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Investor Call

May 19, 2017

Nasdaq: IMGN

Forward-Looking Statements

This presentation includes forward-looking statements based on management's current expectations. These statements include, but are not limited to, ImmunoGen's expectations related to: the occurrence, timing and outcome of potential pre-clinical, clinical and regulatory events related to the Company's and its collaboration partners' product programs; the presentation of preclinical and clinical data on the Company's and its collaboration partners' product candidates; and the financial guidance provided. 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 these slides. Factors that could cause future results to differ materially from such expectations include, but are not limited to: the timing and outcome of ImmunoGen's and its collaboration partners' research and clinical development processes; the difficulties inherent in the development of novel pharmaceuticals, including uncertainties as to the timing, expense and results of preclinical studies, clinical trials and regulatory processes; ImmunoGen's ability to financially support its product programs; the Company's dependence on its collaborative partners; industry merger and acquisition activity; and other factors more fully described in ImmunoGen's Annual Report on Form 10-K for the fiscal year ended December 31, 2016 and other reports filed with the Securities and Exchange Commission.

Continued Execution Against Our Strategic Priorities

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ASCO 2017

Promising safety and efficacy data further support the potential of mirvetuximab soravtansine to treat FRα-positive epithelial ovarian cancer as both a monotherapy and in combination with existing therapies

Strategic Direction and Focused Priorities

BUILD A FULLY-INTEGRATED BIOTECH DELIVERING INNOVATIVE ADC THERAPIES THAT MEANINGFULLY IMPROVE THE LIVES OF CANCER PATIENTS

Execute on speed-to-market for mirvetuximab soravtansine

Commercialize by 2020 for platinum-resistant ovarian cancer

Continue to drive innovation in ADCs as cancer therapies

Payloads, linkers, methods of conjugation

Accelerate earlier-stage portfolio

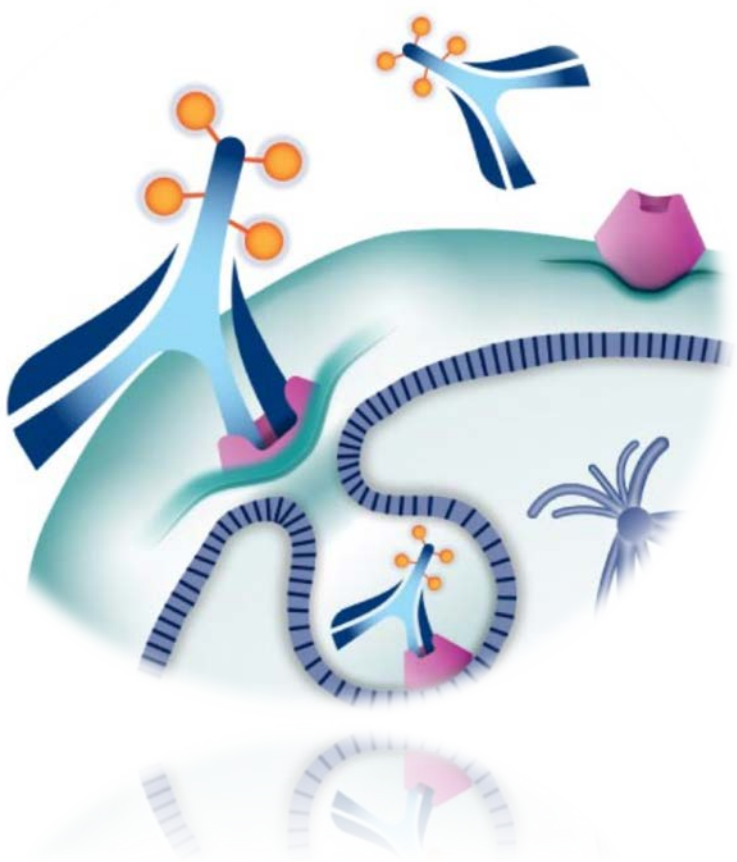
IMGN779, IMGN632

Lever partnerships to expand impact of innovations and strengthen financials

NOVARTIS, Biotest, Lilly, CytomX Therapeutics, Takeda, Sanofi, Bayer, Roche, Amgen

ENHANCED FINANCIAL DISCIPLINE

Mirvetuximab Soravtansine:
Phase 3 Program with Significant Potential



Differentiated

- Distinct MOA and target
- Potential to replace single-agent chemotherapy and serve as a preferred agent for combination therapy in multiple solid tumor indications

Significant Need

- Recurrent ovarian cancer – need for more effective, better-tolerated therapies
  - 7,500-9,000 platinum-sensitive patients in 2nd line[1]
  - 19,000-24,000 platinum-resistant patients in ≥ 2nd line[1]

Opportunity

- Commercialize by 2020 via monotherapy speed-to-market strategy in ovarian cancer
- Label expansion, earlier lines of treatment through combination regimens in ovarian cancer
- Potential to expand into additional FRα-positive solid tumors
  - Non-small cell lung cancer, endometrial, and triple negative breast cancer
  - Lever cooperative groups, ISTs to generate additional data in other indications
    - NCCN, IST with Rubraca™

[1]Decision Resources Group Patientbase

2017 ASCO Annual Meeting Abstracts

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Abstract	Title
5547	Mirvetuximab soravtansine (IMGN853), a folate receptor alpha (FRα)-targeting antibody-drug conjugate (ADC), in platinum-resistant epithelial ovarian cancer (EOC) patients (pts): Activity and safety analyses in phase I pooled expansion cohorts.
5553	Safety findings from FORWARD II: A phase 1b study evaluating the folate receptor alpha (FRα)-targeting antibody-drug conjugate (ADC) mirvetuximab soravtansine (IMGN853) in combination with bevacizumab, carboplatin, pegylated liposomal doxorubicin (PLD), or pembrolizumab in patients (pts) with ovarian cancer.
TPS5607	FORWARD I (GOG 3011): A randomized phase 3 study to evaluate the safety and efficacy of mirvetuximab soravtansine (IMGN853) versus chemotherapy in adults with folate receptor alpha (FRα)-positive, platinum-resistant epithelial ovarian cancer (EOC), primary peritoneal cancer, or primary fallopian tube cancer.

Mirvetuximab 0401 FIH Phase I Program
Expansion Cohorts

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Dose Escalation

Phase 1 Escalation (69pts)
RP2D 6 mg/kg Q3W

→

Individual Dose Expansion Cohorts

Platinum-Resistant Ovarian Cancer
Completed (46 pts); Data at ASCO 2016

Ovarian Biopsy Cohort
Completed (27 pts); Data at SGO 2017

Ovarian w/ Corticosteroid Eye Drops
Completed (40 pts)

→

Pooled Expansion Data

Pooled 0401 Ovarian Cancer Expansion Cohorts (113 pts)
Data at ASCO 2017

Mirvetuximab 0401 Phase 1 Expansion Cohorts
Patient Demographics

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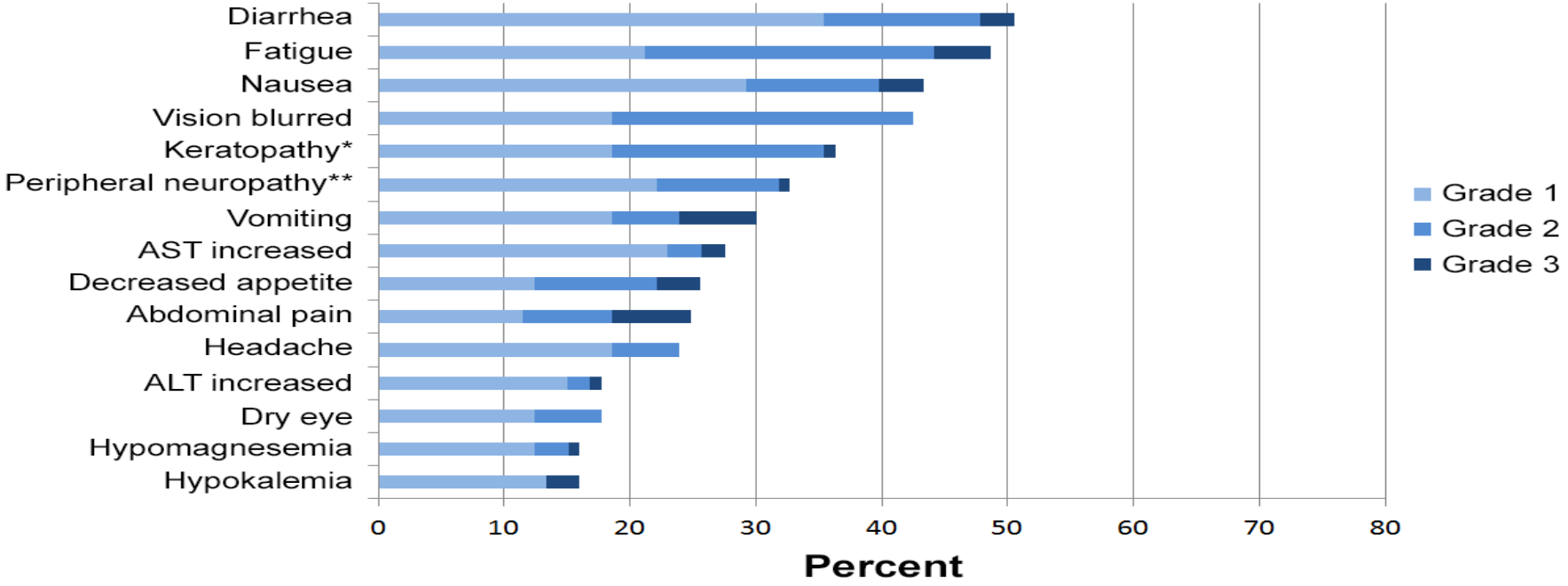
	Pooled population (n=113)	FORWARD I-eligible (n=36)
Age		
Median (range)	61 (38-83)	65 (46-81)
No. of prior systemic therapies		
Median	3	3
1-3	57 (50%)	36 (100%)
4+	56 (50%)	0 (0%)
Platinum resistant		
Yes	96 (85%)	36 (100%)
No	17 (15%)	0 (0%)
Prior exposure		
Platinum compounds	113 (100%)	36 (100%)
Taxanes	113 (100%)	36 (100%)
Bevacizumab	76 (67%)	19 (53%)
PARP inhibitor	25 (22%)	7 (19%)

Mirvetuximab Demonstrates Manageable Safety Profile
Summary of Phase 1 Expansion Cohorts Pooled Analyses



Keratopathy and Neuropathy peripheral include several AE terms pooled together.

- Mirvetuximab was well tolerated across all ovarian cancer cohorts in the Phase I study (n = 113)
- Adverse events were generally grade 1 or 2 and manageable
- Drug-related AEs leading to discontinuation were seen in 10 patients (9%)
- The adverse event profile for the FORWARD 1-eligible subset (n = 36) was consistent with the overall pooled population

Mirvetuximab Demonstrates Consistent and Encouraging Activity in Platinum-Resistant Ovarian Cancer

	ASCO 2016 Cohort [1]		Pooled Analysis[2]	
	All Patients (n = 46)	PROC 1-3 priors + med/high FRα expression (n = 16)	All Patients (n = 113)	PROC 1-3 priors + med/high FRα expression (n = 36)
cORR (95% CI)	26% (14, 41)	44% (20, 70)	30% (22, 39)	47% (30, 65)
PFS Median months (95% CI)	4.8 (3.9, 5.7)	6.7 (3.9, 11.0)	4.3 (3.9, 5.4)	6.7 (4.1, 8.3)

FORWARD I Phase 3 Study Population

Current single-agent SOC: 15-20% ORR; 3.5 – 4 mo. PFS

Notes: 1.) Moore et al ASCO 2016; 2.) Moore et al ASCO 2017

FORWARD I: Phase 3 for Registration in Ovarian Cancer

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FORWARD I

333 Patients

In partnership with
GOG Foundation, Inc.
>100 sites in North America
and Europe

Mirvetuximab soravtansine

Physician's choice single agent chemo*

2:1 randomization

Primary Endpoint

Progression-Free Survival (PFS)
- High FRα expressers only
- All patients

Population

For patients with FRα-positive (high/medium) platinum-resistant ovarian cancer treated with up to 3 prior regimens

~12,000-14,000 FRα-positive (high/medium) platinum-resistant patients in ≥ 2nd line

Data presented at SGO annual meeting (3/2017) confirm use of archival tumor tissue to determine patient selection

*Pegylated liposomal doxorubicin (PLD), topotecan, weekly paclitaxel.
FORWARD I ClinicalTrials.gov identifier: NCT02631876.
SGO 2017, abstract # 61

FORWARD II: Phase 1b/2 Combination Regimens in Ovarian Cancer

FORWARD II

Patients with FRα-positive ovarian cancer

- **+ Avastin®** → *Dose escalation completed*
- **+ carboplatin** → *Dose escalation completed*
- **+ PLD** → *Dose escalation completed*
- **+ Keytruda®** → *Dose escalation ongoing*

→ **Avastin® naïve and pretreated expansion cohorts** — ***Ongoing***

→ **Keytruda® expansion cohort** — ***To start 2Q2017***

- Preclinical synergy* supports selection of broader patient population (*i.e.,* include FRα low)
  - ~80% of ovarian cancer patients
- Full dose of all combination agents reached
  - Bev expansion cohort enrolling
  - At highest dose level of pembro combination; carbo and PLD dose escalation complete
- Positions mirvetuximab soravtansine to potentially move into earlier lines of therapy

*Preclinical combination data published – Ponte et al, Neoplasia 2016

FORWARD II ClinicalTrials.gov identifier: NCT02606305.

FORWARD II: Phase 1b/2 Data Results

Parameter	Avastin	Carboplatin	PLD	Keytruda
Number enrolled	14	18	16	13
Median number of prior therapies (range)	6 (2-8)	3 (1-5)	2 (1-6)	5 (2-7)
Grade 3 or greater adverse events in > 1 patient	Hypertension, small intestinal obstruction	Neutropenia, anemia, thrombocytopenia, hypokalemia	Anemia, vomiting	None
Dose limiting toxicity	1 pt: grade 2 neutropenia and thrombocytopenia	1 pt: grade 3 vasculitis	None	None
Objective response rate	29% (95% CI 8,58)	65% (95% CI 38,86)	13% (95% CI 2, 38)	NA
Median progression free survival (months)	9.5 (95% CI 3.5, 15.2)	12.1 (95% CI 9.0, 15.0)	7.0 (95% CI 1.7, NE)	NA

- Phase I dose escalation ovarian cancer patient population
- Full doses of each agent are combinable
- Safety profile is manageable and expected based on known profiles of each agent
- Most common low grade AEs: diarrhea, nausea, blurred vision, fatigue
- Encouraging efficacy data

ASCO 2017: Mirvetuximab Key Takeaways

- ✓Monotherapy data consistent and promising, now with an expanded set of safety and anti-tumor activity results
- ✓Anti-tumor activity observed in larger subset of patients who would meet the key eligibility criteria for FORWARD I supports the design of our pivotal trial
- ✓Safety profile of mirvetuximab lends itself to combination therapy
- ✓Anti-tumor activity from the dose escalation portion of FORWARD II supports further development of mirvetuximab in multiple combinations

Value-Creating Milestones Throughout 2017

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MIRVETUXIMAB SORAVTANSINE	• FORWARD I registration trial – Enrolled first patient (✓) – Rapid patient accrual with more than 100 sites becoming active in 2017 • Clinical data presentations – First data from FORWARD II combination trial, additional expanded Phase 1 data (2Q2017) (✓)
EARLIER-STAGE PORTFOLIO AND RESEARCH	• IMGN779 – Early clinical data – safety (mid-2017); expanded clinical data (4Q2017) • IMGN632 – IND activated/Phase 1 initiation (2H2017) • Nine posters highlighting platform innovations, novel ADC targets (AACR, April 2017) (✓) • ImmunoGen/CytomX collaboration candidate into preclinical (2017)
BUSINESS OPERATIONS	• Partner progress • New collaboration

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Q&A