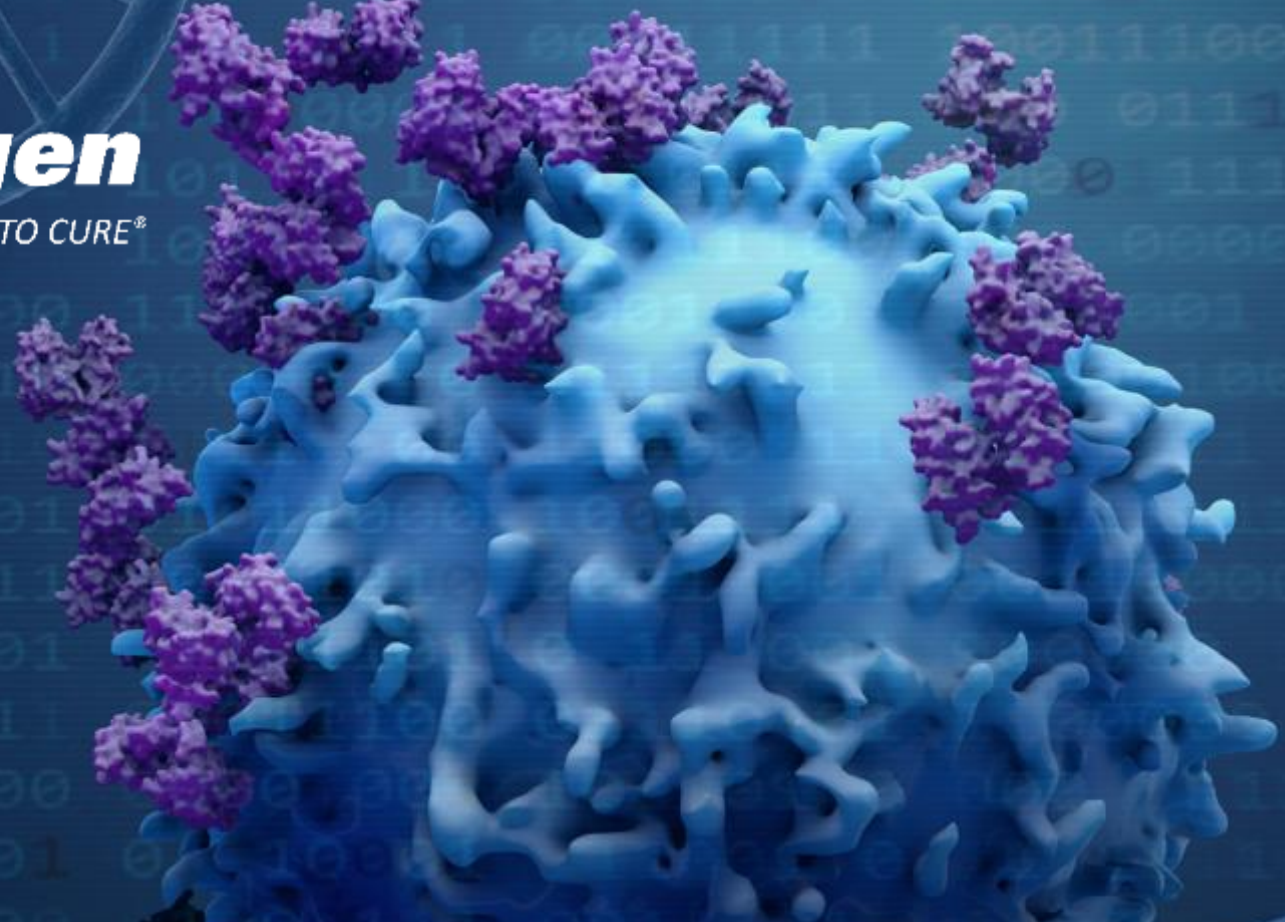
compugen

FROM CODE TO CURE®



CORPORATE OVERVIEW

May 2020

SAFE HARBOR STATEMENT

This presentation contains “forward-looking statements” within the meaning of the the Securities Act of 1933 and the Securities Exchange Act of 1934, as amended, and the safe-harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements can be identified by the use of terminology such as “will,” “may,” “expects,” “anticipates,” “believes,” “potential,” “plan,” “goal,” “estimate,” “likely,” “should,” and “intends,” and similar expressions that are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements involve known and unknown risks and uncertainties that may cause the actual results, performance or achievements of Compugen to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements, including statements regarding the timing and success of our clinical trials, enrollment of patients, type of clinical trials, presentation of data and our cash position and expenditures. Among these risks: Compugen’s operations could be affected by the outbreak and spread of COVID-19, Compugen’s business model is substantially dependent on entering into collaboration agreements with third parties, and Compugen may not be successful in generating adequate revenues, or commercialize its business model or control its expenditures. Compugen also may not meet expected milestones in its development pipeline and may also be unable to enroll patient to its clinical trials or to present data. Moreover, clinical development involves a lengthy and expensive process, with an uncertain outcome and Compugen may encounter substantial delays or even an inability to begin clinical trials for any specific product, or may not be able to conduct or complete its trials on the timelines it expects. These and other factors, including the ability to finance the Company, are more fully discussed in the "Risk Factors" section of Compugen’s most recent Annual Report on Form 20-F as filed with the Securities and Exchange Commission (“SEC”) as well as other documents that may be subsequently filed by Compugen from time to time with the SEC. In addition, any forward-looking statements represent Compugen’s views only as of the date of this presentation and should not be relied upon as representing its views as of any subsequent date. Compugen does not assume any obligation to update any forward-looking statements unless required by law. Certain studies and data presented herein have been conducted for us by other entities as indicated where relevant. Intellectual property, including patents, copyrights or trade secret displayed in this presentation, whether registered or unregistered, are the intellectual property rights of Compugen. Compugen's name and logo and other Compugen product names, slogans and logos referenced in this presentation are trademarks of Compugen Ltd. and/or its subsidiary, registered in the U.S.A., EU member states and Israel.

OUR VISION

FROM CODE TO CURE ®

Transforming patient lives by developing first-in-class therapeutics based on Compugen's computational target discovery platform

INVESTMENT HIGHLIGHTS

Innovative Immuno-Oncology Portfolio

First-in-Class Drugs

- Phase 1 drug candidates
  - COM701
  - COM902
  - BAY1905254
- Novel targets to address immunosuppressive tumor microenvironment
- Enabling strong IP position

Encouraging Preliminary Clinical Data

Well-Tolerated with Signals of Anti-Tumor Activity

- 2 confirmed partial responses
- High disease control rate in monotherapy dose escalation (69%) and combination dose escalation (75%)
- Durable responses of over six months in 21% (6/28) of patients
- All-comer, heavily pretreated, refractory patient population

Strategic Collaborations

External Validation of Targets & Approach

Strategic collaborations with leading pharma companies

Bristol-Myers Squibb

BAYER

AstraZeneca

Computational Platform

From Code to Clinic

- Proven engine for novel drug targets
- Identification of new I/O pathways
- Translation to clinical validation
- Integrated I/O and drug development expertise

STRONG EXECUTION AND NEAR-TERM VALUE DRIVERS

	COM701	COM902
2020	• Presented encouraging data from combination dose escalation study with Opdivo® and monotherapy update at AACR • Completed enrollment in monotherapy dose escalation arm	• Initiated Phase 1 dose escalation study in March 2020, all comers in patients with advanced solid malignancies
2020-21	• Initiate Phase 1/2 triple combination study with Opdivo® and BMS-986207 (anti-TIGIT inhibitor) in 2H 2020 • Initiate enrollment of monotherapy expansion cohorts in Q2 2020 and complete by year-end	• Potential for combination with COM701 in a PD1/PDL1-free regimen
2021	• Initial data from monotherapy expansion cohorts expected in 1H 2021	• Initial data from the dose escalation study expected in 2021

Partnered Programs - BAY 1905254 clinical development by Bayer
- AstraZeneca bi-specific product development

Discovery - discover novel targets and pathways to address various mechanisms of immune resistance

LEADERSHIP TEAM

Management Team

Anat Cohen-Dayag, PhD
President and CEO

Ari Krashin
Chief Financial & Operating Officer

Henry Adewoye, MD
SVP & Chief Medical Officer

Oliver Froescheis, PhD
SVP, Business & Corporate Development

Eran Ophir, PhD
VP, Research and Drug Discovery

Zurit Levine, PhD
SVP, Technology Innovation

Yaron Turpaz, PhD
SVP & Sr. Advisor Computational Discovery

Dorit Amitay
VP, Human Resources

Board Of Directors

Paul Sekhri
Chairman of the Board

Anat Cohen-Dayag, PhD
President & CEO, Director

Jean-Pierre Bizzari, MD
Director

Gilead Halevy
Director

Kinneret Livnat Savitzky, PhD
Director

Eran Perry
Director

Sanford (Sandy) Zweifach
Director

STRATEGIC ADVISORS

Industry Veterans, Renowned Oncologists and Immunologists

Scientific Advisory Board

Drew Pardoll, MD, PhD
Chairman
Multi-year strategic collaboration

Antoni Ribas, MD, PhD

Iain McInnes, MD, PhD

Elliott Sigal, MD, PhD
Strategic Advisor
Former CSO, EVP & Director, Bristol-Myers Squibb

Charles Drake, MD, PhD

Miriam Merad, MD, PhD

Howard Soule, PhD

COMPUTATIONAL DISCOVERY PLATFORM

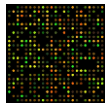
FROM TARGET DISCOVERY TO CLINICAL VALIDATION

Proven Computational Approach to Discover New Biological Pathways for I/O Drug Targets

RNASeq

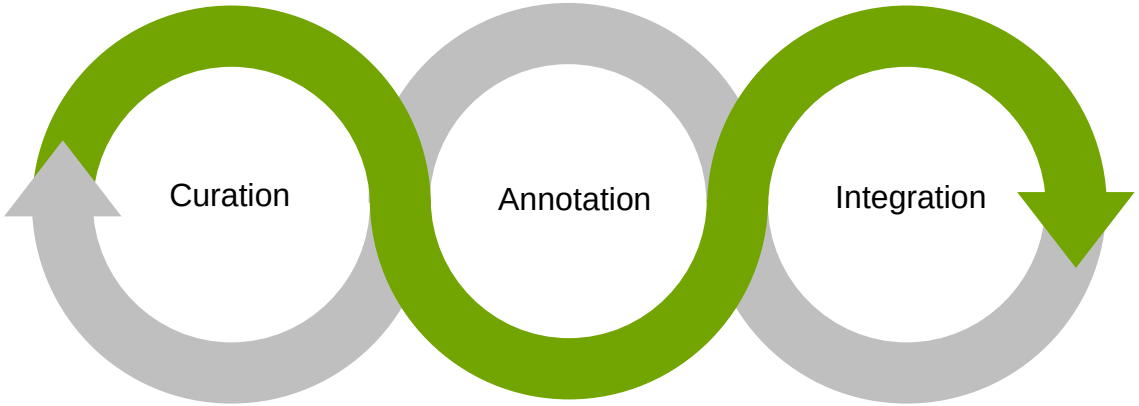
Single Cell RNA

Microarray

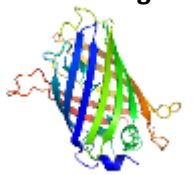


……..Multi-omics

PROPRIETARY COMPUTATIONAL TOOLS AND ALGORITHMS

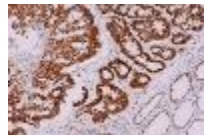


Novel Targets



First-in-Class Drug Candidates

Novel Biomarkers



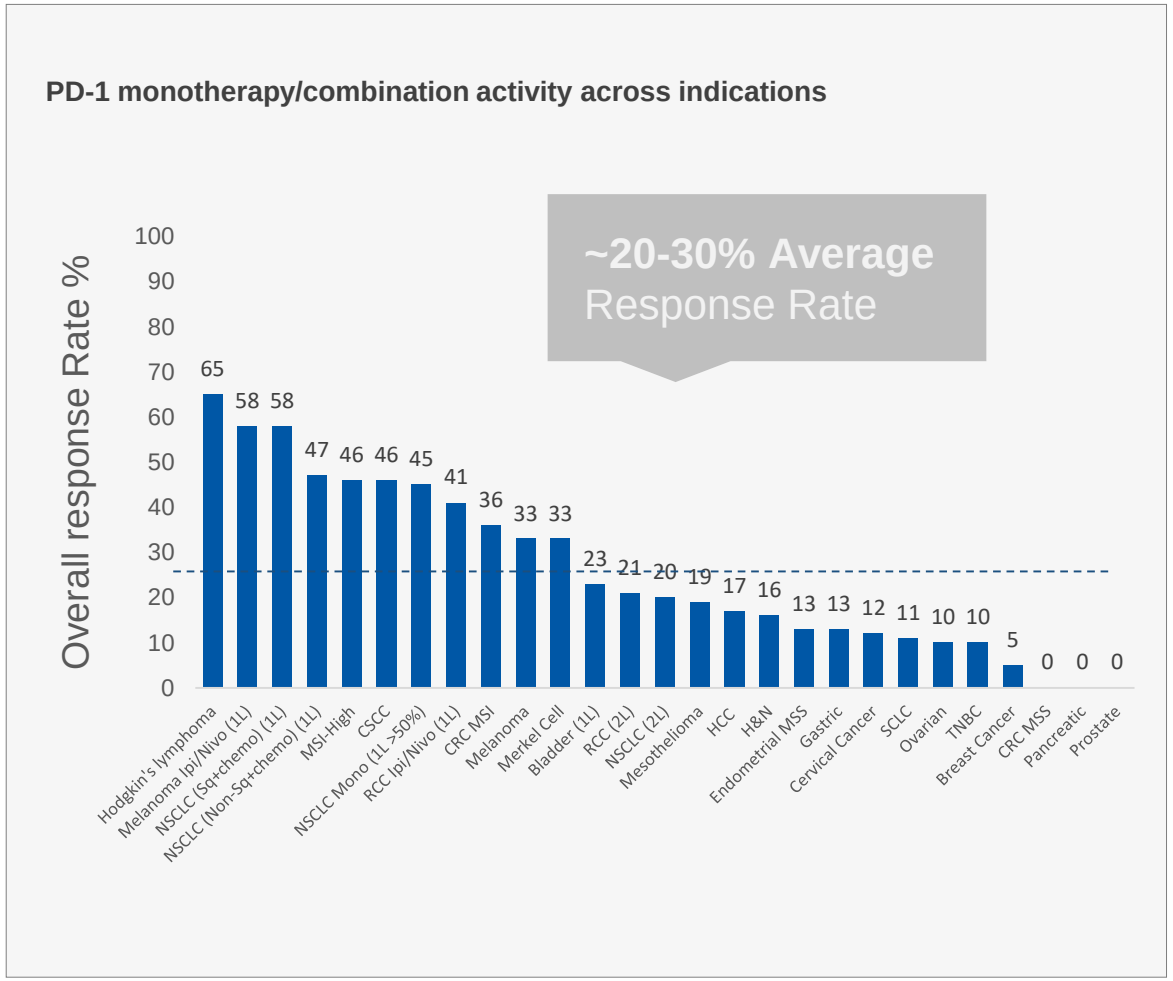
Data Input

Computational Model

Candidates

SIGNIFICANT UNMET NEED

70-80% of Patients Non-responsive to Approved Cancer Immunotherapies



- New targets aimed towards non-responsive patient populations
- Mechanism-driven first-in-class combinations
- Robust biomarker strategy to select patients based on pathway expression profile

Compugen Discovers and Targets Novel Pathways to Address Non-responsive Patient Populations

VERSATILE COMPUTATIONAL DISCOVERY PLATFORMS TO ADDRESS MULTIPLE MECHANISMS OF IMMUNE RESISTANCE

INFLAMED

IMMUNE CHECKPOINT PLATFORM

Advanced pipeline with 3 programs in clinical development

Addressing mechanisms of T & NK cell dysfunction

EXCLUDED/SUPPRESSED

MYELOID PLATFORM

Early stage pipeline with multiple programs

Addressing immunosuppressive cells in tumor microenvironment

DESERT/NON-INFLAMED

IMMUNE RESISTANCE PLATFORM

Technology in development exploring underlying biology to identify new drug targets

Addressing tumor-intrinsic mechanisms of resistance

COMPUGEN'S IMMUNO-ONCOLOGY PIPELINE

From Code to Cure®

PROGRAM	PARTNER	DISEASE	STAGE OF DEVELOPMENT
COM701 *PVRIG inhibitor*		Expansion to Lung, Breast, Ovarian Endometrial, Colorectal	PHASE 1
COM701 + Opdivo® * *PVRIG + PD-1 inhibitors*	Bristol-Myers Squibb		PHASE 1
COM701 + Opdivo® + BMS-986207 *PVRIG + PD-1 + TIGIT inhibitors*	Bristol-Myers Squibb	Expansion to Ovarian, Endometrial, high PVRL2	PHASE 1/2
COM902 *TIGIT inhibitor*		Advanced malignancies	PHASE 1
Multiple myeloid programs			DRUG DISCOVERY
BAY 1905254 *ILDR2 inhibitor*	BAYER	Expansion to Bladder, Cervical, Head & Neck, TMB-Selected	PHASE 1
BAY 1905254 + Keytruda® *ILDR2 + PD-1 inhibitors*	BAYER	Expansion to Bladder, Gastric, Head & Neck	PHASE 1
Bi-specific products	AstraZeneca		UNDISCLOSED

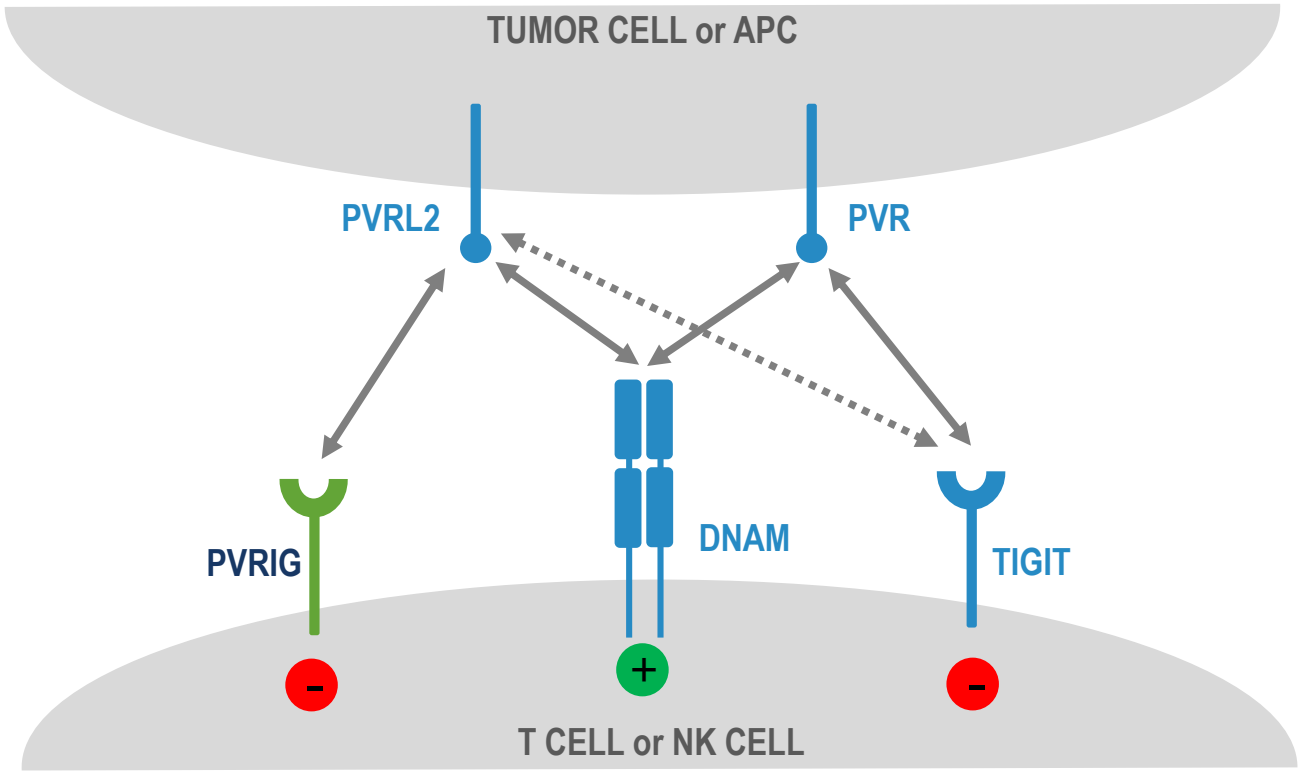
* Dose escalation study

Compugen-owned programs Partnered programs

INNOVATIVE CANCER IMMUNOTHERAPY PORTFOLIO:

TO OVERCOME RESISTANCE TO IMMUNOTHERAPY

PVRIG: A NOVEL CHECKPOINT TARGET IN THE TIGIT/DNAM AXIS

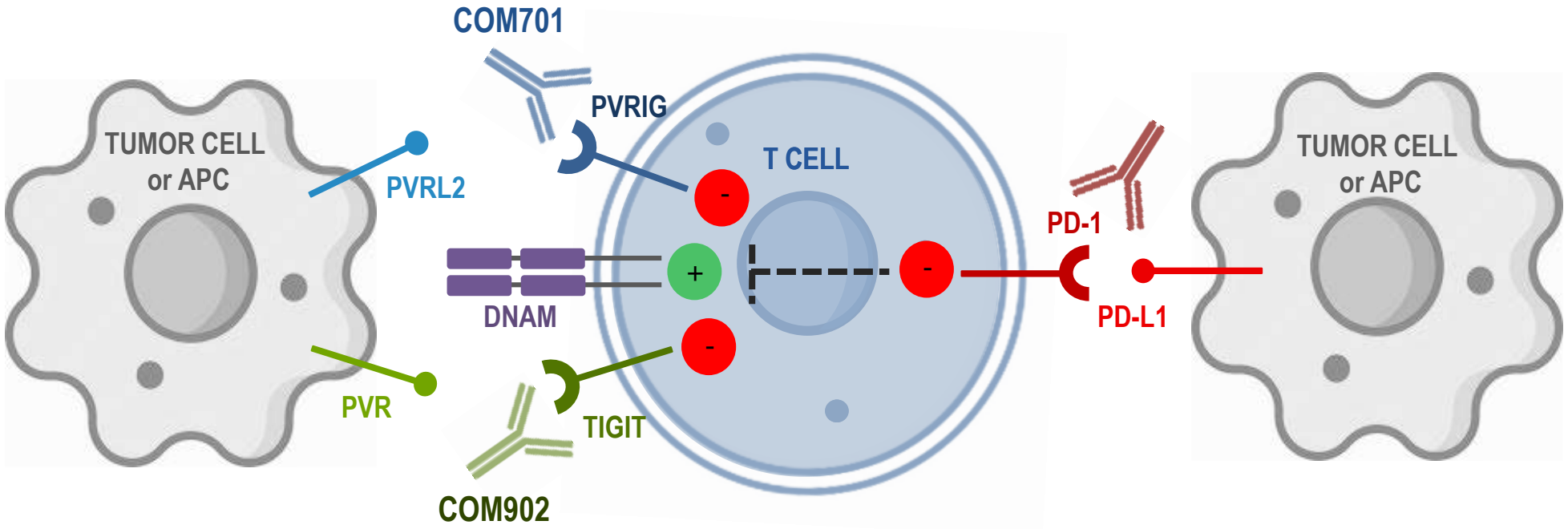


Martinet & Smyth, 2015 (modified)

- PVRIG – internally discovered by Compugen's discovery platform
- DNAM axis – two parallel and complementary inhibitory pathways (PVRIG & TIGIT)
- PVRL2 broadly expressed in PD-L1 positive and negative tumors
- Potential to address non-responsive patient populations via combination therapy approach

PVRIG PATHWAY IN THE DNAM AXIS

Potential Molecular Interactions Between PVRIG/TIGIT and PD-1 Pathways Support Combination Approach to Overcome Immunotherapy Resistance



BIOMARKER AND BIOLOGY-DRIVEN DRUG COMBINATION APPROACH

COM701: A FIRST-IN-CLASS ANTI-PVRIG THERAPEUTIC MONOCLONAL ANTIBODY

Ongoing Phase 1 study in patients with advanced solid tumors who have exhausted standard treatment options

- Signals of anti-tumor activity in monotherapy and in combination in dose escalation studies: high disease control rate; confirmed partial responses; durable disease control
- Well-tolerated as a monotherapy and in combination

Combination therapy strategy based on deep understanding of DNAM axis biology

- Dual and triple combinations with TIGIT and PD-1 inhibitors have potential to overcome PD-1 inhibitor resistance
- Preclinical models support anti-tumor effects with dual and triple combinations

Biomarker and biology-driven strategy targeting indications with elevated expression of DNAM axis members

- Targeting tumor types most likely to respond to treatment
- Clinical opportunities in endometrial, breast, lung, ovarian, colorectal and other solid tumors

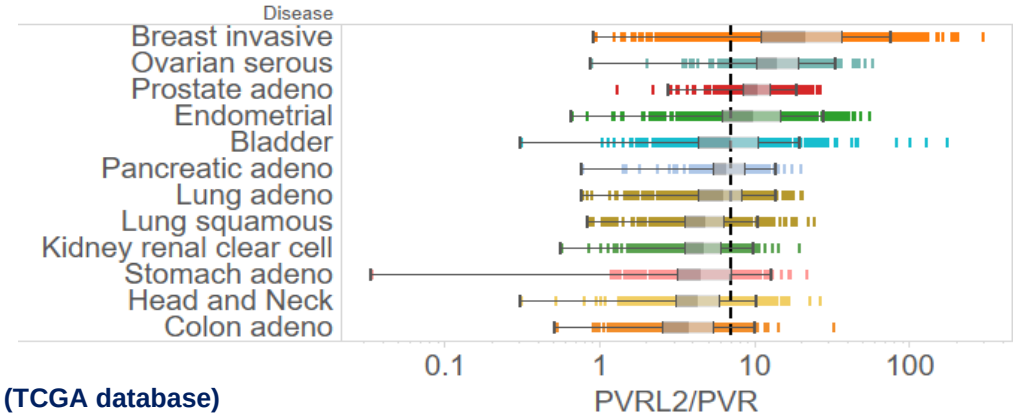
Strong IP position

- Internally discovered and developed, first-in-class asset
- Issued and pending patents for composition of matter, use and combinations worldwide

BIOMARKER-DRIVEN APPROACH SUPPORTS COM701 MONOTHERAPY AND COMBINATION THERAPY

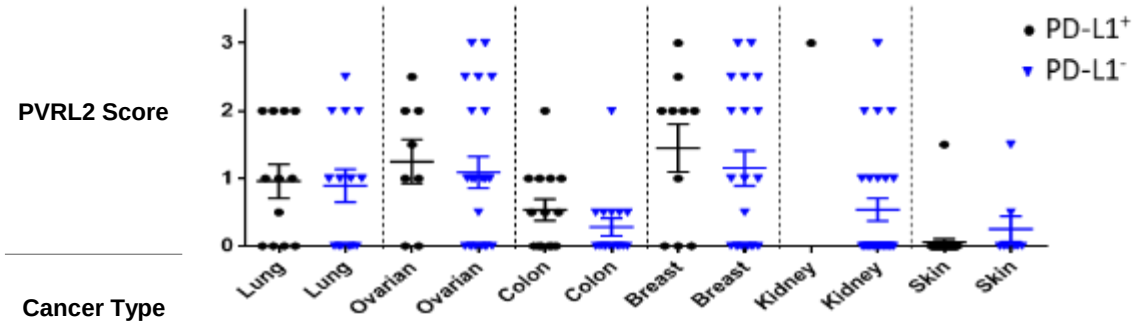
- PVRL2 highly expressed in many solid tumors
- PVRL2 commonly expressed in both PD-L1 positive and negative tumors
- PVRIG may serve as alternative, targetable checkpoint in PD-L1 negative tumors
- Potential to address patient populations non-responsive to PD-1 therapies and improve outcomes in PD-1 responsive patient populations

TARGET INDICATIONS EXPRESS HIGHER PVRL2 RELATIVE TO PVR



RNA (TCGA database)

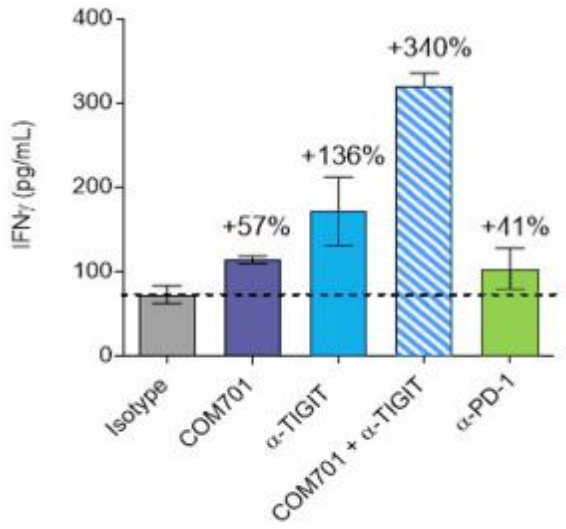
PVRL2 COMMONLY EXPRESSED IN PD-L1 NEGATIVE TUMORS



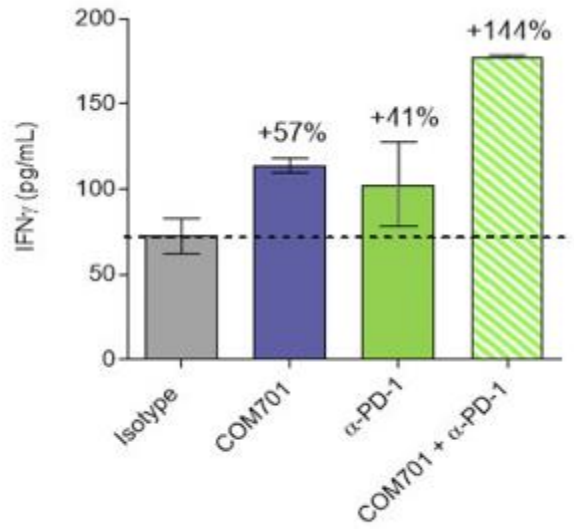
SITC, November 2017, Whelan, *et al.*, poster presentation

COM701: SYNERGISTIC T CELL ACTIVATION WITH PD-1 OR TIGIT INHIBITORS

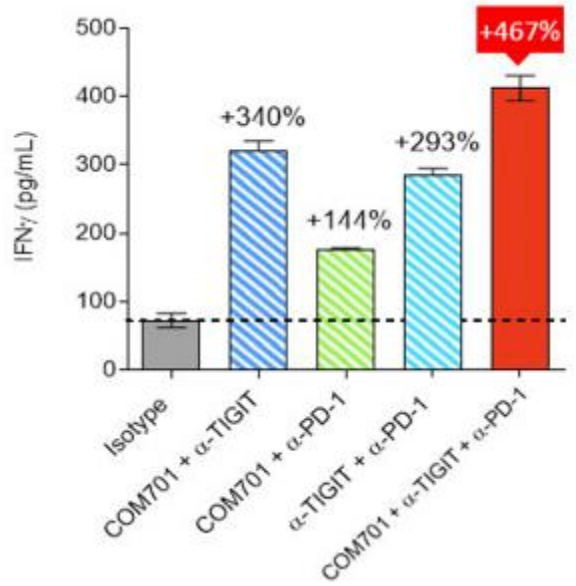
COM701 +/- anti-TIGIT



COM701 +/- anti-PD-1



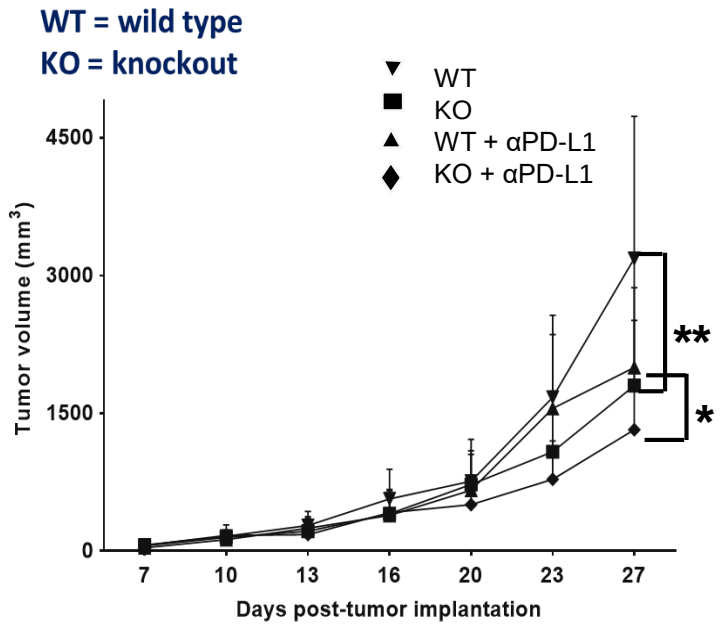
Triple combination



Whelan, *et al.,* Cancer Immunol Res. 2019

PVRIG KNOCKOUT OR INHIBITION REDUCES TUMOR GROWTH IN COMBINATION WITH PD-L1 OR TIGIT IN MOUSE MODELS

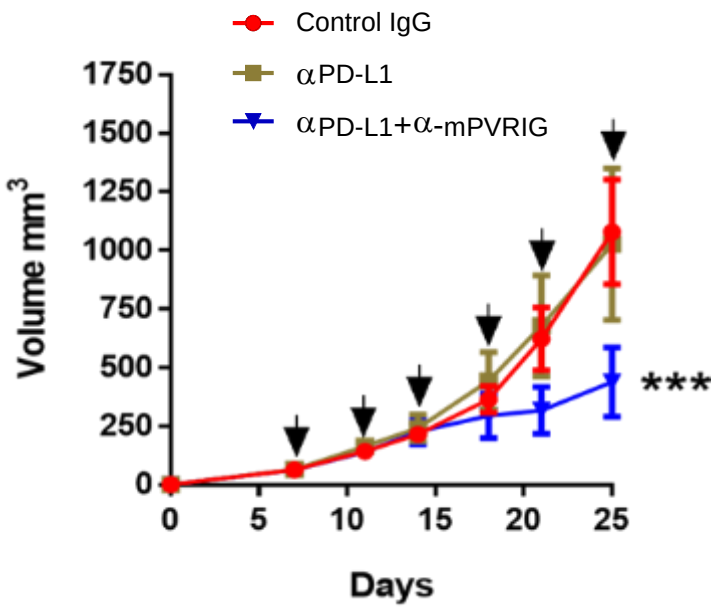
PVRIG KO MICE (MC38)



Reduced tumor growth in KO mice

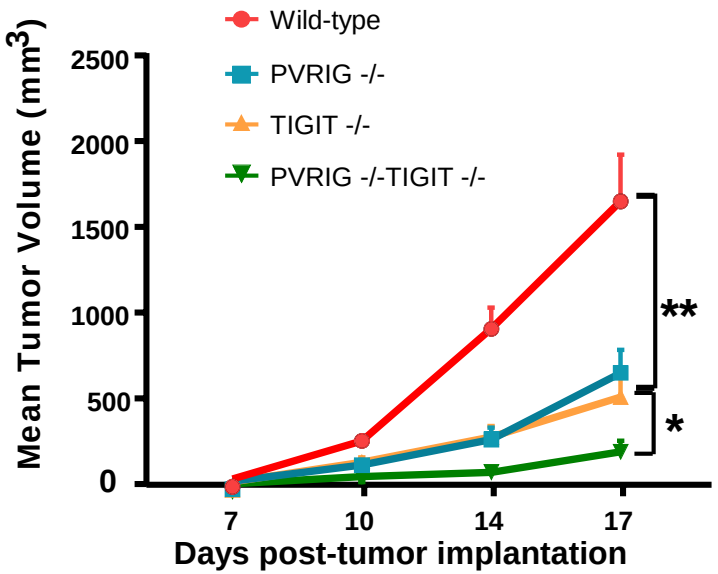
Ganguly and Pardoll, Johns Hopkins Univ. MC38 model

anti-PVRIG + anti-PD-L1 (CT26)



Synergistic tumor growth inhibition with anti-PD-L1

PVRIG + TIGIT Double KO (B16)



Reduced tumor growth in PVRIG + TIGIT double KO mice

SITC, November 2016, Hunter, *et al.*, oral presentation
SITC, November 2019, Logronio, *et al.*, poster presentation

COM701 CLINICAL PROGRAMS

Phase 1 Arm A

Monotherapy Dose Escalation	Monotherapy Cohort Expansion (20 patients; progressed on SOC)
All-comers (progressed on SOC)	NSCLC, Ovarian, Breast, Endometrial, Colorectal
Enrollment completed; data presented at AACR 2020	2020 enrollment completion with initial data expected 1H 2021

Phase 1 Arm B

Dual Combination Escalating doses of COM701 with fixed dose of Opdivo® (Up to 20 patients)
All-comers (progressed on SOC)
Initial data presented at AACR 2020

Phase 1/2 – in development

Triple Combination Dose Escalation Escalating doses of COM701 with fixed doses of Opdivo® + BMS-986207
All-comers (progressed on SOC); expected initiation in 2H 2020

Triple Combination Cohort Expansion
Ovarian, Endometrial, additional tumor types with high PVRL2 expression

Study Objectives

- Safety & Tolerability
- PK/PD
- Clinical activity – COM701 monotherapy and in combination

Biomarker Strategy

- Expression of DNAM axis members
- Additional indications based on biomarker analysis

COM701: SIGNALS OF ANTI-TUMOR ACTIVITY

Monotherapy and Combination Dose Escalation Study

Safety Profile	• COM701 well-tolerated, no DLTs reported as a monotherapy and in combination with Opdivo® • 16 patients in Arm A (13 in cohorts 1-7, 3 in cohort 8); 12 patients in Arm B
Anti-Tumor Activity	• ***2 confirmed partial responses***: A patient with MSS primary peritoneal cancer (a type of ***ovarian cancer***) from monotherapy dose escalation arm; a patient with ***MSS-CRC*** from combination dose escalation arm; both patients continue on study treatment • ***High disease control rate*** of 69% (11/16) for monotherapy and 75% (9/12) for combination • 50% of patients in Arm B remain on study, some with continued responses beyond 200 days • ***Durable responses*** for over six months in 21% of patients across treatment arms
Biomarker Driven Strategy	• Antitumor activity in indications selected for the expansion cohorts further supports biomarker-informed approach and predictive discovery capability

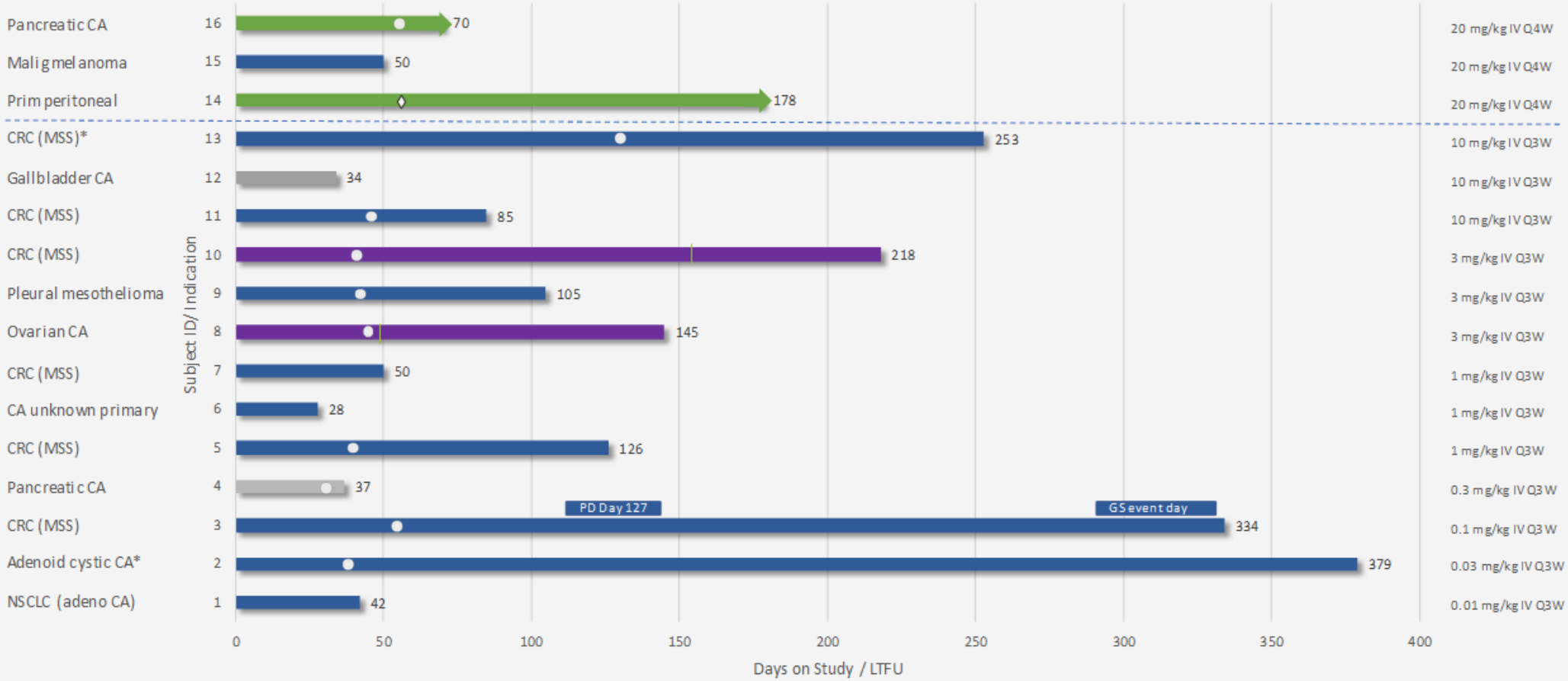
SUMMARY OF INVESTIGATOR-ASSESSED RESPONSE (per RECIST v1.1 DLT-EVALUABLE POPULATION)

Data from Monotherapy and Combination Dose Escalation Study

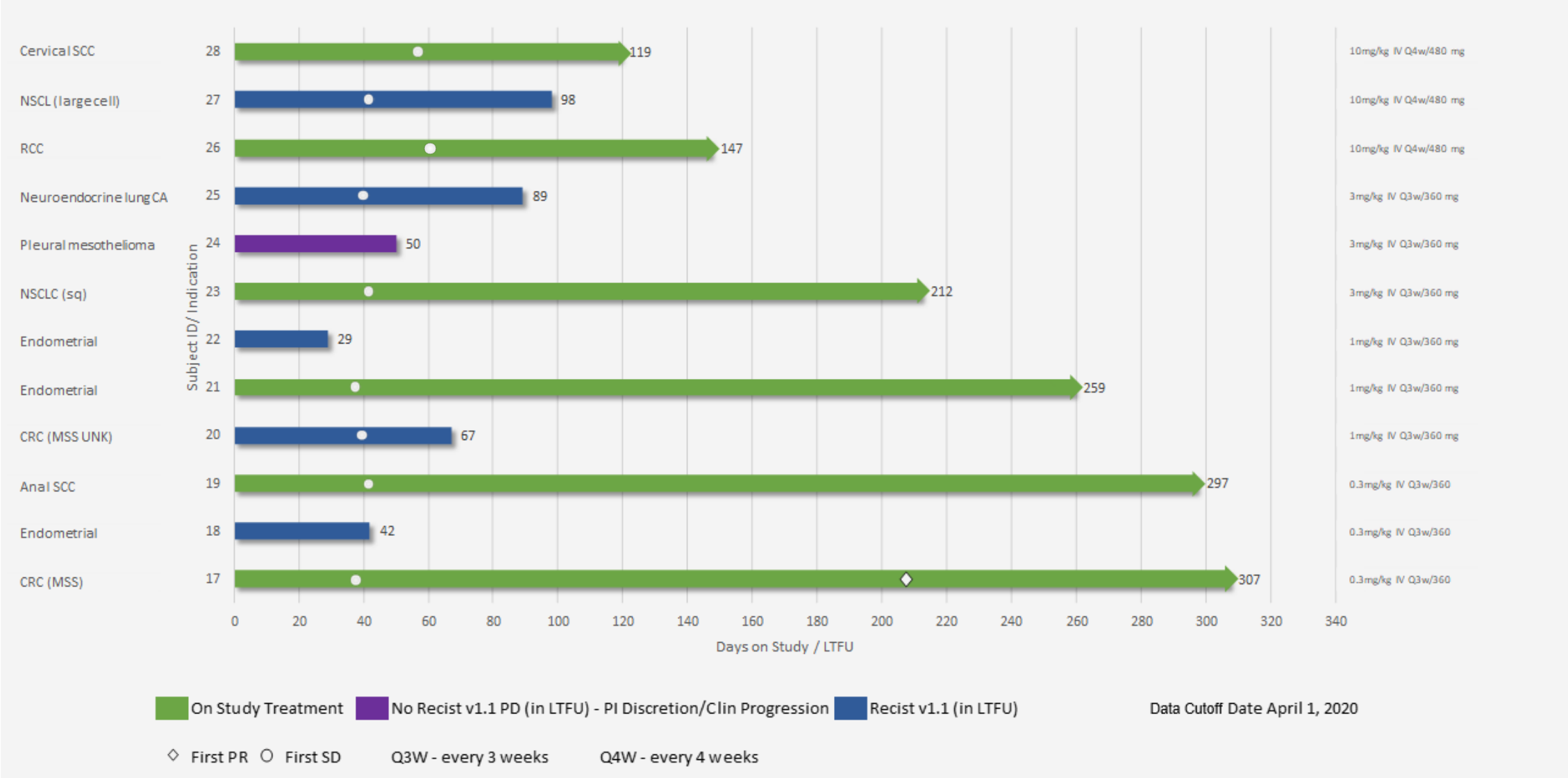
	Arm A (N = 16) N (%)	Arm B (N = 12) N (%)
Overall Response rate (CR+PR)	1 (6)	1 (8)
Disease control rate (CR+PR+SD)	11 (69)	9 (75)
Durable stable disease (SD ≥ 6 months)	2 (13)	4 (33)
Best response Complete response Partial response Stable Disease Progressive Disease NA	 0 1 (6) 10 (63) 4 (25) 1 (6)	 0 1 (8) 8 (67) 2 (17) 1 (8)

DATA CUT 31MAR2020; modified from AACR 2020 presentation

COM701 MONOTHERAPY DOSE ESCALATION – ARM A



COM701 DOSE ESCALATION + FIXED DOSE OPDIVO® – ARM B



COM701: ENCOURAGING PRELIMINARY CLINICAL DATA

Confirmed Partial Responses and Durable Stable Disease in Highly Refractory Patient Population

2 Confirmed partial responses

6 Patients with durable responses of stable disease ≥ 6 months

15 Maximum prior anti-cancer therapies

Encouraging signals of anti-tumor activity

69% Disease control rate with stable disease in 11/16 patients (69%) in Arm A

75% Disease control rate with stable disease in 9/12 patients (75%) in Arm B

50% Of patients in Arm B remain on treatment with durable responses

- Well-tolerated safety profile with no dose limiting toxicities
- Potential for combination therapy with checkpoint inhibitors and SOC therapies
- Trend in dose-response relationship

Presented at AACR 2020; Data cutoff date: April 1, 2020

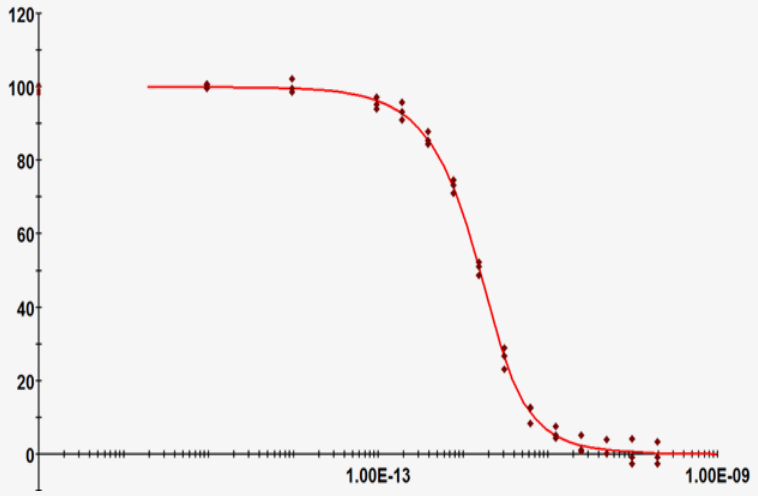
COM902: ANTI-TIGIT THERAPEUTIC MONOCLONAL ANTIBODY

Potential to Fully Address DNAM Axis in Combination with COM701

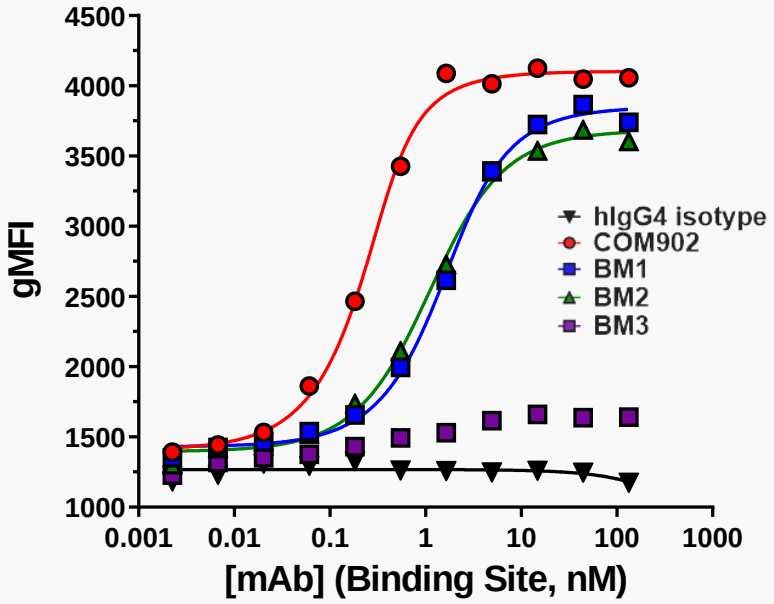
Potential Best-in-Class	High affinity – femtomolar – anti-TIGIT monoclonal antibody In vitro activity comparable or superior to TIGIT antibodies in clinical development
Data-driven Rationale	Preclinical proof-of-concept demonstrated synergistic effect with COM701 Potential to address tumors unresponsive to approved checkpoint inhibitors
Clinical Stage	Phase 1 study for patients with advanced malignancies ongoing Combination of COM902 and COM701 offers unique clinical differentiation

COM902: A HIGH AFFINITY ANTI-TIGIT ANTIBODY

High affinity TIGIT binding (650 fM)

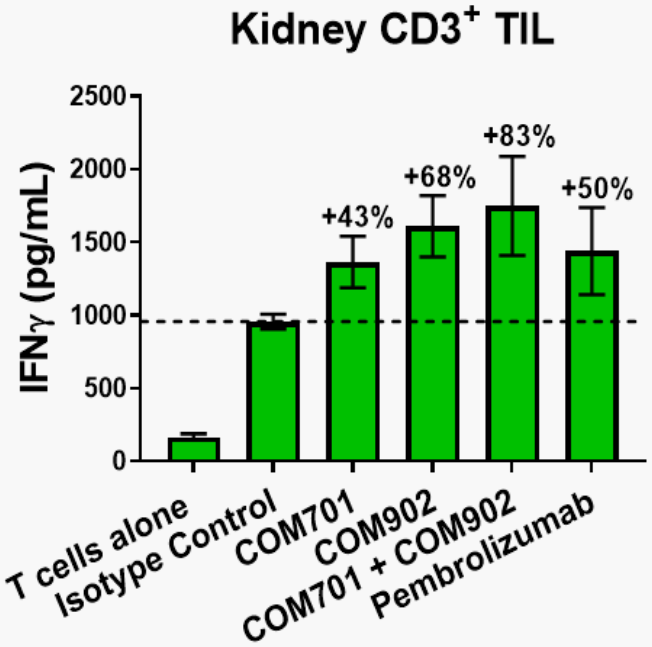


Superior binding compared to clinical TIGIT BMs



SITC, November 2019, Logronio, *et al.*, poster presentation

Enhances tumor infiltrating T-cells activation ex-vivo



SITC, November 2019, Logronio, *et al.*, poster presentation

COM902 PHASE 1 STUDY

Identifier: NCT04354246

Monotherapy
Dose Escalation

All-comers, advanced malignancies who exhausted available treatment options

Administered IV every 3 weeks

Up to 7 dose escalation cohorts may be evaluated until a maximum tolerated dose or recommended phase 2 dose is identified

Initial data in expected 2021

Study Objectives

- Safety & tolerability
- PK/PD
- Clinical activity

STRATEGIC COLLABORATIONS:

EXTERNAL VALIDATION OF INTERNALLY DISCOVERED TARGETS

PARTNERSHIPS WITH LEADING PHARMA COMPANIES

Bristol-Myers Squibb

Clinical Trial Collaboration and Equity Investment
October 2018, Amended February 2020

$12M strategic equity investment

Collaborate on Phase 1/2 triple combination study of COM701, Opdivo® and BMS-986207

BMS to supply Opdivo® and BMS-986207, anti-TIGIT inhibitor

Compugen retains ownership and commercial rights to COM701

BMS right-of-first negotiation during exclusivity period

Bayer

Development and Commercialization Agreement
August 2013

Over **$30M** in upfront and milestone payments to date

Over **$250M** in future milestone and mid-to-high single digit royalty payments

First-in-class candidate targeting Compugen discovered target ILDR2

Phase 1 study initiated Sept 2019 as monotherapy and in combination with Keytruda®

AstraZeneca

License Agreement
March 2018

$10M upfront payment

Up to **$200M** milestone payments for first product. Payments for additional products and tiered royalties on future sales

Development of bi-specific and multi-specific I/O mAb candidates based on one pipeline program

AZ responsible for R&D and commercial activities

Compugen retains all other rights with exception of those licensed to AZ

FINANCIAL POSITION

CASH BALANCE

- ~$121 million as of March 31, 2020
- No Debt

GROSS CASH EXPENDITURES
(excludes any cash inflows)

- 2020 expected gross cash expenditures ~$27 million

MARKET CAPITALIZATION

- ~$1 billion (May 2020)
- NASDAQ (CGEN); Nasdaq Biotechnology Index
- TASE (CGEN.TA); TA-90, TA-125, TA-Biomed, TA Global BlueTech, TA Tech-Elite

STRONG EXECUTION AND NEAR-TERM VALUE DRIVERS

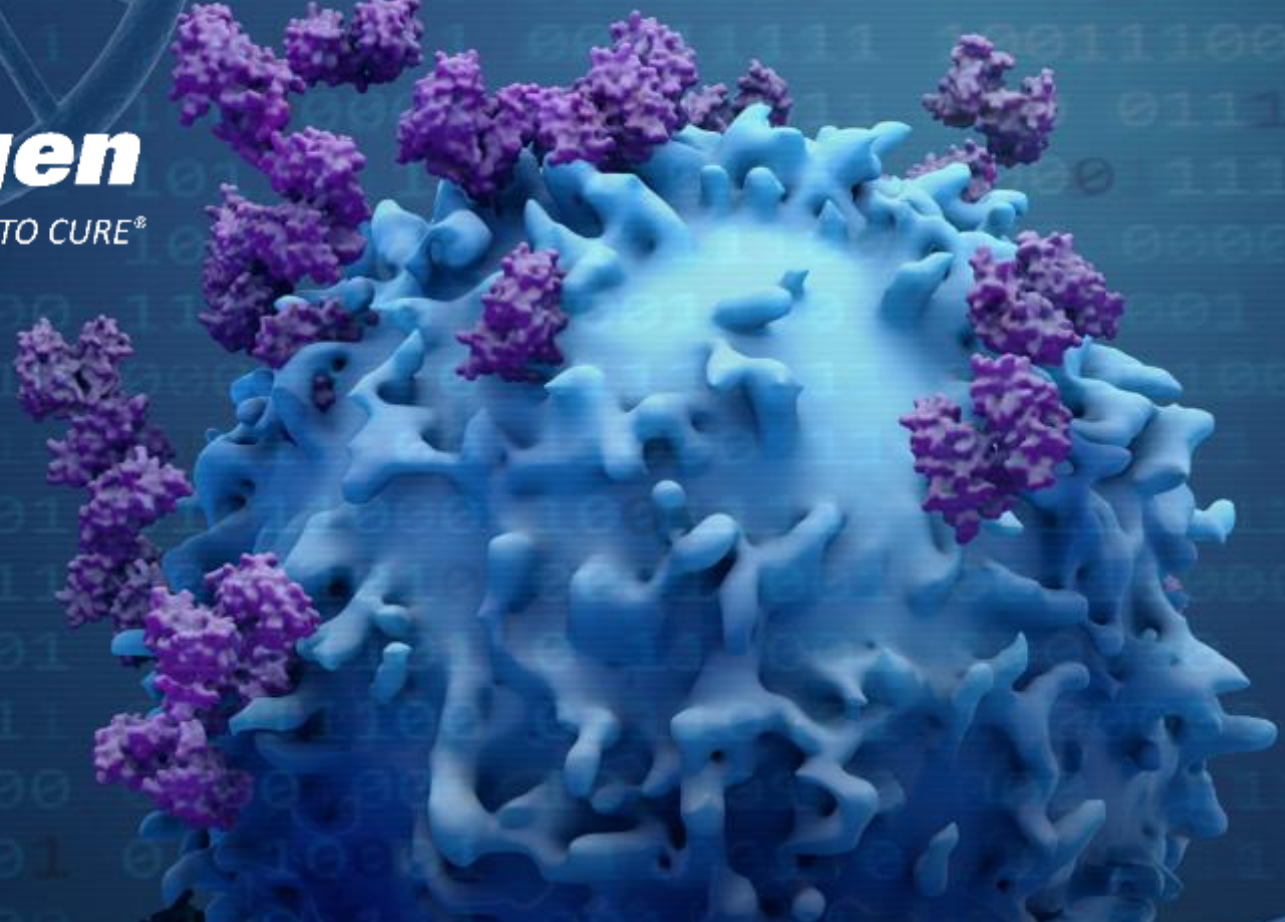
	COM701	COM902
2020	• Presented encouraging data from combination dose escalation study with Opdivo® and monotherapy update at AACR • Completed enrollment in monotherapy dose escalation arm	• Initiated Phase 1 dose escalation study in March 2020, all comers in patients with advanced solid malignancies
2020-21	• Initiate Phase 1/2 triple combination study with Opdivo® and BMS-986207 (anti-TIGIT inhibitor) in 2H 2020 • Initiate enrollment of monotherapy expansion cohorts in Q2 2020 and complete by year-end	• Potential for combination with COM701 in a PD1/PDL1-free regimen
2021	• Initial data from monotherapy expansion cohorts expected in 1H 2021	• Initial data from the dose escalation study expected in 2021

Partnered Programs - BAY 1905254 clinical development by Bayer
- AstraZeneca bi-specific product development

Discovery - discover novel targets and pathways to address various mechanisms of immune resistance

compugen

FROM CODE TO CURE®



CORPORATE OVERVIEW

May 2020