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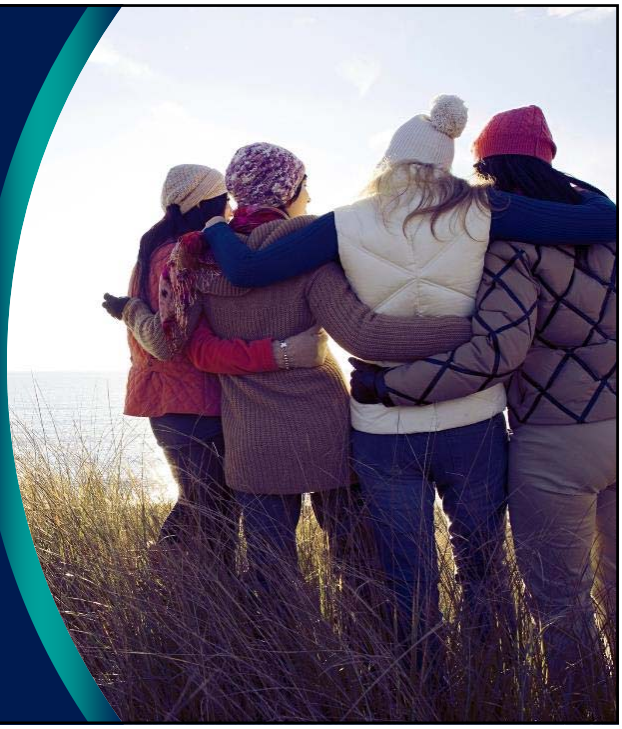
NASDAQ: IMGN

TARGET A BETTER NOW

Current as of January 2018



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 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.

OUR COMMITMENT TO TARGET A BETTER NOW

MIRVETUXIMAB PHASE 3 IN OVARIAN CANCER

LEADING ADC INNOVATION AND PIPELINE

PRODUCTIVE RESEARCH PLATFORM

PROVEN MANAGEMENT TEAM

STRONG CASH POSITION

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ADVANCING OUR STRATEGIC PRIORITIES TO BRING ANTIBODY-DRUG CONJUGATES TO PATIENTS

EXECUTE SPEED-TO-MARKET STRATEGY FOR MIRVETUXIMAB SORAVTANSINE

ACCELERATE NOVEL ADC PIPELINE

SUSTAIN LEADERSHIP IN ADC FIELD THROUGH PLATFORM INNOVATION

EXPAND REACH AND STRENGTHEN FINANCIALS THROUGH PARTERNSHIPS

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EXECUTED ON OUR 2017 GOALS AND MUCH MORE

MIRVETUXIMAB SORAVTANSINE

- FORWARD I global Phase 3 trial on track
- Phase I expansion cohorts pooled analysis at ASCO
- FORWARD II Phase 1b/2 combo data at ASCO
- Multiple clinical collaborations and data publications

ADC PIPELINE

- IMGN779 Phase I clinical data at EHA and ASH
- IMGN632 Phase I trial enrolling patients
- Collaboration with Jazz Pharmaceuticals
- MacroGenics partnership advanced ADAM9 into preclinical development

OPERATIONS

- Divested IMGN529 to Debiopharm
- Convertible debt exchange
- $102M public offering
- $267M year-end cash[1]

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[1]Unaudited cash and cash equivalents as of 12/31/17

MIRVETUXIMAB

IMGN779

NEAR-TERM VALUE DRIVER

MIRVETUXIMAB IN OVARIAN CANCER

IMGN632

PLATFORM

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WHAT'S NEXT FOR HER?

- Current treatments have 6-30% response rate and median progression-free survival (mPFS) of 2.1-4.2 months[1-3]
- Significant toxicities associated with current treatments[1-3]
- Despite advances, >14,000 women die annually from ovarian cancer in US[4]

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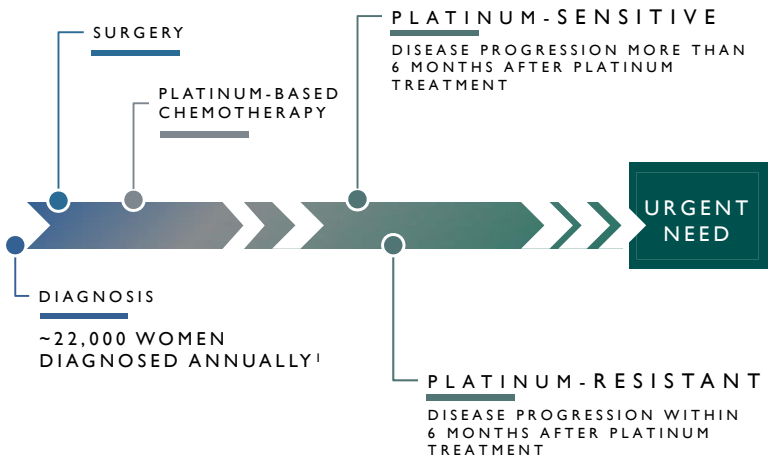


[1,2,3]JCO, vol 33; 32 Nov 2015, Gyn Onc 133(2014) 624-631.
[4]American Cancer Society – About Ovarian Cancer (2016)

TARGET A BETTER NOW
FOR WOMEN WITH OVARIAN CANCER

MIRVETUXIMAB SORAVTANSINE

TARGET A BETTER NOW
FOR WOMEN WITH OVARIAN CANCER

Distinct target and mechanism of action

Demonstrated activity in platinum-resistant and platinum-sensitive disease

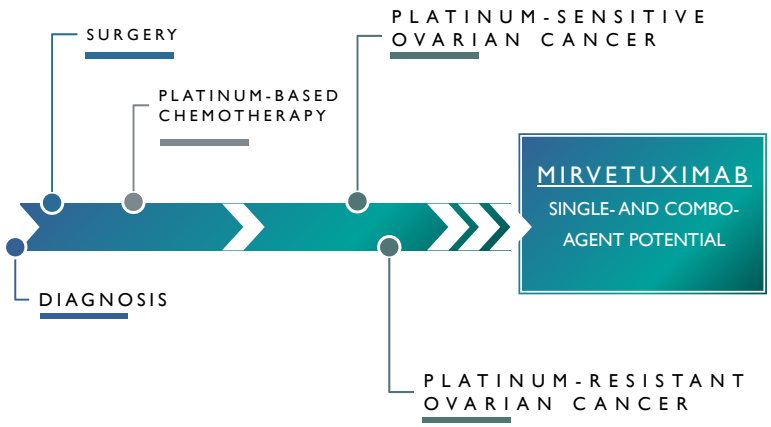
Favorable safety profile supports use as combo agent

Potential in other FRα-positive solid tumors

MIRVETUXIMAB SORAVTANSINE

DISPLACING CHEMO IN THE TREATMENT FOR OVARIAN CANCER

$1B+
POTENTIAL OPPORTUNITY IN OVARIAN CANCER[1]



- 7,500 (US) + 9,000 (EU) platinum-sensitive patients[1]
- 19,000 (US) + 24,000 (EU) platinum-resistant patients[1]
- 60% of ovarian cancer patients express FRα at med/high levels[1]

[1] Decision Resources Group Ovarian Cancer report (Jun 2017)

CONSISTENT MIRVETUXIMAB SINGLE-AGENT DATA

6.7
MONTHS
mPFS

ASCO 2017 POOLED ANALYSIS[1]

- Well-tolerated across all ovarian cancer cohorts (n=113)
- mPFS of 6.7 months in platinum-resistant ovarian cancer 1-3 prior treatments, med/high FRα expression (n=36)

"Mirvetuximab is the most exciting drug I've worked on in my career."

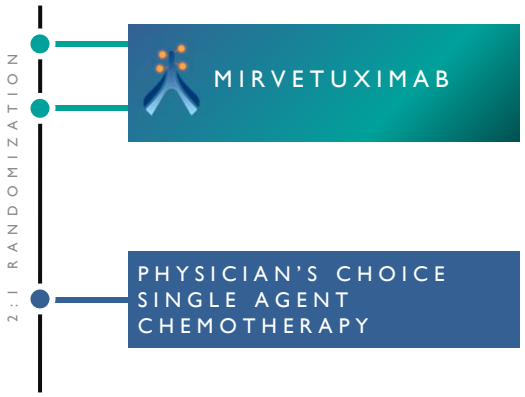
- DR. LAINIE MARTIN, CHIEF, GYNECOLOGIC MEDICAL ONCOLOGY, FOX CHASE CANCER CENTER

[1] Moore et al, abstract 5547, ASCO 2017

INITIAL REGISTRATION:

SINGLE-AGENT APPROACH IN PLATINUM-RESISTANT OVARIAN CANCER

FORWARD I



ENROLLMENT:
333 patients with FRα-positive (med/high) platinum-resistant ovarian cancer treated with up to 3 prior regimens

PRIMARY ENDPOINT:
PFS for all patients and for high FRα expressers only

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MIRVETUXIMAB COMBINATIONS OFFER POTENTIAL TO TREAT MORE WOMEN WITH OVARIAN CANCER[1]

9.5 MONTHS mPFS
AVASTIN® COMBO

12.1 MONTHS mPFS
CARBOPLATIN COMBO

- Full dose of each agent able to be combined
- Favorable safety profile with adverse events in-line with known profiles of each agent
- Keytruda® combination cohort dose-escalation data expected in 1Q18

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[1]O'Malley et al, abstract 5553, ASCO 2017
Avastin® is a registered trademark of Genentech
Keytruda® is a registered trademark of Merck

LABEL EXPANSION:

BECOME THE COMBINATION AGENT OF CHOICE

FORWARD II

ENROLLMENT:
Patients with recurrent platinum-resistant or platinum-sensitive FRα-positive ovarian cancer

MIRVETUXIMAB

+ **AVASTIN®**
  Avastin® naïve and pretreated expansion cohorts ongoing
+ **KEYTRUDA®**
  Keytruda® expansion cohort ongoing
+ **CARBOPLATIN**
  Triplet expansion planned: mirvetuximab+Avastin®+carboplatin

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Avastin® is a registered trademark of Genentech
Keytruda® is a registered trademark of Merck

ROBUST MIRVETUXIMAB CLINICAL MILESTONES IN 2018 AND BEYOND

2018

1Q18
- FORWARD I futility analysis
- Initiate triplet cohort in FORWARD II
- FORWARD II Keytruda® dose-escalation data

MID-18
COMPLETE FORWARD I ENROLLMENT

2Q18
- FORWARD II Avastin® expansion cohort data

2H18
- FORWARD II Keytruda® expansion cohort data

2019

1H19
FORWARD I TOP-LINE RESULTS

2020
FIRST MARKET APPROVAL

ONGOING

ISTs in FRα-positive solid tumors
- Two studies as single-agent in triple-negative breast cancer (underway with NCCN)
- Combination with gemcitabine in gynecologic malignancies (underway with NCCN)
- Combination with Rubraca® in ovarian cancer (planned with Clovis)

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Rubraca® is a registered trademark of Clovis

MIRVETUXIMAB

IMGN779

BEYOND MIRVETUXIMAB

ADCs FOR HEMATOLOGICAL DISEASES

IMGN632

PLATFORM

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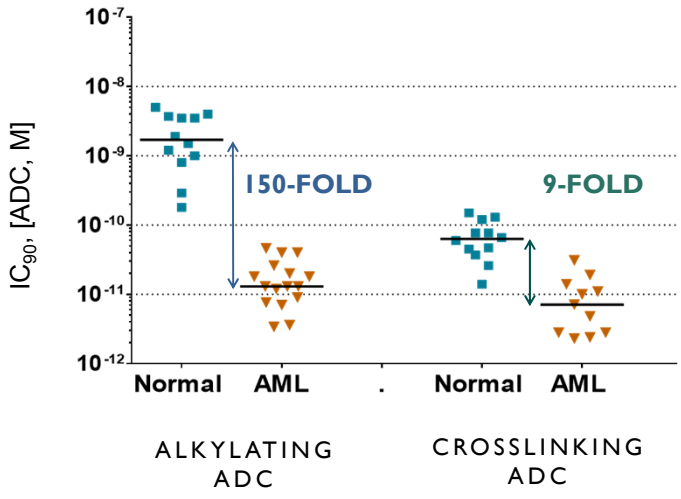
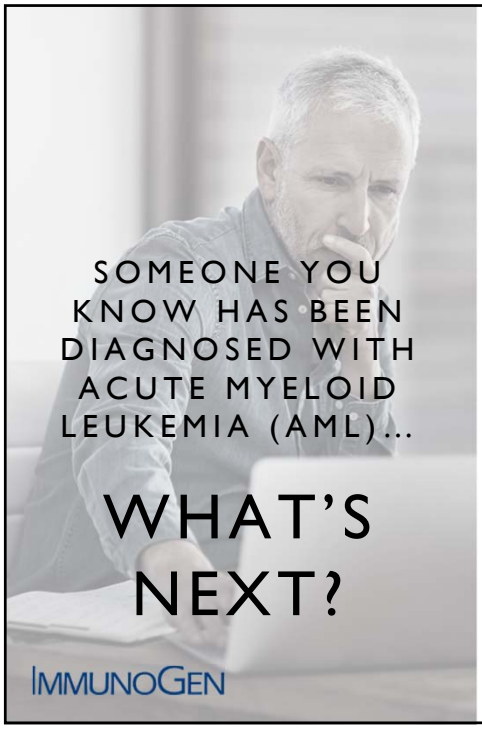
NEW CLASS OF PAYLOADS DESIGNED FOR IMPROVED EFFICACY AND TOLERABILITY



IGN DNA Alkylator Selectively Kills AML Blasts while Sparing Normal Bone Marrow Cells[1]

[1]Kovtun et al, abstract 768, ASH 2016



SOMEONE YOU KNOW HAS BEEN DIAGNOSED WITH ACUTE MYELOID LEUKEMIA (AML)…

WHAT'S NEXT?

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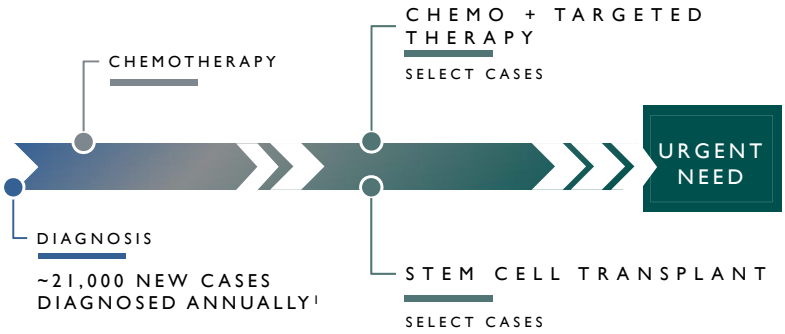

- More than 10,000 deaths due to AML in US each year[1]
- 5-year overall survival is ~25%[2]
- Median overall survival is ~6 months in relapsed/refractory AML[3-4]

[1]American Cancer Society (2016), About Acute Myeloid Leukemia;
[2]National Cancer Institute Surveillance, Epidemiology, and End Results Program (seer.cancer.gov);
[3]Faderl, S., et al. J Clin Oncol 2012;30:2492-2499;
[4]Ravandi, F., et al. Lancet Oncol 2015;16:1025-36.

ENCOURAGING INITIAL PHASE I DATA IN AML

IMGN779

SAFETY ENABLES REPEAT DOSING

- Anti-CD33 ADC targeting AML
- Phase 1 data show IMGN779 well-tolerated; no dose-limiting toxicities at once-weekly and bi-weekly schedules[1]

  DOSE ESCALATION STAGE ONGOING
- Pharmacokinetic exposures and pharmacodynamics CD33 saturation increase with dose; support further escalation[1]
- Anti-leukemia activity seen in both schedules[1]

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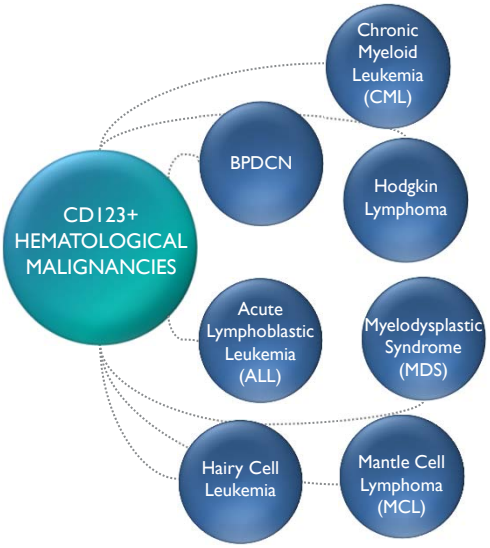
[1]Cortes et al, abstract 1312, ASH 2017

DEPLOYING OUR MOST POWERFUL IGN PAYLOAD
IMGN632

- Phase 1 trial open in patients with AML and blastic plasmacytoid dendritic cell neoplasm (BPDCN), both CD123+ malignancies
  PATIENT DOSING UNDERWAY
- Preclinical data show reduced tumor burden and extended survival with IMGN632 in AML models[1]

OPPORTUNITIES BEYOND AML



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[1]Adams et al, abstract 2832, ASH 2016

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PRODUCTIVE PLATFORM
PORTFOLIO EXPANSION AND HIGH-VALUE PARTNERSHIPS

IMGN632

PLATFORM

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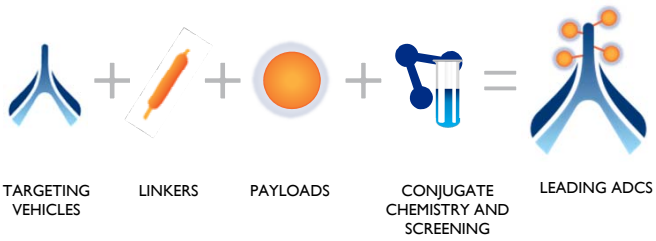
ADCs HAVE A PROMISING AND DURABLE ROLE IN CANCER CARE



- Surgery and adjuvant therapies continue to be standard treatment for many cancers
- Molecular profile of tumor will increasingly form basis for initial and subsequent treatments
- ADCs play an essential role as targeted mono- and combination therapies delivering potent anti-tumor activity with favorable tolerability profiles

ACTIVE RESEARCH PIPELINE FOR HEMATOLOGICAL MALIGNANCIES AND SOLID TUMORS:

ADAM9, cMET,
EpCAM Probody-Drug Conjugate
and Multiple Additional Targets in Exploration

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SMART APPROACH TO PARTNERING

ILLUSTRATING OUR LEADERSHIP IN THE ADC FIELD

CytomX Therapeutics

Jazz Pharmaceuticals

MacroGenics

LEGACY PLATFORM DEALS

Takeda · Novartis · Sanofi · Bayer · Roche · Biotest · Debiopharm · Lilly · Amgen

BOLDLY DRIVING OUR FUTURE

8
CLINICAL INVESTIGATIONS IN 2018

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MULTIPLE DATA READOUTS COMING

MIRVETUXIMAB SORAVTANSINE
- 1Q18: FORWARD I interim futility analysis
- 1Q18: FORWARD II Keytruda® dose-escalation data
- 2Q18: FORWARD II Avastin® expansion cohort data
- 2H18: FORWARD II Keytruda® expansion cohort data
- 1H19: FORWARD I top-line data

IMGN779
- 4Q18: Additional Phase I data

IMGN632
- 4Q18: Initial Phase I data

PLATFORM
- Preclinical data at multiple conferences in 2018

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MIRVETUXIMAB PHASE 3 WITH PLANNED COMMERCIALIZATION BY 2020

LEADING ADC INNOVATION AND PIPELINE

PRODUCTIVE RESEARCH PLATFORM

FINANCIAL STRENGTH AND DISCIPLINE

PROVEN MANAGEMENT TEAM