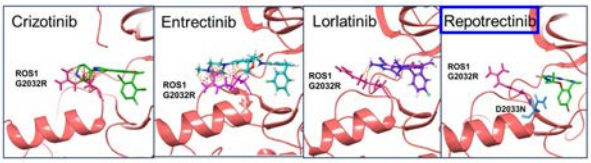
* Capmatinib administered in fasting conditions; food restriction removed in new cohorts 6 and 7
† Capmatinib is known to inhibit creatinine transporters
‡ *MET* mutated/amplified

16

Targeting *ROS1* Fusion Positive Non-Small Cell Lung Cancer

- *ROS1* rearrangement is an oncogenic driver in 1-2% of NSCLC
- Crizotinib is the only approved targeted therapy for patients with advanced *ROS1*+ NSCLC
- G2032R is the most common *ROS1* resistance mutation after crizotinib treatment[1]
- **Repotrectinib is a next-generation ROS1/TRKA-C/ALK inhibitor, designed to overcome TKI resistance mutations, especially solvent front *ROS1* G2032R[2]**

Repotrectinib is a Small, Rigid Macrocycle Designed to Overcome the *ROS1* G2032R Solvent Front Mutation



CD74-ROS1 Ba/F3 Cell Proliferation IC_{50} (nM)*

ROS1	Crizotinib	Ceritinib	Cabozantinib	Entrectinib	Lorlatinib	Repotrectinib
WT	14.6	42.8	0.5	10.5	0.2	<0.2
G2032R	266.2	1391	11.3	1813	160.7	3.3

*Data based on evaluation of comparable proxy chemical reagents purchased from commercial sources except repotrectinib

[1]Gainor JF et al., JCO Precis Oncol 2017
[2]Drilon A et al., Cancer Discov 2018

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Repotrectinib in TKI Naïve ROS1+ NSCLC

Repotrectinib in TKI Pretreated ROS1+ NSCLC

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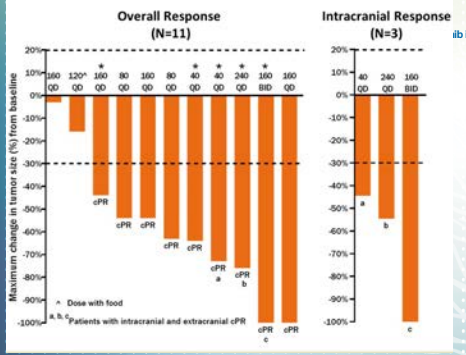

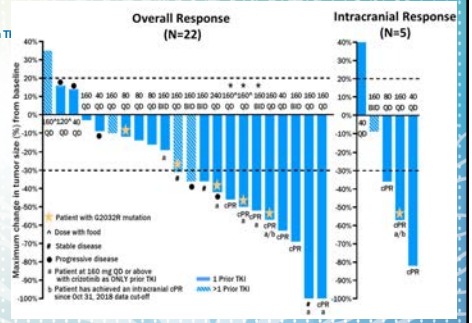

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