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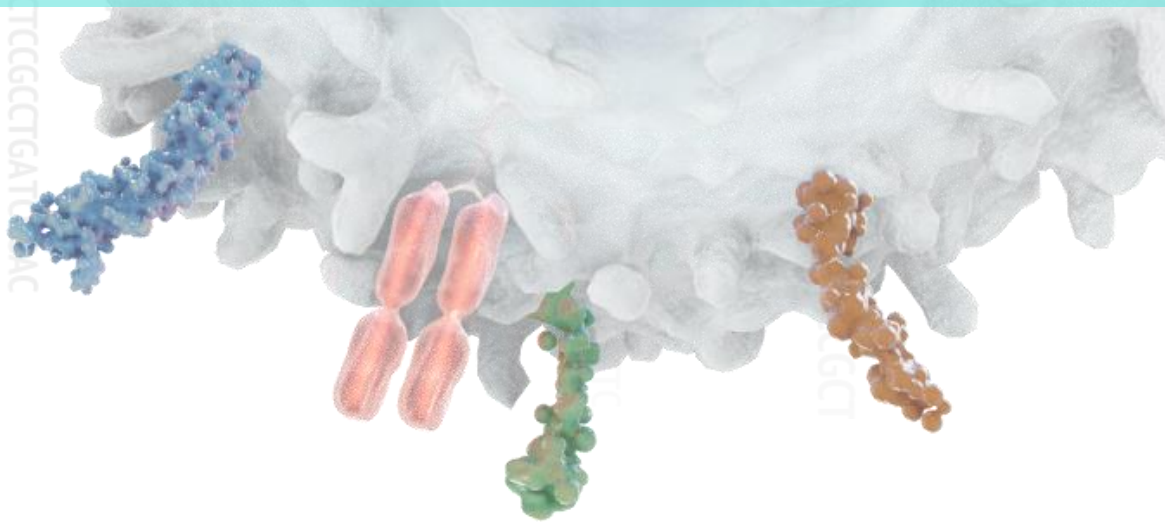

Q3 Earning Call

12 November 2021

Safe Harbor Statement

This presentation contains “forward-looking statements” within the meaning of 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: The global COVID-19 pandemic may negatively impact the global economy and may also adversely affect Compugen’s business; 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; Compugen relies and expects to continue to rely on third parties to conduct its clinical trials and these third parties may not successfully carry out their contractual duties, comply with regulatory requirements or meet expected deadlines, and Compugen may experience significant delays in the conduct of its clinical trials as well as significant increased expenditures; 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 commercializing aspects of its business model; Compugen’s approach to the discovery of therapeutic products is based on its proprietary computational target discovery infrastructure, which is unproven clinically; and Compugen does not know whether it will be able to discover and develop additional potential product candidates or products of commercial value. 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.

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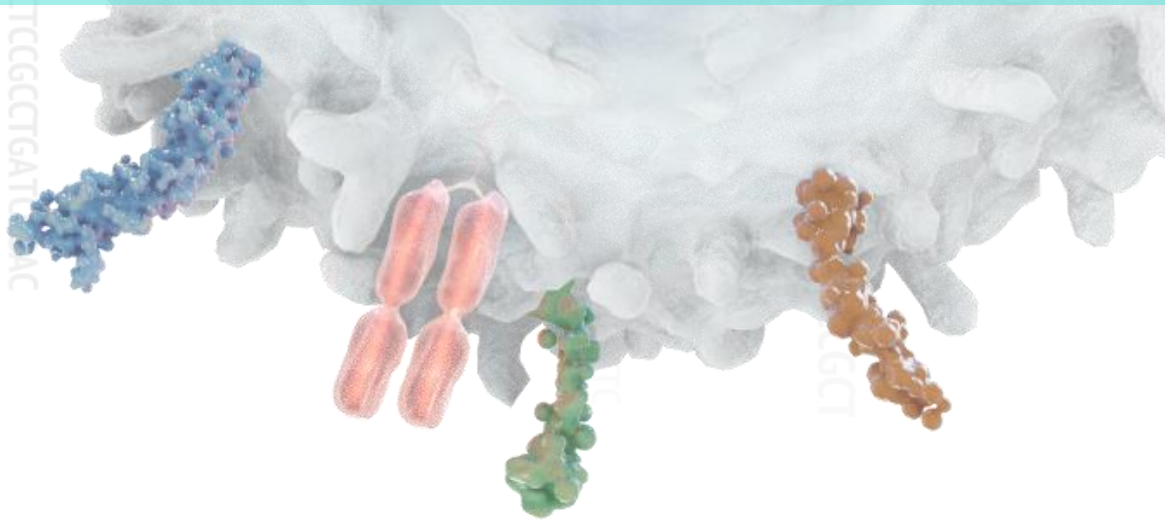

Anat Cohen-Dayag, President and CEO

Long-term strategy

Advance
Immuno-oncology research

Excellence in immuno-oncology & translational medicine

Clinically validated computational platform – discovery of new targets and pathways

Expand
Number of patients responding to treatment

Focus on patients non-responsive or refractory to available therapies

Targeting PVRIG, TIGIT, PD-1

Select biomarker informed tumor types

Maximize
Value for patients

Strategic collaborations with Pharma & academic institutions

BAYER

Bristol Myers Squibb

AstraZeneca

Protect
Intellectual Property

Seek broad IP protection

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Comprehensive clinical strategy targeting DNAM pathways

Multiple combination studies, biomarker informed tumor types selection and translational data analytics to direct future path forward

PROGRAM TARGET	PARTNER	BIOMARKER INFORMED EXPANSION COHORTS IN SELECT TUMORS	STATUS
COM701 PVRIG		Ovarian, Breast, Endometrial and CRC (MSS), NSCLC	Data Presented, Completed*
COM701 + Opdivo® PVRIG, PD-1	**Bristol Myers Squibb**	Ovarian, Breast, Endometrial and CRC (MSS)	First patient dosed Q2 2021*
COM701 + Opdivo® + BMS-986207 PVRIG, PD-1, TIGIT	**Bristol Myers Squibb**	Ovarian, Endometrial , HNSCC, and High PVRL-2 expressing tumors	First patient dosed Q3 2021**
COM902 TIGIT		Advanced Solid Tumors, Multiple Myeloma	Enrolling patients*
COM902 + COM701 TIGIT, PVRIG		HNSCC, NSCLC, CRC (MSS)	First patient dosed in Q4 2021*
AZD2936 TIGIT BISPECIFIC	**AstraZeneca**	Advanced or Metastatic Non-small Cell Lung Cancer	First patient dose Q4 2021**

Strategy also allows evaluation of the contribution of components

*Phase 1 study ** Phase 1/2 study

Compugen-owned programs

Partner program

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Well executed milestone rich 2021

Striding forward as leaders in the DNAM axis space

Expected date	Program	Milestone	Achieved
H1 2021	COM701 mono Phase 1 dose escalation and expansion	Data presented	☑
	COM701+ nivolumab Phase 1 dose escalation	Data presented	☑
	COM701 + nivolumab Phase 1 cohort expansion	First patient dosed	☑
H2 2021	COM701 + COM902 Phase 1	First patient dosed	☑
	COM701 triple combination* Phase 1 /2 cohort expansion	First patient dosed	☑
	COM902 mono Phase 1 dose escalation	Data presented	☑
	COM701 triple combination* Phase 1 dose escalation	Data presented	☑
	Milestone payment triggered by AZD2936 Ph 1 first patient dosed	AstraZeneca	☑
	Collaboration expansion and $20 million equity investment	Bristol Myers Squibb	☑

*Triple combination of COM701 with nivolumab and BMS-98620 (anti-TIGIT antibody)

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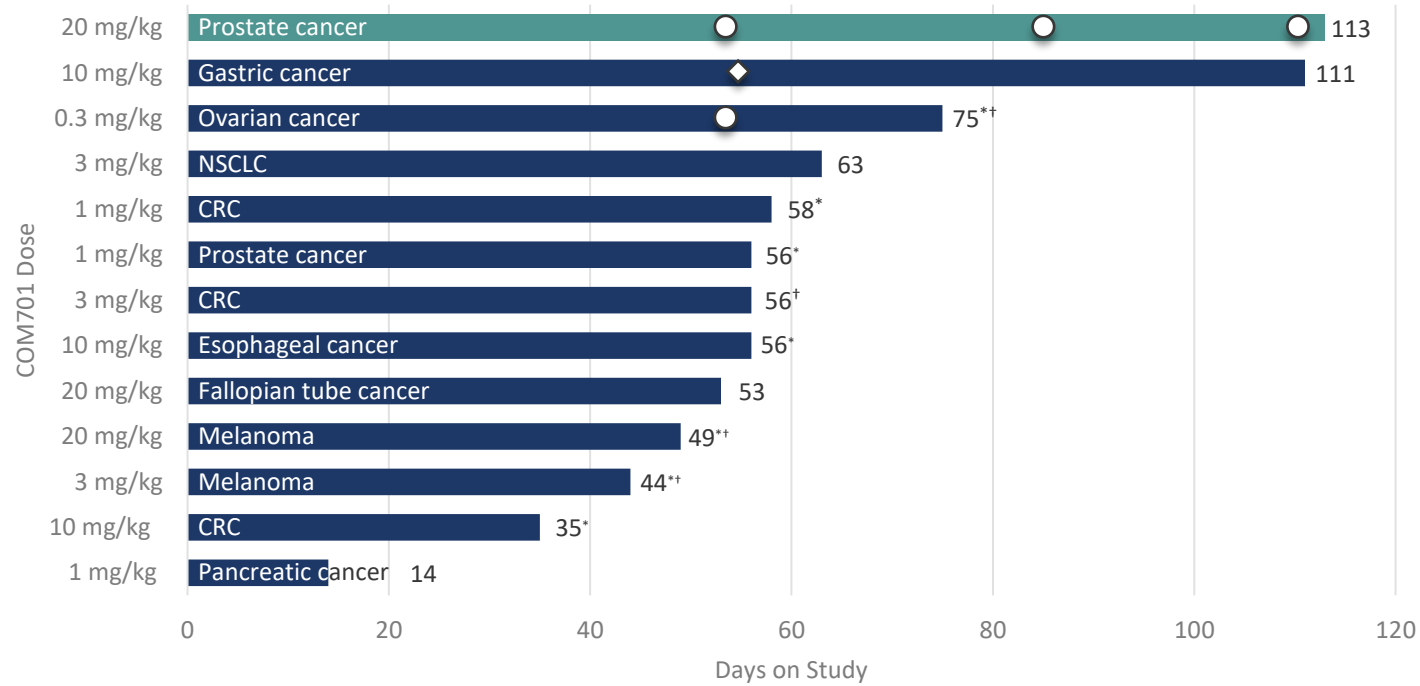
COM701, nivolumab and BMS-986207 combination well tolerated in dose escalation study

- Favorable safety and tolerability
- A maximum tolerated dose was not reached
- Best response of stable disease in a heavily pretreated all-comer patient population



Study clears the path to a comprehensive evaluation of Compugen's DNAM axis hypothesis in select expansion cohorts*

*platinum resistant ovarian cancer, endometrial cancer, head and neck squamous cell cancer and basket cohort
Dumbrava et al, SITC November 2021 Poster Presentation, modified
Datacut 03 September 2021

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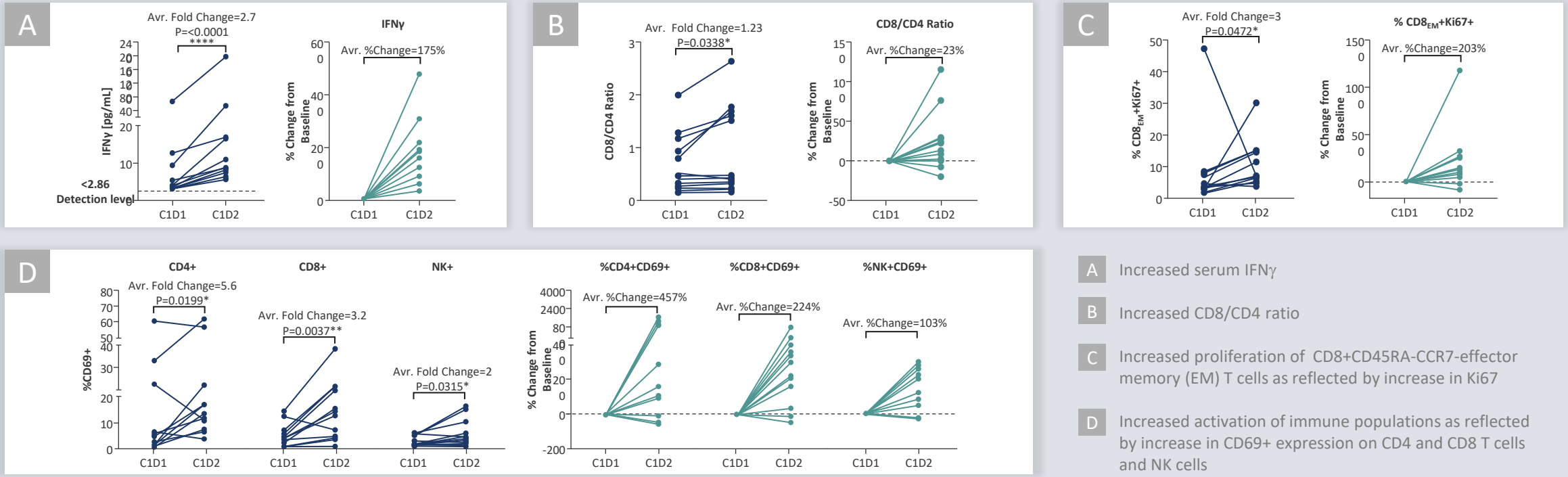
Potent activation of the immune system with COM701, nivolumab and BMS-986207 triple blockade

Increased T and NK cell activation, memory T Cell proliferation and IFNγ induction in blood at all COM701 doses



- **A** Increased serum IFNγ
- **B** Increased CD8/CD4 ratio
- **C** Increased proliferation of CD8+CD45RA-CCR7-effector memory (EM) T cells as reflected by increase in Ki67
- **D** Increased activation of immune populations as reflected by increase in CD69+ expression on CD4 and CD8 T cells and NK cells

Dumbrava et al, SITC November 2021 Poster Presentation, modified

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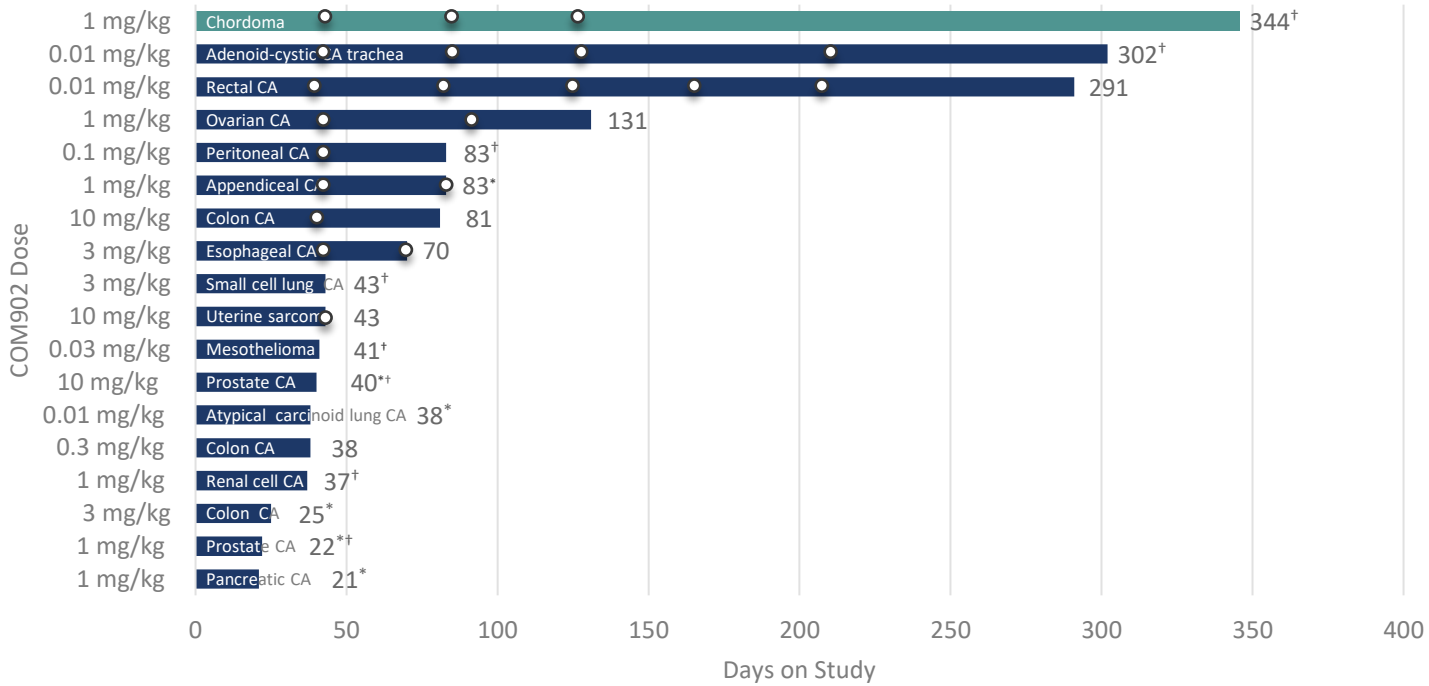
COM902 monotherapy well tolerated in dose escalation study

- Favorable safety and tolerability
- Peripheral receptor occupancy >90% from 0.1 mg/kg
- Dose proportional PK profile
- Best response of stable disease in 9 patients (50%)



COM902 + COM701 Phase 1 study ongoing

Dumbrava et al, SITC November 2021 Poster Presentation, modified
Datacut 03 September 2021

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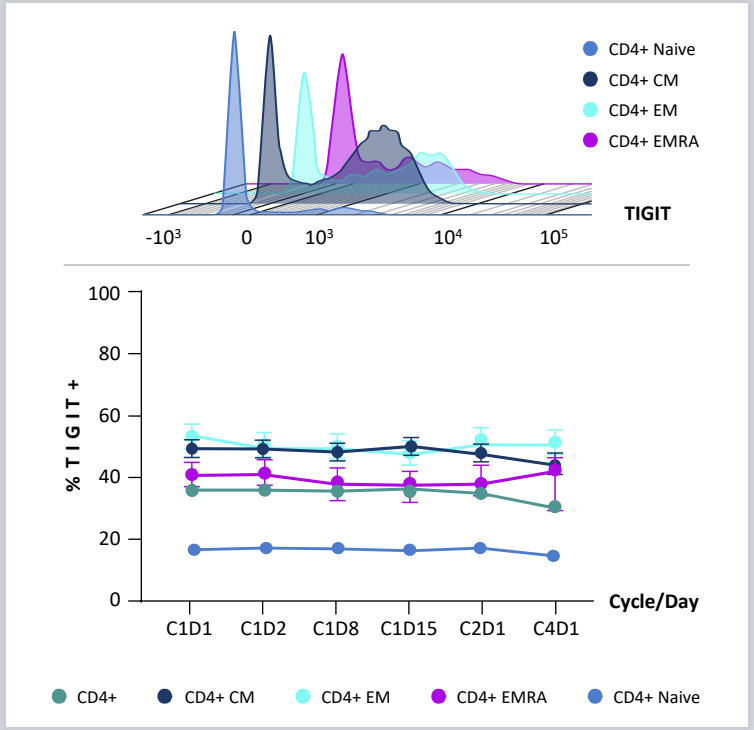
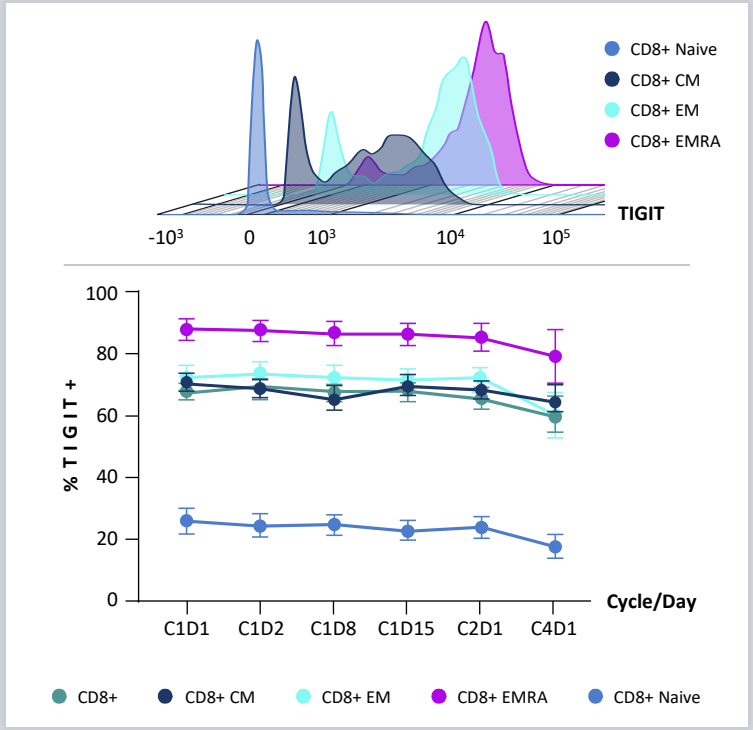
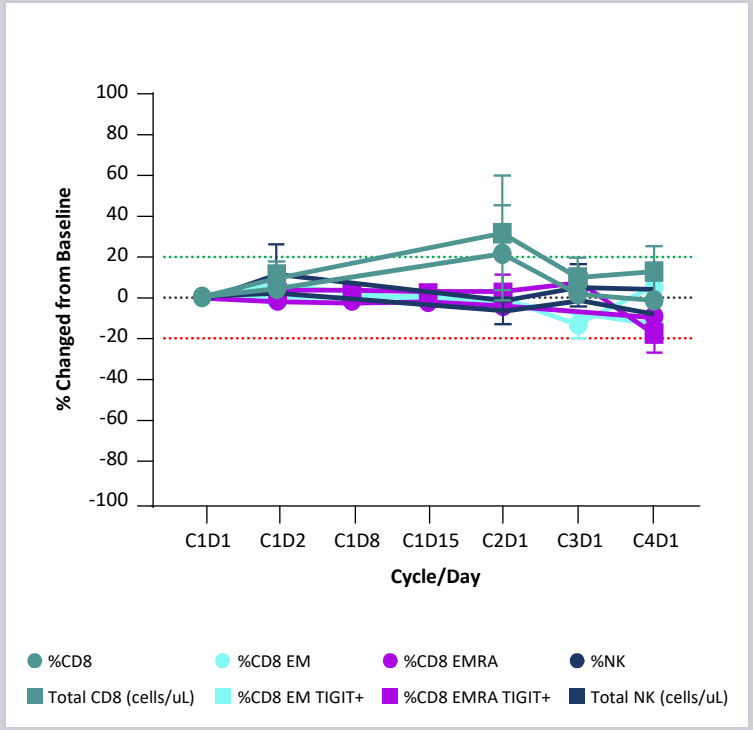
COM902 avoids depletion of major TIGIT+ expressing lymphocytes- NK, CD4 and CD8 T cells

Supporting rationale for selecting high affinity COM902 as a IgG4 reduced Fc effector function







COM902 avoids CD8+ T Cells depletion and potential associated risks

Dumbrava et al, SITC November 2021 Poster Presentation, modified

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Compugen leadership in the DNAM Axis space

Strong execution of a differentiated clinical strategy

1. **Only Company** targeting PVRIG, TIGIT and PD-1 combinations in the clinic as part of our three-pathway hypothesis

4. **Only Company** targeting TIGIT + PVRIG in a PD- (L)1 free regimen in the clinic

2. **New** translational data supports **potent immune activation** with triple blockade of PVRIG, TIGIT and PD-1 & **differentiation** of PVRIG from TIGIT and PD-1

5. **New** translational data support our rationale in choosing a **reduced Fc effector function** anti-TIGIT antibody

3. Developments in the field bring external validation to our **3 Pathway DNAM axis hypothesis**

6. 2021 has been a **strong year of execution and** initiation of the cohort expansion studies in select tumors **with multiple data readouts**

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Strong cash position to fund progress

CASH BALANCE

- ~$102 million as of September 30, 2021
- Cash balance at year end expected to be in the range of $113- $116
- No Debt

GROSS CASH EXPENDITURES

(EXCLUDES ANY POTENTIAL CASH INFLOWS)

- 2021 expected gross cash expenditures ~$40 million

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