

# **Oncology Today: Management of Endometrial Cancer**

**Wednesday, September 14, 2022  
5:00 PM – 6:00 PM ET**

## **Faculty**

**Michael J Birrer, MD, PhD**

## **Moderator**

**Neil Love, MD**

# Faculty



**Michael J Birrer, MD, PhD**

Vice Chancellor, UAMS

Director, Winthrop P Rockefeller Cancer Institute

Director, Cancer Service Line

Professor of Biochemistry and Molecular Biology

Director's Endowed Chair for the Winthrop P

Rockefeller Cancer Institute

University of Arkansas for Medical Sciences

Little Rock, Arkansas



**Live Moderator**

**Neil Love, MD**

Research To Practice

# ONCOLOGY TODAY

WITH DR NEIL LOVE

## Endometrial Cancer Edition



DR MANSOOR RAZA MIRZA  
COPENHAGEN UNIVERSITY HOSPITAL



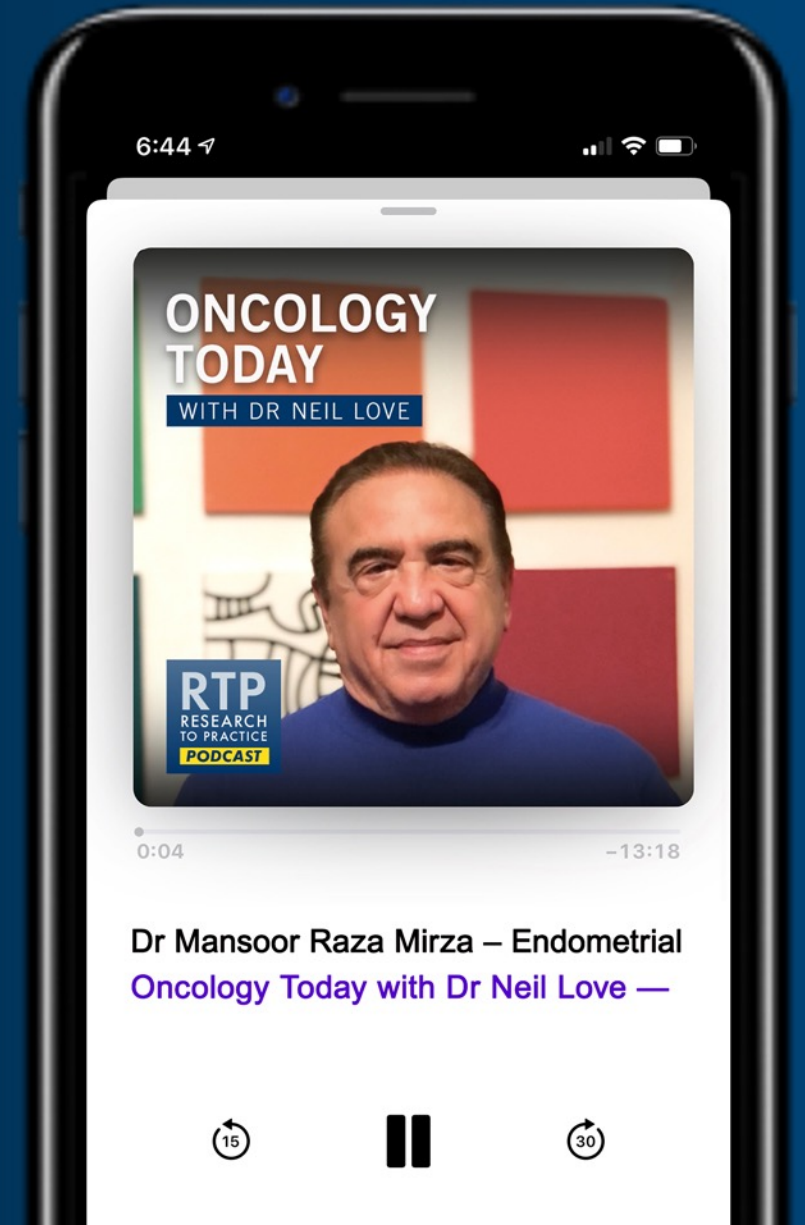
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***Meet The Professor***  
**Optimizing the Management of  
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**7:30 AM – 5:30 PM ET**

**JW Marriott Orlando | Orlando, Florida**

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**Matthew P Goetz, MD**

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**Corey J Langer, MD**

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## Dr Love — Disclosures

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# Research To Practice CME Planning Committee Members, Staff and Reviewers

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# Oncology Today: Endometrial Cancer

**Mansoor Raza Mirza, MD**

Chief Oncologist

Copenhagen University Hospital

Medical Director

Nordic Society of Gynaecological Oncology – Clinical Trial Unit

Chairman, European Network of Gynaecological Trial Groups

Vice President, European Society of Gynaecological Oncology

Copenhagen, Denmark

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***Thank you for joining us!***

***CME and MOC credit information will be emailed to each participant within 5 business days.***



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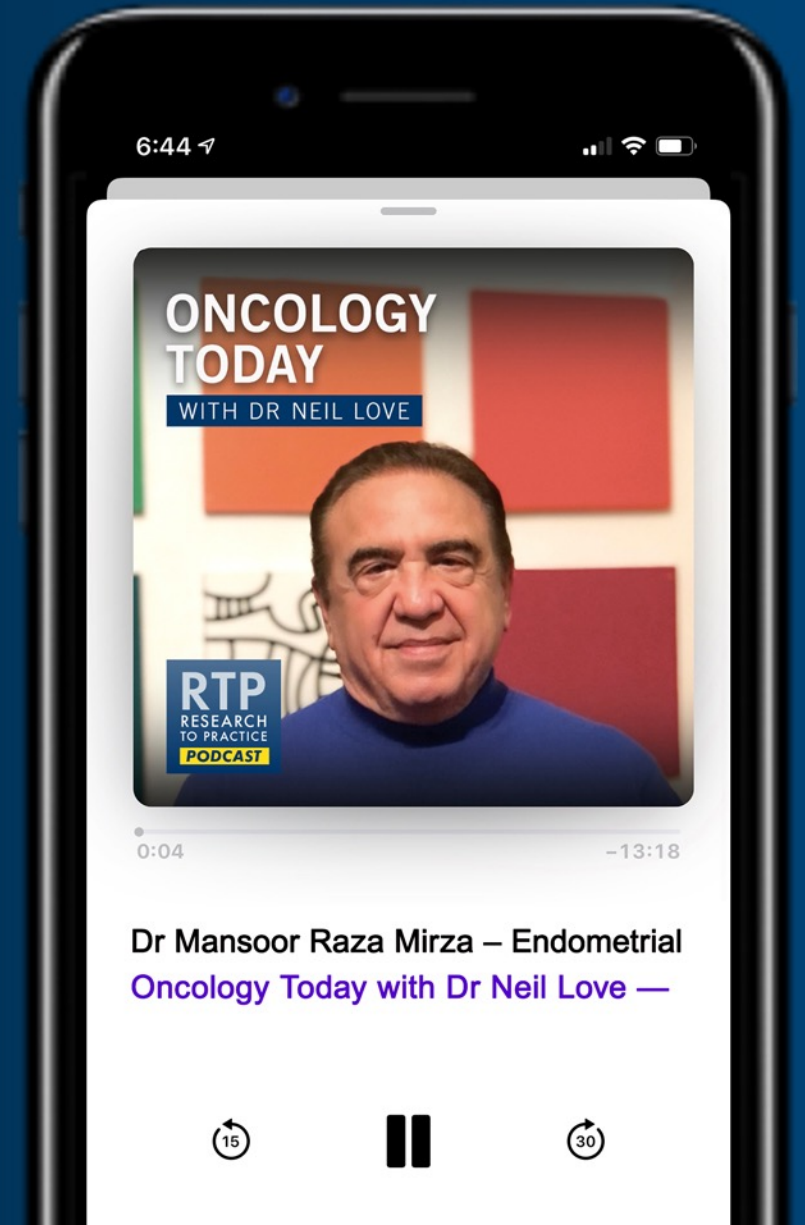
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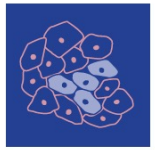
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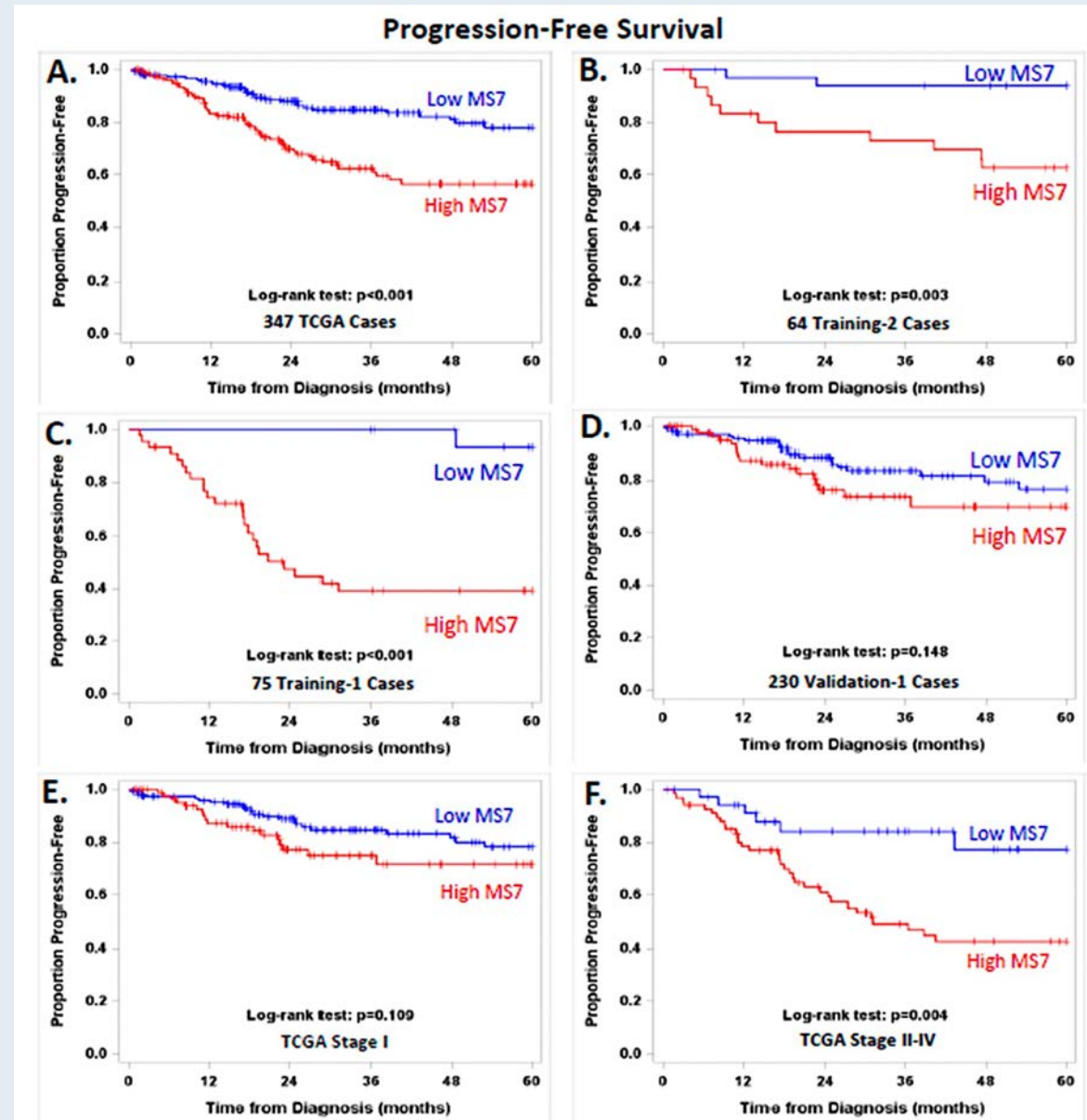


*Article*

# Improving Risk Assessment for Metastatic Disease in Endometrioid Endometrial Cancer Patients Using Molecular and Clinical Features: An NRG Oncology/Gynecologic Oncology Group Study

Yovanni Casablanca <sup>1,†</sup>, Guisong Wang <sup>1,2,†</sup>, Heather A. Lankes <sup>3,‡</sup>, Chunqiao Tian <sup>1,2</sup>, Nicholas W. Bateman <sup>1,2</sup>, Caela R. Miller <sup>1,§</sup>, Nicole P. Chappell <sup>1,||</sup>, Laura J. Havrilesky <sup>4</sup>, Amy Hooks Wallace <sup>4</sup>, Nilsa C. Ramirez <sup>5</sup>, David S. Miller <sup>6</sup> , Julie Oliver <sup>1,2</sup>, Dave Mitchell <sup>1,2</sup>, Tracy Litzi <sup>1,2</sup>, Brian E. Blanton <sup>1,2</sup>, William J. Lowery <sup>1,¶</sup>, John I. Risinger <sup>7</sup>, Chad A. Hamilton <sup>1,8,\*\*</sup>, Neil T. Phippen <sup>1,8</sup>, Thomas P. Conrads <sup>1,8</sup>, David Mutch <sup>9</sup>, Katherine Moxley <sup>10</sup>, Roger B. Lee <sup>11</sup>, Floor Backes <sup>12</sup>, Michael J. Birrer <sup>13</sup>, Kathleen M. Darcy <sup>1,2,\*,††</sup> and George Larry Maxwell <sup>1,8,\*,††</sup>

# Progression-Free Survival for Patients with Low and High MS7 Scores





# HHS Public Access

Author manuscript

*Cell*. Author manuscript; available in PMC 2020 May 18.

Published in final edited form as:

*Cell*. 2020 February 20; 180(4): 729–748.e26. doi:10.1016/j.cell.2020.01.026.

## Proteogenomic Characterization of Endometrial Carcinoma

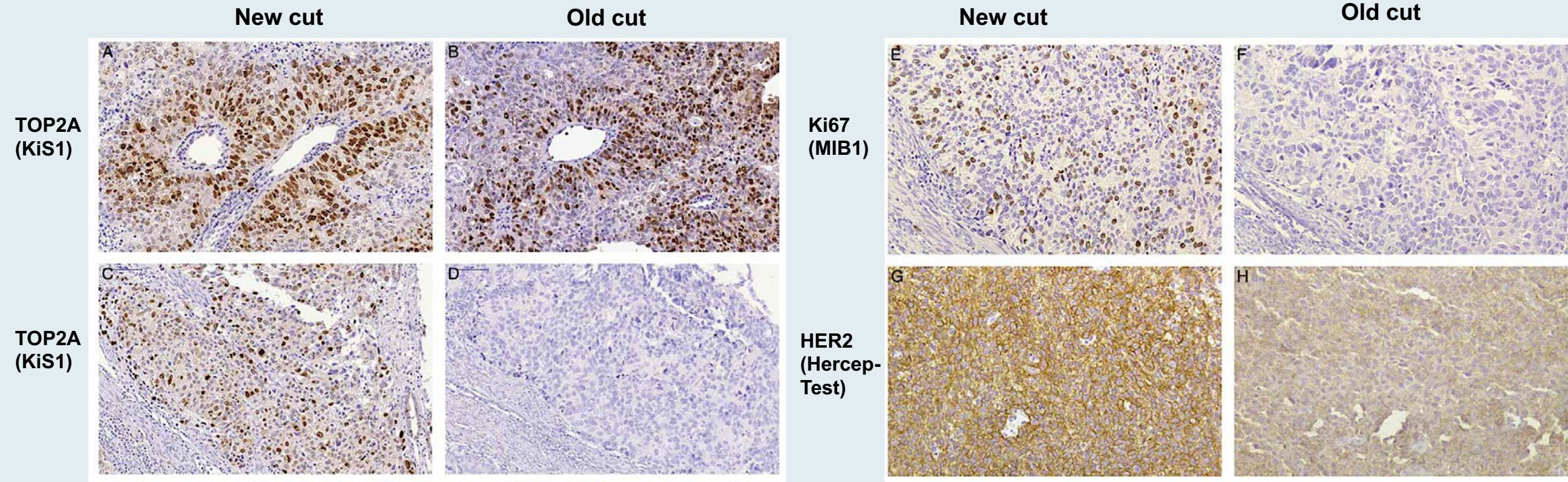


# Effects of Slide Storage on Detection of Molecular Markers by IHC and FISH in Endometrial Cancer Tissues From a Clinical Trial: An NRG Oncology/GOG Pilot Study

*Tatyana A. Grushko, PhD,\* Virginia L. Filiaci, PhD,† Anthony G. Montag, MD,‡✚*  
*Marsha Apushkin, MD,‡ Maria J. Gomez, MS,\* Laura Monovich, MBA,§*  
*Nilsa C. Ramirez, MD,§ Carlton Schwab, MD,|| Joshua P. Kesterson, MD,¶*  
*Shelly M. Seward, MD,# Michael W. Method, MD,\*\* Olufunmilayo I. Olopade, MD,\**  
*Gini F. Fleming, MD,\* and Michael J. Birrer, MD, PhD††*



# Photomicrographs of Staining of New Cut (3 wk old) and Stored (Old Cut, >10 y Old) Slides Sectioned from the Same Formalin-Fixed Paraffin-Embedded EC Tumor Blocks







# HHS Public Access

Author manuscript

*Cancer Epidemiol Biomarkers Prev.* Author manuscript; available in PMC 2021 October 01.

Published in final edited form as:

*Cancer Epidemiol Biomarkers Prev.* 2021 April ; 30(4): 719–726. doi:10.1158/1055-9965.EPI-20-1613.

## Sex Hormones Insulin-like Growth Factors in Recurrence of High Stage Endometrial Cancer

Melissa A. Merritt<sup>1</sup>, Howard D. Strickler<sup>2</sup>, Alan D. Hutson<sup>3</sup>, Mark H. Einstein<sup>4</sup>, Thomas E. Rohan<sup>2</sup>, Xiaonan Xue<sup>2</sup>, Mark E. Sherman<sup>5</sup>, Louise A. Brinton<sup>6</sup>, Herbert Yu<sup>1</sup>, David S. Miller<sup>7</sup>, Nilsa C. Ramirez<sup>8</sup>, Heather A. Lankes<sup>9</sup>, Michael J. Birrer<sup>10</sup>, Gloria S. Huang<sup>11,\*</sup>, Marc J. Gunter<sup>12,\*</sup>

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# Gynecologic Oncology in Denmark



**Dr Mansoor Mirza (Copenhagen, Denmark)**

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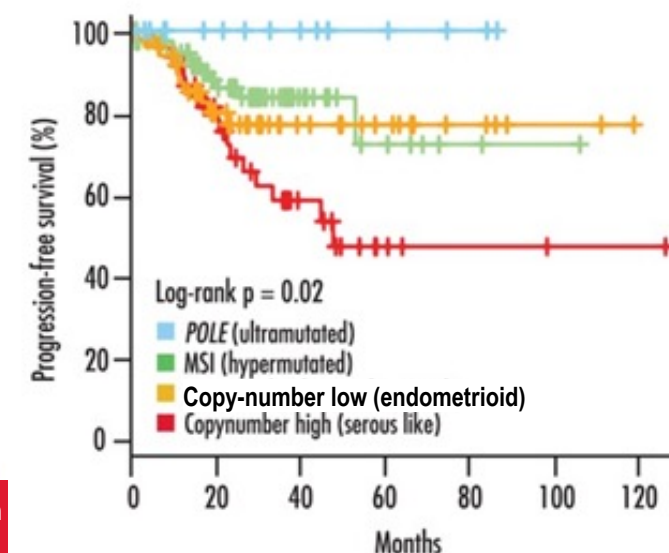
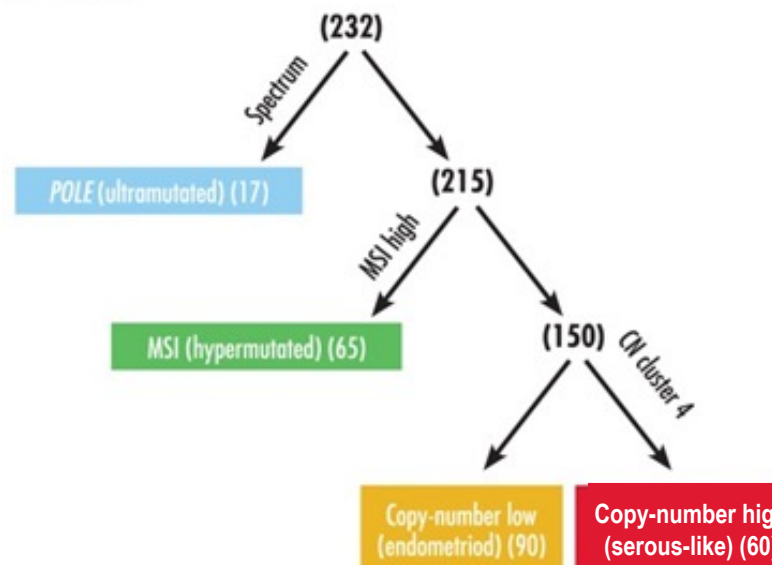
# Molecular Classification of Endometrial Cancer

TCGA molecularly classified endometrial cancer into 4 groups:

- POLE (DNA polymerase  $\epsilon$  catalytic subunit) ultramutated
- MSI hypermutated
- Copy number low
- Copy number high (serous)

These groups are prognostic

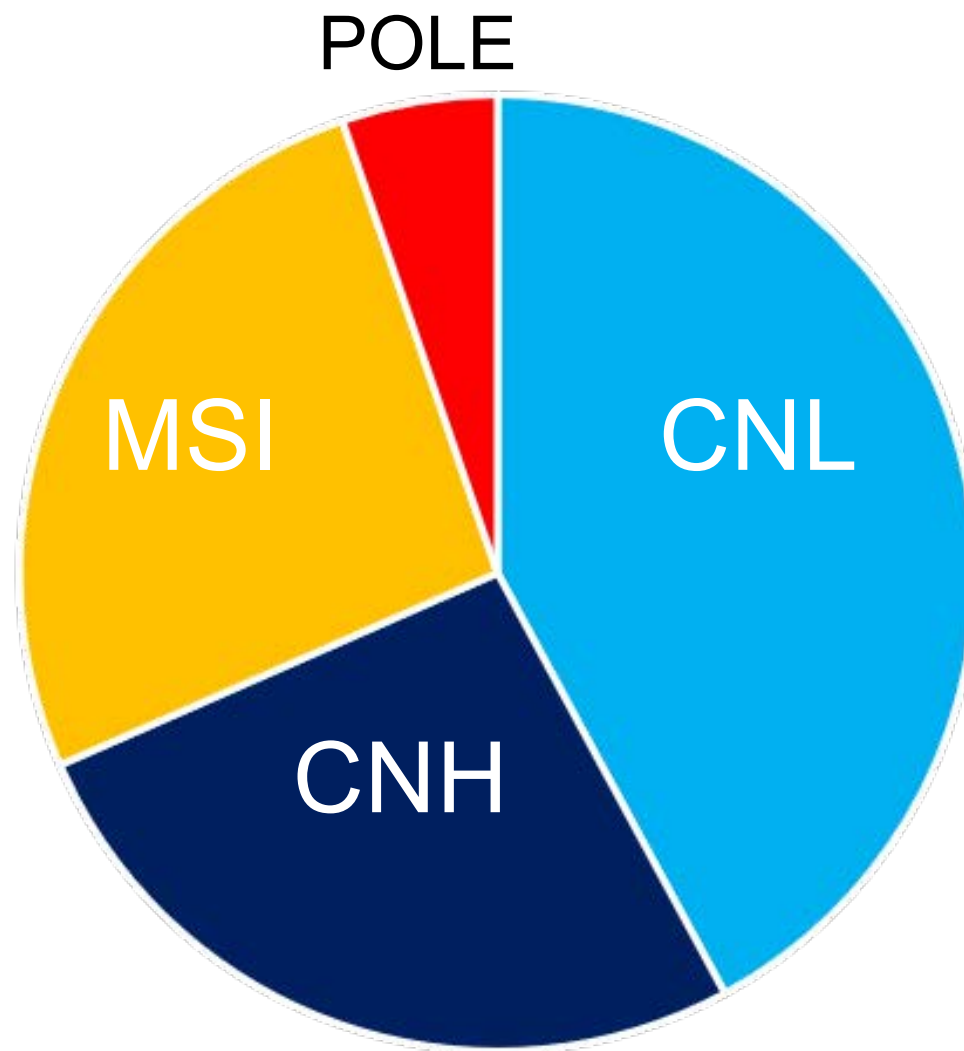
A. TCGA



\*\*Pathobiology of Endometrial Cancer in Treatment Decision Making and Therapeutic Development  
Amanda Fader, MD

Cancer Genome Atlas Research Network. *Nature*. 2013;497(7447):67-73.

# Molecular Subtypes



# Management of Endometrial Cancer

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## Case Presentation: 68-year-old woman with MSI-high Stage III endometrial cancer



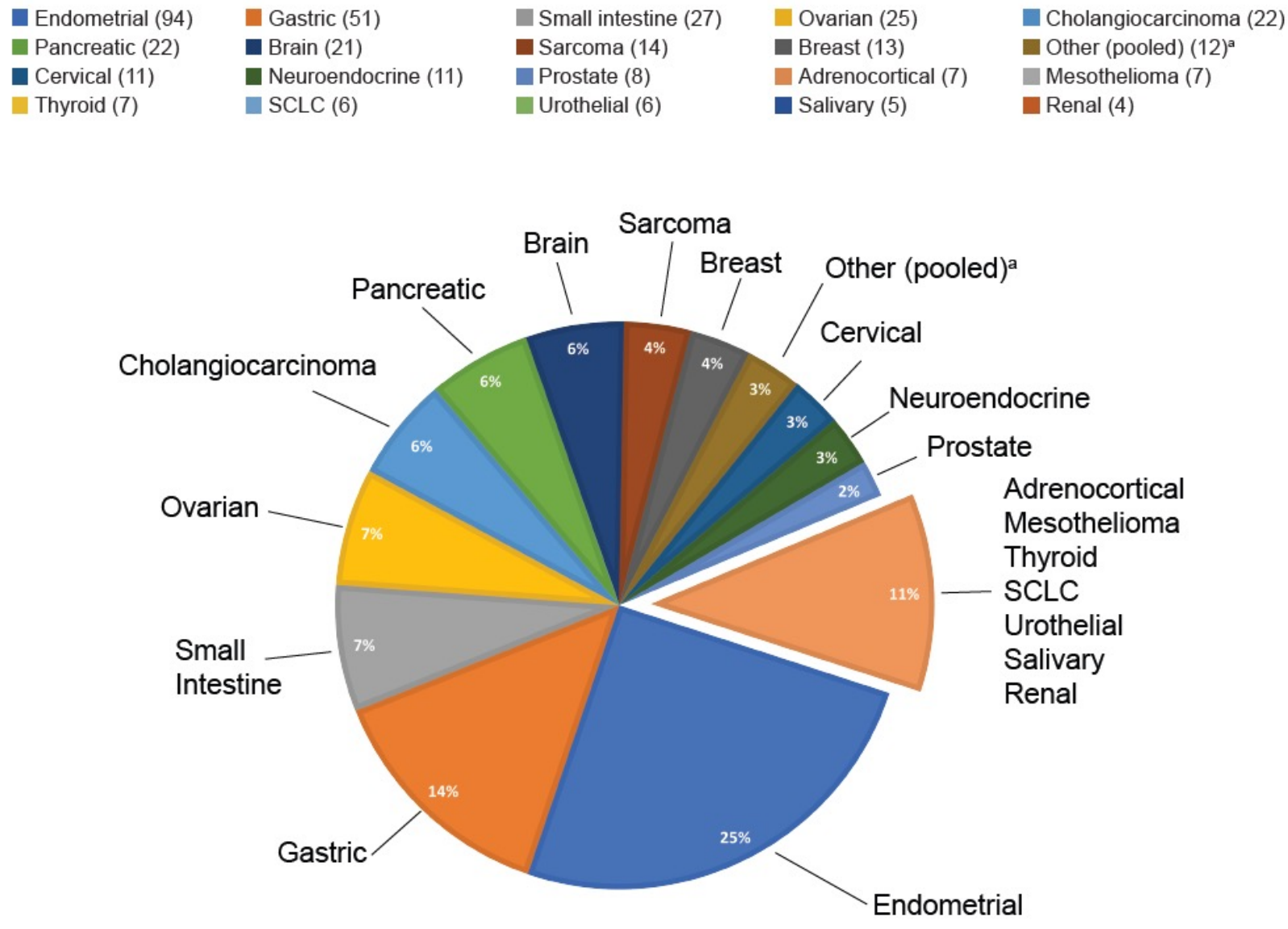
**Dr Mansoor Mirza (Copenhagen, Denmark)**

# Pembrolizumab in Microsatellite Instability-High (MSI-H)/Mismatch Repair Deficient (dMMR) Advanced Solid Tumors: An Update of the Phase II KEYNOTE-158 Trial

Maio M et al.

ESMO 2022;Abstract 113P.

# KEYNOTE-158: High MSI at Primary Diagnosis — Tumor Types



# **Pembrolizumab for Microsatellite Instability-High (MSI-H) or Mismatch Repair Deficient (dMMR) Advanced Endometrial Cancer: Long-Term Follow-Up Results from KEYNOTE-158**

O'Malley D et al.

ESMO 2022;Abstract 546P.

# KEYNOTE-158: Long-Term Efficacy Results

	Analysis population (n = 94)
ORR, % (95% CI)	50 (39.5–60.5)
CR, n (%)	15 (16)
PR, n (%)	32 (34)
SD, n (%)	17 (18)
ORR by prior treatment line, % (95% CI) <sup>a</sup>	
Neo-adjuvant and/or adjuvant therapy only (n = 10)	40 (12.2–73.8)
1 line (n = 39)	59 (42.1–74.4)
>1 line (n = 45)	44 (29.6–60.0)
DOR, median (range), <sup>b</sup> mo	63.2 (2.9–63.2)
DOR ≥1 y, <sup>b</sup> %	87
DOR ≥2 y, <sup>b</sup> %	71
DOR ≥3 y, <sup>b</sup> %	66
DOR ≥4 y, <sup>b</sup> %	66
Median PFS (95% CI), <sup>b</sup> mo	13.1 (4.3–25.7)
4-y PFS rate, <sup>b</sup> %	37
Median OS (95% CI), <sup>b</sup> mo	65.4 (29.5–NR)
4-y OS rate, <sup>b</sup> %	59

K-M, Kaplan-Meier; NR, not reached. <sup>a</sup>Percentages are based on number of patients in each subgroup. <sup>b</sup>K-M estimate



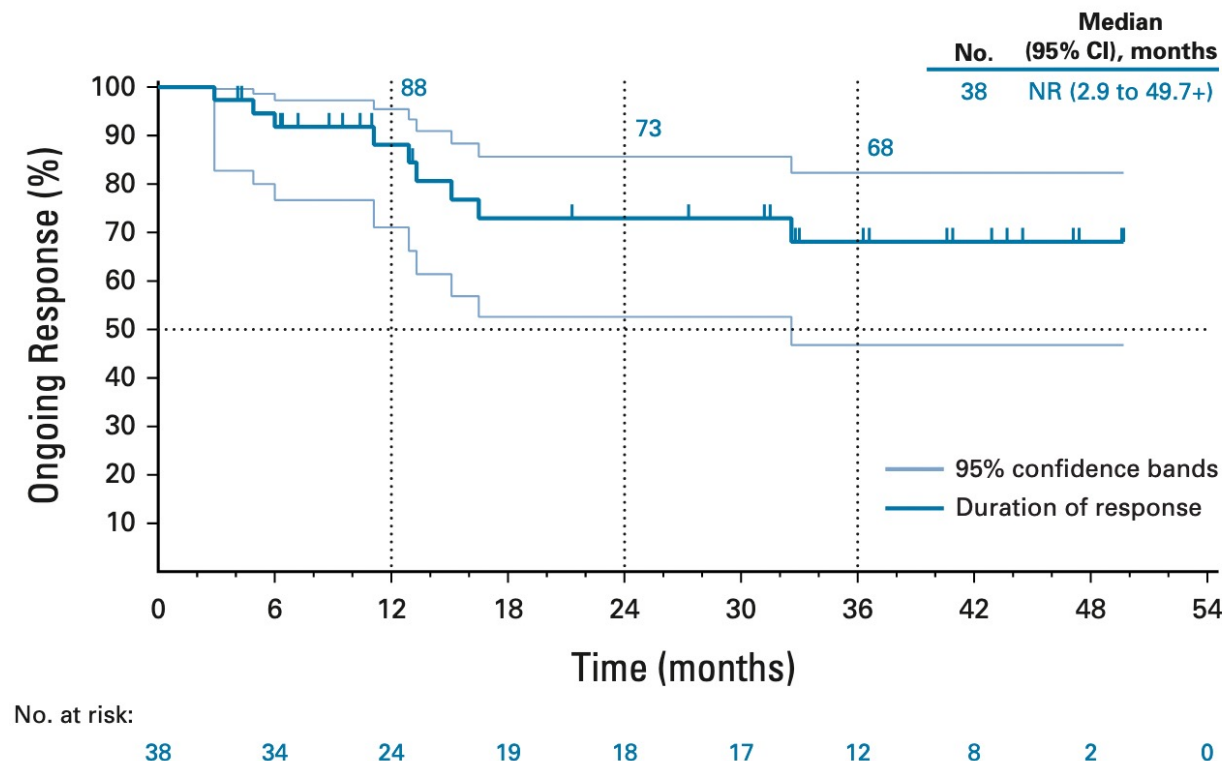
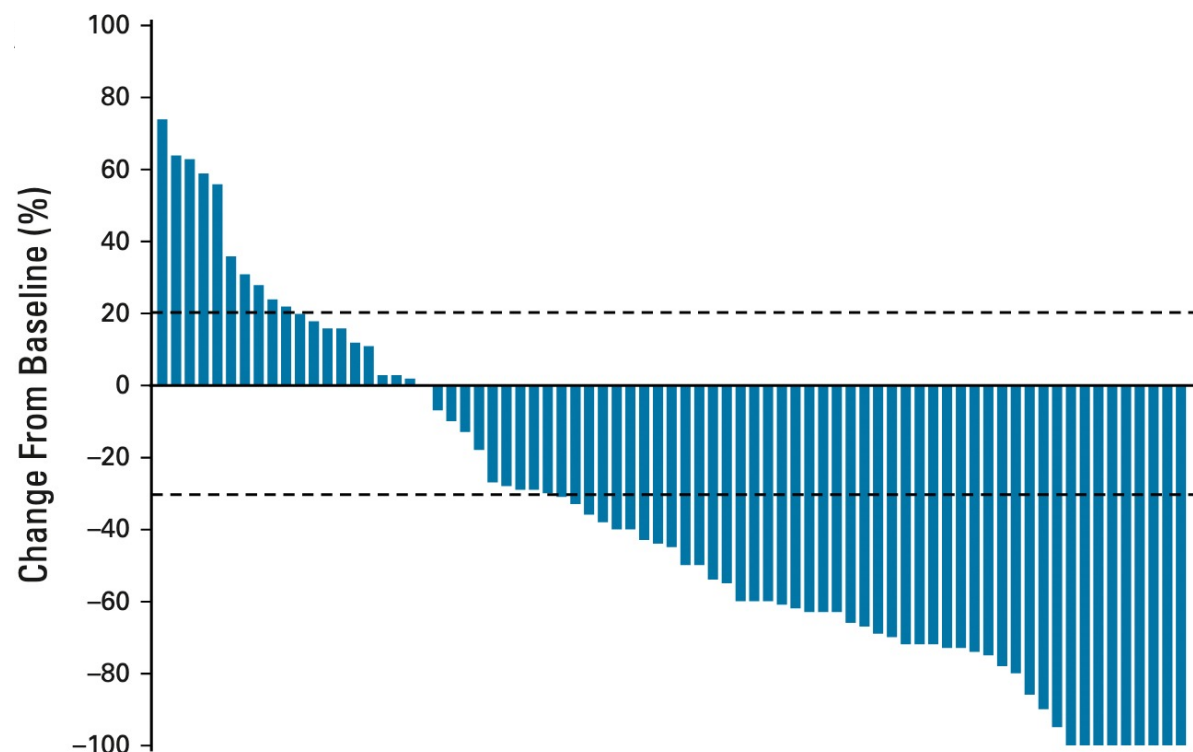
original reports

# Pembrolizumab in Patients With Microsatellite Instability–High Advanced Endometrial Cancer: Results From the KEYNOTE-158 Study

David M. O'Malley, MD<sup>1</sup>; Giovanni Mendonca Bariani, MD<sup>2</sup>; Philippe A. Cassier, MD<sup>3</sup>; Aurelien Marabelle, MD, PhD<sup>4</sup>; Aaron R. Hansen, MBBS<sup>5</sup>; Ana De Jesus Acosta, MD<sup>6</sup>; Wilson H. Miller Jr, MD, PhD<sup>7,8</sup>; Tamar Safra, MD<sup>9,10</sup>; Antoine Italiano, MD, PhD<sup>11,12</sup>; Linda Mileskin, MBBS<sup>13</sup>; Lei Xu, PhD<sup>14</sup>; Fan Jin, MD<sup>14</sup>; Kevin Norwood, MD<sup>14</sup>; and Michele Maio, MD<sup>15</sup>

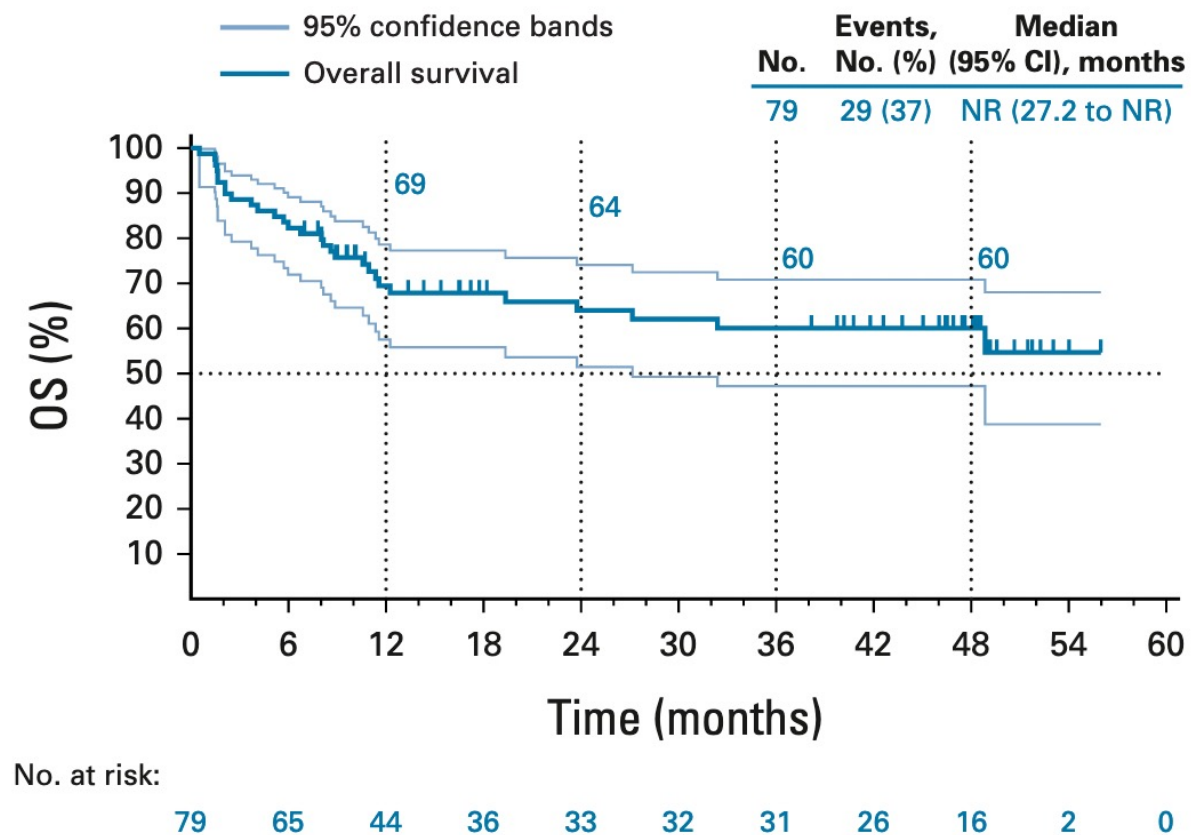
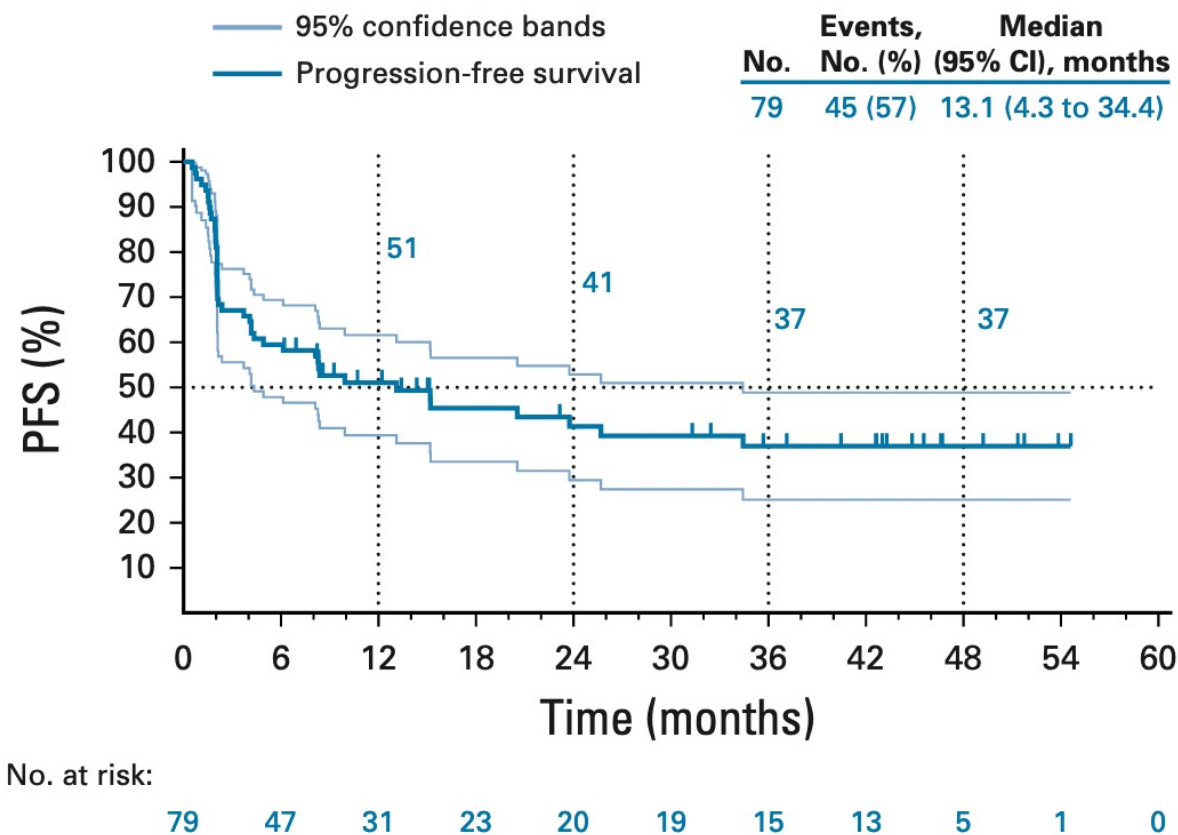
*Journal of Clinical Oncology* 2022 40:7,752-761

# KEYNOTE-158: Best Percentage Change and Duration of Response



- Among 79 patients in the efficacy analysis population, 48% (95% CI, 37 to 60) had an objective response as determined by independent central radiologic review, including 11 patients (14%) with CR and 27 (34%) with PR

# KEYNOTE-158: PFS and OS





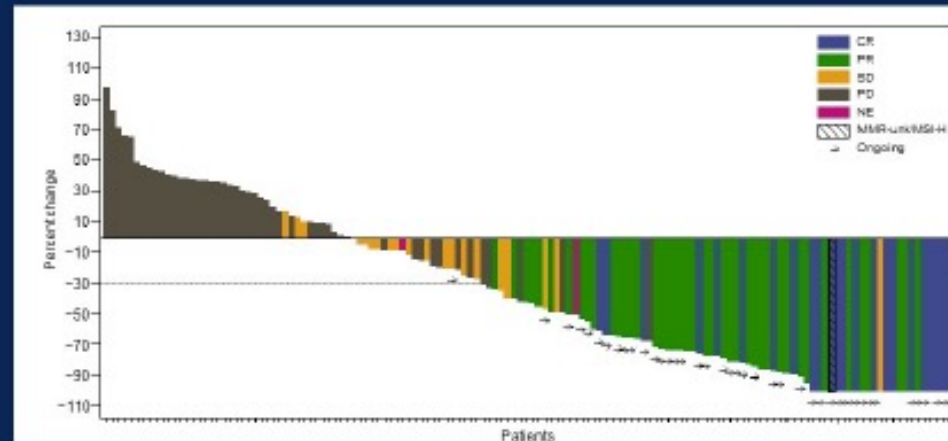
# Dostarlimab in Advanced/Recurrent Mismatch Repair Deficient/Microsatellite Instability–High or Proficient/Stable Endometrial Cancer: the GARNET study

Ana Oaknin,<sup>1</sup> Bhavana Pothuri,<sup>2</sup> Lucy Gilbert,<sup>3</sup> Renaud Sabatier,<sup>4</sup> Sharad Ghamande,<sup>5</sup> Adriano Gravina,<sup>6</sup> Emiliano Calvo,<sup>7</sup> Susana Banerjee,<sup>8</sup> Rowan E. Miller,<sup>9</sup> Joanna Pikiel,<sup>10</sup> Mansoor R. Mirza,<sup>11</sup> Tao Duan,<sup>12</sup> Sybil Zildjian,<sup>13</sup> Eleftherios Zografos,<sup>14</sup> Jennifer Veneris,<sup>13</sup> Anna V. Tinker<sup>15</sup>

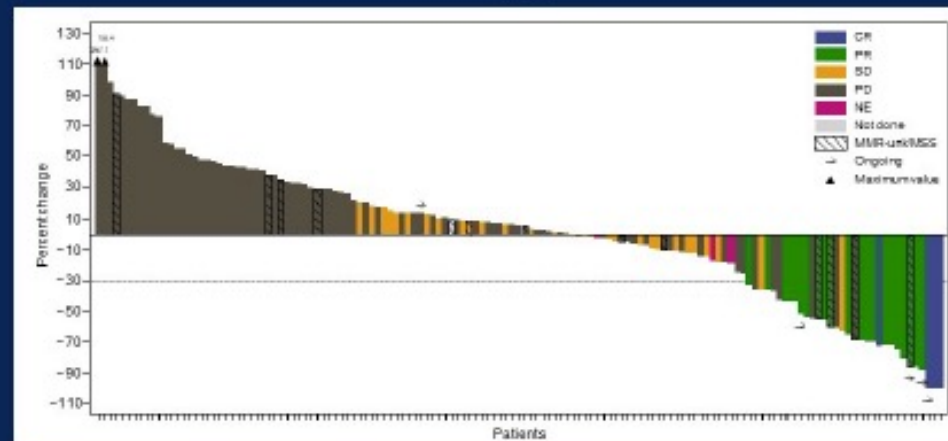
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# Best Volume Change in Target Lesions Based on BICR per RECIST v1.1

dMMR/MSI-H EC



MMRp/MSS EC



BICR, blinded independent central review; CR, complete response; dMMR, mismatch repair deficient; EC, endometrial cancer; MMRp, mismatch repair proficient; MMR-unk, mismatch repair unknown; MSI-H, microsatellite instability-high; MSS, microsatellite stable; NE, not evaluated; PD, progressive disease; RECIST v1.1, Response Evaluation Criteria in Solid Tumors version 1.1; SD, stable disease.



# Conclusions

- Cohort A1 is the largest cohort of patients with dMMR/MSI-H EC studied with an anti-PD-1 monotherapy to date
- Dostarlimab demonstrated durable antitumor activity in both dMMR/MSI-H and MMRp/MSS advanced or recurrent EC
  - Median follow-up time is 27.6 (dMMR/MSI-H) and 33.0 (MMRp/MSS) months
  - The probability of remaining in response at 24 months was 83.7% in dMMR/MSI-H
- Dostarlimab is the only PD-1 therapy clinically tested with a Q6W dosing schedule in endometrial cancer
- The safety profile was manageable
  - The majority of TRAEs were grade 1 or 2
  - Discontinuation rates were low:
    - 8.6% of patients discontinued treatment because of a TRAE

AE, adverse event; dMMR, mismatch repair deficient; EC, endometrial cancer; Ir, immune related; MMRp, mismatch repair proficient; MSI-H, microsatellite instability-high; MSS, microsatellite stable; PD-1, programmed death 1; TRAE, treatment-related adverse event; Q6W, every 6 weeks.

# Progression-Free Survival (PFS) and Overall Survival (OS) in Patients (pts) with Mismatch Repair Deficient (dMMR) Solid Tumors Treated with Dostarlimab in the GARNET Study

Andre T et al.

ESMO 2022;Abstract 549P.

# GARNET: Antitumor Activity by Tumor Type

Tumour type	Patients, N	Confirmed ORR (RECIST v1.1)		DOR (RECIST v1.1)
		n (%)	95% CI, %	Median (range), months
Overall	327	144 (44.0)	38.6–49.6	NR (1.18+ to 47.21+)
EC	141	64 (45.4)	37.0–54.0	NR (1.18+ to 47.21+)
Non-EC	186	80 (43.0)	35.8–50.5	NR (2.76 to 41.49+)
CRC	105	45 (42.9)	33.2–52.9	NR (2.8 to 41.5+)
Non-CRC	81	35 (43.2)	32.3–54.7	NR (2.8+ to 39.4+)
Gastric cancer	21	10 (47.6)	25.7–70.2	NR (2.8+ to 27.7+)
Small-intestinal cancer	19	7 (36.8)	16.3–61.6	NR (4.1+ to 39.4+)
Pancreatic carcinoma	11	5 (45.5)	16.7–76.6	NR (8.4+ to 19.8+)
Biliary neoplasm	10	4 (40.0)	12.2–73.8	NR (16.5+ to 27.9+)
Ovarian cancer	7	3 (42.9)	9.9–81.6	NR (6.0+ to 36.4+)
Adrenal cortical cancer	2	PR, PD		
Cancer of unknown origin	2	PR, PD		
Oesophageal cancer	2	PR, PD		
Mesothelioma	2	SD, PR		
Breast cancer	1	CR		
Malignant neoplasm of the female genitals	1	PR		
Renal cell carcinoma	1	SD		
Sarcoma	1	PD		
Thymic tumour	1	PD		

CR, complete response; CRC, colorectal cancer; DOR, duration of response; EC, endometrial cancer; NR, not reached; ORR, objective response rate; PD, progressive disease; PR, partial response; RECIST v1.1, Response Evaluation Criteria in Solid Tumors version 1.1; SD, stable disease.

# Progression-Free Survival (PFS) and Overall Survival (OS) in Advanced/Recurrent (AR) Mismatch Repair Deficient/Microsatellite Instability-High or Proficient/Stable (dMMR/MSI-H or MMRp/MSS) Endometrial Cancer (EC) Treated with Dostarlimab in the GARNET Study

Tinker A et al.

ESMO 2022;Abstract 548P.



# GARNET: Secondary Endpoint Analysis

Variable	dMMR/MSI-H EC N=143	MMRp/MSS EC N=156
Median follow-up time, months	27.6	33.0
PFS events observed, n (%)	83 (58.0)	136 (87.2)
Median PFS (95% CI), months	6.0 (4.1–18.0)	2.7 (2.6–2.8)
Estimated probability of PFS, % (95% CI)		
6 months	49.5 (41.0–57.5)	22.9 (16.5–30.0)
12 months	46.4 (37.8–54.5)	13.3 (8.3–19.5)
24 months	40.1 (31.6–48.4)	9.4 (5.2–15.0)
36 months	40.1 (31.6–48.4)	6.8 (3.3–12.0)
OS events observed, n (%)	57 (37.3)	111 (68.9)
Median OS (95% CI), months	NR (27.1–NR)	16.9 (13.0–21.8)
Estimated probability of survival, % (95% CI)		
6 months	84.9 (78.0–89.8)	74.3 (66.6–80.6)
12 months	73.3 (65.2–79.8)	60.6 (52.3–67.9)
24 months	60.5 (51.5–68.4)	38.4 (30.5–46.2)
36 months	58.4 (49.2–66.5)	22.2 (14.9–30.5)
dMMR, mismatch repair deficient; EC, endometrial cancer; MMRp, mismatch repair proficient; MSI-H, microsatellite instability-high; MSS, microsatellite stable; NR, not reached; OS, overall survival; PFS, progression-free survival.		

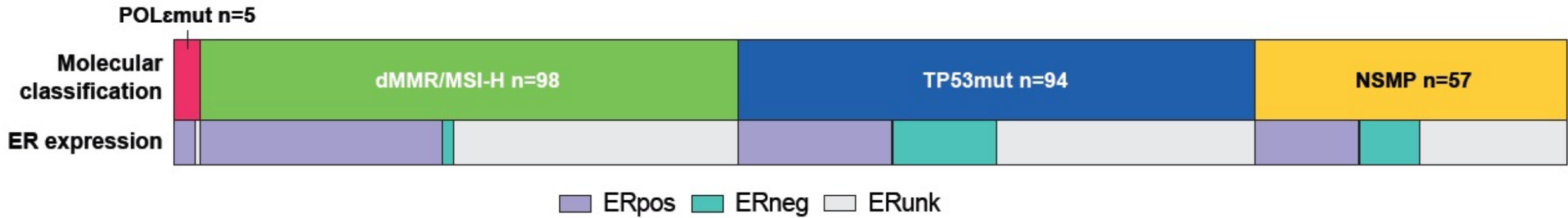
# **Efficacy of Dostarlimab in Endometrial Cancer (EC) by Molecular Subtype: A Post Hoc Analysis of the GARNET Study**

Oaknin A et al.

ESMO 2022;Abstract 547P.



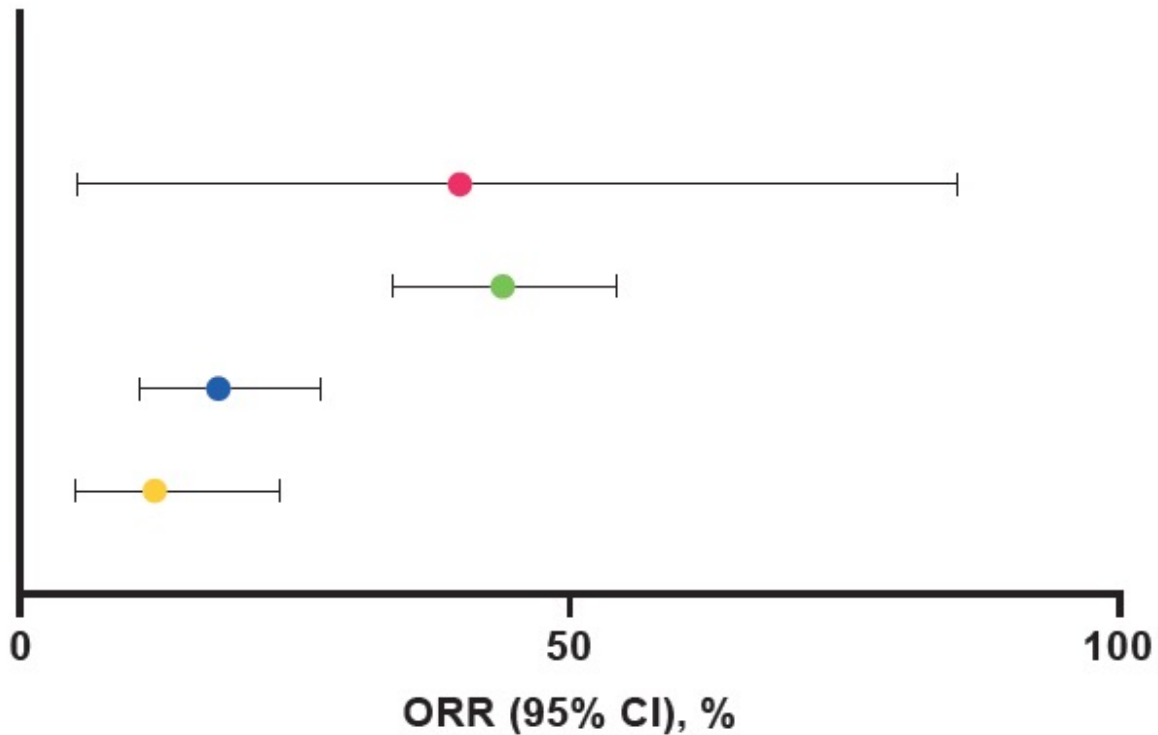
# GARNET: Molecular Subtype and ER Expression Distribution



Because the cohort designation is by MMR status, patients from cohort A1 could only be classified as POLεmut or dMMR/MSI-H, whereas patients from cohort A2 could only be classified as POLεmut, TP53 or NSMP.

dMMR, mismatch repair deficient; ER, oestrogen receptor; MMR, mismatch repair; MSI-H, microsatellite instability–high; mut, mutated; neg, negative; NSMP, no specific mutational profile; pos, positive; unk, unknown.

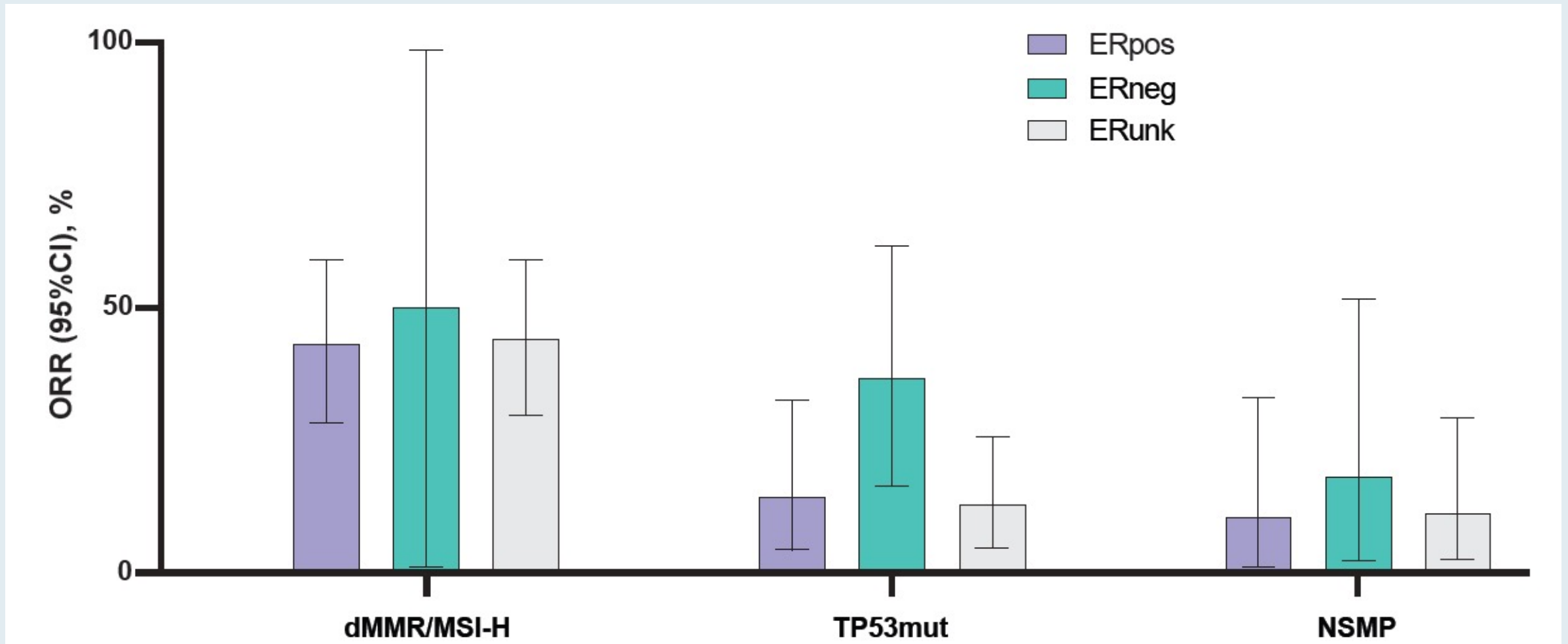
# GARNET: ORR by Molecular Classification



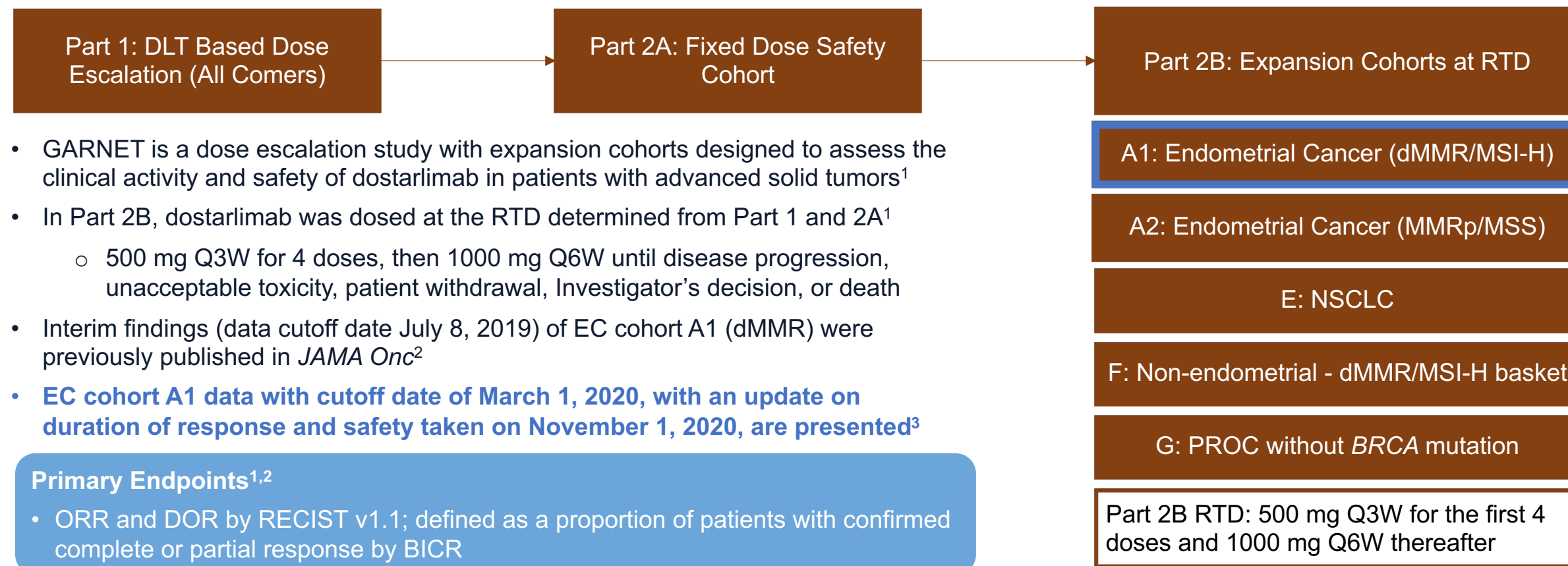
Molecular classification	ORR, n/N, % (95% CI)	Median DOR (range), mo
POLεmut	2/5, 40% (5.3–85.3)	NR (32.46+ to 44.42+)
dMMR/MSI-H	43/98, 43.9% (33.9–54.3)	NR (2.63–47.21+)
TP53mut	17/94, 18.1% (10.9–27.4)	19.4 (1.54–47.18)
NSMP	7/57, 12.3% (5.1–23.7)	26.4 (2.79–46.16+)

ORR = objective response rate

# GARNET: ORR by ER Status and Molecular Classification



# Dostarlimab (GARNET): Multicenter, Open-Label, Phase 1 Trial in Patients With Advanced Solid Tumors<sup>1,2</sup>



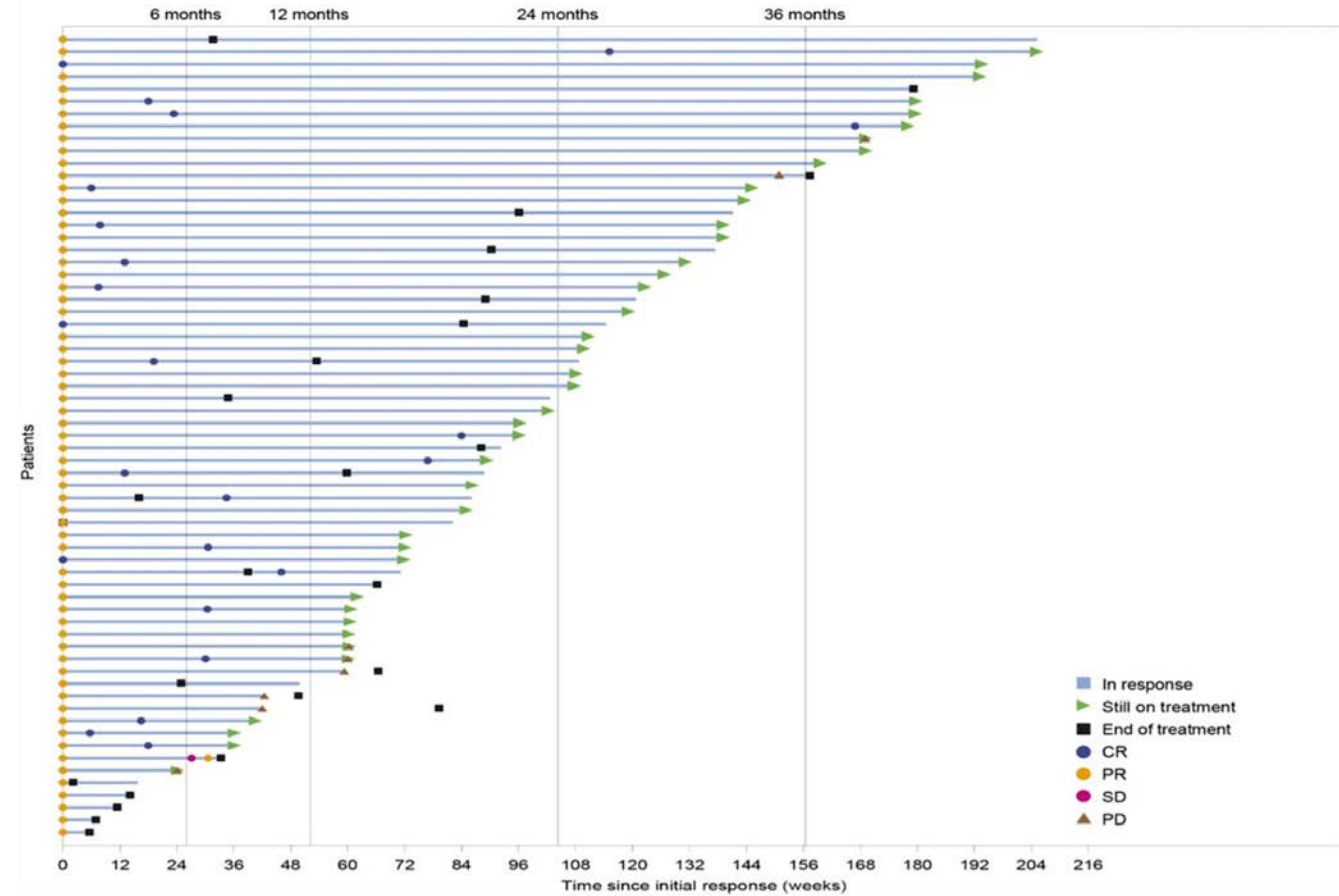
BICR, blinded independent central review; BRCA, breast cancer susceptibility gene; DLT, dose-limiting toxicity; dMMR, deficient mismatch repair; DOR, duration of response; MMRp, mismatch repair-proficient; MSI-H, microsatellite instability-high; MSS, microsatellite stable; NSCLC, non-small cell lung cancer; ORR, objective response rate; PROC, platinum resistant ovarian cancer; Q2W, every 2 weeks; Q3W, every 3 weeks; Q6W, every 6 weeks; RTD, recommended therapeutic dose.

<sup>a</sup>The protocol was amended on May 10, 2019 to use only the results of the immunohistochemistry MMR test for classifying patients.<sup>2</sup>

1. National Library of Medicine. <https://clinicaltrials.gov/ct2/show/NCT02715284>. Accessed May 17, 2021. 2. Oaknin A, et al. *JAMA Onc* 2020;6:1766-1772. . Oaknin A, et al. ASCO 2022, Abstract 5509. 3. Berton D, et al. *J Clin Oncol*. 2021;39(suppl\_15):2564.

# Dostarlimab (GARNET): 45.5% ORR in dMMR EC Patients

dMMR/MSI-H EC N=143	
Median follow-up time, months	27.6
ORR, % (95% CI; n/N)	45.5% (37.1–54.0; 65/143)
Complete response, n (%)	23 (16.1)
Partial response, n (%)	42 (29.4)
Stable disease, n (%)	21 (14.7)
Progressive disease, n (%)	51 (35.7)
Not evaluable, n (%)	6 (4.2)
Median time from cycle 1 day 1 to best overall response, mo	
Complete response	2.79
Partial response	2.69
Disease control rate, % (95% CI; n/N)	60.1% (51.6–68.2; 86/143)
Response ongoing, n (%)	54 (83.1)
Median duration of response (range), months	NR (1.18+ to 47.21+)
Probability of maintaining response, %	
6 months	96.8
12 months	93.3
24 months	83.7



CI, confidence interval; CR, complete response; dMMR, mismatch mutation repair deficient; EC, endometrial cancer; ORR, objective response rate; PR, partial response; SD, stable disease.

Oaknin A, et al. ASCO 2022, Abstract 5509.

# Novel Immunotherapy in Endometrial Cancer

**Ana Oaknin, MD PhD**

Head of Gynecologic Cancer Program.

Vall d'Hebron Institute of Oncology (VHIO) Vall d'Hebron University Hospital  
Barcelona, Spain



# Where Do We Stand with Checkpoint Inhibitors in EC?

## Avelumab

Humanized IgG1 monoclonal antibody that binds to the inhibitory immune checkpoint ligand PD-L1 on tumour cells and immune cells and blocks its interaction with the receptors PD-1 and B7.1

## Durvalumab

Human IgG1 monoclonal antibody that binds to the inhibitory immune checkpoint ligand PD-L1 on tumour cells and immune cells and blocks its interaction with the receptors PD-1 and B7.1

## Pembrolizumab

Humanized IgG4 monoclonal antibody that binds to the inhibitory immune checkpoint receptor PD-1 and blocks its interaction with the ligands PD-L1 and PD-L2

## Dostarlimab

Humanized IgG4 monoclonal antibody that binds to the inhibitory immune checkpoint receptor PD-1 and blocks its interaction with the ligands PD-L1 and PD-L2

**Pembrolizumab** is approved:

- In the US and Europe
  - For patients with unresectable or metastatic, dMMR/MSI-H or TMB-H solid tumours that have progressed following prior treatment.
  - In combination with lenvatinib for the treatment of advanced or recurrent EC (only pMMR in US) in adults with disease progression following prior treatment with a platinum-containing therapy

**Dostarlimab** is approved:

- In the EU for dMMR/MSI-H advanced/recurrent endometrial cancer that have progressed on or following prior treatment
- In the US for adult patients dMMR recurrent or advanced solid tumours that have progressed on or following prior treatment

Konstantinopoulos PA, *et al. J Clin Oncol* 2019; 20: 2786–2794. Antill YC, *et al. J Immunother Cancer* 2021; 9: e002255; .Marabelle A, *et al. J Clin Oncol* 2020; 38: 1–10. Oaknin A, *et al. JAMA Oncol* 2020; 6: 1766–1772. KEYTRUDA US prescribing information 2021.; KEYTRUDA SmPC 2021; emperli SmPC 2021. Jemperli US prescribing information 2021.

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#ASCO22

PRESENTED BY:  
Ana Oaknin, MD PhD

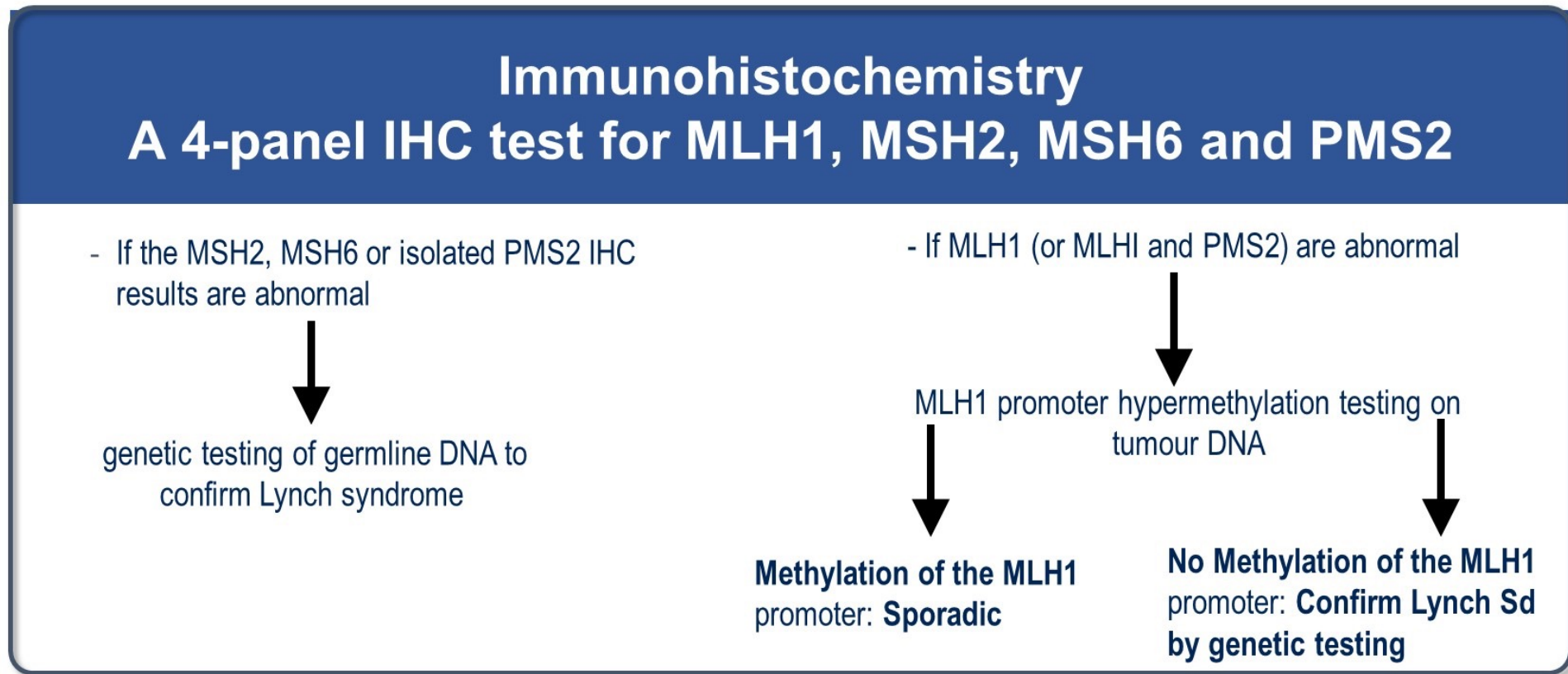
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RTP  
RESEARCH  
TO PRACTICE



# Cases of dMMR/MSI-H EC Originate from Different Pathways: Does This Matter?



Borden et al. Am J Clinical Path, 2022.

**2022 ASCO**  
ANNUAL MEETING

#ASC022

PRESENTED BY: Ana Oaknin, MD PhD

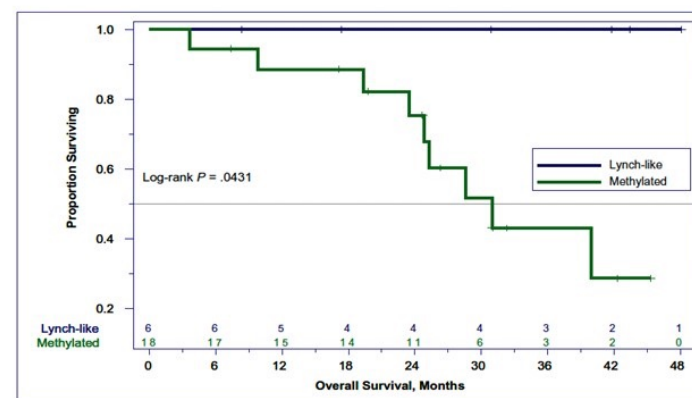
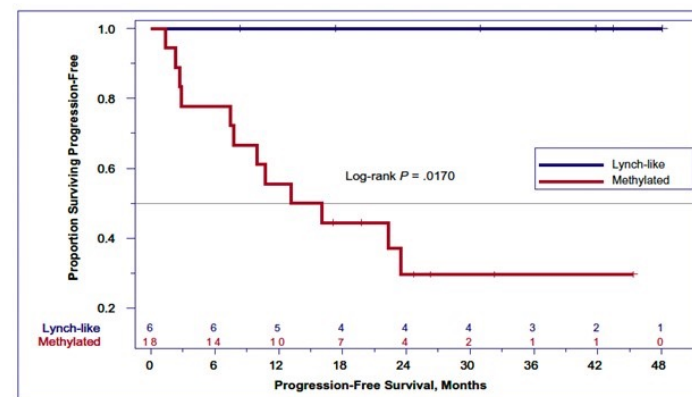
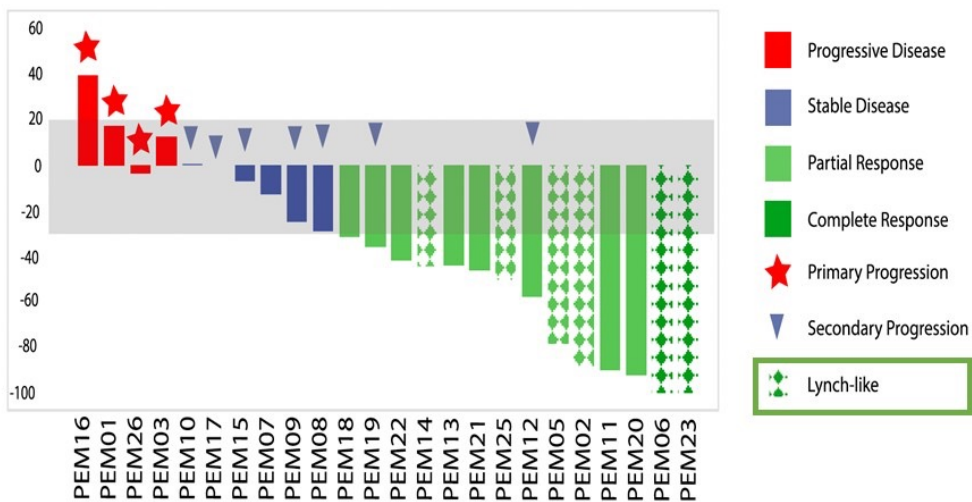
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RESEARCH  
TO PRACTICE

# Could Mechanisms Underlying dMMR/MSI-H EC Alter Responses to ICI? Data from Pembrolizumab Studies

- Study enrollment = 25 patients | 6 somatic loss MMR prot: **Lynch-Like**
- 24 evaluable for response | 19 Methylated
- 14 CR/PR = 58.3%
- Clinical Benefit = 83.3%



Median follow-up was 25.8 months

Bellone S. et al. Cancer. 2022 Mar 15;128(6):1206-1218. Bellone S. et al. Annals of Oncology, Vol 32, Issue 8,2021, 1045-1046  
ClinicalTrial.gov: NCT02899793

2022 ASCO<sup>®</sup>  
ANNUAL MEETING

#ASC022

PRESENTED BY: Ana Oaknin, MD PhD

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KNOWLEDGE CONQUERS CANCER

ICI = immune checkpoint inhibitors

# Management of Endometrial Cancer

## PROLOGUE

**MODULE 1: Multidisciplinary Management of Endometrial Cancer in Copenhagen, Denmark; Boston, Massachusetts and Little Rock, Arkansas**

**MODULE 2: Subtypes of Endometrial Cancer**

**MODULE 3: Microsatellite Instability-High Endometrial Cancer**

**MODULE 4: Microsatellite-Stable Endometrial Cancer**

**MODULE 5: Future Directions**

## Case Presentation: 62-year-old woman with MSS Stage IV endometrial cancer



**Dr Mansoor Mirza (Copenhagen, Denmark)**

# Management of side effects associated with pembrolizumab/lenvatinib



**Dr Mansoor Mirza (Copenhagen, Denmark)**



## Case Presentation: 62-year-old woman with MSS Stage IV endometrial cancer (continued)



**Dr Mansoor Mirza (Copenhagen, Denmark)**

# Immunotherapy in Endometrial Cancer

## ORR in MMRp and unselected patients

Study	Drug	N	Patient selection	ORR (%)
<b>KEYNOTE-158<sup>1</sup></b>	Pembrolizumab	107	Previously treated Recurrent/advanced (unselected)	11%
<b>GARNET<sup>2</sup></b>	Dostarlimab	142	Previously treated Recurrent/advanced MMRp	13%
<b>PHAEDRA<sup>3</sup></b>	Durvalumab	35	Advanced/metastatic MMRp	3%
<b>NCT02912572<sup>4</sup></b>	Avelumab	16	Advanced/metastatic MMRp	11.4%
<b>KEYNOTE-145<sup>5</sup></b>	Pembrolizumab + lenvatinib	94	Previously treated Recurrent/advanced MMRp	36%
<b>KEYNOTE-775<sup>6,7</sup></b>	Pembrolizumab + lenvatinib	346	Previously treated Recurrent/advanced MMRp	30%

MMRp, mismatch repair-proficient; ORR, overall response rate.

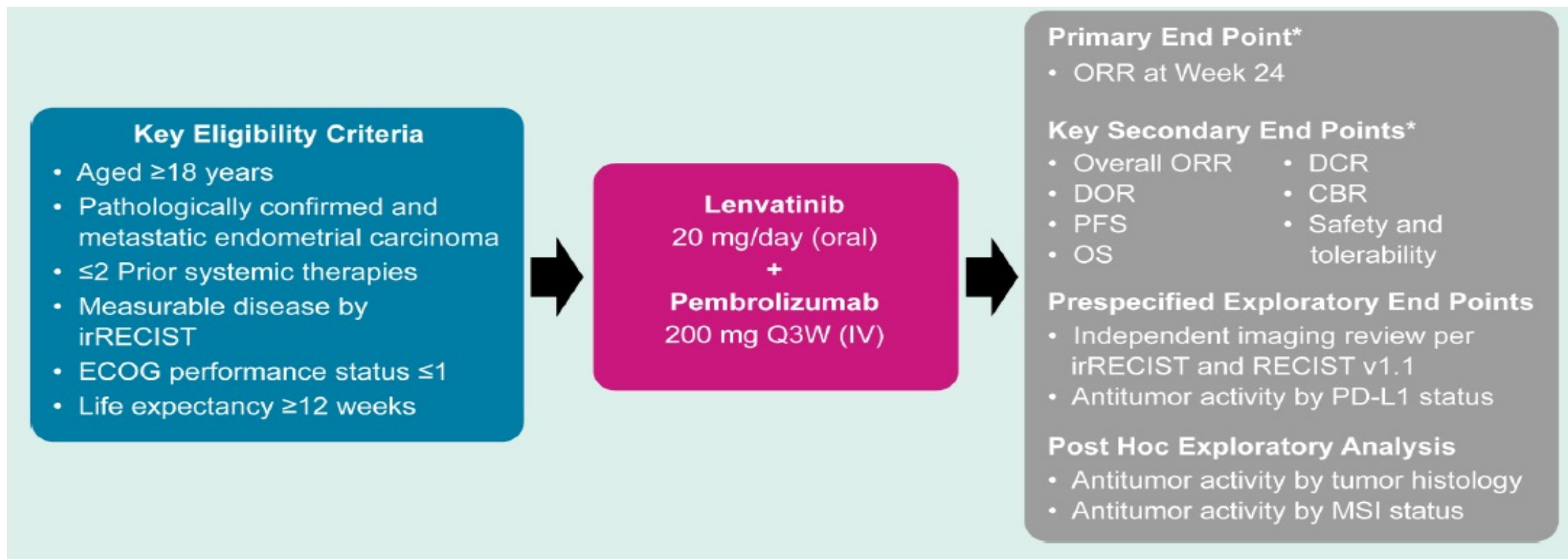
1. O'Malley D, et al. Presented at European Society for Medical Oncology Congress 2019; 2. Oaknin A et al. J Immunother Cancer. 2022 Jan;10(1):e003777; 3. Antill Y et al. J Immunother Cancer 2021 Jun;9(6):e002255

4. Konstantinopoulos PA, et al. *Jama Oncology* 2022; e222181 5. Makker V, et al. *J Clin Oncol*. 2020;38(26):2981-2992; 6. Makker V, et al. Presented at Society for Gynecologic Oncology Virtual Annual Meeting 2021.

7. Makker V et al. *N Engl J Med* 2022 Feb 3;386(5):437-448.

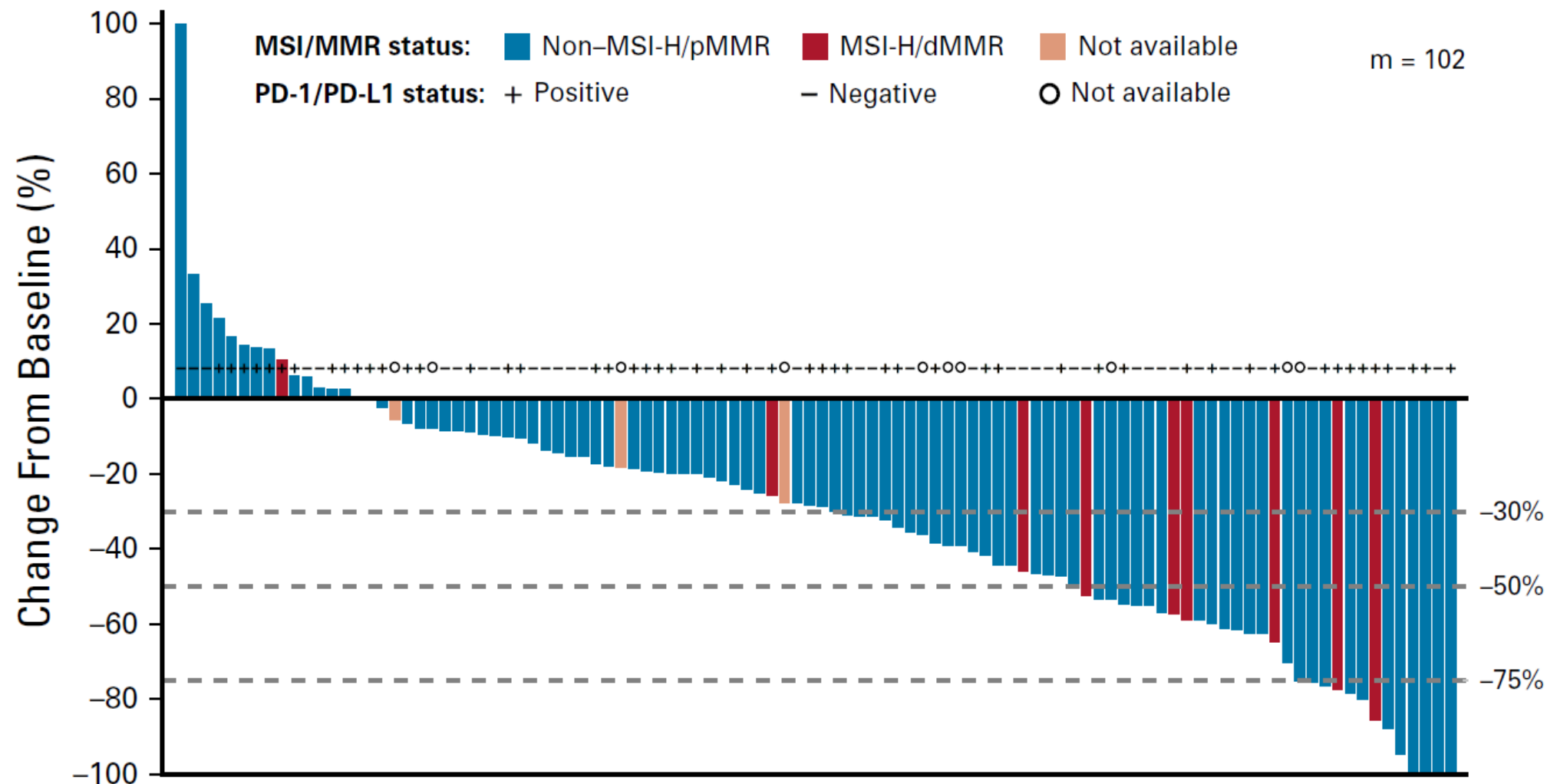


# Lenvatinib Plus Pembrolizumab in Patients with Advanced Endometrial Cancer



CBR, clinical benefit rate; DOR, duration of response; IV, intravenous; MSI, microsatellite instable; ORR, overall response rate; OS, overall survival; PD-L1, programmed death ligand 1; PFS, progression-free survival; Q3W, every 3 weeks

# Percentage Change in Sum of Diameters of Target Lesions from Baseline to Post-baseline Nadir by Microsatellite Instability/Mismatch-repair (MSI/MMR) Status



# Updated efficacy and safety of lenvatinib plus pembrolizumab versus treatment of physician's choice in patients with advanced endometrial cancer: Study 309/KEYNOTE-775

Vicky Makker<sup>1</sup>, Nicoletta Colombo<sup>2</sup>, Antonio Casado Herraiez<sup>3</sup>,  
Bradley J. Monk<sup>4</sup>, Helen Mackay<sup>5</sup>, Alessandro D. Santin<sup>6</sup>,  
David S. Miller<sup>7</sup>, Richard Moore<sup>8</sup>, Sally Baron-Hay<sup>9</sup>, Isabelle Ray-Coquard<sup>10</sup>,  
Ronnie Shapira Frommer<sup>11</sup>, Kimio Ushijima<sup>12</sup>, Kan Yonemori<sup>13</sup>, Yong Man Kim<sup>14</sup>,  
Eva M. Guerra Alia<sup>15</sup>, Ulus A. Sanli<sup>16</sup>, Jie Huang<sup>17</sup>, Jodi McKenzie<sup>18</sup>,  
Gianmaria Barresi<sup>19</sup>, Domenica Lorusso<sup>20</sup>

# Study 309/KEYNOTE-775: Treatment Emergent Adverse Events Consistent with Primary Analysis

Preferred Term <sup>a</sup>	LEN + pembro (n = 406)		Chemotherapy (n = 388)	
	Any grade	Grade ≥ 3 <sup>b</sup>	Any grade	Grade ≥ 3 <sup>b</sup>
<b>TEAEs, n (%)</b>	405 (99.8)	366 (90.1)	386 (99.5)	286 (73.7)
Hypertension	264 (65.0)	159 (39.2)	20 (5.2)	10 (2.6)
Hypothyroidism	239 (58.9)	6 (1.5)	3 (0.8)	0 (0.0)
Diarrhea	226 (55.7)	33 (8.1)	79 (20.4)	8 (2.1)
Nausea	210 (51.7)	14 (3.4)	180 (46.4)	5 (1.3)
Decreased appetite	189 (46.6)	31 (7.6)	83 (21.4)	2 (0.5)
Vomiting	153 (37.7)	12 (3.0)	82 (21.1)	10 (2.6)
Weight decreased	144 (35.5)	44 (10.8)	23 (5.9)	1 (0.3)
Fatigue	138 (34.0)	22 (5.4)	107 (27.6)	12 (3.1)
Arthralgia	131 (32.3)	7 (1.7)	31 (8.0)	0 (0.0)
Proteinuria	124 (30.5)	21 (5.2)	13 (3.4)	1 (0.3)
<b>Treatment-related TEAEs, n (%)<sup>c</sup></b>	395 (97.3)	320 (78.8)	364 (93.8)	233 (60.1)
<b>Adverse events of special interest (for pembro), n (%)<sup>d</sup></b>	279 (68.7)	54 (13.3)	17 (4.4)	1 (0.3)
<b>Clinically significant adverse events (for LEN), n (%)<sup>d</sup></b>	386 (95.1)	227 (55.9)	149 (38.4)	51 (13.1)
<b>Dose interruption due to TEAE<sup>e</sup></b>	292 (71.9)	---	110 (28.4)	---
<b>Dose reduction due to TEAE<sup>f</sup></b>	273 (67.2)	---	49 (12.6)	---
<b>Treatment discontinuation due to TEAE<sup>g</sup></b>	159 (39.2)	---	31 (8.0)	---
Discontinuation of LEN	145 (35.7)	---	---	---
Discontinuation of pembro	90 (22.2)	---	---	---
Discontinuation of both LEN and pembro	65 (16.0)	---	---	---



# KEYNOTE-775 trial

## Key eligibility criteria

- Advanced, metastatic, or recurrent endometrial cancer
- Measurable disease by BICR
- One prior platinum-based CT<sup>a</sup>
- ECOG PS 0–1
- Tissue available for MMR testing

## Stratification factors MMR status

(MMRp vs dMMR) and further stratification within MMRp by:

- Region (R1: Europe, USA, Canada, Australia, New Zealand and Israel vs R2: rest of the world)
- ECOG PS (0 vs 1)
- Prior history of pelvic radiation (Y vs N)

R  
(1:1)

**Lenvatinib**  
20 mg PO QD  
+  
**Pembrolizumab<sup>b</sup>**  
200 mg IV Q3W

Treat until progression  
or unacceptable toxicity

**Doxorubicin**  
60 mg/m<sup>2</sup> IV Q3W<sup>c</sup>  
or  
**Paclitaxel**  
80 mg/m<sup>2</sup> IV QW  
(3 weeks on/1 week off)

## Primary endpoints

- PFS by BICR
- OS

## Secondary endpoints

- ORR
- HRQoL
- Pharmacokinetics
- Safety

## Key exploratory endpoint

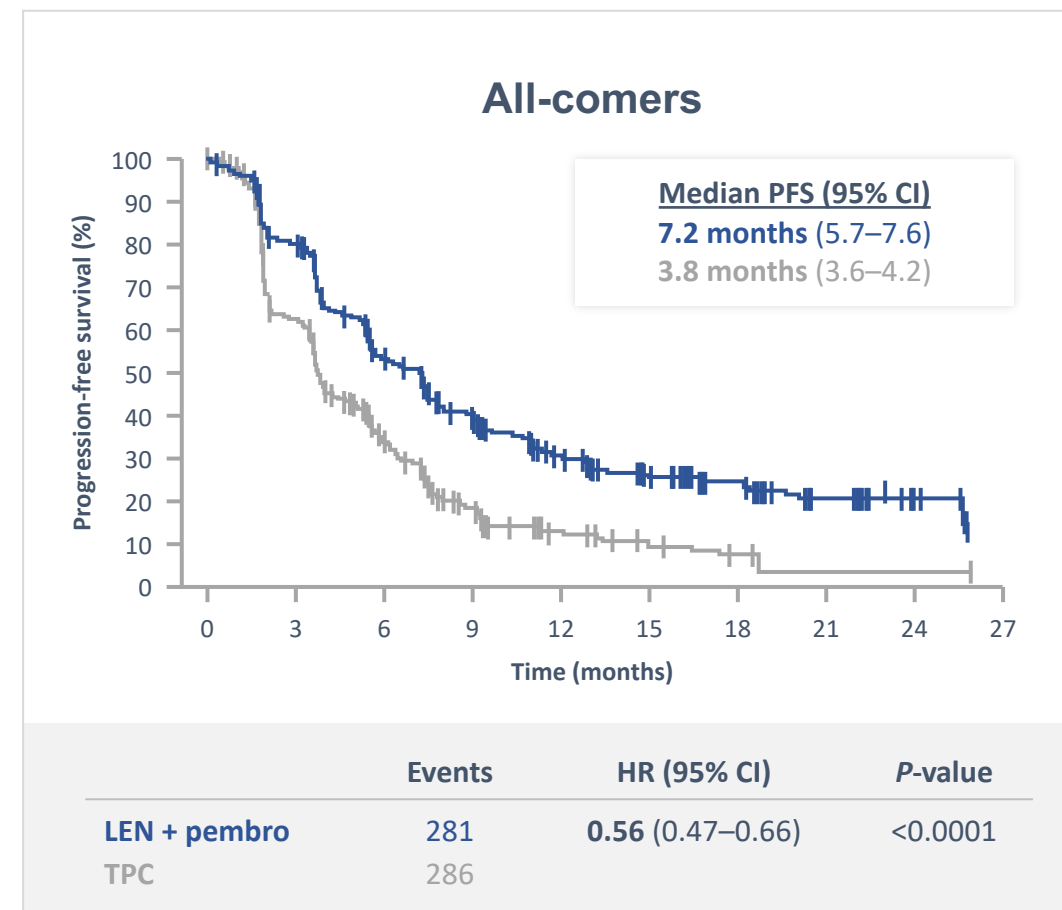
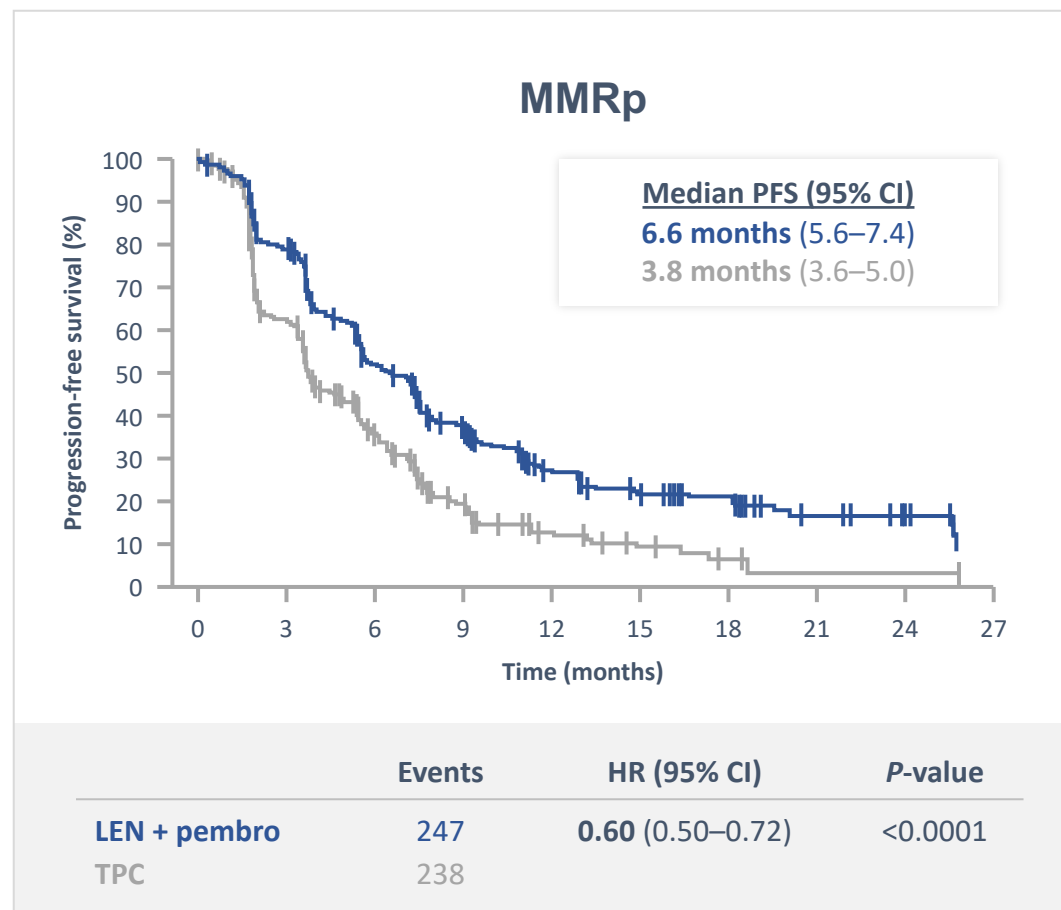
- Duration of response

<sup>a</sup>Patients may have received up to 2 prior platinum-based CT regimens if 1 is given in the neoadjuvant or adjuvant treatment setting. <sup>b</sup>Maximum of 35 doses. <sup>c</sup>Maximum cumulative dose of 500 mg/m<sup>2</sup>.

BICR, blinded independent central review; CT, chemotherapy; <sup>a</sup>MMR, mismatch repair-deficient; ECOG PS, Eastern Cooperative Oncology Group performance status; HRQoL, health-related quality of life; IV, intravenous; MMR, mismatch repair; MMRp, mismatch repair-proficient; ORR, objective response rate; OS, overall survival; PFS, progression-free survival; PO, oral; QD, once daily; Q3W, every 3 weeks; QW, once weekly; R, randomisation.

Makker V, et al. Presented at Society for Gynecologic Oncology Virtual Annual Meeting 2021.

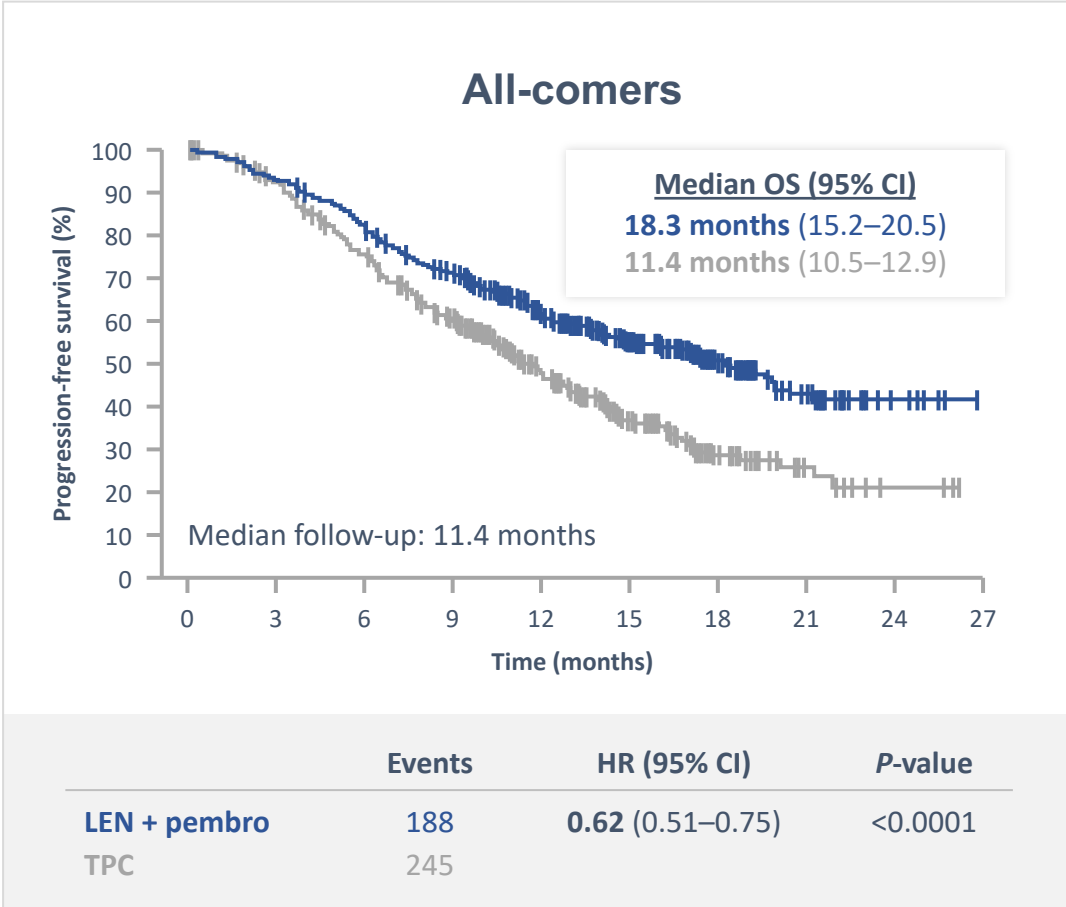
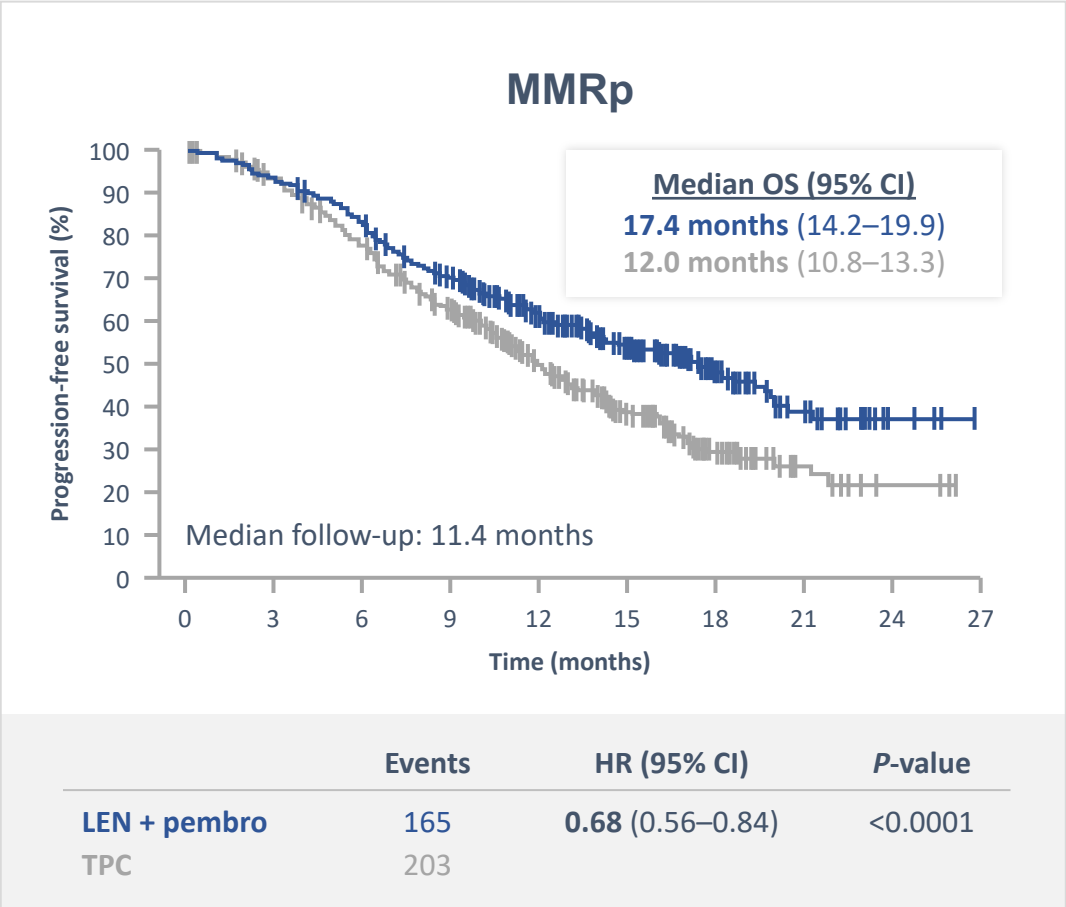
# KEYNOTE-775 Progression-free Survival



— **LEN + pembro** — TPC

CI, confidence interval; HR, hazard ratio; LEN, lenvatinib; MMRp, mismatch repair-proficient; pembro, pembrolizumab; TPC, treatment of physician's choice.  
 Makker V, et al. Presented at Society for Gynecologic Oncology Virtual Annual Meeting 2021.; Makker V et al. N Engl J Med 2022 Feb 3;386(5):437-448.

# KEYNOTE-775 Overall Survival



— LEN + pembro
   
 — TPC

CI, confidence interval; HR, hazard ratio; LEN, lenvatinib; MMRp, mismatch repair-proficient; pembro, pembrolizumab; TPC, treatment of physician's choice.
   
 Makker V, et al. Presented at Society for Gynecologic Oncology Virtual Annual Meeting 2021. Makker V et al. N Engl J Med 2022 Feb 3;386(5):437-448.

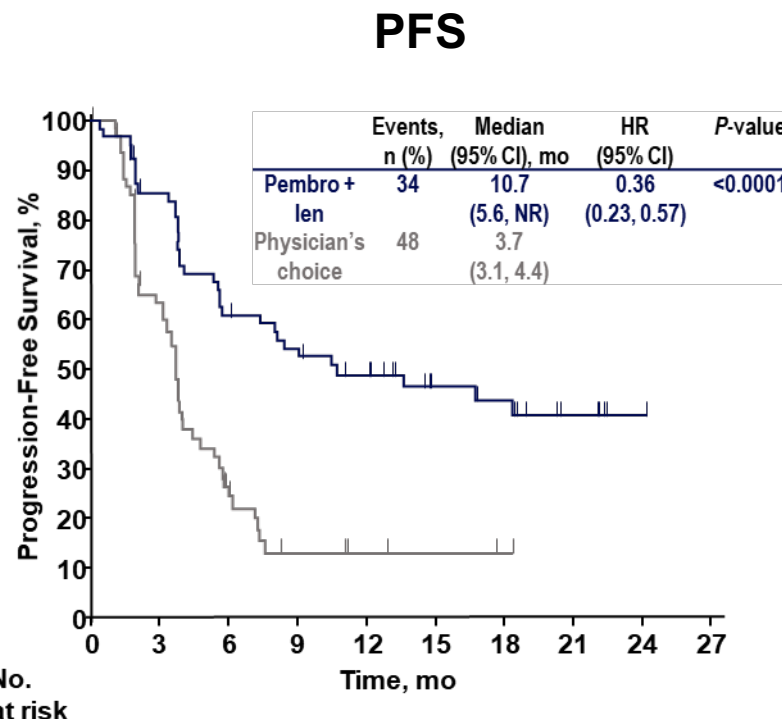


# Pembrolizumab + Lenvatinib (KEYNOTE-775): Subgroup Analysis Showed Efficacy Improvement Over Physician's Choice Therapy in dMMR Patients<sup>1</sup>

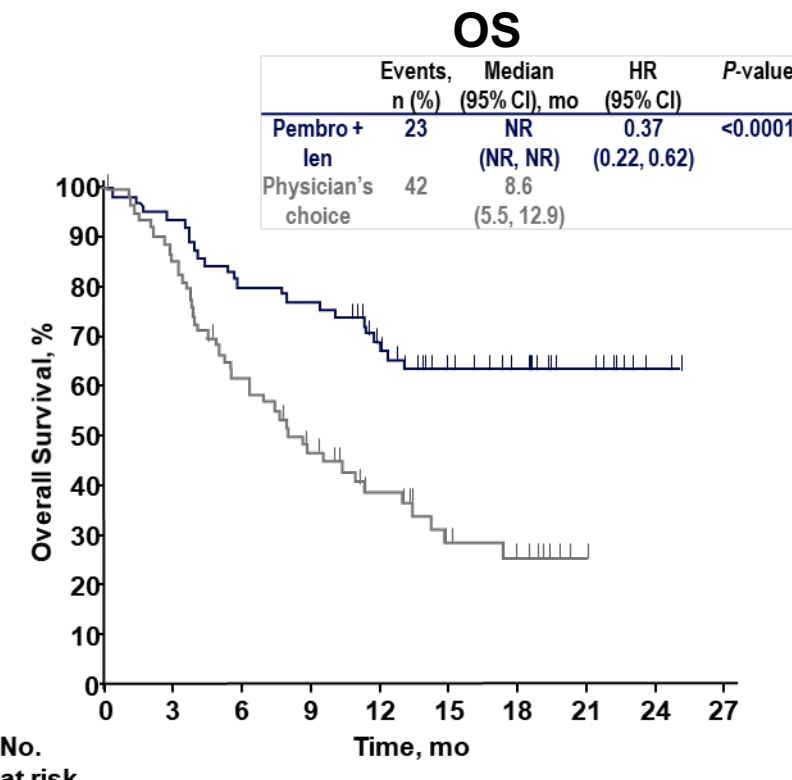
	dMMR	
Efficacy <sup>a</sup>	n=65	n=65
ORR, % (95% CI)	40.0 (28.0-52.9)	12.3 (5.5-22.8)
CR, %	13.8	3.1
PR, %	26.2	9.2
SD, %	38.5	43.1
PD, %	10.8	23.1
NE/assessed, %	4.6/6.2	1.5/20.0
Median DOR (range), months	NR (2.1 <sup>b</sup> - 20.4 <sup>b</sup> )	4.1 (1.9 <sup>b</sup> - 15.6 <sup>b</sup> )
Median PFS (95% CI), mo	10.7 (5.6, NR)	3.7 (3.1, 4.4)
Median OS (95% CI), mo	NR (NR, NR)	8.6 (5.5, 12.9)

Pembro + len

Physician's choice



Pembro + len 65 52 37 32 26 17 13 5 1 0  
Physician's choice 65 37 12 5 3 2 1 0 0 0



Pembro + len 65 61 52 50 38 27 19 12 2 0  
Physician's choice 65 54 38 27 18 10 7 0 0 0

<sup>a</sup>By blinded independent central review per RECIST version 1.1.

<sup>b</sup>No progressive disease reported at the last disease assessment.

Data cut date: October 26, 2020.

CI, confidence interval; CR, complete response; dMMR, mismatch repair deficient; DOR, duration of response; len, lenvatinib; NE, not evaluated; ORR, objective response rate; OS, overall survival; PD, progressive disease; pembro, pembrolizumab; PFS, progression free survival; PR, partial response; SD, stable disease.

1. Makker V, et al. Presentation #O002 at the International Gynaecologic Cancer Society Annual Global Meeting 2021 August 30-September 2, 2021 (Virtual). Makker V et al. N Engl J Med 2022 Feb 3;386(5):437-448.

**How would you compare the incidence of HER2 positivity in patients with endometrial cancer to that in patients with breast cancer?**

About the same

Higher incidence in breast cancer

Higher incidence in endometrial cancer

I'm not sure

2021 ASCO<sup>®</sup>  
ANNUAL MEETING

**PERTUZUMAB PLUS TRASTUZUMAB IN  
PATIENTS WITH UTERINE CANCER WITH *ERBB2*  
OR *ERBB3* AMPLIFICATION, OVEREXPRESSION  
OR MUTATION:  
RESULTS FROM THE TARGETED AGENT  
PROFILING AND UTILIZATION  
REGISTRY (TAPUR<sup>™</sup>) STUDY**

---

**ASCO TAPUR<sup>™</sup>**

Targeted Agent and Profiling Utilization Registry Study

Hussein Moustapha Ali-Ahmad, MD, Michael  
Rothe, MS, Pam K. Mangat, MS, Elizabeth  
Garrett-Mayer, PhD, Eugene R. Ahn, MD, John  
Chan, MD, Michael L. Maitland, MD, PhD, Ani S.  
Balmanoukian, MD, Sapna R. Patel, MD,  
Zachary Reese, MD, Charles W. Drescher, MD,  
Charles A. Leath III, MD, Rui Li, MD, Apostolia  
Maria Tsimberidou, MD, PhD, Richard L.  
Schilsky, MD, FACP, FSCT, FASCO

**Abstract 5508**

# Management of Endometrial Cancer

## PROLOGUE

**MODULE 1: Multidisciplinary Management of Endometrial Cancer in Copenhagen, Denmark; Boston, Massachusetts and Little Rock, Arkansas**

**MODULE 2: Subtypes of Endometrial Cancer**

**MODULE 3: Microsatellite Instability-High Endometrial Cancer**

**MODULE 4: Microsatellite-Stable Endometrial Cancer**

**MODULE 5: Future Directions**



# Ongoing trials evaluating immunotherapy for endometrial cancer

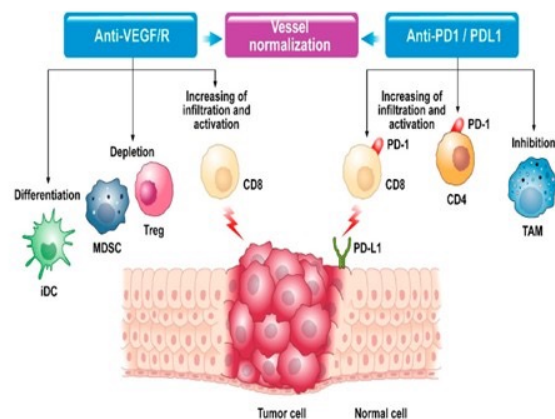


**Dr Mansoor Mirza (Copenhagen, Denmark)**

# Combination Approaches: Leveraging ICI Activity

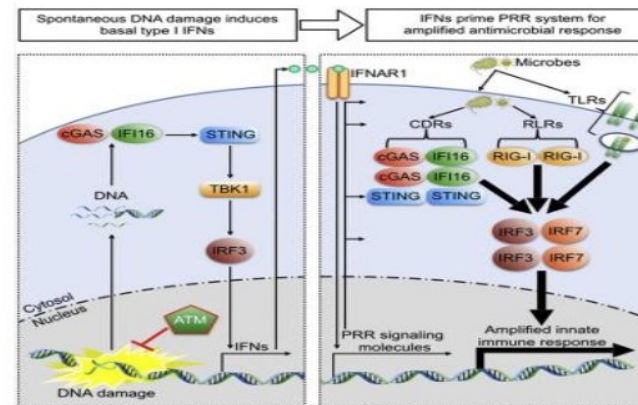
## Antiangiogenic Agents

- Reduction in Treg activity
- Reversal of immunosuppressive effects of VEGF
- Improved T-cell trafficking and infiltration of CD8+ into the tumor bed



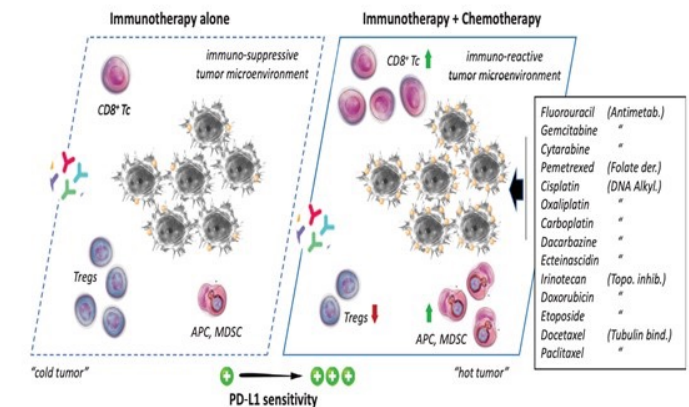
## PARP inhibitors

- Enhanced DNA Damage with increased CD8+ T Cells
- Potential Synergistic antitumor activity partly mediated by STING pathway



## Chemotherapy

- Immunogenic cell death
- Enhanced presentation of tumor specific antigens
- Increased T-Cell activation by DC



DC: Dendritic Cells  
STING: Stimulator of Interferon Genes

Ciciola P, et al. J Clin Med. 2020; Bailly C, et al. NAR Cancer. 2020; Huang J, et al. Biochem and Biophys Res Comm. 2015; 463:551-6; Sen et al. Cancer Discov 2019

2022 ASCO<sup>®</sup>  
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#ASCO22

PRESENTED BY: Ana Oaknin, MD PhD

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RTP  
RESEARCH  
TO PRACTICE

# Endometrial Cancer

## Competitive Landscape of Phase III Immunotherapy Trials

### *Addition of Immunotherapy to Carboplatin/Paclitaxel*

Name		EN6-RUBY	EN7-ATTEND	NRG018	EN-11
Investigational agent		Dostarlimab	Atezolizumab	Pembrolizumab	Pembrolizumab
N		470	550	775	990
Concomitant		+	+	+	+
Maintenance		+	+	+	



# Endometrial Cancer

## Competitive Landscape of Phase III Immunotherapy Trials

*Immunotherapy, Chemotherapy and PARP Inhibitor*

Name		EN6-RUBY Part 2	DUO-E
Investigational agent		Dostarlimab + Niraparib	Durvalumab + Olaparib
N		270	699
Concomitant		+	+
Maintenance		+	+

# Endometrial Cancer

## Competitive Landscape of Phase III Immunotherapy Trials

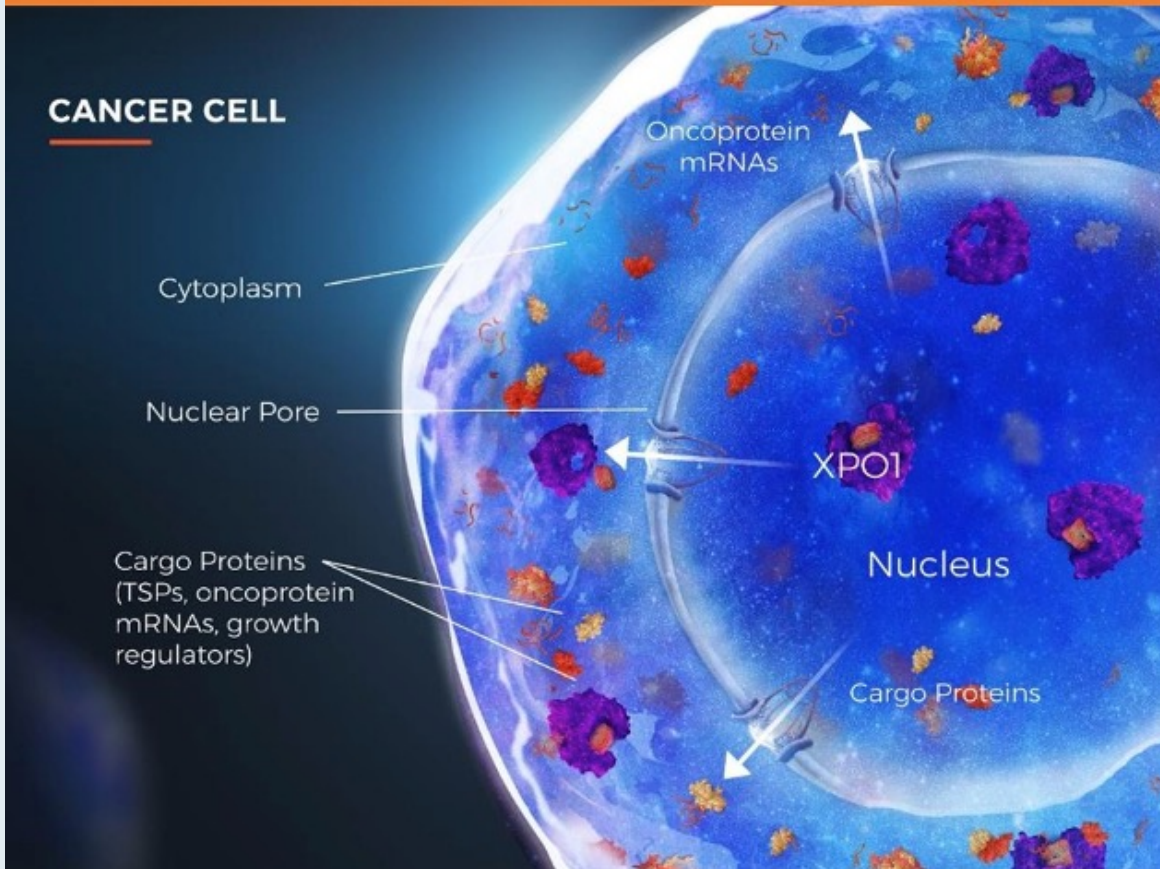
### *Immunotherapy +/- TKI in Patients with MSI-H*

Name		EN9-LEAP-1	EN-13 Domenica
Investigational agent		Pembrolizumab + Lenvatinib	Dostarlimab
N		720	142
Concomitant		Pembro + Lenva vs. Chemotherapy	Dostarlimab vs. Chemotherapy
Maintenance			

# **Randomized Phase III Study of Maintenance Selinexor vs Placebo in Endometrial Cancer (ENGOT-EN5/GOG-3055/SIENDO): Impact of Subgroup Analysis and Molecular Classification**

**Vicky Makker**<sup>1</sup>, J Alejandro Pérez-Fidalgo<sup>2</sup>, Alice Bergamini<sup>3</sup>, Daniel Spitz<sup>4</sup>, Toon Van Gorp<sup>5</sup>, Jalid Sehouli<sup>6</sup>, Jaroslav Klat<sup>7</sup>, Tamar Perri<sup>8</sup>, Amit Oza<sup>9</sup>, Estrid Høgda<sup>10</sup>, Jason Konner<sup>11</sup>, Eva M Guerra-Alia<sup>12</sup>, Francesco Raspagliesi<sup>13</sup>, Stéphanie Henry<sup>14</sup>, Bradley J. Monk<sup>15</sup>, Jerónimo Martínez<sup>16</sup>, Brian Slomovitz<sup>17</sup>, Sharon Shacham<sup>18</sup>, Mansoor Raza Mirza<sup>19</sup>, Ignace Vergote<sup>5</sup>

# ENGOT-EN5/GOG-3055/SIENDO: Mechanism of Action of Selinexor



Selinexor is an oral selective inhibitor of XPO1-mediated nuclear export (SINE) compound

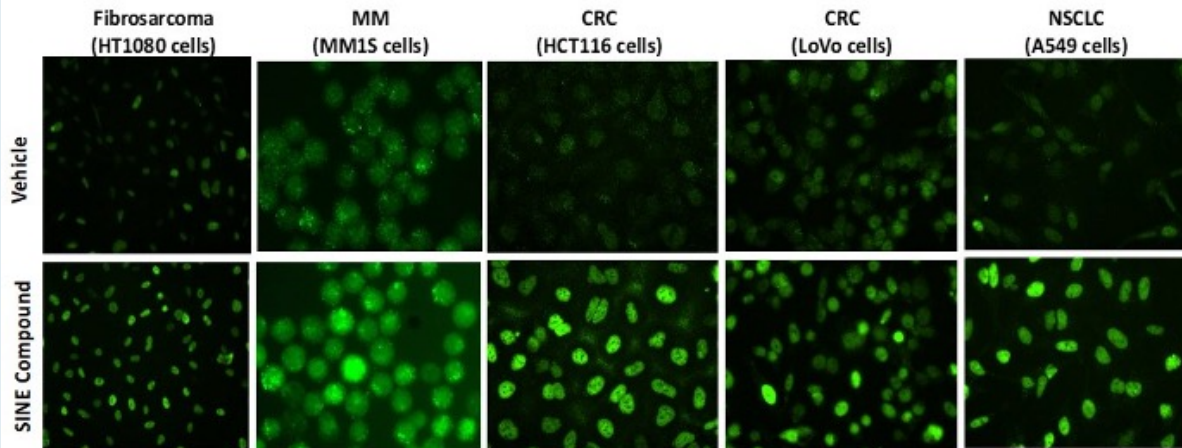
- XPO1 exports the major tumor suppressor proteins (TSPs) including p53 away from the nucleus, where TSPs carry out their function
- Tumor cells overexpress XPO1
- Tumor cells inactivate cytoplasmic p53 through protein degradation
- Selinexor inhibits XPO1 nuclear export, leads to retention / reactivation of TSPs in the nucleus and stabilization of p53
- Retention of wild-type p53 (p53wt) and other TSPs in the cell nucleus leads to selective killing of cancer cells, while largely sparing normal cells



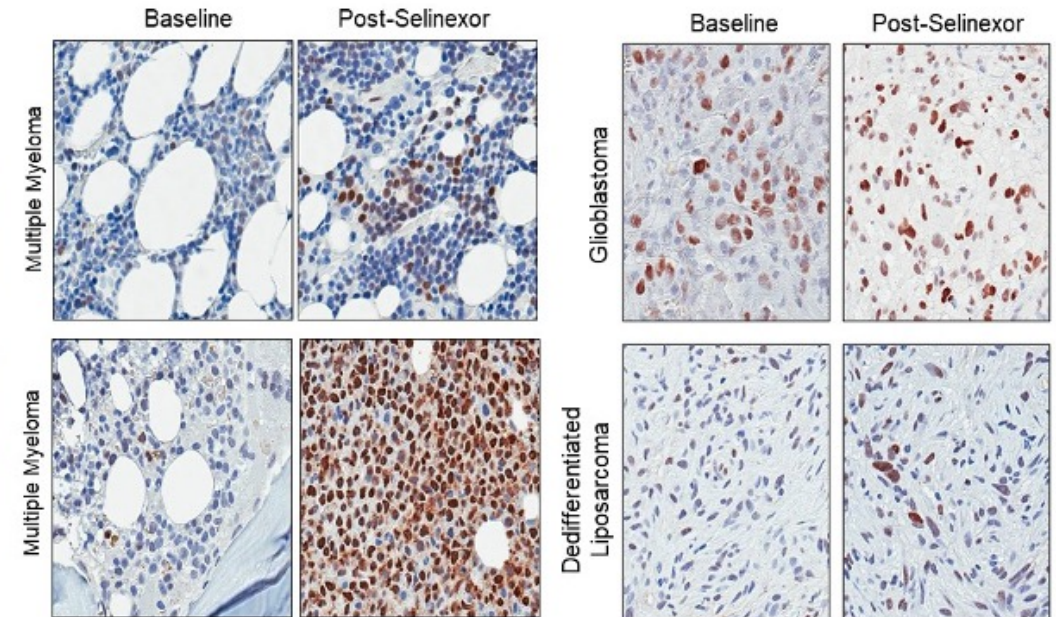
# ENGOT-EN5/GOG-3055/SIENDO: Selinexor Induces Nuclear Accumulation of p53

- Aberrant XPO1 mediated nuclear export of p53 is a mechanism by which cancer cells can inhibit p53
- Inhibition of XPO1 leads to nuclear accumulation of p53 across cancer types, as demonstrated in cell lines and patient samples
- p53 wild-type tumors account for 45-65% of all endometrial cancers
  - Generally, endometrioid in histology and occurs in younger patients

**p53 IF in cell lines**



**p53 IHC in human patient samples**



Oncogenic signaling pathways in The Cancer Genome Atlas. Cell. 2018; 173: 321-37  
Pan-cancer analysis of whole genomes. Nature. 2020; 578: 82-93  
Soumerai et al. Clin Cancer Res. 2018; 24: 5939-47

# ENGOT-EN5/GOG-3055/SIENDO: Author Summary and Conclusions

- Once-weekly oral selinexor may prolong progression-free survival compared to placebo in patients with advanced or recurrent endometrial cancer; the audited ITT population had a 30% decrease of risk for progression and/or death compared to placebo
- Pre-specified exploratory subgroup analyses identified p53 wild-type as a potential predictor of efficacy of selinexor, with 10-month PFS improvement over placebo; no benefit for selinexor was seen in patients with p53 mutant/aberrant tumors
- In this small, exploratory subgroup analysis, potential benefit may be observed for selinexor over placebo in the patients with p53 wild-type including MSS and Copy-Number Low endometrial cancer
- Further investigation is warranted for selinexor as a maintenance treatment for patients with p53 wt endometrial cancer



# ***Meet The Professor***

## **Optimizing the Management of Head and Neck and Thyroid Cancers**

**Tuesday, September 20, 2022  
5:00 PM – 6:00 PM ET**

**Faculty**

**Robert Haddad, MD**

**Moderator**

**Neil Love, MD**

***Thank you for joining us!***

***CME and MOC credit information will be emailed to each participant within 5 business days.***