FORWARD I: Full Data and Exploratory Analyses

30 September 2019

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FORWARD LOOKING STATEMENTS

This presentation includes forward-looking statements regarding ImmunoGen's expectations related to: the design and potential success of ImmunoGen's future mirvetuximab soravtansine studies and regulatory pathway, including the timing of initiating and receiving data from, as well as the likelihood of success of, the planned registration study of mirvetuximab. For these statements, ImmunoGen claims the protection of the safe harbor for forward-looking statements provided by the Private Securities Litigation Reform Act of 1995. Various factors could cause ImmunoGen's actual results to differ materially from those discussed or implied in the forward-looking statements, and you are cautioned not to place undue reliance on these forward-looking statements, which are current only as of the date of this presentation. Factors that could cause future results to differ materially from such expectations include, but are not limited to: the timing and results of communications with FDA, risks and uncertainties related to the execution of the restructuring of the Company's operations, the Company's ability to control future spending and obtain additional funds to enable it to fund its continuing operations through the release of top-line results from the planned mirvetuximab pivotal study, the possibility that future studies fail to replicate the data indicated in the exploratory analyses of the FORWARD 1 data, and the risks and uncertainties inherent in the Company's development programs, including clinical studies and regulatory processes, their timings and results. A review of these risks can be found under the heading "Risk Factors" in ImmunoGen's Annual Report on Form 10-K for the year ended December 31, 2018 and subsequent documents filed with the Securities and Exchange Commission.

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Agenda

1. Overview
2. FORWARD I
3. Closing Remarks
4. Q&A with Dr. Kathleen Moore

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Ovarian Cancer Landscape

OVARIAN CANCER IS THE LEADING CAUSE OF DEATH FROM GYNECOLOGICAL CANCERS

>14,000 WOMEN DIE ANNUALLY FROM OVARIAN CANCER IN US[1]

[1]American Cancer Society – Facts & Figures, 2018.
[2,3]JCO, vol 33; 32 Nov 2015, Gyn Onc 133(2014) 624-631.
mPFS: median progression-free survival

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Mirvetuximab Soravtansine

KEY ATTRIBUTES

- Distinct target and mechanism of action
- Demonstrated activity in platinum-resistant and platinum-sensitive disease
- Well tolerated with differentiated safety profile
- Potential in other FRα-positive solid tumors

DEVELOPMENT STRATEGY

- Seek initial label as monotherapy in platinum-resistant ovarian cancer
- Expand into earlier lines through combinations

DISPLACING CHEMOTHERAPY TO DELIVER MORE GOOD DAYS FOR WOMEN WITH OVARIAN CANCER

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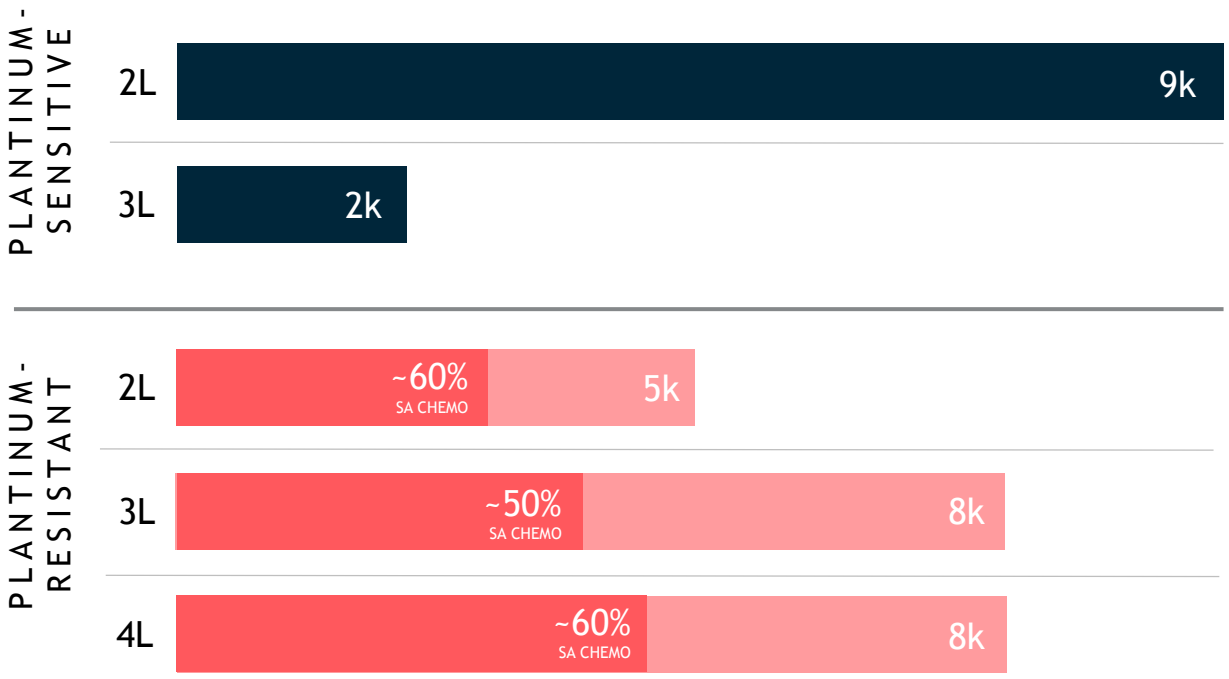
First Indication and Ongoing Expansion Studies Will Cover Significant Percentage of Recurrent Ovarian Cancer Patients



EXPANDED INDICATIONS
~8,000 PATIENTS
FRα HIGH

FIRST INDICATION
~5,000 PATIENTS
FRα HIGH

*Numbers represent drug treatable US patients.
Sources: Decision Resources Group; Diagnosed drug-treatable patients 2017. Kantar Health. Ipsos Oncology Monitor, 2018 and 2019.

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Mirvetuximab: Monotherapy Summary and Next Steps

FORWARD I

- Trial did not meet primary endpoint of progression-free survival
- Consistent efficacy signal seen in folate receptor alpha (FRα) high patients
- Favorable tolerability profile confirmed

Exploratory Analyses

- Change in scoring method from PS2+ to 10X introduced a population of patients into FORWARD I with lower levels of FRα expression than intended
- Analyses of patients scored using PS2+ demonstrate improved outcomes correlated with FRα expression
- Strongest treatment effect for all efficacy endpoints observed in FRα high population

Registration Study

- Data from FORWARD I inform patient selection and significantly improve the likelihood of a positive outcome
- New Phase 3 trial in FRα high patients expected to begin by the end of 2019

MIRASOL

FORWARD I

Anna Berkenblit
Senior Vice President and Chief Medical Officer

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FORWARD I: STUDY DESIGN

FORWARD I

Key Eligibility

- Platinum-resistant ovarian cancer
- FRα-positive tumor expression
  - Medium (50-74% cells positive)
  - High (≥75% cells positive)
- ECOG performance status 0 or 1
- 1-3 prior therapies

Statistical Assumptions

- Hochberg Procedure
- α=0.05 (two-sided), Power = 90%, HR=0.58; control arm mPFS 3.5 mos

Mirvetuximab Soravtansine
(n=248)

6 mg/kg (adjusted ideal body weight) once every 3 weeks

2:1 Randomization

Stratification Factors:
FRa expression (medium or high)
Prior therapies (1 and 2, or 3)
Choice of chemotherapy

Investigator's Choice Chemotherapy
Paclitaxel, PLD†, or Topotecan
(n=118)

Paclitaxel: *80 mg/m² weekly*
PLD: *40 mg/m² once every 4 weeks*
Topotecan: *4 mg/m² on Days 1, 8, and 15 every 4 weeks; or 1.25 mg/m² on Days 1-5 every 3 weeks*

Primary Endpoint

Progression-free survival (PFS; by BIRC*) for ITT and FRα high populations

Secondary Endpoints

Overall response rate (ORR)
Overall survival (OS)
Patient reported outcomes (PRO)

*BIRC = Blinded Independent Review Committee; analyzed by Hochberg procedure
†PLD = pegylated liposomal doxorubicin

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Baseline Characteristics

DISEASE CHARACTERISTICS

	Mirvetuximab soravtansine (n=248)	IC Chemo (n=118)
Primary Diagnosis		
Ovarian	83%	89%
Fallopian Tube	6%	4%
Primary Peritoneal	11%	7%
Histology		
High Grade Serous	99%	97%
Other	1%	3%
ECOG		
0	57%	51%
1	43%	48%
Prior Therapy		
Bevacizumab	49%	47%
PARPi	11%	10%
Any BRCA Mutation		
Yes	9%	7%
Platinum-Free Interval		
0-3 months	39%	38%
3-6 months	57%	58%
≥ 6 months	4%	4%

STRATIFICATION FACTORS

	Mirvetuximab soravtansine (n=248)	IC Chemo (n=118)
FRα Status		
Medium	42%	42%
High	58%	58%
No. Prior Lines		
1 or 2	65%	65%
3	35%	35%
IC Chemotherapy		
Paclitaxel	32%	31%
PLD	44%	46%
Topotecan	23%	23%

BASELINE CHARACTERISTICS WELL BALANCED

CHOICE OF CHEMOTHERAPY REFLECTS REAL-WORLD USAGE

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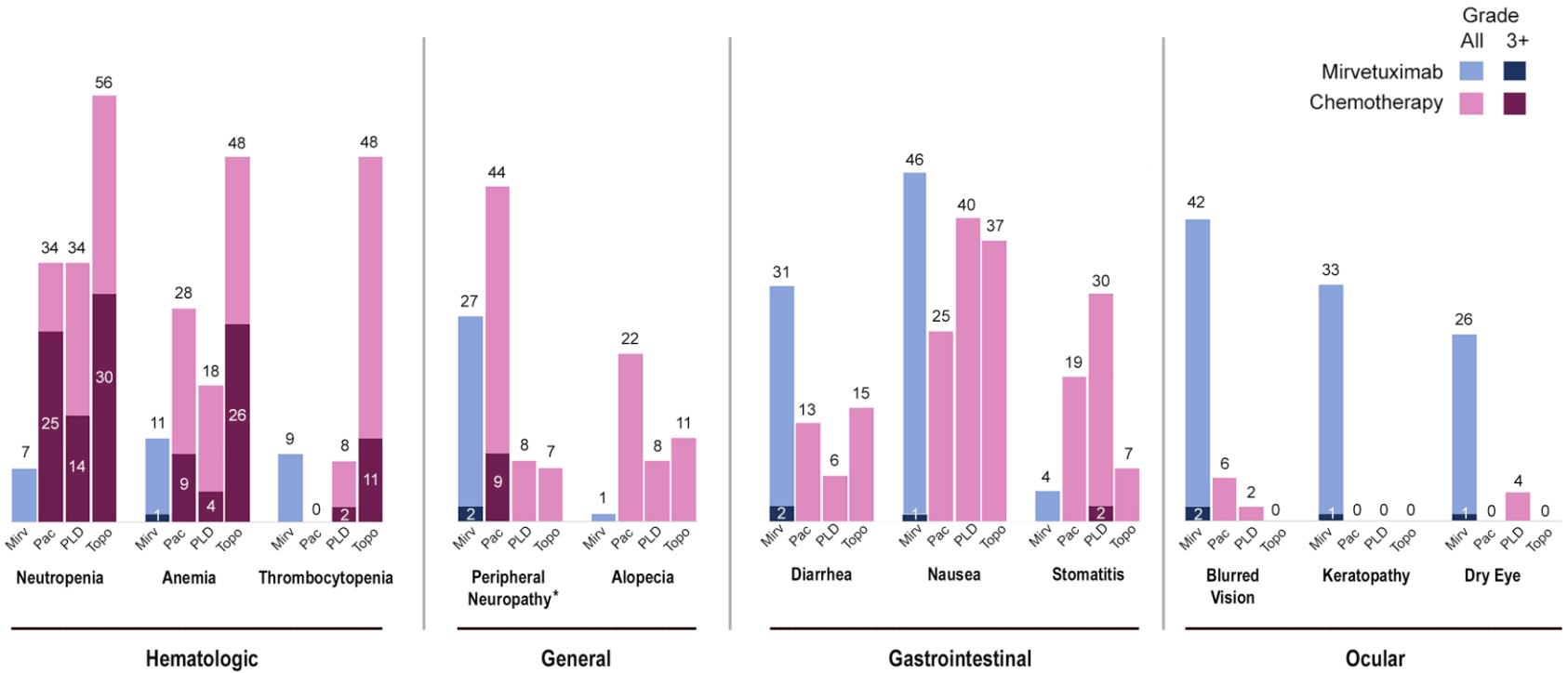
Safety Summary

MIRVETUXIMAB WAS WELL TOLERATED, WITH A DIFFERENTIATED SAFETY PROFILE, FEWER GRADE 3+ AEs, AND FEWER DRUG-RELATED DOSE REDUCTIONS/DISCONTINUATIONS

	Mirvetuximab soravtansine (n=243*)	IC Chemotherapy (n=109*)
Any TEAE	>99%	98%
Grade 3+ TEAEs	46%	61%
SAEs	28%	28%
Deaths on study drug or within 30 days of last dose	4%	6%
Dose reductions due to related TEAEs	20%	30%
Dose delays due to related TEAEs	29%	28%
Discontinuations due to related TEAEs	5%	8%

*Five and nine patients randomized into the mirvetuximab soravtansine and chemotherapy arms, respectively, did not receive any allocated intervention and were not included in the safety analyses

Most Common Treatment-Related Adverse Events (>20%): Differentiated Safety Profile



*Grade 2+ Peripheral neuropathy events were observed in 12% and 28% of patients that received mirvetuximab or paclitaxel, respectively

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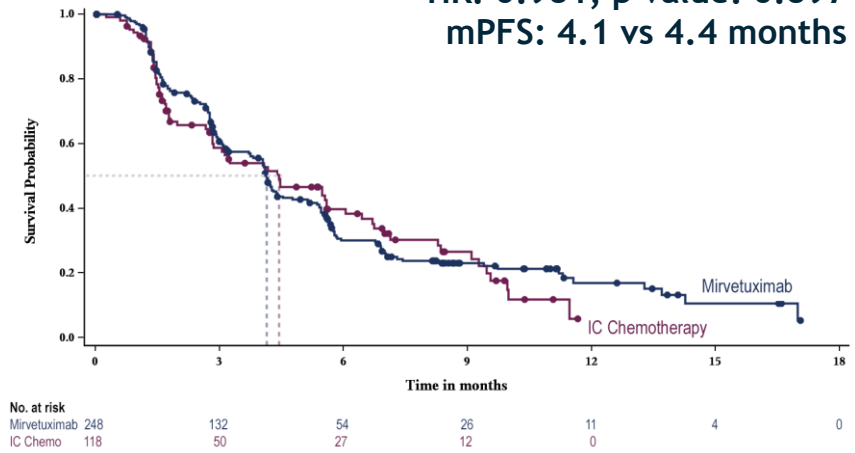
Primary Endpoint: Progression-Free Survival (By BIRC)

FORWARD I DID NOT MEET PRIMARY ENDPOINT

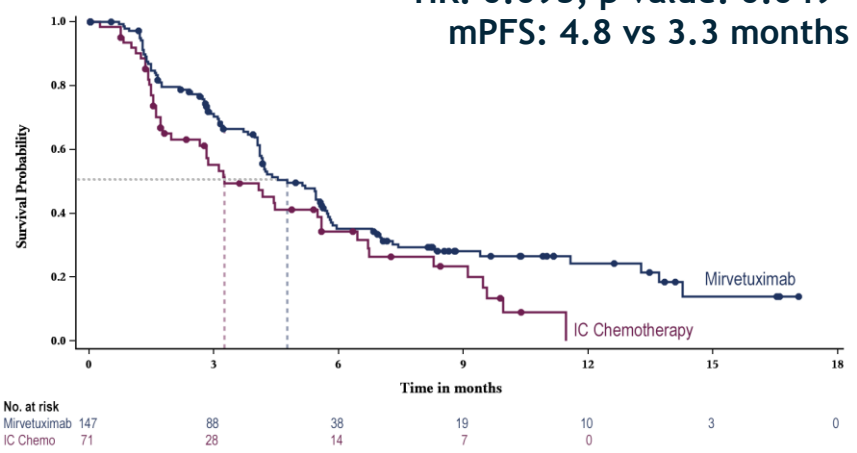
ITT POPULATION

HR: 0.981, p value: 0.897
mPFS: 4.1 vs 4.4 months



FRα HIGH POPULATION

HR: 0.693, p value: 0.049*
mPFS: 4.8 vs 3.3 months



*Not significant per Hochberg procedure

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Efficacy Results

CONSISTENT EFFICACY SIGNAL IN THE FRα HIGH POPULATION

ITT POPULATION

Endpoint	Treatment effect size [Mirv (n=248) vs IC Chemo (n=118)]	P value*
PFS by BIRC (mo.)	HR: 0.981 (0.734, 1.310) mPFS: 4.1 vs 4.4	0.897^
ORR by BIRC 95% CIs	22% vs 12% (17%, 28%) vs (7%, 19%)	0.015
OS (mo.)	HR: 0.815 (0.575, 1.154) mOS: 16.4 vs 14.0	0.248
OS (*August 2019*) (mo.)	HR: 0.846 (0.625, 1.145) mOS: 15.6 vs 13.9	0.278
PRO†	32% vs 14%	0.011

FRα HIGH POPULATION

Endpoint	Treatment effect size [Mirv (n=147) vs IC Chemo (n=71)]	P value*
PFS by BIRC (mo.)	**HR: 0.693** (0.480, 1.000) **mPFS: 4.8 vs 3.3**	0.049^
ORR by BIRC 95% CIs	**24% vs 10%** (17%, 32%) vs (4%, 19%)	0.014
OS (mo.)	HR: 0.618 (0.395, 0.966) mOS: NR vs 11.8	0.033
OS (*August 2019*) (mo.)	**HR: 0.678** (0.460, 0.999) **mOS: 16.4 vs 12.0**	0.048
PRO†	**28% vs 13%**	0.096

Nominal p-value
^Not significant based on Hochberg Procedure
†≥15-point improvement in the EORTC QLQ-OV28 Abdominal/GI Symptom Subscale
NR = not reached
Unless otherwise noted, data cut January 2019

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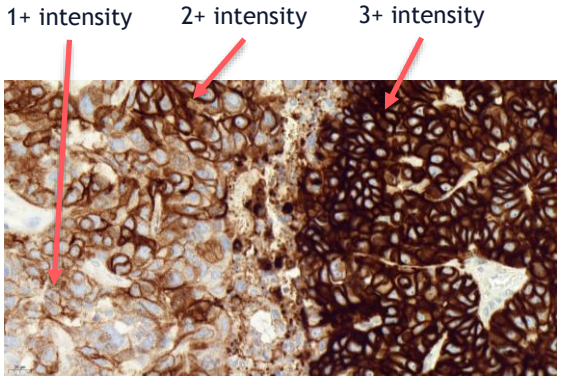
FRα Scoring in the Mirvetuximab Soravtansine Program

PS2+ SCORING

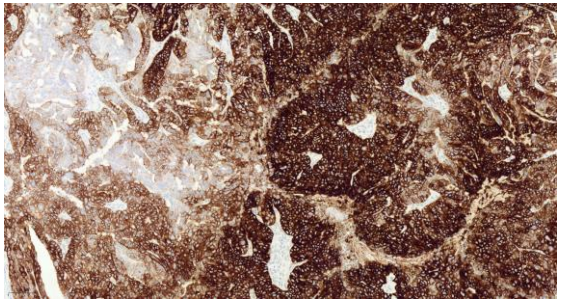
- In all prior studies, PS2+ scoring was used to assess FRα expression
- Eligibility determined by scoring intensity and percentage of tumor cells staining at 0, 1+, 2+, or 3+

PS2+ SCORING POSITIVE:
≥ 50% of tumor cells with FRα membrane staining with ≥ 2+ intensity



10X SCORING

- In FORWARD I, a simplified scoring method to assess FRα expression was implemented
- Eligibility was determined by scoring just the percentage of cells with membrane staining by ≤10X magnification, without the need to separately assess the level of intensity



10X SCORING POSITIVE:
≥ 50% of tumor cells with FRα membrane staining visible at 10X microscope objective

BRIDGING STUDY INDICATED THAT 10X SCORING WAS SUFFICIENT FOR PATIENT SELECTION
EXPLORATORY ANALYSES SUGGEST THAT THE CHANGE IN SCORING METHOD FROM PS2+ TO 10X INTRODUCED A POPULATION OF PATIENTS INTO FORWARD I WITH LOWER LEVELS OF FRα EXPRESSION THAN INTENDED

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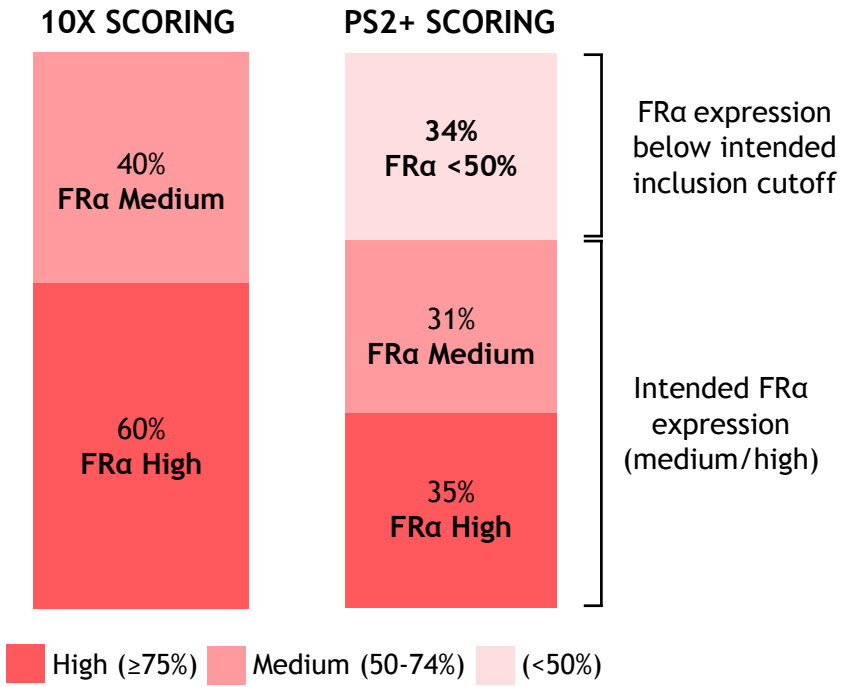
FORWARD I 10X Scoring Compared with Exploratory PS2+ Scoring (n=333)

Rescoring of the FORWARD I samples using PS2+ indicates:

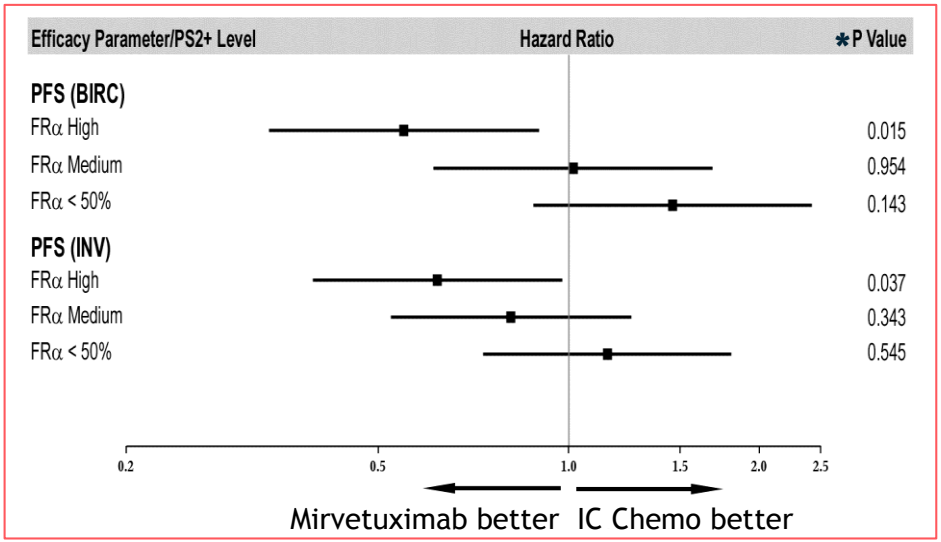
- 34% of patients enrolled in FORWARD I had low FRα levels that should have precluded enrollment; and
- the protocol-defined FRα high subset contained patients with a mixture of FRα expression levels



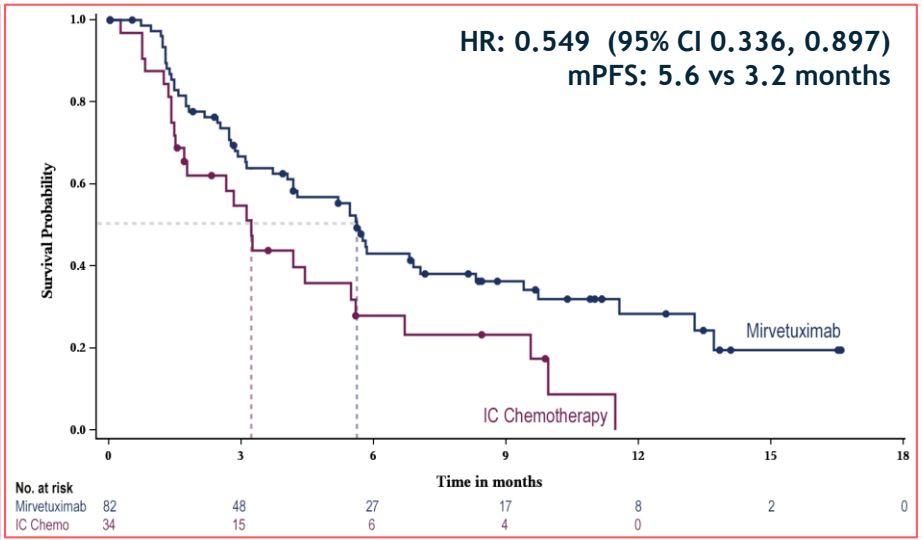
PS2+ Rescore: PFS Outcomes and Trends Across Subgroups

STRONG TREATMENT EFFECT IN INTENDED FRα HIGH POPULATION

PFS HAZARD RATIO PLOT



PFS (by BIRC) FRα HIGH



*Nominal p values
P values from unstratified log-rank test

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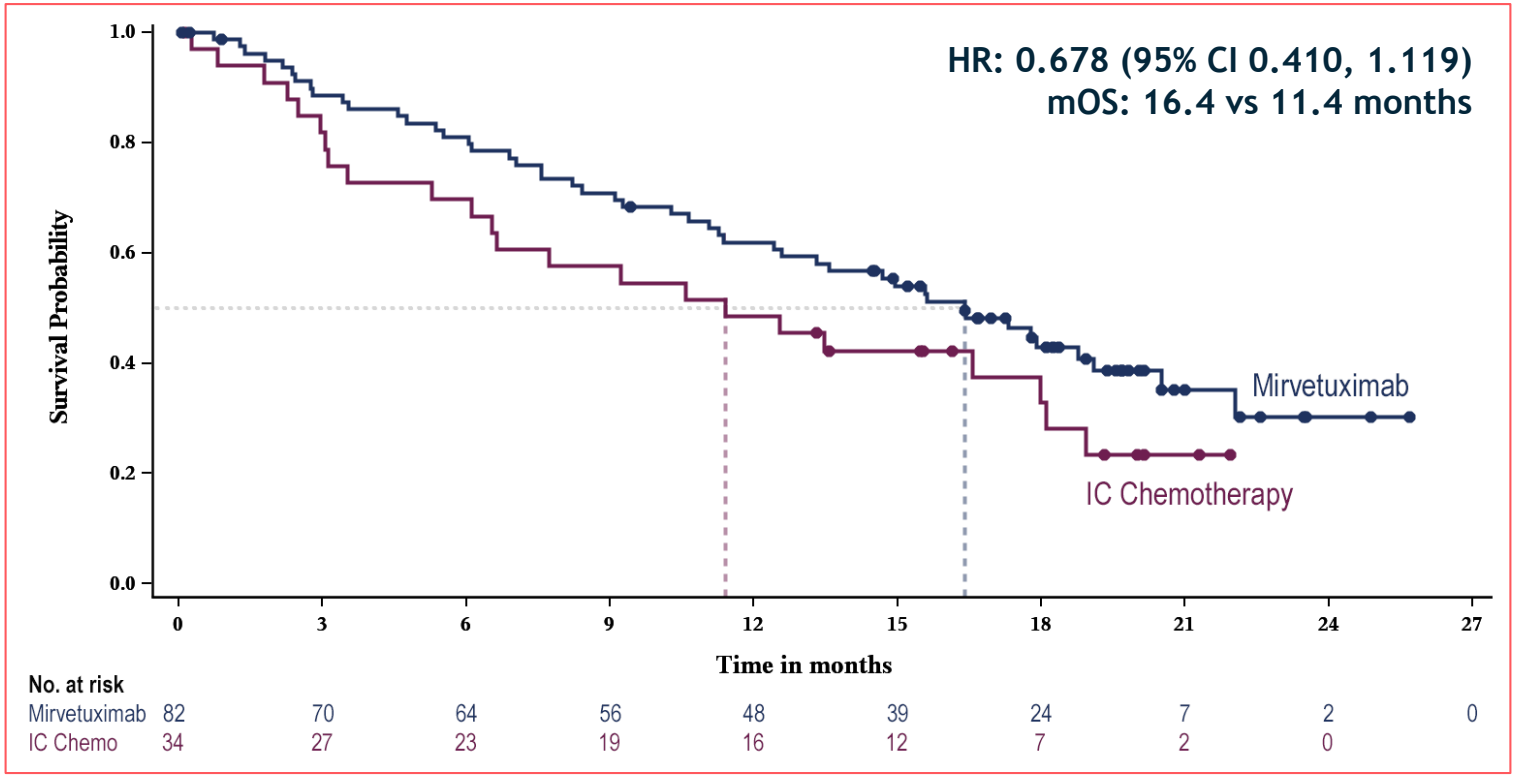
PS2+ Rescore: Overall Survival in FRα High (n=116)



(August 2019)

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PS2+ Rescore: Trends Across Subgroups

IMPROVED EFFICACY OUTCOMES CORRELATED WITH FRα EXPRESSION
STRONGEST TREATMENT EFFECTS FOR ALL EFFICACY ENDPOINTS IN THE FRα HIGH PATIENT POPULATION (BY PS2+ SCORING)

Endpoint	FRα < 50% (n=114) (Mirv vs IC Chemo)	FRα Medium (n=103) (Mirv vs IC Chemo)	FRα High (n=116) (Mirv vs IC Chemo)
PFS by BIRC (mo.)	HR: 1.458 (0.878, 2.420) mPFS: 3.8 vs 5.5	HR: 1.015 (0.611, 1.687) mPFS: 4.3 vs 5.6	**HR: 0.549** (0.336, 0.897) **mPFS: 5.6 vs 3.2**
ORR by BIRC 95% CIs	16% vs 16% (8%, 26%) vs (6%, 31%)	28% vs 18% (18%, 40%) vs (7%, 35%)	**29% vs 6%** (20%, 40%) vs (1%, 20%)
OS (*August 2019*) (mo.)	HR: 0.923 (0.548, 1.554) mOS: 14.0 vs 13.4	HR: 0.936 (0.542, 1.616) mOS: 15.9 vs 20.7	**HR: 0.678** (0.410, 1.119) **mOS: 16.4 vs 11.4**
PFS by INV (mo.)	HR: 1.149 (0.732, 1.803) mPFS: 4.0 vs 4.5	HR: 0.810 (0.523, 1.254) mPFS: 5.1 vs 2.8	**HR: 0.619** (0.394, 0.975) **mPFS: 5.6 vs 3.7**
ORR by INV 95% CIs	18% vs 21% (11%, 29%) vs (10%, 37%)	36% vs 24% (25%, 49%) vs (11%, 41%)	**38% vs 9%** (27%, 49%) vs (2%, 24%)

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FORWARD I Conclusions

- FORWARD I did not meet the PFS primary endpoint in the ITT or FRα high populations
- In the FRα high population (by 10X scoring), consistent efficacy signals were observed with mirvetuximab soravtansine
- Mirvetuximab soravtansine was well tolerated with a differentiated safety profile, fewer grade 3+ adverse events, fewer drug-related dose reductions/discontinuations, and more patients with improved abdominal/GI symptoms compared to chemotherapy
- Exploratory analyses suggest that the change in scoring method from PS2+ to 10X introduced a population of patients into FORWARD I with lower levels of FRα expression than intended
- Mirvetuximab soravtansine demonstrates improved outcomes correlated with FRα expression, with the strongest treatment effects for all efficacy endpoints in the FRα high patient population (by PS2+ scoring)
- MIRASOL, the next Phase 3 trial, in PS2+ FRα high patients is planned to begin by the end of 2019

MIRASOL Study Design: Phase 3 Registration Trial for Mirvetuximab Soravtansine Using PS2+ Scoring in FRα High Patients

MIRASOL

Enrollment and Key Eligibility

- 430 patients/330 events for PFS by INV
- Platinum resistant disease (<6 months PFI)
- Prior Bev and PARP allowed
- BRCAmut patients allowed

Statistical Assumptions

- α=0.05 (two-sided), Power = 90%, HR=0.7; control arm mPFS 3.5 mo

Mirvetuximab Soravtansine

6 mg/kg (adjusted ideal body weight) once every 3 weeks

1:1 Randomization

STRATIFICATION FACTORS

IC Chemotherapy Choice (Paclitaxel, PLD, Topotecan)

Prior therapies (1 vs 2 vs 3)

Investigator's Choice Chemotherapy

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***Paclitaxel**: 80 mg/m² weekly*
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Primary Endpoint

Progression-free survival by INV
BICR for sensitivity analysis*

Secondary Endpoints

Overall response rate by INV
Overall survival
Patient reported outcomes

*BICR: Blinded Independent Central Review
†PLD: pegylated liposomal doxorubicin

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Closing Remarks

Mark Enyedy

President and CEO

Summary

FORWARD I

- Trial did not meet primary endpoint of progression-free survival
- Consistent efficacy signal seen in folate receptor alpha (FRα) high patients
- Favorable tolerability profile confirmed

Exploratory Analyses

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Q&A