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Current as of May 9, 2017

Nasdaq: IMGN

Forward-Looking Statements

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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 transition report on Form 10-KT for the six-month transition period ended December 31, 2016 and other reports filed with the Securities and Exchange Commission.

ImmunoGen Today: The Right Ingredients for Success

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- Leadership in ADCs
- Lead program in Phase 3
- Platform generating novel clinical candidates
- Technology validated clinically and through partnerships
- Strong cash position
- Experienced management team

Strategic Direction and Focused Priorities

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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

Significant Progress Against Our Goals

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Mirvetuximab Soravtansine

- Obtained FDA and EMA agreement with Phase 3 FORWARD I trial design to support full approval
- Dosed first patient in FORWARD I trial and activated trial sites globally
- Initiated Phase 1b/2 FORWARD II combination study
- Established collaborations, including Merck Keytruda® combination, Clovis Rubraca™ IST, and NCCN clinical studies
- Reported Phase 1 ovarian expansion cohort data at ASCO
- Published findings in *Journal of Clinical Oncology* and *Neoplasia*

Earlier-stage portfolio

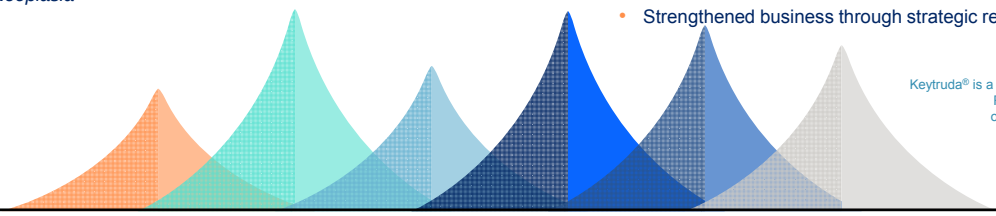
- Initiated Phase 1 clinical testing with IMGN779
- Reported preclinical data, including oral presentation, for IMGN632 at ASH 2016

Partnerships

- Bayer advanced anetumab ravtansine to Phase 2 registration trial
- Sanofi advanced isatuximab to Phase 3
- Novartis advanced HKT288 to Phase 1

Operations

- Strengthened business through strategic review



Differentiated Pipeline of Novel Proprietary Programs

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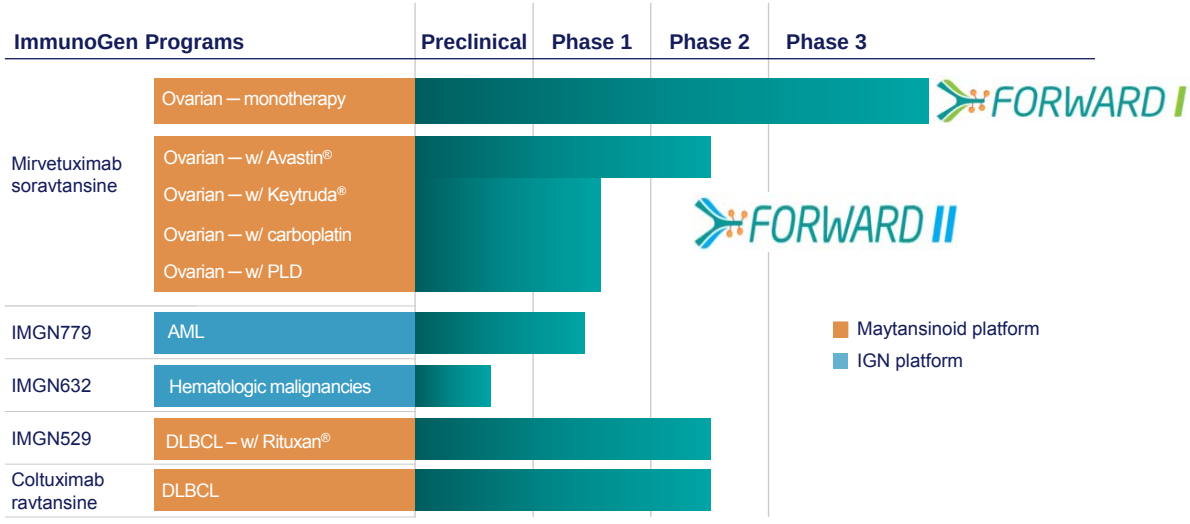

PLD: pegylated liposomal doxorubicin
AML: acute myeloid leukemia, DLBCL: diffuse large B-cell lymphoma

Mirvetuximab Soravtansine: Phase 3 Program with Significant Potential

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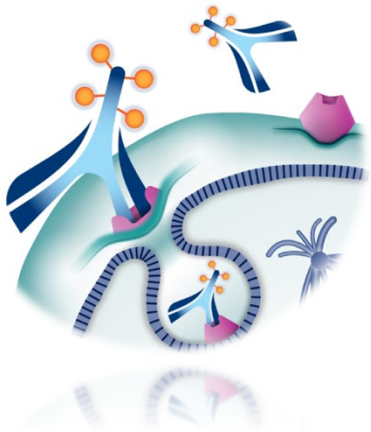

Differentiated

- 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
Rubraca™ is a trademark of Clovis Oncology.

Compelling Monotherapy Activity in Platinum-Resistant Ovarian Cancer

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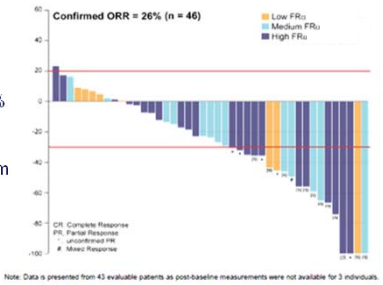
Current single-agent therapies: Low response and short PFS

	ORR	mPFS (months)	Common AEs
Paclitaxel[1]	6.7-30.2%	3.4-3.9	Hair loss, neuropathy
PLD (pegylated liposomal doxorubicin)[2]	7.8-12.3%	2.1-3.7	Hand foot syndrome
Topotecan[3]	0.0-19.3%	2.1-4.2	Low blood counts, fatigue

Mirvetuximab Soravtansine[4]

Maximum % Change in Target Lesions from Baseline



Note: Data is presented from 43 evaluable patients as post-baseline measurements were not available for 3 individuals.

	ORR	mPFS (months)
Overall pop (n=46)	26%	4.8
Pts with 1-3 priors, med/high FRα expression (n=16)	44%	6.7

ORR: objective response rate; PFS: progression-free survival;[1,2,3]JCO, vol 33; 32 Nov 2015, Gyn Onc 133(2014) 624-631
[4]ASCO 2016 abstract #5567; DOI:10.1200/JCO.2016.69.9538 *Journal of Clinical Oncology* - published online December 28, 2016

Favorable Safety with Low Grade, Manageable AEs

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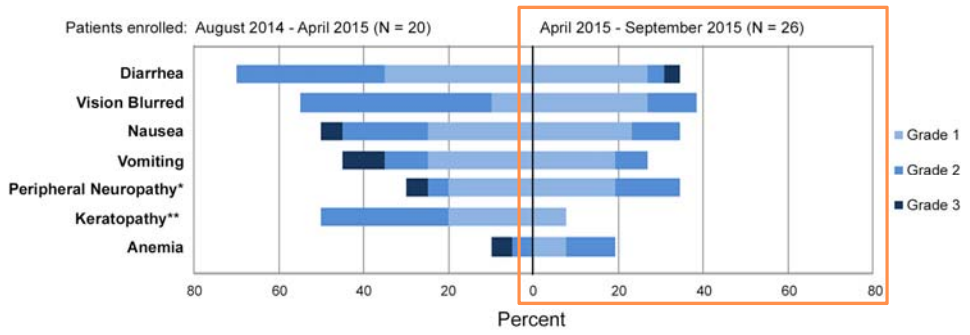

- Predominantly Grade 1 and 2
- Incidence and severity decreased with increased investigator experience and prophylactic measures implemented April 2015

*Includes Neuropathy peripheral, Peripheral sensory neuropathy, Peripheral motor neuropathy, Paraesthesia, and Hypoesthesia
**Includes Corneal cyst, Corneal disorder, Corneal deposits, Corneal epithelial microcysts, Keratitis, Keratopathy, Limbal stem cell deficiency, and Punctate keratitis

ASCO 2016 abstract #5567

Ready for Pivotal Development

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- Compelling profile
  - Robust single-agent activity – especially in patients with 1-3 priors and med/high FRα
  - Well-tolerated – adverse events generally low grade and easily managed
- Global KOL Gyn Onc Steering Committee supported advancement to Phase 3
- FDA and EMA in agreement with primary endpoint, statistical analysis plan, and size of safety database
- Larger sample size and longer follow-up from initial and subsequent ovarian cancer cohorts confirm activity and tolerability profile
  - Expanded data to be presented at ASCO in June 2017

ADVISOR	ACADEMIC POSITION	LEADERSHIP	INSTITUTION
Carol Aghajanian, MD	Chief Gynecological Medical Oncology Service	Chair GOG Ovarian Committee	Memorial Sloan Kettering Cancer Center
Michael Birrer, MD, PhD	Director of Gynecological Medial Oncology	Chair GOG Translational Medicine Committee	Massachusetts General Hospital Cancer Center
Robert Coleman, MD	Professor of Gynecologic Oncology and Vice-Chair of Clinical Research	Former President of SGO	MD Anderson Cancer Network
Lainie Martin, MD	Chief Gynecologic Medical Oncology	NCCN Ovarian Guideline Committee	Fox Chase Cancer Center
Ursula Matulonis, MD	Interim Director, Susan F. Smith Center for Women's Cancers Medical Director, Gynecologic Oncology Institute Physician	NCCN Ovarian Guidelines Committee	Dana-Farber Cancer Institute
Bradley Monk, MD	Director of the Division of Gynecologic Oncology	Co-chair Partners GOG Committee	Arizona Cancer Center
Kathleen Moore, MD	Associate Professor of Section of Gynecologic Oncology and Director of Oklahoma TSET Phase I Program at the Stephenson Cancer Center	Co-Chair Endometrial GOG Committee	Stephenson Cancer Center
Andres Poveda, MD	Director Gynecologic Medical Oncology	President GCIG	Fundación Investigación Hospital General Universitari Valencia
Ignace Vergote, MD, PhD	Medical Head of Department Gynaecology and Obstetrics	Founder of ENGOT	UZ Leuven

FORWARD I: Phase 3 for Registration in Ovarian Cancer

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FORWARD I

333 Patients

Being conducted in partnership with GOG Foundation, Inc.
>100 sites in US, Canada, W. Europe

Mirvetuximab soravtansine

Physician's choice single agent chemo*

2:1 randomization

Primary Endpoint

Progression-Free Survival (PFS)
- High FRα expressers only, or
- 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

Expanding Opportunity through Multiple Combinations

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FORWARD II

Patients with FRα-positive ovarian cancer

+ Avastin® — *Preferred combination agent in platinum-resistant disease*
→ *Phase 2 expansion enrolling*

+ Keytruda® — *Notable I/O + maytansinoid ADC preclinical data*
→ *Phase 2 expansion planned*

+ carboplatin — *Moves ADC into platinum-sensitive disease*

+ PLD — *Extensive use for ovarian cancer*

Positions mirvetuximab soravtansine to move into earlier lines of therapy

Avastin® and Keytruda ® are registered trademarks of their respective owners.
Preclinical combo: Ponte et al, *Neoplasia* 2016.
FORWARD II ClinicalTrials.gov identifier: NCT02606305.

A New Class of DNA-Acting ADCs: IGN Payloads

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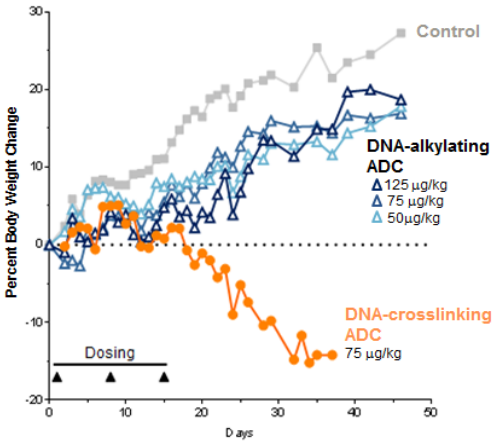
Designed for improved efficacy and tolerability

- Highly potent without sustained toxicity that limits re-dosing
- Indolinobenzodiazepine backbone
  - More potent than SJG-136 – Spirogen's "free-drug" PBD
  - Payload binds to minor groove of DNA
  - Monoimine chemistry alkylates target DNA
    - Retains potency of crosslinking compounds
    - Avoids high toxicity of crosslinking drugs seen in preclinical studies

Preclinical Tolerability



AACR-NCI-EORTC 2013 abstract #C162
Mol Cancer Ther; 15(8) August 2016

Accelerating IGN ADCs for Hematologic Malignancies

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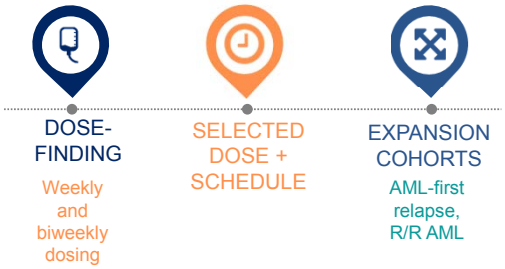
IMGN779: targeting CD33

- First ADC with IGN payload
- Enrolling AML patients in Phase 1
- Clinical data expected in mid-2017



IMGN632: targeting CD123

- Next generation IGN payload with 10X increase in potency
- Peptide linker and proprietary site-specific conjugation yields excellent plasma stability and efficient drug release at tumor site
- Data reported at 2016 ASH (oral ab #768):
  - Exceptional activity in preclinical AML models, including those resistant to standard of care therapies, with Therapeutic Index >100 fold
  - >50 fold reduction in toxicity to human marrow progenitor cells compared to a DNA crosslinking payload, while maintaining similar potency on human AML blasts and xenografts
- IND application and clinical testing expected in 2H2017

Most Comprehensive ADC Toolbox

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MODULAR APPROACH → INTEGRATED SYSTEM

Targeting Vehicles

- MAbs
- Probodies
- Novel protein and chemical binders

Linkers

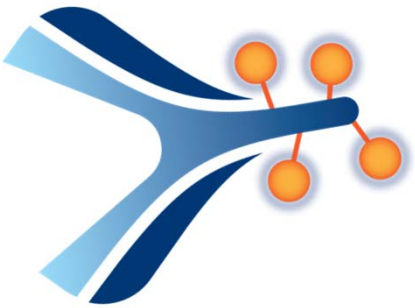
- Thioether
- Peptide
- Hindered disulfides
- Others in development

Payloads

- Tubulin-acting maytansinoids (e.g., DM1, DM4)
- DNA-acting IGNs (e.g., DGN462, DGN549) – alkylate DNA

Conjugate Chemistry and Screening

- Lysine and site-specific conjugation
- Microscale synthesis and screening methods
- Proprietary conjugate CMC capabilities



DRIVES CONTINUED ADC INNOVATION AND LEADERSHIP

Levering Partnerships to Expand Impact of Innovation

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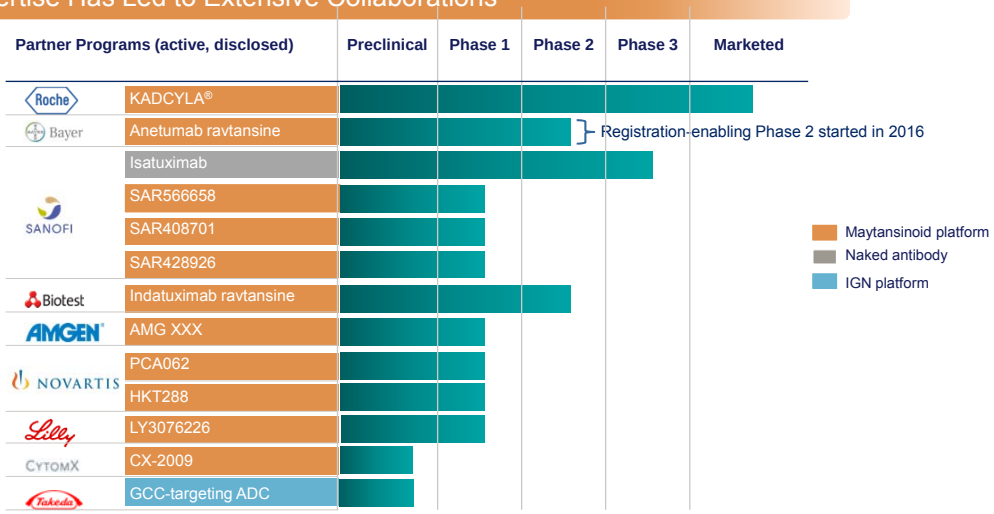
ADC Expertise Has Led to Extensive Collaborations



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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

ImmunoGen: Positioned for Sustainable Growth

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- Most comprehensive, validated ADC technology portfolio
- Robust pipeline of differentiated product candidates
- Enhanced financial resources
- Strong partnerships
- Experienced team


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