UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 6-K

REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO RULE 13a-16 OR 15d-16
UNDER THE SECURITIES EXCHANGE ACT OF 1934

FOR THE MONTH OF NOVEMBER 2023

COMMISSION FILE NUMBER 001-39081

BioNTech SE
(Translation of registrant's name into English)

An der Goldgrube 12
D-55131 Mainz
Germany
+49 6131-9084-0
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover Form 20-F or Form 40-F: Form 20-F ☒ Form 40-F ☐

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1): ☐

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(7): ☐

DOCUMENTS INCLUDED AS PART OF THIS FORM 6-K

On November 7, 2023, BioNTech SE is hosting a second edition of its Innovation Series Day, providing an update on BioNTech's clinical progress across its pipeline and a deep dive into scientific and technological innovations from its research engine. The presentation is attached hereto as Exhibit 99.1.

SIGNATURE

Pursuant to the requirements of the Exchange Act, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

BioNTech SE

By: /s/ Dr. Sierk Poetting
Name: Dr. Sierk Poetting
Title: Chief Operating Officer

Date: November 7, 2023

EXHIBIT INDEX

Exhibit	Description of Exhibit
99.1	Innovation Series Day 2023 Presentation


Innovation Series 2023
November 7, 2023
9:00 AM – 1:00 PM ET
BIONTECH

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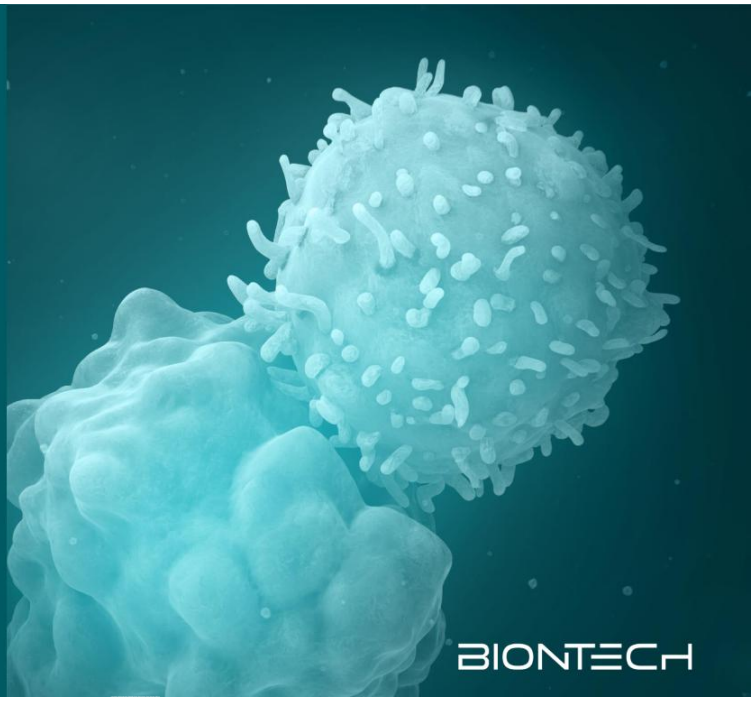
Welcome & Introductory Remarks

Ryan Richardson
Chief Strategy Officer



This Slide Presentation Includes Forward-Looking Statements

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including, but not limited to, statements concerning: BioNTech's expected revenues and net profit related to sales of BioNTech's COVID-19 vaccine, referred to as COMIRNATY® where approved for use under full or conditional marketing authorization, in territories controlled by BioNTech's collaboration partners, particularly for those figures that are derived from preliminary estimates provided by BioNTech's partners; the rate and degree of market acceptance of BioNTech's COVID-19 vaccine and, if approved, BioNTech's investigational medicines; expectations regarding anticipated changes in COVID-19 vaccine demand, including changes to the ordering environment, seasonality and expected regulatory recommendations to adapt vaccines to address new variants or sublineages; the initiation, timing, progress, results, and cost of BioNTech's research and development programs, including those relating to additional formulations of BioNTech's COVID-19 vaccine, and BioNTech's current and future preclinical studies and clinical trials, including statements regarding the timing of initiation and completion of studies or trials and related preparatory work and the availability of results; our expectations with respect to our intellectual property; the impact of the Company's collaboration and licensing agreements; the development of sustainable vaccine production and supply solutions and the nature and feasibility of these solutions; and BioNTech's estimates of commercial and other revenues, cost of sales, research and development expenses, sales and marketing expenses, general and administrative expenses, capital expenditures, income taxes, net profit, cash, cash equivalents and security investments, shares outstanding and cash outflows and share consideration. In some cases, forward-looking statements can be identified by terminology such as "will," "may," "should," "expects," "intends," "plans," "aims," "anticipates," "believes," "estimates," "predicts," "potential," "continue," or the negative of these terms or other comparable terminology, although not all forward-looking statements contain these words. The forward-looking statements in this presentation are neither promises nor guarantees, and you should not place undue reliance on these forward-looking statements because they involve known and unknown risks, uncertainties, and other factors, many of which are beyond BioNTech's control, and which could cause actual results to differ materially from those expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to: BioNTech's pricing and coverage negotiations with governmental authorities, private health insurers and other third-party payors after BioNTech's initial sales to national governments; the future commercial demand and medical need for initial or booster doses of a COVID-19 vaccine; competition from other COVID-19 vaccines or related to BioNTech's other product candidates, including those with different mechanisms of action and different manufacturing and distribution constraints, on the basis of, among other things, efficacy, cost, convenience of storage and distribution, breadth of approved use, side-effect profile and durability of immune response; the timing of and BioNTech's ability to obtain and maintain regulatory approval for BioNTech's product candidates; the ability of BioNTech's COVID-19 vaccines to prevent COVID-19 caused by emerging virus variants; BioNTech's and its counterparties' ability to manage and source necessary energy resources; BioNTech's ability to identify research opportunities and discover and develop investigational medicines; the ability and willingness of BioNTech's third-party collaborators to continue research and development activities relating to BioNTech's development candidates and investigational medicines; the impact of the COVID-19 pandemic on BioNTech's development programs, supply chain, collaborators and financial performance; unforeseen safety issues and claims for potential personal injury or death arising from the use of BioNTech's COVID-19 vaccine and other products and product candidates developed or manufactured by BioNTech; BioNTech's and its collaborators' ability to commercialize and market BioNTech's COVID-19 vaccine and, if approved, its product candidates; BioNTech's ability to manage its development and expansion; regulatory developments in the United States and other countries; BioNTech's ability to effectively scale BioNTech's production capabilities and manufacture BioNTech's products, including BioNTech's target COVID-19 vaccine production levels, and BioNTech's product candidates; risks relating to the global financial system and markets; and other factors not known to BioNTech at this time. You should review the risks and uncertainties described under the heading "Risk Factors" in BioNTech's Report on Form 6-K for the period ended September 30, 2023 and in subsequent filings made by BioNTech with the SEC, which are available on the SEC's website at https://www.sec.gov/. Except as required by law, BioNTech disclaims any intention or responsibility for updating or revising any forward-looking statements contained in this presentation in the event of new information, future developments or otherwise. These forward-looking statements are based on BioNTech's current expectations and speak only as of the date hereof.

Innovation Series 2023 Agenda

1	Welcome and Introductory Remarks	9:00 AM
2	The BioNTech Approach to Innovation	9:05 AM
3	AI Capabilities and Projects	9:25 AM
4	Our Multi-Platform Oncology Strategy	9:35 AM
5	Our Growth Strategy	10:00 AM
		Break (10 mins)
6	Novel Backbones: Next-Generation ADCs and Immunomodulators	10:35 AM
7	Solid Tumor Cell Therapy	12:00 AM
8	mRNA Cancer Vaccines	12:15 PM
9	Path to Value Creation	12:30 PM
10	Closing Remarks and Q&A	12:40 PM

BIONTECH

Innovation Series 2023 – BioNTech Team

Prof. Ugur Sahin, M.D.
Chief Executive Officer, Co-founder

Prof. Özlem Türeci, M.D.
Chief Medical Officer, Co-founder

Ryan Richardson
Chief Strategy Officer

Karim Beguir
Chief Executive Officer, InstaDeep

Prof. Ilhan Celik, M.D.
Vice President, Clinical Development

Michael Wenger, M.D.
Vice President, Clinical Development

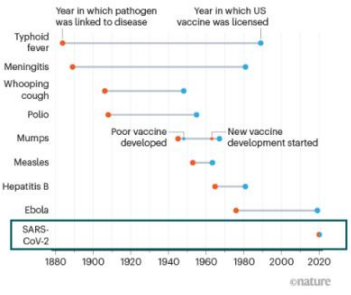
2

The BioNTech Approach to Innovation

Prof. Ugur Sahin, M.D.
CEO and Co-founder

We Made History

The fastest vaccine development in the history of medicine[1]



The strongest launch of any pharmaceutical product[2]

>4 billion doses of BNT162b2 shipped

>170 countries and territories[3]

Saved lives and impacted the global economy

Millions of cases of severe illness or death likely averted

Trillions of dollars of global economic impact[4]

1. Nature 589, 16-18 (2021); 2. Measured by sales recorded for a single product in a single year (>$40 billion combined of direct sales recorded by Pfizer or BioNTech in both 2021 and 2022); 3. Cumulative doses shipped in the years 2021 and 2022. 4. COVID-19 Excess Mortality Collaborators. Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020-21. Lancet. 2022.

BIONTECH

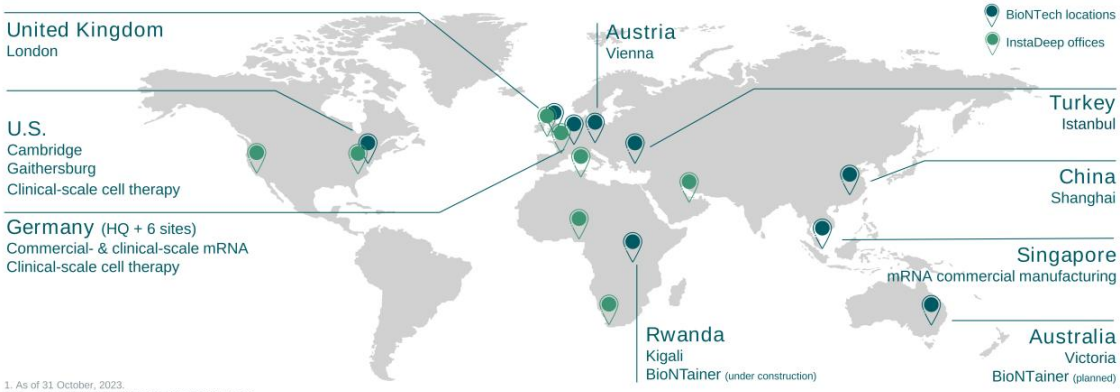
A Global Immunotherapy Leader

Leadership in COVID-19 vaccines development	Healthcare and social responsibility	Innovative and diversified pipeline	Innovation at scale
			
Building and expanding a long-term and successful COVID-19 franchise	Contributing to democratizing access to novel medicines around the globe	Developing an innovative pipeline with a focus on oncology and infectious disease	Aiming to establish a dedicated multi-product oncology company
>60%[1] market share	40%[1] of doses delivered to low- and middle-income countries in 2023	11[2] ongoing phase 2 and 3 trials	>5,700[1] employees globally

1. As of October 1, 2023; 2. As of October 24, 2023.

BioNTech Today

Founded in 2008	>5,700[1] professionals globally	>80 different nationalities	36 average age	>50 % are female



1. As of 31 October, 2023.
R&D = research and development; HQ = headquarters

BIONTECH

Harnessing the Full Power of the Immune System to Fight Human Diseases

The human immune system plays a central role in >80% of human diseases

Hundreds of billions of cells

Impacts the function of every organ system in the body

Ability to kill targeted cells or pathogens with high precision

Potential for long-term memory

Cell types

Function

Cell migration

Removal of diseased cells

Healing

Cell-cell communication

Diseases

Cancer

Infectious diseases

Autoimmune diseases

Cardiovascular disease

Neurodegenerative diseases

Inflammatory diseases

NK cell = natural killer cell

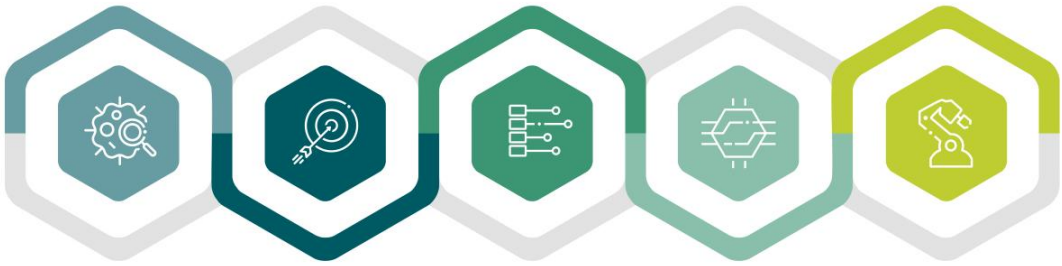
BIONTECH

Focused on Five Innovation Pillars

Deep understanding of the immune system

Multi-platform innovation engine

Manufacturing and automation



Target discovery and characterization

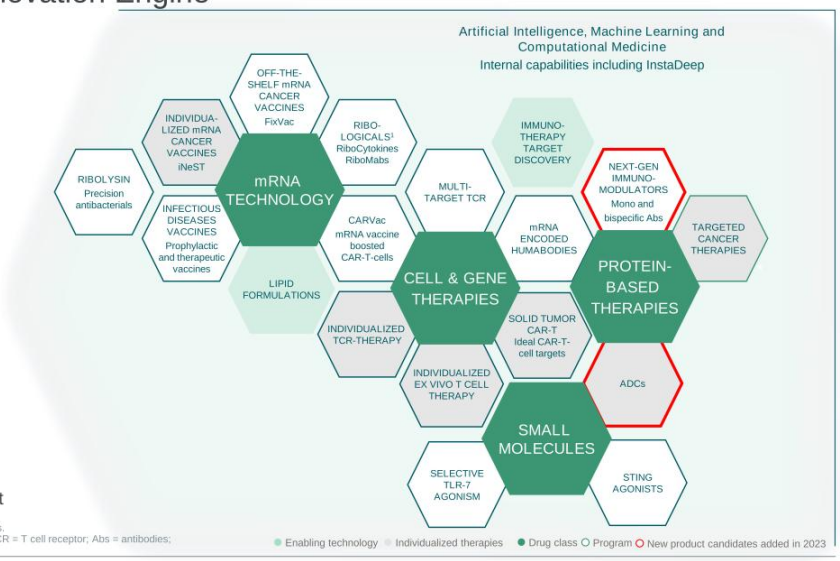
Digital & AI/ML

AI = artificial intelligence; ML = machine learning.

Multi-Technology Innovation Engine

Core principles of our technology strategy

- Multi-technology-driven approach rooted in deep fundamental understanding of biology, immunology and medical need
- Build novel platforms with the ability to produce multiple product candidates
- Open up new combination opportunities which leverage synergistic modes of action
- Enable and accelerate individualization of treatment
- Leverage AI-powered drug discovery, design and development



1. mRNA encoded cancer-targeting antibodies and cytokines.
CAR = chimeric antigen receptor; TLR = toll-like receptor; TCR = T cell receptor; Abs = antibodies; STING = stimulator of interferon genes.

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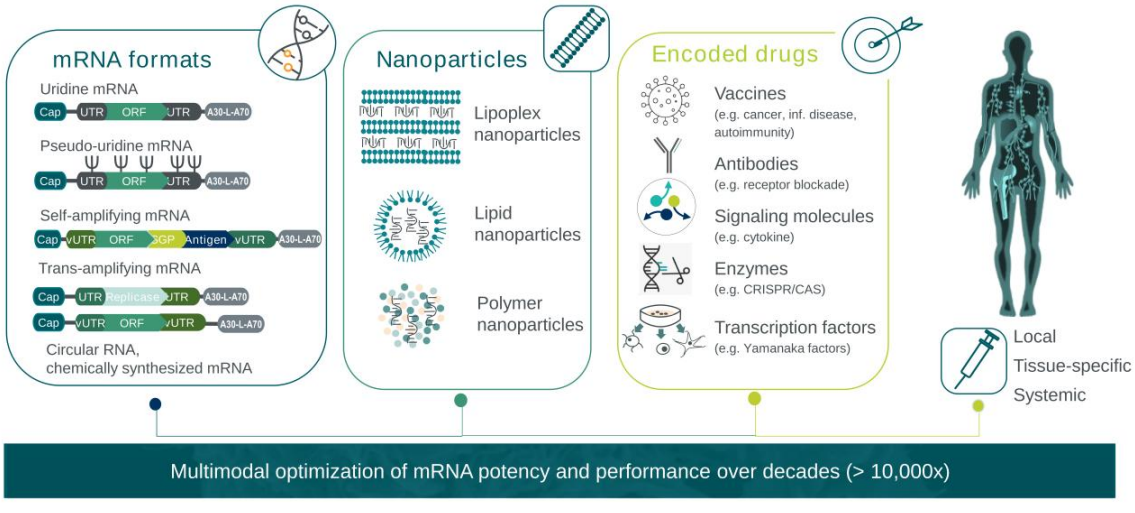
mRNA 2023: A Broad Technology Toolbox



Multimodal optimization of mRNA potency and performance over decades (> 10,000x)

Holtkamp et al. Blood 2006; Kuhn et al. Gene Therapy 2010; Sahin, Türeci & Kariko Nat Drug Discovery 2014; Vogel et al. Mol Therapy 2018; Beissert et al. Mol Therapy 2020.

BIONTECH

Our Innovation Approach To Manufacturing Challenges

Delivery at Large Scale

BioNTech Manufacturing Facility in Marburg
Annual has manufactured mRNA drug substance for 1.6 billion doses

Tailoring & Customization

Digitized manufacturing of individualized mRNA vaccines
Turnaround time 4-6 week

Democratizing access to novel technologies

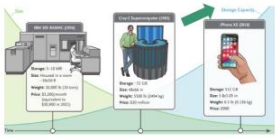
BioNTainer:
Mobile GMP manufacturing units

GMP = Good Manufacturing Practice

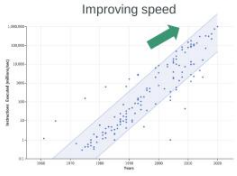
AI's Unprecedented Impact on Science and Medicine

Advances in Computing Power & Algorithms

Increasing storage capacity



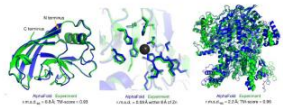
Improving speed



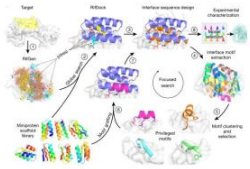
Improvements in the ability to process data over 50 years, allows machine learning to progress, and expected to continuously improve

Leap in LLMs/ Reinforcement Learning

AlphaFold2 – structure prediction



Rosetta - de novo protein design



Prediction of protein structure is near experimental accuracy by AlphaFold2. De novo protein design solutions introduced

AGI expected to arrive in 2024 – 2029

AGI is expected to impact medical education and clinical inquiry, beyond public health and hospital operations

Bioapplication supported by Data Explosion

Speed up clinical trials through more efficient recruitment and matching of study participants and more comprehensive analyses of the data

Create synthetic control groups by matching historical data to target trial enrollment criteria

Accelerate drug discovery including de novo molecular design and optimization and structure-based drug design

The New England journal of medicine vol. 388,13 (2023): 1201-1208. Nature 605, 551–560 (2022). Nature 596, 583–589 (2021). AI, artificial intelligence; ML, machine learning; LLMs, large language models; AGI, artificial general intelligence.

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Our Goals for AI

AI enabled drug and target discovery

Lead structure

- Optimize mRNA structure and function

Protein design

- Discovery and de novo design of TCR
- Discovery and optimized design of antibodies
- Fully scalable, automated engineering of RiboCytokines And RiboMabs
- SARS-CoV-2 variant monitoring and immunogen design
- Customized and synthetic endolysins for infectious diseases

Personalized medicines

1. Super-fast genome analysis
2. Individualized mutanome analysis
3. Neoantigen prediction
4. Automated and digitalized manufacturing

Powered by data and cutting-edge AI & ML technologies

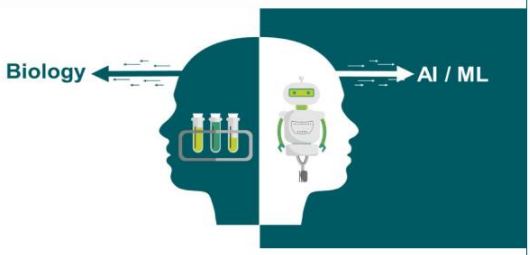
AI = artificial intelligence; ML = machine learning; mRNA = messenger ribonucleic acid; TCR = T cell receptor-engineered; SARS-CoV-2 = severe acute respiratory syndrome coronavirus 2.

Accelerate and Enhance BioNTech's AI Vision

BIONTECH & InstaDeep™

Fully leverage the power of computational science & AI

- Provide high-quality designs to develop next-generation products with a more efficacious or safer profile
- Speed up workflows to develop novel therapeutics & vaccine product candidates
- Scale up our capability by fully digitalized automation throughout the whole drug discovery, e.g., high-throughput sequencing, target identification, candidate design and optimization, clinical development and manufacturing



Implementation strategy

Successful collaboration over past three years	Define high priority projects
Ensure close teamwork at project level	Keep integrity of InstaDeep

AI = artificial intelligence; ML = machine learning.

3

AI Capabilities and Projects

Karim Beguir
CEO, InstaDeep

Our AI Capabilities

300+ AI Experts

From AI researchers to ML engineers and ML Ops experts, our team has critical size, depth, and a differentiated ability to attract talents in EMEA.

Supercomputing Assets

Our proprietary GPU cluster in the UK (500 petaflops expected 2024), is optimized for high performance computing and fully managed by our Aichor software platform.

AI Research Capabilities

Strong contributor to major AI conferences (NeurIPS, ICLR etc.), workshops and journals.
25 publications in 2023, in ML for Biology and AI Decision-Making.

Frontier LLMs

Proprietary high-efficiency libraries for advanced Large Language Model (LLM) training, supporting R&D efforts and biology-focused generative AI.

Large Scale Optimization

Distributed, scalable reinforcement Learning (RL) and combinatorial optimization algorithms. 5 reference JAX frameworks released.

Quantum Machine Learning

Pioneer in Quantum Machine Learning incl. publications in Nature journals, collaborations (NPL, Cambridge, IBM) and commercial partnerships.

Software Productization

Converting technology powered by our AI innovation into user-friendly, scalable software products integrated with our compute infrastructure and the Cloud.

Simulation Expertise

Physically realistic representations of complex environments, optimized for speed, including GPU-accelerated Molecular Dynamics in biology.

AI = artificial intelligence; ML = machine learning; EMEA = Europe, Middle East, India & Africa; GPU = Graphics Processing Unit; NeurIPS = Neural Information Processing System; ICLR = International Conference on Learning Representations; NPL = National Physical Laboratory.

End-to-End Therapeutics Platform Powered by AI

Synergistic approach designed to improve BioNTech's personalized immunotherapy platform

Target identification → mRNA optimization → Gene synthesis → Functional validation

BioNDeep by BIONTECH
Enhanced neoepitope selection algorithms in terms of positive predictive value (PPV)

mRNA Optimizer by BIONTECH
Developing LLMs for RNA translation prediction

Oligo Optimizer by BIONTECH
36% success rate improvement on oligonucleotide assembly

Elispot BIONTECH
More than 8x speedup on immune response detection

We apply our AI capabilities at the forefront of the design of potential cancer therapies and infectious disease vaccines

Immune recognition modelling in sequence and structure space

AI-designed vaccines competitive with human expert designs

Developing state-of-the-art foundational large language models for DNA

Crossfunctional learnings across the research themes are shared

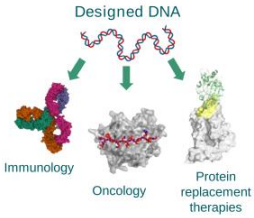
AI = artificial intelligence; LLM = large language model.

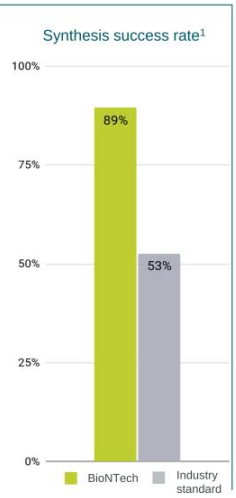
Gene Synthesis

DNA is the language of biology, and the starting material for a huge range of bioproducts. Creation of long DNA molecules is complex. Assembly PCR builds complete molecules from carefully designed fragments. However, failure is common and costly.

Our AI optimization algorithms improve the success rate of this process by 36 absolute percentage points over the industry standard. Our innovation has been embedded into a software platform that unlocks BioNTech's capacity for large scale experiments, reducing failure rates by ~5x and increasing successful design throughput by 68 percentage points over the same hardware.

Intuitive software platform





1. Results from April 2022 internal evaluation; data on file.
PCR = polymerase chain reaction; AI = artificial intelligence.

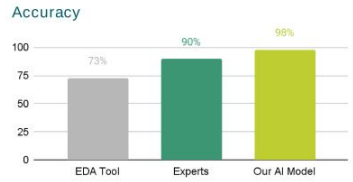
Functional Validation

AI-powered platform for ELISpot experiments classification

The ELISpot project streamlines the categorization of experimental results by classifying them into one of three distinct outcomes: those showing no immune response, those exhibiting a positive immune response, and those that are not evaluable. We built an AI product to offer a superior and reliable alternative to traditional manual labeling methods, enhancing accuracy and efficiency of ELISpot assessments.

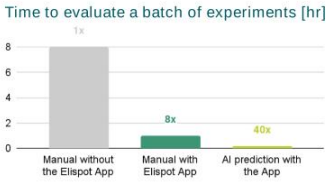
AI classification accuracy:

- Our AI product: 98%
- Human-level performance: 90%
- Previous tool: 73%



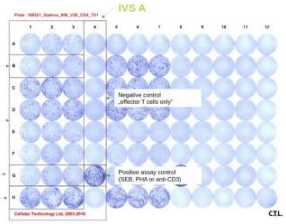
Efficiency improvements:

- Manual process: 8x faster within the ELISpot app
- Full AI automation: 40x faster



Overall process optimization:

- AI evaluates 97% of experiments, leaving only 3% for experts to review



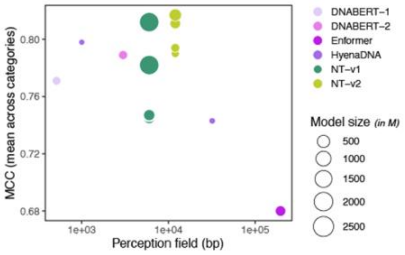
Data on file.
AI = artificial intelligence; EDA = electronic design automation.

Nucleotide Transformer: State-of-the-Art LLM for DNA

The Nucleotide Transformer is our collection of language models tailored for DNA developed in collaboration with TUM and Nvidia. The models have been trained on reference genomes from more than 850 species at large scale and are currently the state-of-the-art LLM for genomics. They have been evaluated against many competitors on a large range of tasks including splice site prediction, enhancer activity prediction and epigenetic marks predictions.

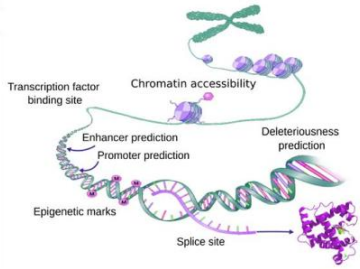
Comparison to other LLMs for genomics

Enformer, DeepMind, Nature Methods
HyenaDNA, Stanford, NeurIPS



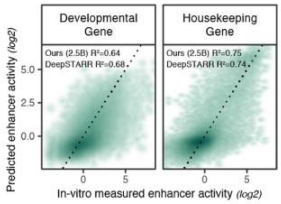
Landscape of the tasks performed by the nucleotide transformer

from chromatin accessibility, to splice site detection and deleteriousness prediction



Comparison to DeepSTARR

Stark lab, Nature Genetics



Comparison to SpliceAI

Illumina, Cell

	PR−AUC	Top−k
NT−Multispecies (2.5B)	0.98	0.95
SpliceAI−10k	0.98	0.95
SpliceAI−6k	0.92	0.86
GeneSplicer	0.23	0.30
NNSplice	0.15	0.22
MaxEntScan	0.15	0.22

Dalla-Torre et al. 2023, https://doi.org/10.1101/2023.01.11.523679
LLM = large language model.

BIONTECH

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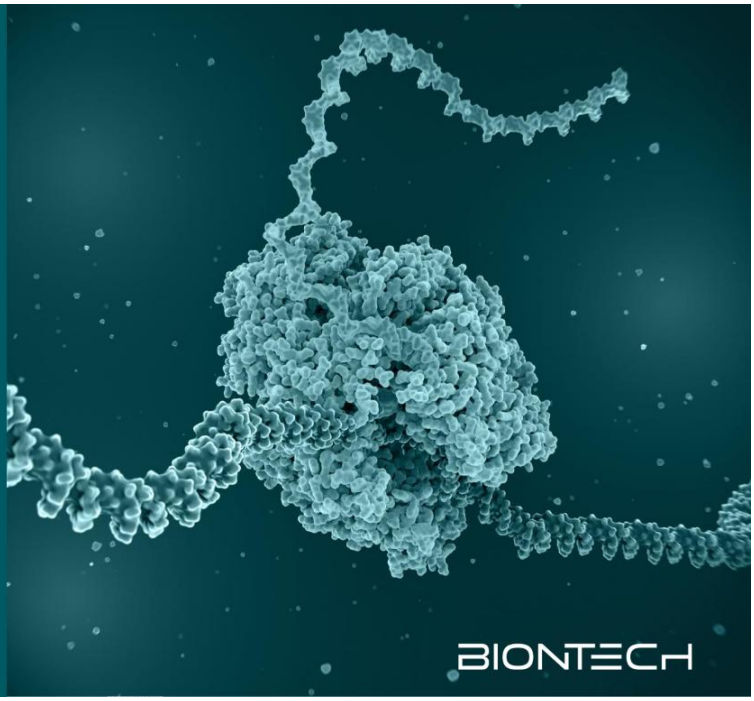
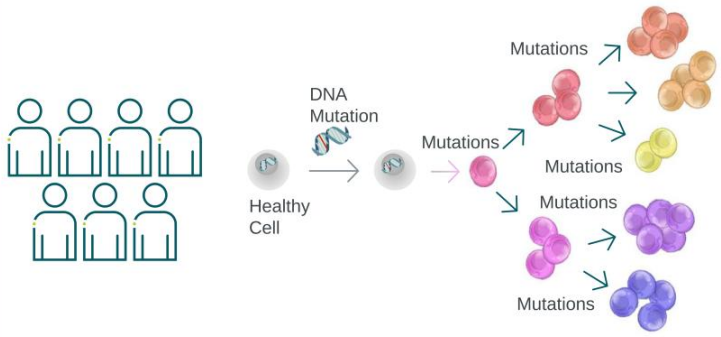
Our Multi-Platform Oncology Strategy

Prof. Ugur Sahin, M.D.
CEO and Co-founder



Root Cause of Cancer Treatment Failure

Intraindividual variability & intratumoral heterogeneity driving evasion and secondary resistance mechanism



Individual patients

5-20 Years – up to 10,000 mutations

Cancer cells

Genetically diverse & adaptable

BIONTECH

Our Oncology Strategy

Vision

Address the continuum of cancer treatment

Bring novel therapies to cancer patients and establish new treatment paradigms

Open up novel options to combine platforms and therapies

Strategy

Portfolio strategy covering compound classes with synergistic mechanism of actions

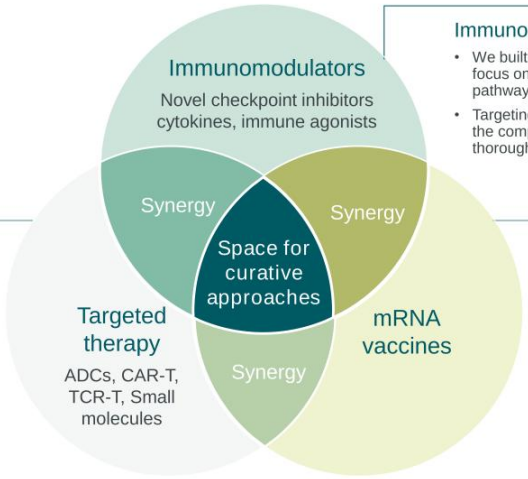
- Immunomodulators
- Targeted therapies
- Personalized mRNA vaccines

Programs across a wide range of solid tumors and stages of treatment

Programs with first-in-class and / or best-in-class potential

Unique therapeutic combinations

Towards a Potentially Curative Approach to Cancer: Differentiated Combinations of Multiplatform Assets



Immunomodulators

- We built a modality agnostic armamentarium to focus on the most relevant and crucial IO pathways
- Targeting different but complementary players in the complex cancer immunity cycle to promote a thorough and durable anti-tumoral effect

Targeted therapy

- Potent and precise therapies to rapidly reduce tumor burden
- Efficacy across the entire disease continuum including late lines

mRNA cancer vaccines

- Eliminate polyclonal residual disease with individualized vaccines for potential long-term impact
- Polyspecific activity by targeting multiple antigens at once

CAR = chimeric antigen receptor; ADC = antibody-drug conjugate; IO = immuno-oncology; TCR-T = T-cell receptor engineered T cell.

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Well-Positioned in Immuno-Oncology with Therapeutic Candidates Across Multiple Tumors

BNT316/ ONC-392[2] (gotistobart)	BNT311/ GEN1046[1]	BNT312/ GEN1042[1]	BNT313/ GEN1053[1]	BNT314/ GEN1059[1]	PM8002[3]
Anti-CTLA4 Optimized Fc	Anti-PD-L1 Anti-4-1BB	Anti CD40 Anti-4-1BB	Anti-CD27	EpCAM Anti-4-1BB	Anti-VEGF A; Inert Fc (LALA); Anti-PD-L1 VHH
Monospecific antibody with optimized Fc targeting CTLA-4 and selectively depleting tumor-infiltrating Tregs in the TME but not in the periphery due to a pH driven mechanism.	Bispecific antibody to inhibit proliferation of PD1-positive cells. 4-1BB enhances T cell proliferation, T cell effector functions and prevents T cell death.	Engagement of CD40 leads to activation and maturation of APCs. 4-1BB enhances T cell proliferation, T cell effector functions and prevents T cell death.	A CD27 antibody based on the HexaBody technology, specifically engineered to form an antibody hexamer upon binding its target on T cell membranes.	Bispecific antibody designed to boost antitumor immune response through EpCAM-dependent 4-1BB agonistic activity.	PD-L1 expression or upregulation in tumors may enrich VEGF neutralization into the TME which inhibits angiogenesis.
Clinical status • Ph1/2 in multiple solid tumors • Ph2 in PROC • Ph3 in 2L+ mNSCLC	Clinical status • Ph1/2 in multiple solid tumors • Ph2 in mNSCLC • Ph2 in 2L mEC	Clinical status • Ph1/2 trials in multiple solid tumors	Clinical status • Ph1/2 in multiple solid tumors	Clinical status • Ph1/2 in multiple solid tumors planned	Clinical status • Ph1b dose escalation • Ph2a as monotherapy in multiple cancers • Ph2 in combination with CTx in multiple cancers

1. Partnered with Genmab; 2. Partnered with OncoC4; 3. Partnered with Biotheus. CTLA4 = Cytotoxic T-Lymphocyte-Associated Protein 4; CD27, CD40, 4-1BB = members of the tumor necrosis factor receptor superfamily; PD-1 =Programmed cell death protein 1; HER2 = human epidermal growth factor receptor 2; ADCC = Antibody dependent cell-mediated cytotoxicity; ADCP = Antibody dependent cellular phagocytosis; PROC = platinum-resistant ovarian cancer; NSCLC = non-small cell lung cancer; EC = endometrial cancer APC = antigen presenting cells; VEGF = vascular endothelial growth factor; TME = tumor microenvironment; CTx = chemotherapy; LALA = IgG1 variant L234A/L235A.

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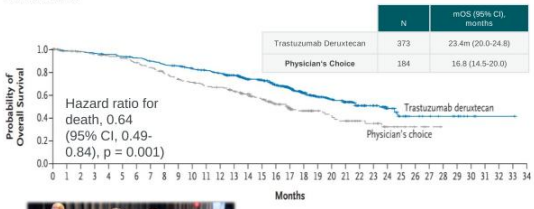
ADCs: The Next Wave of Transformation in Oncology

ADCs are expected to replace chemotherapy

Overall survival

Risk of death was reduced by 36% in patients who received Trastuzumab Deruxtecan

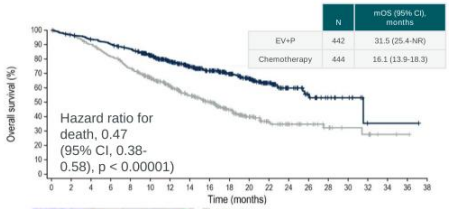


ASCO 2022 standing ovation for T-Dxd (Destiny Breast-04), breast cancer

ADC + IO are expected to become a new standard

Overall survival

Risk of death was reduced by 53% in patients who received EV + Pembrolizumab



ESMO 2023 standing ovation for EV-302, urothelial cancer

ADC development is practice-changing in oncology

ASCO 2022 Trastuzumab Deruxtecan vs. Chemotherapy, N Engl J Med 2022;387:9-20; Enfortumab Vedotin, + Pembrolizumab vs. Chemotherapy; Powles TB, et al. EV-302/KEYNOTE-A39: Open-label, randomized phase 3 study of enfortumab vedotin in combination with pembrolizumab (EV+P) vs chemotherapy (chemo) in previously untreated locally advanced metastatic urothelial carcinoma (la/mUC), ESMO Congress 2023.
ADC = antibody-drug conjugate; EV = enfortumab vedotin, IO = immuno-oncology.

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ADCs: The Innovation Cycle is Just Beginning

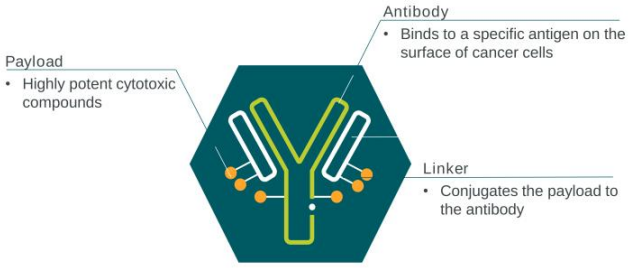
BioNTech is driving the development of next-generation ADCs

Distinguished ADC linker technology
- Stability improving safety profile
- Higher efficacy

- Novel mechanisms of actions
- Tumor specific activation
- Improved and novel payloads

Novel targets and novel epitopes
- Targeting broader spectrum of tumors
- Higher specificity

BioNTech plans to develop ADCs against novel targets



Our deep understanding of ADC targets and immunology distinctively positions us to consolidate and maximize the substantial therapeutic window offered by the next-gen ADC technology

ADC = antibody-drug conjugate.

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Clinical stage ADC Programs

BNT323/ DB-1303[1]	BNT324/ DB-1311[1]	BNT325/ DB-1305[1]	BNT326/ YL202[2]
			
Targeting HER2, cleavable linker (L101) and topoisomerase I inhibitor (P1003) DAR: 8	Targeting B7H3, cleavable linker and topoisomerase I inhibitor (P1021) DAR: 6	Targeting TROP2, cleavable linker and topoisomerase I inhibitor (P1021) DAR: 4	Targeting HER3, cleavable linker allows for intracellular and extracellular release of topoisomerase I inhibitor (YL0014) DAR: 8
Clinical status • Ph3 in HR+HER2-low mBC • Ph1/2 in multiple solid tumors	Clinical status • Ph1/2 in multiple solid tumors	Clinical status • Ph1/2 in multiple solid tumors	Clinical status • Ph1 in multiple solid tumors

1. Partnered with DualityBio; 2. Partnered with MediLink; The completion of the agreement is subject to customary closing conditions, including clearance under the Hart-Scott-Rodino ("HSR") Antitrust Improvements Act.
ADC = antibody-drug conjugates; DAR = drug-to-antibody ratio; HER2/3 = human epidermal growth factor receptor 2/3; TROP2 = trophoblast cell-surface antigen 2; mBC = metastatic breast cancer

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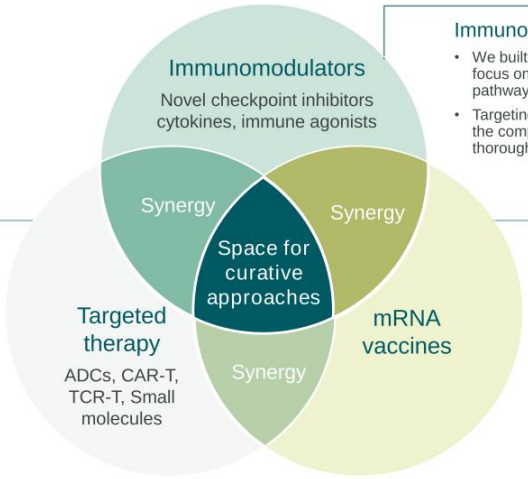
Towards a Potentially Curative Approach to Cancer: Differentiated Combinations of Multiplatform Assets



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CAR = chimeric antigen receptor; ADC = antibody-drug conjugate; IO = immuno-oncology; TCR-T = T-cell receptor engineered T cell.

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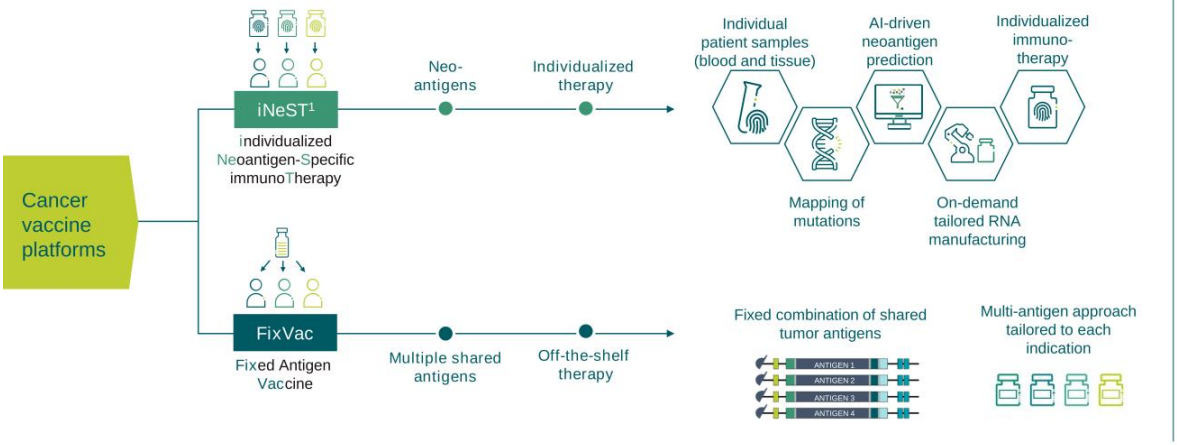
mRNA Cancer Vaccines May Become the Next Tangible Transformation in Oncology



1. iNeST is being developed in collaboration with Genentech, a member of the Roche Group.
AI = artificial intelligence.

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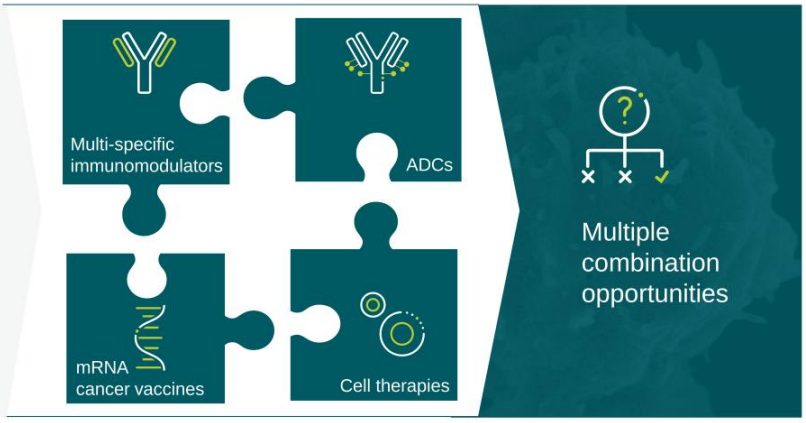
Potential to Address Numerous Cancer Types Through the Combination of Synergistic Modalities

Disclosed phase 2 and 3 indications

- Non-small lung cancer
- Melanoma
- Head and neck cancer
- Breast cancer
- Endometrial cancer
- Colorectal cancer
- Pancreatic ductal adenocarcinoma
- Ovarian cancer

Technology toolkit



ADC = Antibody-drug conjugate.

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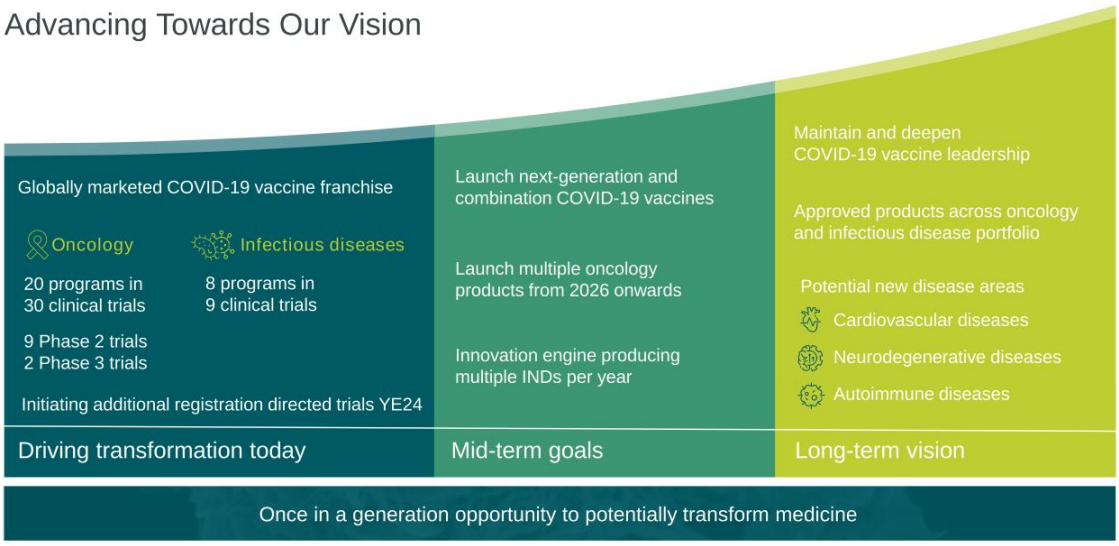
Advancing Towards Our Vision



YE = Year end; IND = Investigational new drug.

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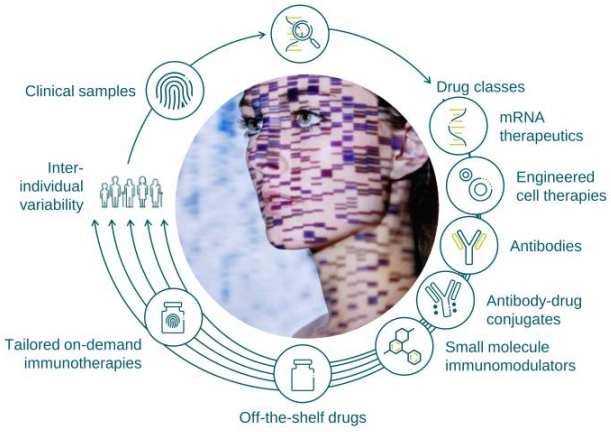
Charting the Course for Tomorrow's Personalized Precision Medicine

- AI & digitally-integrated target & drug discovery and development
- Individualized treatment platforms to address inter-individual variability
- Deep genomics & immunology expertise to leverage patient data
- Automated manufacturing to serve patients on time and globally



AI = Artificial Intelligence.

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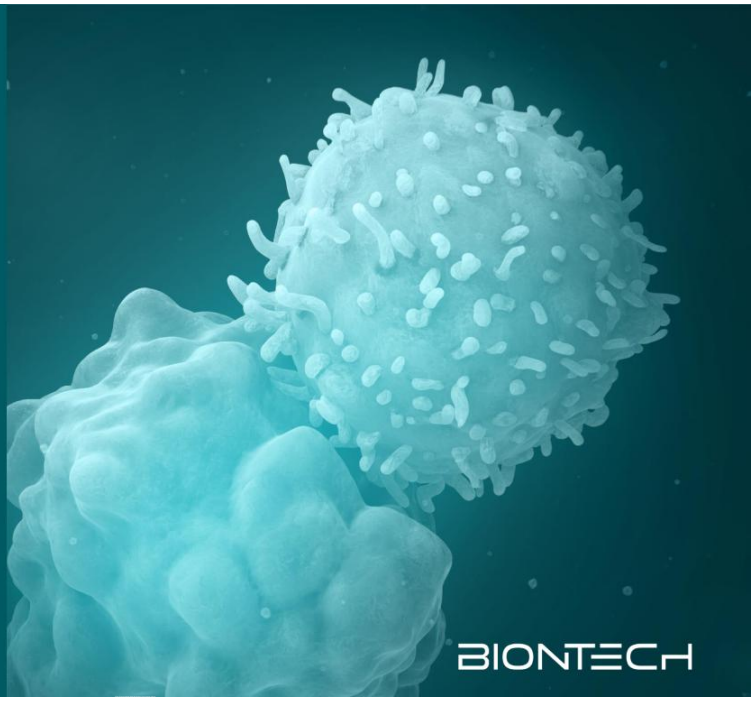
5

Our Growth Strategy

Ryan Richardson
Chief Strategy Officer



Our Diversified Model for the Next Phase of Growth

Strategy

COVID-19[1]	Immuno-oncology	Infectious diseases
Drive leadership in COVID-19 vaccine franchise leveraging Pfizer's global infrastructure	Build fully integrated global organization to discover, develop, and commercialize a multi-product portfolio	Advance pipeline of innovative mRNA prophylactic and therapeutic vaccine candidates

1. Partnered with Pfizer.
mRNA = messenger RNA.

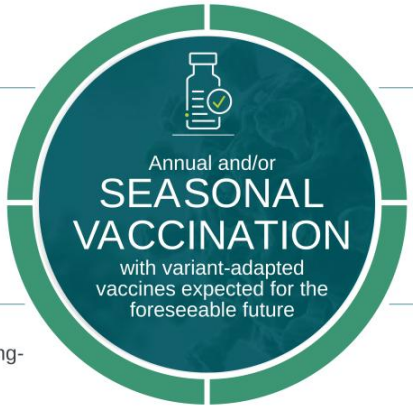
Long-Term Need for Annually Adapted Vaccines Anticipated

Continuous evolution

Ongoing antigenic evolution of SARS-CoV-2[1,2]

Risk remains high

For severe COVID-19 in vulnerable populations[3]



Long-term health consequences

Accumulating evidence demonstrates that COVID-19 vaccination reduces long-COVID[4]

XBB.1.5-adapted vaccine

Effective against multiple variants of concern[5]

1. World Health Organization Tracking SARS-CoV-2 variant www.who.int/en/activities/tracking-SARS-CoV-2-variants accessed 30 October 2023; 2. Global Initiative on Sharing All Influenza Data https://gisaid.org/ accessed 30 October 2023; 3. FDA Briefing Document Vaccines and Related Biological Products Advisory Committee Meeting June 15, 2023; 4 Brannock et al, Nature Comm. 2023; 5. Stankov M. V. et al., medRxiv pre-print, 5 October 2023.

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Global COVID-19 Vaccine Franchise with Lean Commercial Infrastructure

Lean commercial organization in Germany and Turkey

Leveraging partners' commercial infrastructures for global rollout of Comirnaty

COMIRNATY™
COVID-19 mRNA Vaccine (nucleoside modified)

~55 person field force in DE

~€45m S&M costs YTD[1]

BioNTech commercial territories
Pfizer commercial territories
Fosun commercial territories[1]

1. Nine months ended September 30, 2023; 2. Comirnaty is not approved in mainland China. S&M = sales & marketing, YTD = year-to-date. DE = Germany.

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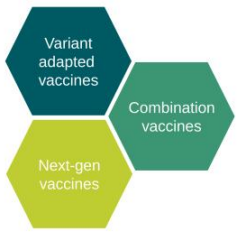
Lean Fixed Cost Base of COVID-19 Vaccine Business

Maintained high gross margin	Limited sales & marketing expense	Reduced R&D expense due to partner cost-sharing
>80%	~€60m	~25-45%
Average Gross Margin 2021-2023[1]	Average Sales & Marketing expenses 2021-2023[2]	Approximate range of 2021, 2022 and 2023 YTD[3] annual COVID-19 R&D spend as a % of total R&D spend

1. Gross margin average calculated using forecast information for Fully Year 2023 based on assumptions. 2. S&M average calculated using forecast information for Fully Year 2023 based on assumptions. 3. Annual COVID-19 R&D spend as a % of total R&D spend 2021-2023.
YTD = year-to-date R&D = Research & Development

COVID-19 Vaccine Market Potential and Mid-term Growth Drivers

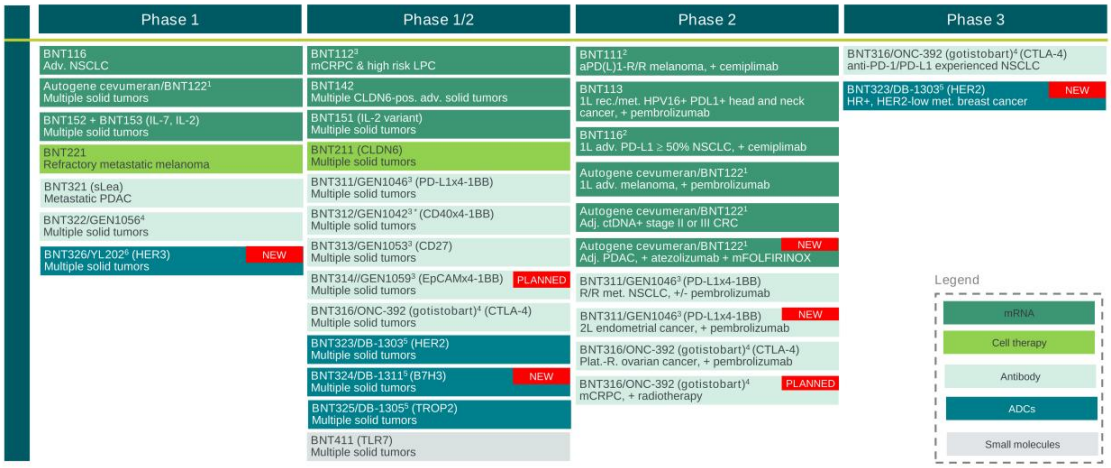


2024 → 2025

- Manufacturing base reset to serve endemic market
- Shift to commercialization model in some key markets
- Expect continued shift to single dose vials and pre-filled syringes
- Potential for increased vaccine uptake from combination and next-gen vaccines

COVID-19 product franchise expected to remain cash generative

Our Multi-Platform Immuno-Oncology Pipeline Today



1. Partnered with Genentech, member of Roche Group; 2. Partnered with Regeneron; 3. Partnered with Genmab; 4. Partnered with OncoC4; 5. Partnered with DualityBio; 6. Partnered with MediLink Therapeutics.
*Two phase 1/2 clinical trials in patients with solid tumors are ongoing in combination with immune checkpoint inhibitor +/- chemotherapy.
NSCLC = non-small cell lung cancer; mCRPC = metastatic castration resistant prostate cancer; LPC = localized prostate cancer; HPV = human papillomavirus; PDAC = pancreatic ductal adenocarcinoma; CRC = colorectal cancer; CLDN = claudin; IL = interleukin; 1L = first line; R/R = relapsed/refractory; HER2/HER3 = human epidermal growth factor 2/3; sLeA = sialyl-Lewis A antigen; TROP2 = tumor-associated calcium transducer 2.

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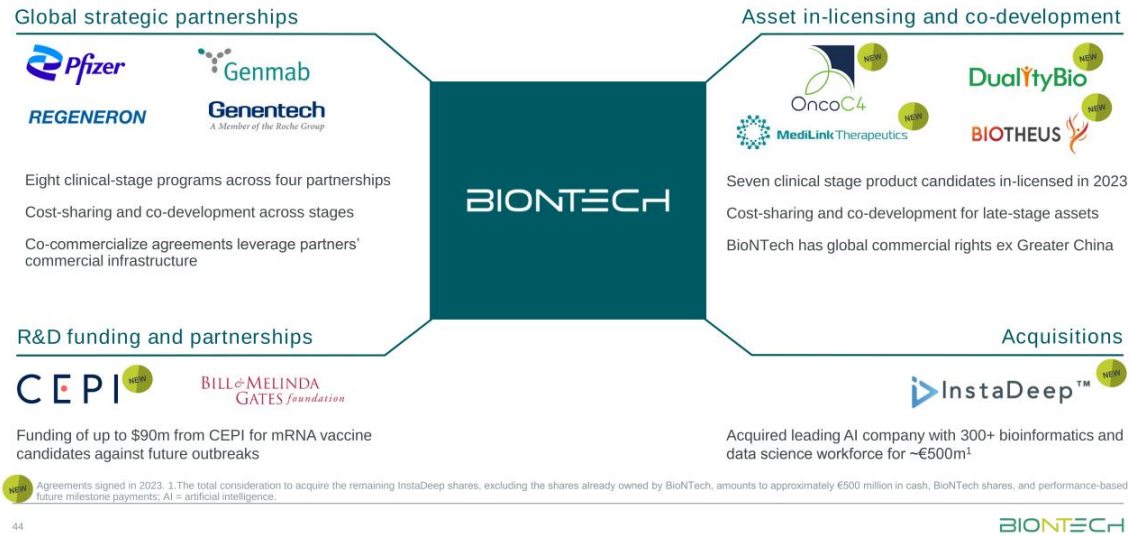
Our Strategy Leverages Partner Organizations and Capabilities



NEW Agreements signed in 2023. 1.The total consideration to acquire the remaining InstaDeep shares, excluding the shares already owned by BioNTech, amounts to approximately €500 million in cash, BioNTech shares, and performance-based future milestone payments; AI = artificial intelligence.

Active Portfolio Management Approach

Key principles guiding our R&D investments	Translation
Prioritize lead late-stage programs to accelerate path-to-market	Plans for at least six programs in 10+ potentially pivotal trials by end of 2024
Access external innovation to accelerate pipeline maturation in a capital-efficient manner	Seven clinical-stage assets in-licensed this year for ~€500m upfront
Rigorous go/no-go decision-making across all development stages	Emphasis on demonstration of single agent activity prior to initiation of pivotal trials

Our aim is to generate high return on R&D investment

R&D = Research & Development

Select Oncology Programs to Fuel Our Next Stage of Growth

- Diverse MoAs
- Each program with potential in multiple indications
- Mix of partnered and proprietary progr ams

	BNT122/ Autogene cevumeran[1]	BNT316/ ONC-392[2] (gotistobart)	BNT323/ DB-1303[3]	BNT311/ GEN1046[4]	BNT312/ GEN1042[4]	BNT211
Product candidate						
Target	Individual neoantigens	CTLA-4	HER2	PD-L1x4-1BB	CD40x4-1BB	CLDN6
Partner	Genentech	OncoC4	DualityBio	Genmab	Genmab	-
Initial indications	1L Melanoma Adj. CRC Adj. PDAC	aPD(L)1-R/R NSCLC	2L+ HR+/HER2-low breast cancer	aPD(L)1-R/R NSCLC	TBD	Adv. CLDN6+ cancers
Status	Multiple potentially pivotal trials ongoing	Ph3 ongoing	Ph3 initiated	Ph3 planned	Pivotal trial TBD	Pivotal Ph2 planned for 2024

Planning for multiple oncology launches from 2026 onward

1. Partnered with Genentech, member of Roche Group; 2. Partnered with OncoC4; 3. Partnered with DualityBio; 4. Partnered with Genmab.
MoA = mode of action; CTLA-4 = cytotoxic T-lymphocyte-associated protein 4; HER2 = human epidermal growth factor 2; PD1 = programmed cell death protein 1; CD = cluster of differentiation; CLDN6 = claudin 6; CRC = colorectal cancer; PDAC = pancreatic ductal adenocarcinoma; NSCLC = non-small cell lung cancer; R/R = relapsed/recurrent; HR = hormone receptor; adj. = adjuvant; adv. = advanced.

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Our Plan is to Build a Specialized Oncology Sales Force in Major Markets

- Build commercial presence in North America, Europe and other key markets[1]
- Plan to leverage commercial partners for co-commercialization
- Plan to deploy lean commercial operations with digital enablement
- Aim to be commercial-ready by end of 2025

1. Other markets not shown.


Time for a
10 minute
Break

6

Novel Backbones: Next-Generation ADCs and Immunomodulators

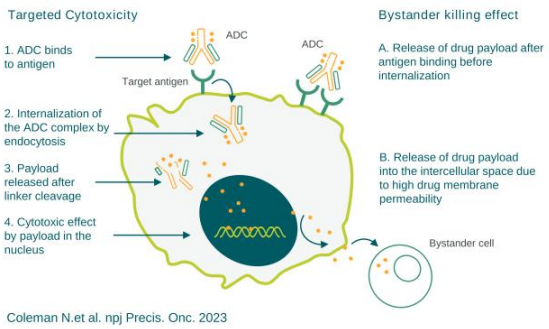
Prof. Özlem Türeci, M.D.
CMO and Co-founder

Prof. Ilhan Celik, M.D.
VP, Clinical Development

Michael Wenger, M.D.
VP, Clinical Development

Leveraging Next-Generation ADCs and IO agents for Transformative Combinations

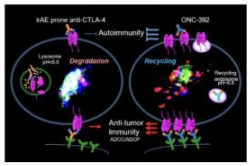
Next-Gen ADCs: Targeted cytotoxic agents with untapped potential

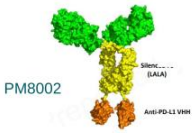


Coleman N.et al. npj Precis. Onc. 2023

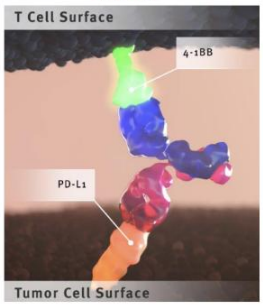
Next-Gen IO agents: Converging multiple proven MoAs into one molecule

BNT316





BNT311



Next-gen ADCs and IO combos represent a paradigm shift from current chemotherapy and checkpoint inhibitor treatment regimen, which could contribute to curative approaches

MoA = Mechanism of Action; ADC = antibody-drug conjugate; IO = immuno-oncology; irAE = immune-related adverse event; CTLA-4 = cytotoxic T-lymphocyte-associated Protein 4; PD-L1 = programmed cell death ligand 1

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ADC Portfolio Constructed with Thoughtful Considerations

Expression level by indication[1]

Target	NSCLC	SCLC	HER2+ BC	HR+ BC	TNBC	CRC	Gastric	Ovarian	PDAC	HNSCC	Prostate	Other high expression indications
HER2												Gynecologic
TROP2												
B7-H3												UC, EC
HER3												

High | Medium / / Low | Very low / No-expression

Target	Program	Stage	Indications	Partner
		Ph1/2 → Ph3		
HER2	BNT323/DB1303	→	HR+/HER2-low mBC	DualityBio
		→	Solid tumors with HER2 expression	
TROP2	BNT325/DB1305	→	Solid tumors	DualityBio
B7H3	BNT324/DB1311	→	Solid tumors	DualityBio
HER3	BNT326/YL202	→	Solid tumors	MediLink*

Advanced asset on path to registration

- BNT323/DB-1303[2] in multiple pivotal studies

Unique indication selection strategy

- Four clinical stage ADCs with broad yet minimal overlapping indication opportunities
- Innovative trial design to open leapfrog path
- Fast-follower potential in large indications

Wider therapeutic window may enable novel combinations in earlier lines

- ADC combinations based non-overlapping tumor antigens and different payload MoAs
- ADC + IO to advance towards (neo)adjuvant and frontline settings

[1]RNAseq data from AACR Project GENIE: 2. Partnered with DualityBio
*The completion of the agreement with MediLink is subject to customary closing conditions, including clearance under the Hart-Scott-Rodino Antitrust Improvements Act.
ADC = Antibody-drug conjugate; IO = immuno-oncology; MoA = mode of action; HER = human epidermal growth factor receptor; TROP2 = trophoblast cell-surface antigen ,UC = Uretherial cancer EC = Endometrial Cancer

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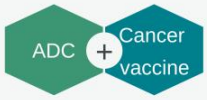
Our Pipeline Holds Potential for Synergistic Drug Combinations

Immunomodulators activate the immune system supporting vaccine-induced tumor-specific T cell responses

ADCs deliver cytotoxic drugs directly to cancer cells while immunomodulators activate the immune system to recognize and destroy cancer cells

Converging checkpoint inhibition and improved immune cell trafficking and ADC penetration

Complementary and/or potentially synergistic MoA of immunomodulators enhance T cell priming and sustain activation



ADCs quickly debulk tumors while cancer vaccines meaningfully boost the immune system to eradicate multi-clonal micrometastases hence lifting the long-term survival curve

IO = immuno-oncology; ADC = antibody-drug conjugates; MoA = Mechanism of Action.

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Well-Positioned in Immuno-Oncology with Therapeutic Candidates Across Multiple Tumors

BNT323/ DB-1303[1]	BNT324/ DB-1311[1]	BNT325/ DB-1305[1]	BNT326/ YL202[2]
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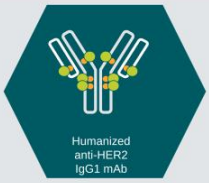
BNT323/DB-1303[1]: A Potentially Best-in-Class HER2-Targeting ADC

Features of BNT323/DB1303[1] vs. other HER2-targeting therapies

Properties	BNT323/DB-1303[1]	Enhertu (Trastuzumab deruxtecan, DS8201)®,[2]	Kadcyla (trastuzumab emtasine, TDM1)®,[3]
DAR	~8	~8	~3.5
Linker	Cleavable	Cleavable	Non-cleavable
Payload MoA	Topoisomerase I inhibitor (P1003) Bystander effect	Topoisomerase I inhibitor (Dxd) Bystander effect	Tubulin inhibitor (DM1) Non-bystander effect
Highest non-severely toxic dose*	80 mg/kg, Q3W*3	30 mg/kg, Q3W*3	10 mg/kg, Q3W*4

1. Partnered with DualityBio; 2. Partnered with Daiichi Sankyo; 3. Partnered with Genentech, member of Roche group.
HER2 = human epidermal growth factor receptor 2; DAR = drug-to-antibody ratio; Dxd = deruxtecan; DM1 = mertansine MoA = mechanisms of action; PDX = patient-derived-xenograft; Q3W = Once every 3 weeks.

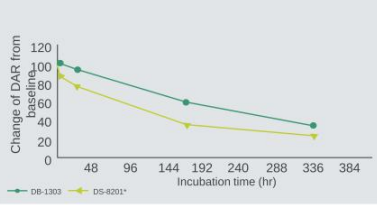
BNT323/DB-1303[1]: A HER2 ADC With a Potentially Differentiated Profile



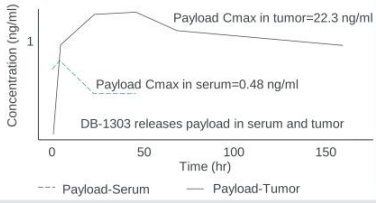
- A humanized anti-HER2 IgG1 mAb, with a wild-type Fc
- A proprietary DNA topoisomerase I inhibitor (P1003)
- A maleimide tetrapeptide-based tumor-selectively cleavable linker (L101)
- High drug-to-antibody ratio: ~8

Lin S. et al. Abstract #252. Presented at ORTC-NCI-AACR in 2022

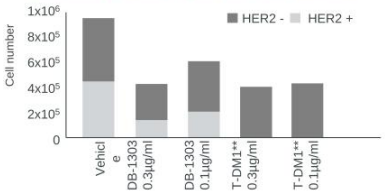
Superior in vitro plasma stability in human plasma



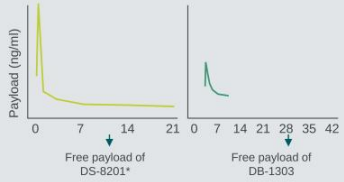
Sustained tumor-selective drug release in tumor-bearing mice



Efficient bystander killing in tumor cell lines



Rapid systemic clearance in monkeys



.1.Partnered with DualityBio. ADC = Antibody-drug conjugate; HER = human epidermal growth factor receptor; cmax = maximum concentration; DAR = Drug antibody ratio. *DS-8201 is an in-house produced analog of DS-8201, Trastuzumab deruxtecan; **Trastuzumab-Emtansin.

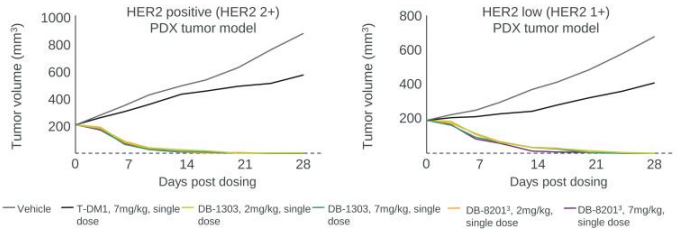
BIONTECH

BNT323/DB-1303[1]: Preclinical Data Show Antitumor Effect and Favorable Safety Profile in HER2 Positive & HER2 Low Tumor Models and Toxicity Studies

Antitumor effect

Lin S. et al. Abstract #252. Presented at EORTC-NCI-AACR in 2022.

- BNT323/DB-1303 induced dose-dependent tumor growth inhibition and tumor regression
- Potent anti-tumor effect in both HER2 positive and HER2 low tumor models with a wide therapeutic window



Vehicle — T-DM1, 7mg/kg, single dose — DB-1303, 2mg/kg, single dose — DB-1303, 7mg/kg, single dose — DB-8201[3], 2mg/kg, single dose — DB-8201[3], 7mg/kg, single dose

Toxicity

- Toxicity studies[2] showed improved toxicity profile compared to published profile of DS-8201
- Highest non-severely toxic dose: 80mg/kg
- BNT323/DB-1303 showed lower risk of causing lung inflammation compared to published profile of DS-8201
- Stable linker and fast clearance may contribute to the improved toxicity profile of BNT323/DB-1303

3rd generation ADC with improved safety and efficacy may add survival benefit to cancer patients

1. Partnered with DualityBio. 2. in cynomolgus monkey 3. DS-8201 is an in-house produced analog of DS-8201, Trastuzumab deruxtecan
HER = human epidermal growth factor receptor; ILD = interstitial lung disease; PDX = patient-derived xenograft.

BIONTECH

First-in-Human Trial with BNT323/DB-1303[1] in Patients with Advanced HER2-Expressing Solid Tumors

Phase 1/2a trial design (NCT05150691), multicenter, non-randomized, open-label

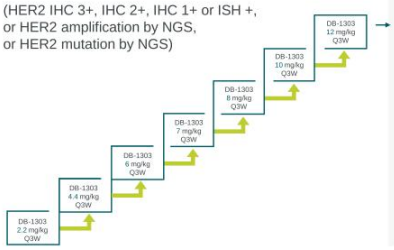
Hamilton E. et al. TiP #9504. Presented at AACR 2023

Inclusion criteria

- Pretreated advanced or metastatic solid tumors
- Histologically confirmed HER2-positive or HER2-expressing cancers
- Previous systemic therapies
- ECOG PS 0-1
- Adequate organ function

Part 1: Dose escalation (n=88 patients)

(HER2 IHC 3+, IHC 2+, IHC 1+ or ISH +, or HER2 amplification by NGS, or HER2 mutation by NGS)



Part 2a: Dose expansion (n=165 patients)

3 weeks DLT window

Indications

- HER2+ gastric, esophageal or gastroesophageal junction adenocarcinoma, CRC
- HR+/HER2-low breast cancer
- HER2+ breast cancer
- HER2 overexpression and HER2-low endometrial cancer
- HER2-mutated NSCLC

Disease progression, withdrawal of consent, unacceptable toxicity

Key endpoints

Safety, tolerability, pharmacokinetic, preliminary anti-tumor activity at the selected MTD/RP2D

Status

FPI: Jan 2022
Trial ongoing

1. Partnered with DualityBio.

IHC = immunohistochemistry; FIH = First in human; Q3W = every three weeks; DLT = dose limiting toxicity; HER2 = human epidermal growth factor 2; HR = hormone receptor; CRC = colorectal cancer; NSCLC = non-small cell lung cancer; MTD = maximum tolerated dose; RP2D = recommended phase 2 dose; ECOG = Eastern Cooperative Oncology Group; FPI = First patient in; LPO = Last patient out; ISH = in-situ hybridization; NGS = next-generation sequencing.

BIONTECH

BNT323/DB-1303[1] is Well Tolerated with Low Incidences of Key AEs

Phase 1/2a (NCT05150691): Safety

Moore K. et al. Presented at ASCO 2023. Abstract #3023.

	2.2 mg/kg (n = 1)	4.4 mg/kg (n = 5)	6.0 mg/kg (n = 15)	7.0 mg/kg (n = 29)	8.0 mg/kg (n = 32)	10.0 mg/kg (n = 3)	Total (n = 85)
Any TEAEs	1 (100.0%)	5 (100.0%)	14 (93.3%)	26 (89.7%)	26 (81.2%)	2 (66.7%)	74 (87.1%)
Associated with treatment withdrawal	0	0	0	1 (3.4%)	0	0	1 (1.2%)
Associated with treatment dose reduction	0	0	0	2 (6.9%)	1 (3.1%)	0	3 (3.5%)
Associated with treatment dose interruption	0	0	4 (26.7%)	8 (27.6%)	5 (15.6%)	0	17 (20.0%)
Grade ≥3	0	3 (60.0%)	3 (20.0%)	9 (31.0%)	2 (6.2%)	1 (33.3%)	18 (21.2%)
Serious AEs	0	3 (60.0%)	4 (26.7%)	4 (13.8%)	2 (6.2%)	0	13 (15.3%)
Treatment-related TEAEs	1 (100.0%)	3 (60.0%)	12 (80.0%)	26 (89.7%)	25 (78.1%)	2 (66.7%)	69 (81.2%)
Grade ≥3	0	1 (20.0%)	2 (13.3%)	6 (20.7%)	1 (3.1%)	1 (33.3%)	11 (12.9%)
Serious AEs	0	0	2 (13.3%)	0	0	0	2 (2.4%)

- No DLT observed in all dose levels
- Most common TRAEs of grade ≥3: nausea (2.4%), platelet count decreased (3.5%), anemia (5.9%)
- No grade 5 TEAEs
- Interstitial lung disease occurred in 2 patients (2.4%, grade 1), without any ≥grade 2
- Few patients with neutropenia (10 [11.8%]; grade ≥3 in 1 [1.2%] patients,) and alopecia (3 [3.5%], grade 1)

1. Partnered with DualityBio. DLT= dose-limiting toxicity. TEAEs: treatment-emergent adverse events. TRAEs: treatment-related adverse events; AEs: adverse events.

BIONTECH

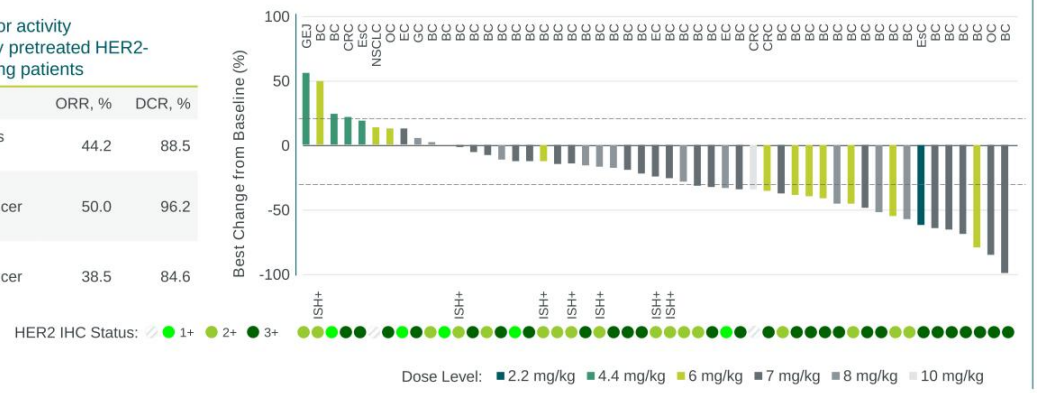
BNT323/DB-1303[1] Demonstrates Encouraging Antitumor Activity in HER2-Expressing Patients

Phase 1/2a (NCT05150691): Clinical Efficacy

Moore K. et al. Presented at ASCO 2023. Abstract #3023.

Anti-tumor activity in heavily pretreated HER2-expressing patients

	ORR, %	DCR, %
All patients (n=52)	44.2	88.5
HER2+ breast cancer (n=26)	50.0	96.2
HER2 low breast cancer (n=13)	38.5	84.6



1. Partnered with Duality Bio.

HER2 = human epidermal growth factor receptor 2; ORR = objective response rate; DCR = disease control rate; IHC = immunohistochemistry; ISH = in situ hybridization; GEJ = gastro oesophageal junction cancer; EsC = esophageal cancer; BC = breast cancer; CRC = colorectal cancer; EC = endometrial cancer; GC = gastric cancer; OC = ovarian cancer; NSCLC = non-small cell lung cancer.

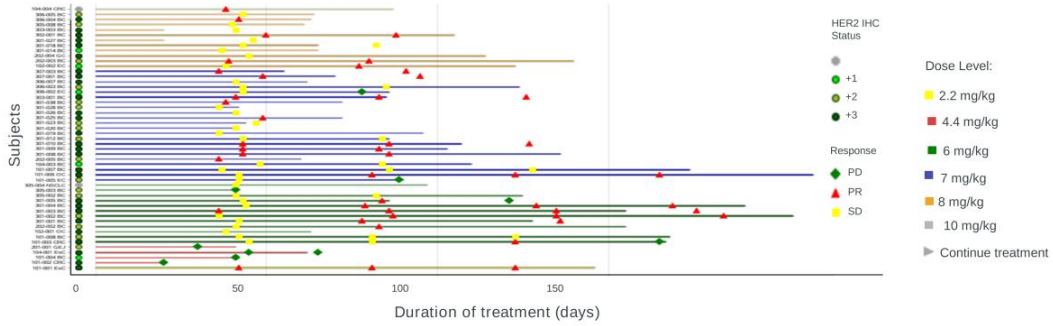
BIONTECH

Data Support Initiation of a Pivotal Phase 3 Trial Evaluating BNT323/DB-1303[1] in HER2-Expressing Patients

Phase 1/2a (NCT05150691): Clinical Efficacy

Moore K. et al. Presented at ASCO 2023. Abstract #3023.

Response over time in heavily pretreated HER2-expressing patients treated with different dose levels and HER2 IHC status:

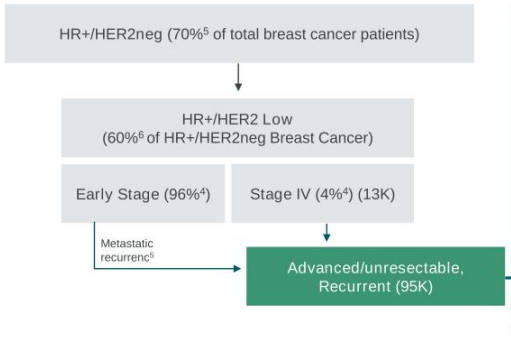


1. Partnered with DualityBio.
HER2 = human epidermal growth factor receptor 2; ORR = objective response rate; DCR = disease control rate; FIH = first in human; ADC = antibody-drug conjugate; IHC = immune histochemistry; PD = progressive disease; PR = partial response; SD = stable disease; DLT = dose limiting toxicities; RP2D = recommended Phase 2 dose.

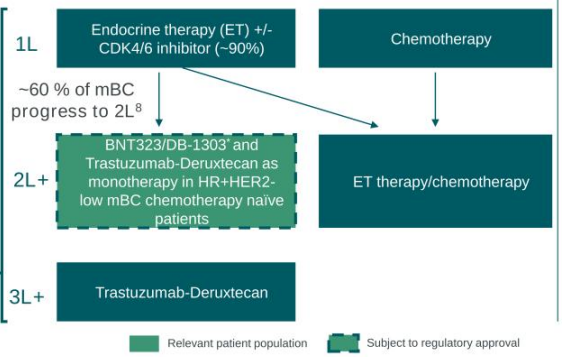
BIONTECH

BNT323/DB-1303* Offers Potential to Establish New SoC for Chemotherapy Naïve, HR+/HER2-Low Patients Who Have Limited Therapeutic Options

Total diagnosed breast cancer patients in US, UK, EU 4 and Japan: ~708K[1-4]



Potential future treatment algorithm for patients with adv./met. HR+/HER2-low breast cancer



1. American Cancer Society (ACS) 2023 Report; 2. Globocan – Cancer Tomorrow; 3. Cancer.net ASCO; 4. SEER*Stat Research Tool; 5. Putnam Expertise, KOL inputs from SMARTANALYST Syndicated Insights Report and triangulation from published literature; 6. Burstein et al., NEJM 2020; 2557-2570 7. Modi et al., NEJM 2022; Pg 10/12; 8. Market Research, data on file.
* Partnered with DualityBio.
SoC = standard of care; HR = hormone receptor; HER2 = human epidermal growth factor receptor 2; BC = breast cancer; CDK4/6 = cycline dependent kinase 4/6; 2L = second line; 3 line = third line

BIONTECH

Phase 3 Trial Design BNT323/DB-1303[1] in Chemotherapy-Naïve Patients with HR+/HER2-Low Breast Cancer

Open-label, multi-center, randomized Phase 3 trial (NCT06018337)

Inclusion criteria

- Adult participants, aged 18 years and older
- Documented advanced or metastatic HR+/HER2-low (IHC 1+ or IHC 2+/ISH-) breast cancer
- Progressed on at least 2 lines of prior ET or within 6 months of first line ET + CDK4/6 inhibitor in the metastatic setting
- No prior chemotherapy for advanced or metastatic breast cancer*
- ECOG performance status 0 or 1

Stratification factors

- Prior CDK4/6 inhibitor use, HER2 IHC expression, prior taxane use in the non-metastatic setting

n=532
R 1:1

Experimental arm: BNT323/DB-1303[1]
8mg/kg IV, Q3W

Investigator's choice single agent chemotherapy
(paclitaxel or nab-paclitaxel or capecitabine)

Historical efficacy chemotherapy in BC patients:[2]
ORR = 11-36%;
mPFS = 3-8 months;
mOS = 9-16 months

Randomized patients are treated until:

- RECIST 1.1 defined disease progression or
- unacceptable toxicity or
- withdrawal of consent or
- any other criterion for discontinuation is met

Key endpoints

Primary: PFS
Secondary: OS, ORR, DoR, DCR, TTR, safety, tolerability, PK and PRO

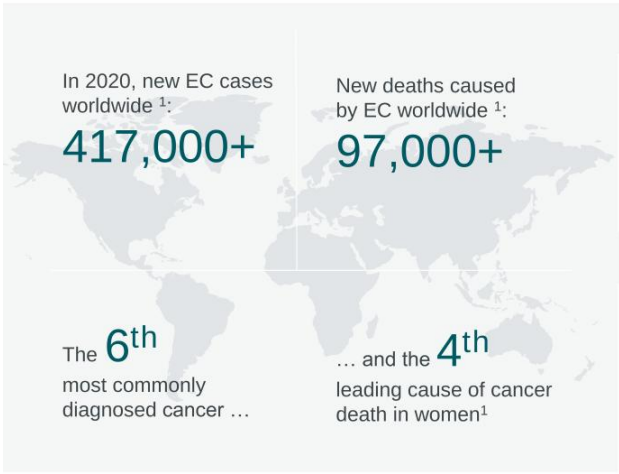
Status

Trial initiated in Q3 2023

1. Partnered with DualityBio; 2. Twelves C. et al. Clinical Breast Cancer. 2022.
HR = hormone receptor; HER = human epidermal growth factor; ET = endocrine therapy; ECOG = eastern Cooperative oncology group; IV = intravenous; Q3W = every 3 weeks; RECIST = response evaluation criteria in solid tumors; PFS = progression free survival; OS = overall survival; ORR = objective response rate; DoR = duration of response; DCR = disease control rate; TTR = time to response; PK = pharmacokinetics.
* Subjects who have received chemotherapy in the neo-adj. or adj. setting are eligible, as long as they have had a disease-free interval (defined as completion of systemic chemotherapy to diagnosis of adv. or met disease) of >12 months.

BIONTECH

Unmet Need in Endometrial Cancer



The 5-year survival among patients with EC with distant metastases has been reported to be 18%[2]

Targeted therapies and chemotherapy have had limited efficacy in advanced or recurrent EC after platinum-based chemotherapy[3]

- Lenvatinib plus pembrolizumab: ORR, 31.9%; mPFS, 7.2 months[3]
- Doxorubicin or paclitaxel: ORR, 14.7%; mPFS, 3.8 months[3]

HER2 protein overexpression and/or gene amplification is present in approximately 17%-38% of EC[4]

- In approximately 25%-30% of uterine serous carcinoma (USC)[5]
- In approximately 14%-56% of uterine carcinoma[4]

In patients with USC in the U.S., black women (90%, 9/10) have significantly higher HER2 overexpression than white women (48%, 8/17)[6]

1. Sung H, et al. CA: a cancer journal for clinicians. 2021; 2. SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Jun 8; cited 2023 Aug 17]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020); 3. Makker V, et al. N Engl J Med. 2022; 4. Livasy C A, et al. Gynecol Oncol. 2005; 5. Buza N, et al. Arch Pathol Lab Med. 2021; 6. Santin A D, et al. Am J Obstet Gynecol. 2005.
EC = endometrial cancer; HER2 = human epidermal growth factor receptor 2; mPFS = median progression free survival; ORR = objective response rate; UC = uterine carcinosarcoma.

BIONTECH

Efficacy of BNT323/DB-1303[1] Enables Clear Path to Registration in Heavily Pretreated HER2-Expressing Endometrial Cancer Patients

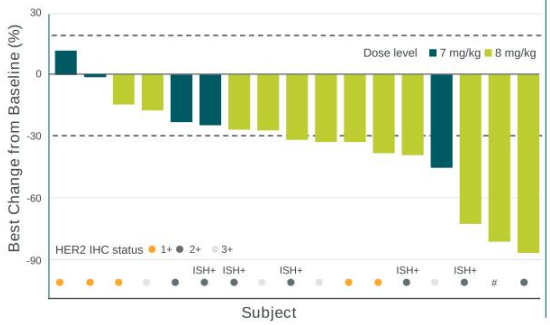
Phase 1/2a FIH study (NCT05150691): Clinical Efficacy

Moore K. et al. Presented at ESGO 2023. Abstract # 430

- Patients received median 2 lines of prior treatment for their metastatic disease
- ~60% of patients had received prior immunotherapy, ~38% of patient had received prior anti-HER2 antibody
- Clinical response observed in IHC 1+ patients
- 34% of patients had serous carcinoma, ORR 87.5%

	Dose Escalation		Dose Expansion	
Response[a]	7 mg/kg (n=4)[b]	8 mg/kg (n=4)[b]	8 mg/kg (n=9)[b]	Total (n=17)[b]
Unconfirmed ORR, n (%)	2 (50.0)	4 (100)	4 (44.4)	10 (58.8)
Confirmed ORR, n (%)	1 (25.0)	3 (75.0)	0	4 (23.5)
Pending confirmation ORR, n (%)	1 (25.0)	1 (25.0)	4 (44.4)	6 (35.3)
Unconfirmed DCR, n (%)	4 (100)	4 (100)	8 (88.9)	16 (94.1)

[a] By investigator. [b] Response-evaluable subjects, which includes subjects with ≥1 postbaseline overall response.



1. Partnered with DualityBio.

HER2 = human epidermal growth factor receptor 2; ORR = objective response rate; DCR = disease control rate; FIH = first in human; ADC = antibody-drug conjugate; IHC = immune histo chemistry test; ISH = In situ hybridization; PD = progressive disease; PR = partial response; SD = stable disease.

BIONTECH

Well-Positioned in Immuno-Oncology with Therapeutic Candidates Across Multiple Tumors

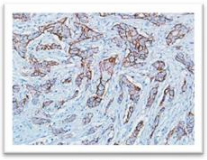
BNT323/ DB-1303[1]	BNT324/ DB-1311[1]	BNT325/ DB-1305[1]	BNT326/ YL202[2]
 HER2	 B7H3	 TROP2	 HER3
Targeting HER2, cleavable linker (L101) and topoiso-merase I inhibitor (P1003) DAR: 8	Targeting B7H3, cleavable linker and topoisomerase I inhibitor (P1021) DAR: 6	Targeting TROP2, cleavable linker and topoisomerase I inhibitor (P1021) DAR: 4	Targeting HER3, cleavable linker allows for intracellular and extracellular release of topoisomerase I inhibitor (YL0014) DAR: 8
Clinical status • Ph3 in HR+HER2-low mBC • Ph1/2 in multiple solid tumors	Clinical status • Ph1/2 in multiple solid tumors	Clinical status • Ph1/2 in multiple solid tumors	Clinical status • Ph1 in multiple solid tumors

1. Partnered with DualityBio; 2. Partnered with MediLink; The completion of the agreement is subject to customary closing conditions, including clearance under the Hart-Scott-Rodino ("HSR") Antitrust Improvements Act.
ADC = antibody-drug conjugates; DAR = drug-to-antibody ratio; HER2/3 = human epidermal growth factor receptor 2/3; TROP2 = trophoblast cell-surface antigen 2; mBC = metastatic breast cancer

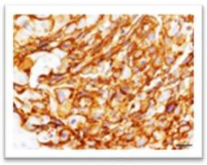
BNT325/DB-1305[1] Positioned As a Key Backbone ADC for a Variety of Solid Tumors

TROP-2 as an ADC target

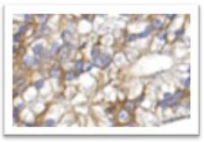
TROP2 is highly expressed in a wide range of indications



TNBC[2]



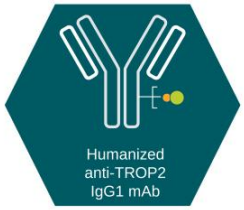
NSCLC[3]



Prostate cancer[4]

Colorectal cancer[5]

Key attributes of BNT325/DB-1305[1]



Interchain Cysteine Residue

Linker-Payload

BNT325/DB-1305[1] and its three components:

- Humanized anti-TROP2 IgG1 mAb, with active Fc
- Proprietary DNA topoisomerase I inhibitor (P1021)
- Cleavable linker

- Optimized drug-to-antibody ratio: ~4
- Linker highly stable in the circulation
- High potency of payload with a short systemic half-life
- Bystander antitumor effect

1. Partnered with DualityBio; 2. Oncotarget. 2015; 6:22496-22512 3. Pathology International. 2020;1–8; 4. Am J Clin Exp Urol. 2021 Feb 15;9(1):73-87. 5. Cancers (Basel). 2022 Sep; 14(17): 4137
TROP-2 = trophoblast cell surface antigen-2; ADC antibody drug conjugate; TNBC = triple negative breast cancer, NSCLC= non-small cell lung cancer; IgG = immunoglobulin G; mAb = monoclonal antibody.

BIONTECH

BNT325/DB1305[1] - A Potential Best-in-Class TROP2-Targeting ADC

Preclinical comparison BNT325/DB-1305[1] vs other TROP2-targeting ADCs

Zhang Y. et al. Presented at EORTC-NCI-AACR.2022

Properties	BNT325/DB-1305[1,2]	Trodelvy (Sacituzumab-Govitecan)®[,3]	Dato-DXd[4]	SKB264[5,6]
DAR	4	~8	~4	7.4
Linker	Cleavable maleimide tetrapeptide linker	Hydrolysable (CL2A)	Cleavable tetrapeptide-based linker	Sulfonyl pyrimidine-CL2A-carbonate (TL033)
Payload	DNA Topoisomerase inhibitor (P1021)	DNA Topoisomerase I inhibitor (SN-38)	DNA Topoisomerase I inhibitor (DXd)	Belotecan-derivative topoisomerase I inhibitor (KL610023)
Payload MoA	DNA Topoisomerase inhibitor / Bystander effect	DNA Topoisomerase I inhibitor / Bystander effect	DNA Topoisomerase I inhibitor / Bystander effect	DNA Topoisomerase I inhibitor / Bystander effect
HNSTD in Monkey	80 mg/kg Q3W	50 mg/kg	30 mg/kg	50 mg/kg

1. Partnered with DualityBio; 2. Zhang Y. et al. Presented at EORTC-NCI-AACR. 2022. 4. Gilead; 5. Daiichi Sankyo; 5. Cheng Y et al. Front. Oncol. 2022; 6. Merck.
TROP-2 = trophoblast cell surface antigen-2; ADC = antibody drug conjugate; DAR=Drug-to-antibody ratio; HNSTD=Highest non-severely toxic dose; MoA=Mechanisms of action; PDX=Patient-derived-xenograft; Q3W=Once every 3 weeks.

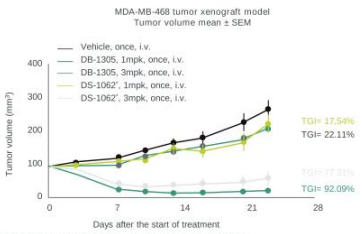
BNT325/DB-1305[1]: Preclinical Data Show Anti-Tumor Effect in TROP2 Positive & Low Tumor Models and a Favorable Toxicity Profile

Antitumor effect

Zhang Y. et al. Presented at EORTC-NCI-AACR.2022

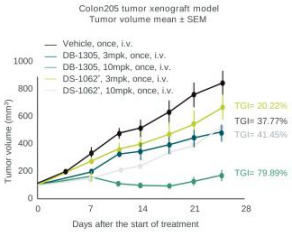
- BNT325/DB-1305 induces dose-dependent tumor growth inhibition and tumor regression
- Potent anti-tumor effect in TROP2 high and low tumor models with a wide therapeutic window

Trop2-high CDX MDA-MB-468 (breast cancer)



*DS-1062 is an in-house produced analog of Dato deruxtecan

Trop2-negative CDX Colon-205 (colon cancer)



Toxicity data

- The HNSTD of BNT325/DB-1305 for cynomolgus monkeys is 80 mg/kg in 6-week repeated-dose toxicity study
- Low free payload in circulation may contribute to improved tolerance of BNT325/DB-1305

1. Partnered with DualityBio.
TROP-2 = trophoblast cell surface antigen-2; CDX = cell-derived xenograft. HNSTD = highest non-severely toxic dose; SEM = standard error of the mean.

BIONTECH

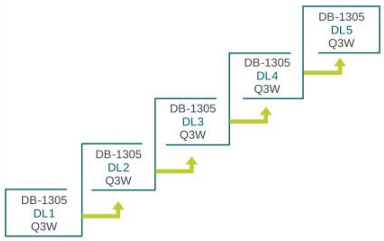
First-in-human trial with BNT325/DB-1305[1] in Patients with Advanced/Metastatic Solid Tumors

Phase 1/2 trial design (NCT05438329), multicenter, non-randomized, open-label, n=255

Inclusion criteria

- Advanced/unresectable, recurrent or metastatic solid tumors
- Relapsed or progressed on or after standard systemic treatments
- ECOG PS 0-1
- Adequate organ function

Part 1: Dose escalation



Part 2: Dose expansion

	Indications	
RP2D Q3W	• NSCLC with actionable genomic alterations • NSCLC without actionable genomic alterations • Ovarian cancer • HR+/HER2-neg breast cancer • TNBC without prior sacituzumab govitecan treatment • TNBC with treatment failure on sacituzumab govitecan	Disease progression, withdrawal of consent, unacceptable toxicity

Key endpoints

Primary:
Part 1: Assessment of DLT, TEAE, SAE, MTD, RP2D.
Phase 2a: TEAEs, SAEs, ORR
Secondary: Pharmacokinetic measures

Trial ongoing

1. Partnered with DualityBio.
ECOG PS = eastern cooperative oncology group performance status; DL = dose level; Q3W = every three weeks; RP2D = recommended phase 2 dose; HR = hormone recptor; HER2 = human epidermal growth factor receptor 2; NSCLC = non-small cell lung cancer; TNBC = triple negative breast cancer; DLT = dose-limiting toxicity; TEAE = treatment emergent adverse events; SAE = serious adverse events; MTD = maximum tolerated dose; ORR = objective response rate.

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BNT325/DB-1305[1] Shows a Manageable Safety Profile

Phase 1/2a FIH study (NCT05150691): Safety

Marathe O. et al. Presented at ESMO 2023. Poster #689P.

Overall safety

	2 mg/kg (n=1) n (%)	4 mg/kg (n=20) n (%)	5 mg/kg (n=17) n (%)	6 mg/kg (n=6) n (%)	Total (n=44) n (%)
Any TRAEs	0	19 (95.0)	15 (88.2)	6 (100)	41 (93.2)
Grade ≥3	1 (100)	13 (65)	6 (35.3)	5 (83.3)	25 (56.8)
Serious TRAEs	0	3 (15.0)	4 (23.5)	3 (50.0)	10 (22.7)
Lead to dose reduction	0	1 (5.0)	2 (11.8)	3 (50.0)	6 (13.6)
Lead to dose interruption	0	6 (30.0)	5 (29.4)	4 (66.7)	15 (34.1)
Lead to dose discontinuation	0	1 (5.0)	0	0	1 (2.3)

One patient died by suicide on day 18 after first dose and one patient experienced double pneumonia related AE on day 49.

- DB-1305 was tolerable and all TRAEs were manageable in dose levels 2 mg/kg and 4 mg/kg
- Three patients dosed at 6 mg/kg experienced dose-limiting toxicities (i.e., stomatitis, febrile neutropenia, and white blood cell decrease)
- The maximum tolerated dose was established as 5 mg/kg
- 1 ILD occurred
- No TRAEs led to death

1. Partnered with DualityBio.
DLT = dose limiting toxicities; MTD = maximum tolerated dose; TRAE = treatment related adverse event; AE = adverse event; FIH = first in human. ILD = interstitial lung disease.

BNT325/DB-1305[1] Demonstrates Promising Antitumor Activity in NSCLC and Other Solid Tumors

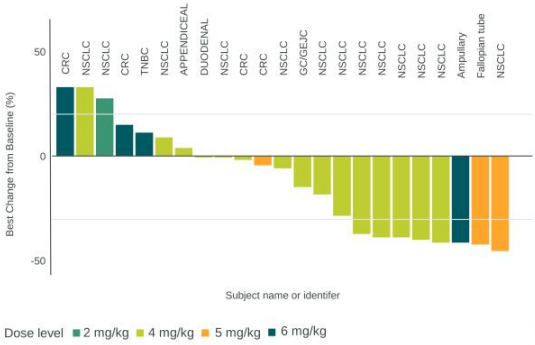
Phase 1/2 FIH study (NCT05438329): Clinical Efficacy

Marathe O. et al. Presented at ESMO 2023. Poster #689P.

Anti-tumor activity in heavily pretreated patients with 3 median prior lines of treatment

	Unconfirmed ORR, %	Unconfirmed DCR, %
All patients (n=23)	30.4	87.0
NSCLC (n=13)	46.2	92.3

Best tumor response for all patients with post-baseline scans (n=23)



Dose level ■ 2 mg/kg ■ 4 mg/kg ■ 5 mg/kg ■ 6 mg/kg

1. Partnered with DualityBio.

FIH = first in human; ORR = objective response rate; DCR = disease control rate; NSCLC = non-small cell lung cancer; CRC = colorectal cancer; TNBC = triple-negative breast cancer; GC = gastric cancer; GEJC = gastroesophageal junction cancer.

BIONTECH

ADC Key Takeaways

Targeted milestones

BNT323/DB1303[1]

- Multiple pivotal studies planned

BNT324/DB-1311[1] I BNT325/DB-1305[1] I BNT326/YL202[2]

- Ongoing studies will inform potential activity in multiple expansion cohorts and drive future development decisions
- Investigate monotherapy or combination regimens

Strategy

- Leverage ADCs as a tool for de-bulking tumor mass to unlock potential in hard-to-treat cancer types
- Explore various indication-selection strategies
- Leverage ADCs' wide therapeutic window to enable novel combinations in earlier lines of treatment

1. Partnered with DualityBio 2. MediLink. ADC= Antibody-drug conjugate.

Well-Positioned in Immuno-Oncology with Therapeutic Candidates Across Multiple Tumors

BNT316/ ONC-392[1] (gotistobart)

Anti-CTLA4

Monospecific antibody with optimized Fc targeting CTLA-4 and selectively depleting tumor-infiltrating Tregs in the TME but not in the periphery due to a pH driven mechanism.

Clinical status
- Ph1/2 in multiple solid tumors
- Ph2 in PROC
- Ph3 in 2L+ mNSCLC

BNT311/ GEN1046[2]

Anti-PD-L1 Anti-4-1BB

Bispecific antibody to inhibit proliferation of PD1-positive cells. 4-1BB enhances T cell proliferation, T cell effector functions and prevents T cell death.

Clinical status
- Ph1/2 in multiple solid tumors
- Ph2 in mNSCLC
- Ph2 in 2L mEC

BNT312/ GEN1042[2]

Anti CD40 Anti-4-1BB

Engagement of CD40 leads to activation and maturation of APCs. 4-1BB enhances T cell proliferation, T cell effector functions and prevents T cell death.

Clinical status
- Ph1/2 trials in multiple solid tumors

BNT313/ GEN1053[2]

Anti-CD27

A CD27 antibody based on the HexaBody technology, specifically engineered to form an antibody hexamer upon binding its target on T cell membranes.

Clinical status
- Ph1/2 in multiple solid tumors

BNT314/ GEN1059[2]

EpCAM Anti-4-1BB

Bispecific antibody designed to boost antitumor immune response through EpCAM-dependent 4-1BB agonistic activity.

Clinical status
- Ph1/2 in multiple solid tumors planned

PM8002[3]

Anti-VEGF A

Inert Fc (LALA)

PD-L1 expression or upregulation in tumors may enrich VEGF neutralization into the TME which inhibits angiogenesis.

Clinical status
- Ph1b dose escalation
- Ph2a as monotherapy in multiple cancers
- Ph2 in combination with CTx in multiple cancers

1. Partnered with OncoC4; 2. Partnered with Genmab; 3. Partnered with Biotheus. CTLA4 = Cytotoxic T-Lymphocyte-Associated Protein 4; CD27, CD40, 4-1BB = members of the tumor necrosis factor receptor superfamily; PD-1 =Programmed cell death protein 1; HER2 = human epidermal growth factor receptor 2; ADCC = Antibody dependent cell-mediated cytotoxicity; ADCP = Antibody dependent cellular phagocytosis; PROC = platinum-resistant ovarian cancer; NSCLC = non-small cell lung cancer; EC = endometrial cancer APC = antigen presenting cells; VEGF = vascular endothelial growth factor; TME = tumor microenvironment; CTx = chemotherapy; LALA = IgG1 variant L234A/L235A.

BIONTECH

Well-Positioned in Immuno-Oncology with Therapeutic Candidates Across Multiple Tumors

BNT316/ ONC-392[1] (gotistobart)

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A CD27 antibody based on the HexaBody technology, specifically engineered to form an antibody hexamer upon binding its target on T cell membranes.

Clinical status
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BNT314/ GEN1059[2]

Bispecific antibody designed to boost antitumor immune response through EpCAM-dependent 4-1BB agonistic activity.

Clinical status
- Ph1/2 in multiple solid tumors planned

PM8002[3]

PD-L1 expression or upregulation in tumors may enrich VEGF neutralization into the TME which inhibits angiogenesis.

Clinical status
- Ph1b dose escalation
- Ph2a as monotherapy in multiple cancers
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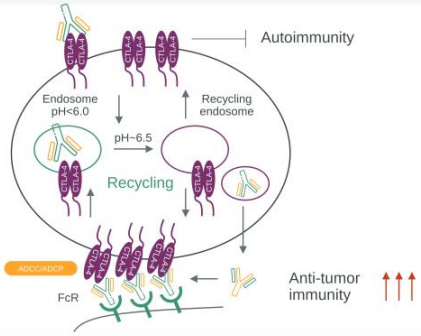
BIONTECH

Differentiated Mechanism with Potential to Become Best-in-Class Anti-CTLA-4 Antibody

Avoiding lysosomal degradation of CTLA-4 for safer and more effective immunotherapy may lead to uncoupling cancer therapeutic effect from immunotherapy-related adverse effects

BNT316/ONC-392 (gotistobart)[1] designed to:

- Allow regular recycling and enrichment of antibody and CTLA-4 molecule
- Enhance anti-tumor immunity
- Reduce immune-related adverse events



MoA designed to allow higher dosing & longer duration of treatment with BNT316/ONC-392 (gotistobart)

Liu Y. et al. Abstract # 231, SITC 2021. Du et al. Uncoupling therapeutic from immunotherapy-related adverse effects for safer and effective anti-CTLA-4 antibodies in CTLA4 humanized mice. Cell Res. 2018 Apr; 28(4): 416–432. Du et al. A reappraisal of CTLA-4 checkpoint blockade in cancer immunotherapy. Cell Res. 2018 Apr; 28(4): 433–447.

1.Partnered with OncoC4. FcR = fragment crystallizable region, CTLA-4 = cytotoxic T-lymphocyte-associated protein 4, ADCC = antibody-dependent cell-mediated cytotoxicity, ADCP = antibody-dependent cellular phagocytosis

BIONTECH

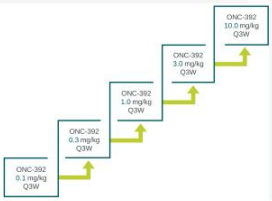
PRESERVE-001: Phase 1/2 Trial Design and Safety Data

Part A and B: Dose finding
(Li T. et al. Poster #949, Presented at SITC 2021)

Part A: MTD or RP2D for Monotheraphy

Part B: MTD or RP2D for combination with pembrolizumab

- advanced or metastatic solid tumors with measurable or non-measurable disease
- Progression despite standard of care therapy, or no standard therapies exist



Part C: Dose expansion
(Hu-Lieskovan et al. Poster #594. Presented at SITC 2022)

RP2D Q3W

Indications: Monotherapy
- Pancreatic cancer
- IO naïve NSCLC
- IO R/R NSCLC
- HNSCC
- Triple negative breast cancer
- Ovarian cancer
- Other multiple solid tumors

Indications: Combination with pembrolizumab
- IO naïve NSCLC
- IO R/R NSCLC
- IO naïve melanoma
- IO R/R melanoma

Findings

- >450 patients treated with BNT316/ONC-392 (gotistobart)[1]
- BNT316/ONC-392 (gotistobart)[1] as mono-therapy and in combination with pembrolizumab well tolerated
  - TRAE manageable, no DLTs, MTD not reached
  - Monotherapy RP2D: 10 mg/kg, combination RP2D: 6 mg/kg
- Preliminary data demonstrated lower irAE rate than observed for comparable IO or IO-IO combinations
- Safety profile allows for higher dosing and longer duration of treatment in monotherapy and in combination with pembrolizumab

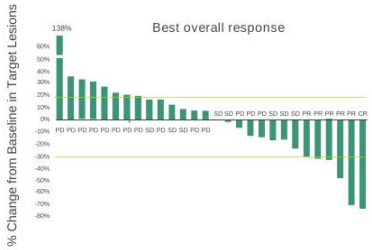
1.Partnered with OncoC4.
Q3W = every three weeks; MTD = maximum tolerated dose; RP2D = recommended phase 2 dose; DLT = dose-limiting toxicity; TRAE = treatment related adverse event; HNSCC = head and neck squamous cell carcinoma; NSCLC = non-small cell lung cancer; irAE = immune-related adverse event, IO = immuno-oncologic, R/R = relapsed/refractory.

BIONTECH

Clinical Efficacy of BNT316/ONC-392 (gotistobart)[1] as Single Agent and in Combination in Patients with Multiple Solid Tumors

BNT316/ONC-392 (gotistobart) monotherapy (10mg/kg) in platinum-resistant ovarian cancer patients

Hays J et al. Poster #564. Presented at SITC 2022

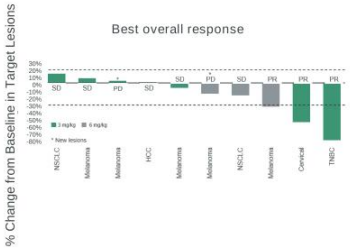


14/28 pts. with clinical activity

- CR/PR/SD/PD = 1/5/8/14
- ORR=21%, DCR=50%

BNT316/ONC-392 (gotistobart) (3 or 6mg/kg) in combination with pembrolizumab

Hu-Lieskovan et al. Poster #594. Presented at SITC 2022

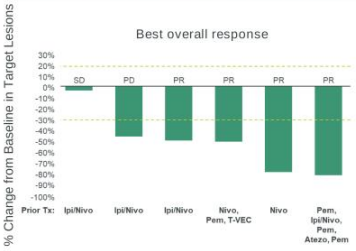


8/10 pts. with clinical activity

- At 3 mg/kg (6 pts.): 2 PR, 3 SD
- At 6 mg/kg (4 pts.): 1 PR, 2 SD

BNT316/ONC-392 (gotistobart) (6mg/kg) in combination with pembrolizumab in R/R Melanoma

Hu-Lieskovan et al., Poster #594. Presented at SITC 2022



6 pts. with clinical activity

- 5 PR, 1 SD

1.Partnered with OncoC4.
CR = complete remission; PR = partial response; SD = stable disease; PD = progressive Disease; ORR = objective response rate; DCR = disease control rate, Ipi = Ipilimumab, Nivo = nivolumab, Pem = pemetrexed, Tx = treatment, T-VEC = talimogen laherparepvec, Atezo = atezolizumab, R/R = relapsed/refractory.

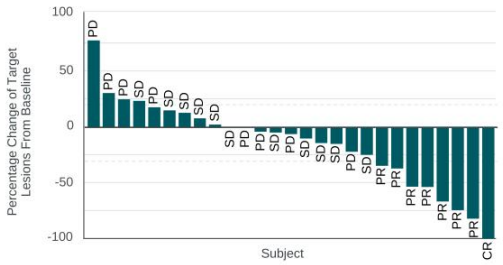
BIONTECH

Data Support Initiation of Pivotal Phase 3 Trial Evaluating BNT316/ONC-392 (gotistobart)[1] in CPI-resistant NSCLC

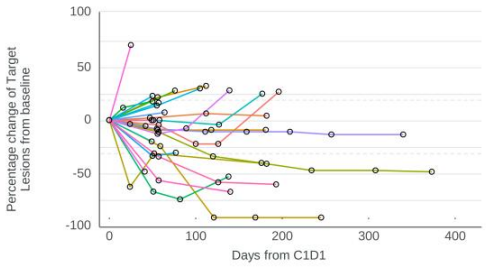
PRESERVE-001: Phase 1/2a multicenter, non-randomized, open-label, multiple-dose, FIH trial (NCT04140526)
He K. et al. presented at ASCO 2023, Abstract #9024.

Anti-tumor activity observed in ICI-resistant NSCLC patients (n=27)	ORR: 29.6% (22.2% confirmed & 7.4% unconfirmed) DCR: 70.4%	Manageable adverse events

Target lesion best overall response (N=27 evaluable)
Dosing 10 mg/kg x 2, then 6 mg/kg, q3w (2 pts.: 10 mg/kg x 4, q3w)



Target lesion percentage change over time (N=27 evaluable)
Dosing; 10 mg/kg x 2, then 6 mg/kg, q3w (2 pts.: 10 mg/kg x 4, q3w)



1.Partnered with OncoC4.
CPI = Checkpoint inhibitor; NSCLC = non-small cell lung cancer; FIH = first in human; IO = immuno-oncology; ORR = objective response rate; DCR = disease control rate; pts = patients; q3w = 3-week schedule; C1D1 = Cycle 1 Day 1.

BIONTECH

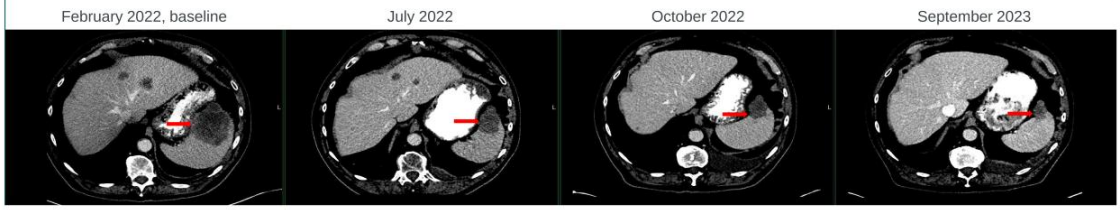
Case Report Demonstrates Clinical Response to BNT316/ONC-392 (gotistobart)[1]

PRESERVE-001: Case report

He K. et al. presented at SITC 2023, Abstract #599.

64-year-old male

Diagnosis	Squamous cell carcinoma of lung in Aug 2021, 100 pack years smoking history (quit 15 years ago) Tumor PD-L1 <1%. TMB 4. No actionable mutations. Microsatellite status is stable
Prior therapy	Initially treated at outside hospital with chemo-RT (weekly paclitaxel and carboplatin), completed in Nov 2021. PET/CT on 12/10/21 showed disease progression with metastases. Started with carboplatin, paclitaxel, ipilimumab and nivolumab; continued progression after 2 cycles of treatment
Sites of metastases	Spleen and liver



Gotistobart, Mar. 7, 2022; active in treatment cycle 25 as of Sep. 2023

1. Partnered with OncoC4.
PD-L1 = programmed cell death protein L1; TMB = tumor mutation burden; chemo-RT = chemo-radio therapy;; PET/CT = positron emission tography / computer tomography

BIONTECH

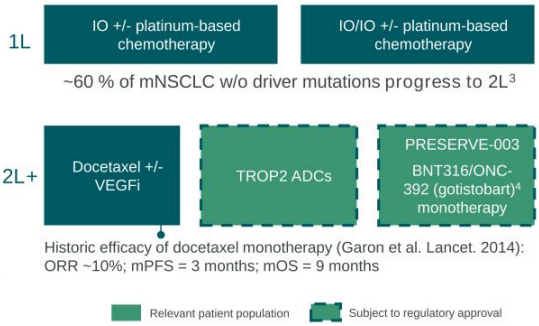
Limited 2L Treatment Options Post Immunotherapy in NSCLC

Total diagnosed metastatic NSCLC patients in US, UK, EU 4 and Japan: ~375K[1]

~50% with actionable driver mutations[2]

~50% without actionable driver mutations (~190K)[2]

Potential future treatment algorithm – metastatic NSCLC w/o driver mutations



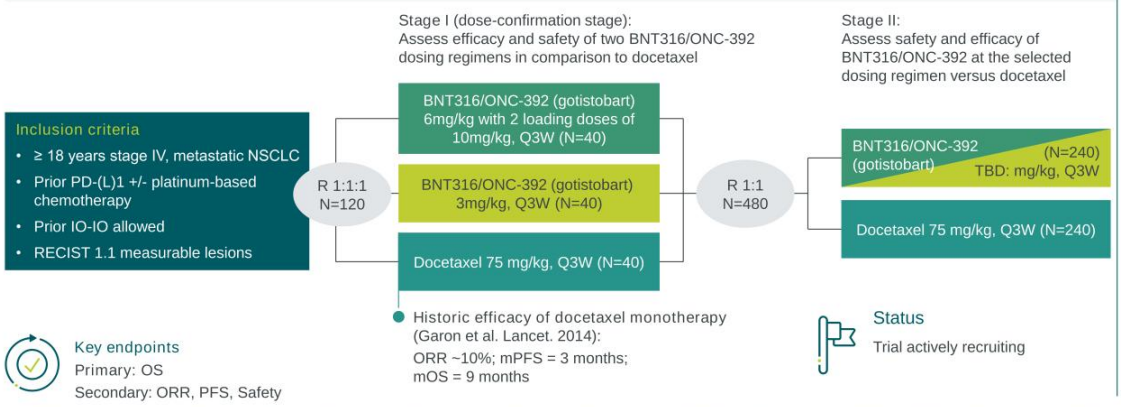
BNT316/ONC-392 (gotistobart) could provide an additional treatment option for 2L NSCLC patients

1. Kantar CancerMPact Treatment Architecture; 2. Thai AA et al. Lancet. 2021; 3. Markt research, data on file; 4. Partnered with OncoC4.
NSCLC = non-small cell lung cancer; IO = immuno oncology; VEGFi = vascular endothelial growth factor inhibitor; TROP-2 = trophoblast cell surface antigen-2; CTLA4 = cytotoxic T-lymphocyte-associated protein 4; ORR = objective response rate; mOS = median overall survival.

BIONTECH

Phase 3 Trial Evaluating BNT316/ONC-392 (gotistobart)[1] in CPI-resistant NSCLC

PRESERVE-003 (NCT05671510)
Randomized, open-label, active controlled, multi-center Phase 3 trial



1. Partnered with OncoC4; CPI = Checkpoint inhibitor; NSCLC = Non-small cell lung cancer; PD-1 = Programmed cell death protein 1; IO = immuno-oncology; RESCIST = Response Evaluation Criteria In Solid Tumors; Q3W = once every three weeks; (median)OS = (median) overall survival; ORR = objective response rate; (m)PFS = (median) progression free survival; ECOG = Eastern Cooperative Oncology Group; FPD = first patient dosed.

BIONTECH

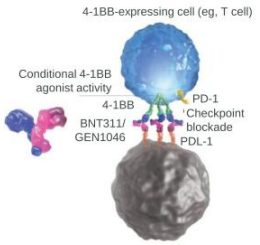
Well-Positioned in Immuno-Oncology with Therapeutic Candidates Across Multiple Tumors

1. Partnered with OncoC4; 2. Partnered with Genmab; 3. Partnered with Biotheus. CTLA4 = Cytotoxic T-Lymphocyte-Associated Protein 4; CD27, CD40, 4-1BB = members of the tumor necrosis factor receptor superfamily; PD-1 =Programmed cell death protein 1; HER2 = human epidermal growth factor receptor 2; ADCC = Antibody dependent cell-mediated cytotoxicity; ADCP = Antibody dependent cellular phagocytosis; PROC = platinum-resistant ovarian cancer; NSCLC = non-small cell lung cancer; EC = endometrial cancer APC = antigen presenting cells; VEGF = vascular endothelial growth factor; TME = tumor microenvironment; CTx = chemotherapy; LALA = IgG1 variant L234A/L235A.

BIONTECH

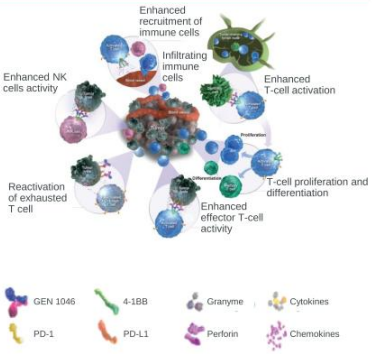
BNT311/GEN1046 – Combining Checkpoint Blockade and Conditional T Cell Co-Stimulation

Inert Fc, dual targeted 4-1BB co-stimulation that is conditional on PD-L1 binding



BNT311/GEN1046 binding affinity:
K_D PD-L1: 0.16 nmol/L,
4-1BB: 0.15 nmol/L

Novel mechanism that enhances T- and natural killer cell functions



Muik A, et al. Cancer Discov 2022; 12:1248−1345.

Conditional bispecific molecule for two validated targets:

PD-L1: receptor-ligand expressed on tumor cells that inhibits proliferation of PD1-positive cells, and has a role in immune evasion.

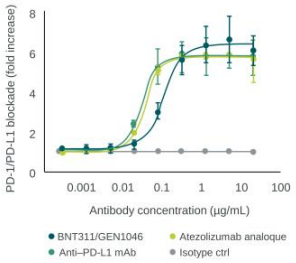
4-1BB: costimulatory tumor necrosis factor expressed on T and NK-cells. Activating the 4-1BB pathway enhances T cell proliferation, T cell effector functions and prevents T cell death.

1. Partnered with Genmab; Fc = fragment crystallizable region; PD –L1 = programmed cell death ligand 1; PD-1 = programmed cell death protein 1; NK cell = natural killer cell; .

BIONTECH

BNT311/GEN1046[1] – Preclinical Data

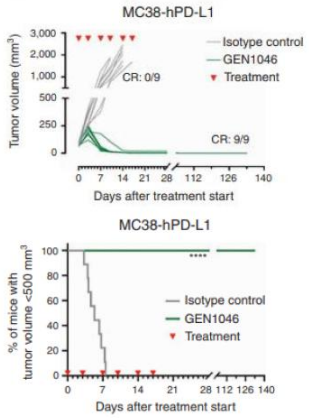
4-1BB agonist activity of BNT311/GEN1046 was strictly conditional on PD-L1 binding



BNT311/GEN1046 blocks the PD-1/PD-L1 axis in the absence of 4-1BB binding, showing that its PD-L1–specific Fab arm also functions as a classic immune CPI

Muik A, et al. Cancer Discov 2022; 12:1248−1345.

BNT311/GEN1046 exhibits antitumor activity in vivo

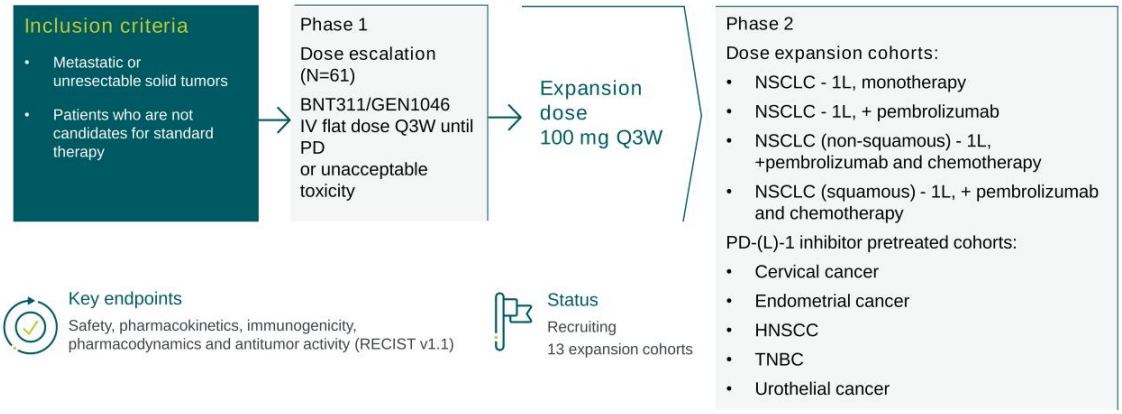


1. Partnered with Genmab. CPI = Checkpoint Inhibitor; PD-L1 = programmed cell death ligand 1; ctrl = control.

BIONTECH

First-in-Human Trial with BNT311/GEN1046[1] in Patients with Metastatic or Unresectable Solid Tumors

Phase 1/2a trial design (NCT03917381), multicenter, non-randomized, open-label



Key endpoints
Safety, pharmacokinetics, immunogenicity, pharmacodynamics and antitumor activity (RECIST v1.1)

Status
Recruiting
13 expansion cohorts

1. Partnered with Genmab.
Q2W = once every three weeks; PD = progressive disease; NSCLC = non-small-cell lung cancer; HNSCC = head and neck squamous-cell cancer; TNBC = triple-negative breast cancer; RECIST = Response Evaluation Criteria In Solid Tumors;

Initial Results of BNT311/GEN1046[1] Monotherapy in Dose Escalation Show a Manageable Safety Profile and Clinical Activity

Phase 1/2a FIH trial (NCT03917381): Safety & efficacy, dose escalation monotherapy

Garralda E. et al. presented at SITC 2020, Poster #412.

Dose escalation cohort TEAE's occurring in **≥10% of patients**	All grades, n (%)	**Grade ≥3, n (%)**
Any TRAE	43 (70.5)	17 (27.9)
TRAEs in ≥10% patients, by preferred term		
ALT increased	14 (23.0)	5 (8.2)
AST increased	13 (21.3)	2 (3.3)
Hypothyroidism	11 (18.0)	1 (1.6)
Fatigue	8 (13.1)	1 (1.6)

Data cut-off: August 31, 2020.

- Most AEs were mild to moderate:
  - TRAEs occurred in 43 (70.5%) patients
  - Grade 3–4 TRAEs were experienced by 17 (27.9%) patients
- MTD was not reached
- 6 patients had DLTs; all 6 patients recovered without sequelae

In the dose escalation phase, BNT311/GEN1046[1] demonstrated a manageable safety profile and preliminary clinical activity in a heavily pretreated population with advanced solid tumors:

- Disease control achieved in 65.6% (40/61) of patients at a median of 3 months follow-up
- 4 early partial responses in TNBC (1), ovarian cancer (1), and CPI pre-treated NSCLC (2) patients

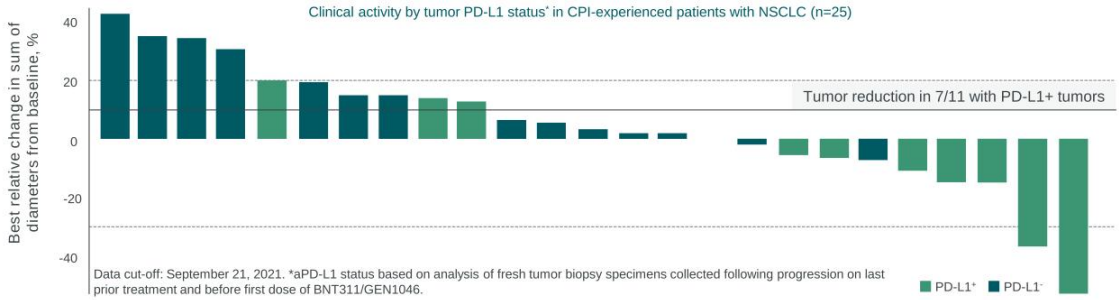
1. Partnered with Genmab.

DLT = dose-limiting toxicity; MTD = maximum tolerated dose; TEAE= treatment-emergent adverse event; TRAE = treatment-related adverse event, TNBC = triple negative breast cancer; NSCLC = non-small cell lung cancer; CPI = checkpoint inhibitor; AST = aspartate transaminase; ALT = alanine transaminase.

BNT311/GEN1046[1] Monotherapy Demonstrates Efficacy in Patients with Advanced Solid Tumors Who had Failed PD-(L)1 Treatment including in NSCLC

Phase 1/2a FIH trial (NCT03917381): Clinical efficacy, 100 mg Q3W monotherapy

Ponce Aix S. et al. presented at SITC 2021, Poster #516.



- BNT311/GEN1046 elicits early responses across expansion cohorts of patients who failed prior CPI therapy
- Patient selection based on tumoral PD-L1 status and anti–PD-1 combination therapy are being explored and may improve clinical efficacy with GEN1046

1. Collaboration with Genmab; PD-L1 = programmed cell death ligand 1; NSCLC = non-small cell lung cancer; CPI = checkpoint inhibitor; .

BIONTECH

Ongoing Phase 2 Trials Investigating BNT311/GEN1046[1] as Single Agent and in Combination with Pembrolizumab in NSCLC and Endometrial Cancer

	NSCLC	Endometrial cancer NEW
Inclusion criteria	Stage IV metastatic R/R NSCLC (2L+) PD-L1 TPS ≥1% Prior treatment with an anti-PD-(L) 1	Treatment experienced advanced endometrial carcinoma (2L) Cohort A: CPI naïve Cohort B: CPI-experienced
Treatment arms	• A: BNT311/GEN1046 monotherapy • B: BNT311/GEN1046 + pembrolizumab (Q3W) • C: BNT311/GEN1046 + pembrolizumab (Q6W)	• BNT311/GEN1046 + pembrolizumab
Status	• Recruiting • FPD December 2021	• Recruiting • FPD projected for November 2023

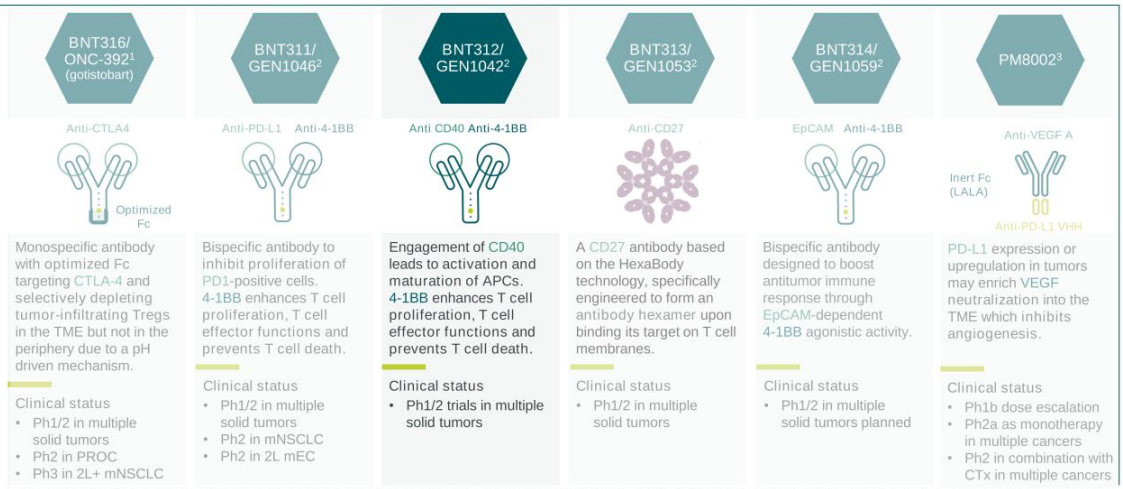
Next steps

- Engage with health authorities on the design of a pivotal trial in post-IO non-small cell lung cancer
- Plan to present data at a medical conference in 2024

1. Partnered with Genmab; 50:50 profit/loss collaboration.
NSCLC = non-small cell lung cancer; PD-L1 = programmed cell death ligand 1; FPD = first patient dosed; CPI =check point inhibitor; TPS = tumor proportion score; R/R = relapse/refractory.

BIONTECH

Well-Positioned in Immuno-Oncology with Therapeutic Candidates Across Multiple Tumors



Monospecific antibody with optimized Fc targeting CTLA-4 and selectively depleting tumor-infiltrating Tregs in the TME but not in the periphery due to a pH driven mechanism.	Bispecific antibody to inhibit proliferation of PD1-positive cells. 4-1BB enhances T cell proliferation, T cell effector functions and prevents T cell death.	Engagement of CD40 leads to activation and maturation of APCs. 4-1BB enhances T cell proliferation, T cell effector functions and prevents T cell death.	A CD27 antibody based on the HexaBody technology, specifically engineered to form an antibody hexamer upon binding its target on T cell membranes.	Bispecific antibody designed to boost antitumor immune response through EpCAM-dependent 4-1BB agonistic activity.	PD-L1 expression or upregulation in tumors may enrich VEGF neutralization into the TME which inhibits angiogenesis.
Clinical status • Ph1/2 in multiple solid tumors • Ph2 in PROC • Ph3 in 2L+ mNSCLC	Clinical status • Ph1/2 in multiple solid tumors • Ph2 in mNSCLC • Ph2 in 2L mEC	Clinical status • Ph1/2 trials in multiple solid tumors	Clinical status • Ph1/2 in multiple solid tumors	Clinical status • Ph1/2 in multiple solid tumors planned	Clinical status • Ph1b dose escalation • Ph2a as monotherapy in multiple cancers • Ph2 in combination with CTx in multiple cancers

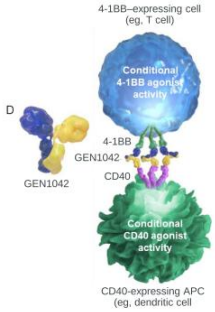
1. Partnered with OncoC4; 2. Partnered with Genmab; 3. Partnered with Biotheus. CTLA4 = Cytotoxic T-Lymphocyte-Associated Protein 4; CD27, CD40, 4-1BB = members of the tumor necrosis factor receptor superfamily; PD-1 =Programmed cell death protein 1; HER2 = human epidermal growth factor receptor 2; ADCC = Antibody dependent cell-mediated cytotoxicity; ADCP = Antibody dependent cellular phagocytosis; PROC = platinum-resistant ovarian cancer; NSCLC = non-small cell lung cancer; EC = endometrial cancer APC = antigen presenting cells; VEGF = vascular endothelial growth factor; TME = tumor microenvironment; CTx = chemotherapy; LALA = IgG1 variant L234A/L235A.

BIONTECH

BNT312/GEN1042[1] – Bispecific Antibody Designed to Strengthen T Cell and APC Synapse

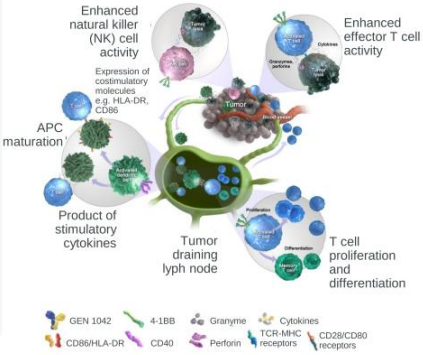
Inert Fc, double conditional, dual CD40×4-1BB agonist

BNT312/GEN1042 binding affinity:
K_D CD40 1.0 nmol/L,
4-1BB: 0.17 nmol/L



Muik A, et al. J Immunother Cancer 2022

Conditional CD40-stimulation of APC and conditional 4-1BB mediated stimulation of T cells



"Double-conditional" "dual-agonist" molecule for two preclinically validated targets:

CD40: stimulatory receptor primarily expressed on APCs. Engagement of CD40 leads to activation and maturation of APCs

4-1BB: costimulatory tumor necrosis factor expressed on T and NK-cells. Activating the 4-1BB pathway enhances T cell proliferation, T cell effector functions and prevents T cell death

Inert Fc to avoid unwanted immune cells crosslinking

1. Partnered with Genmab.
APC = antigen-presenting cell; Fc = fragment crystallizable region; CD = cluster of differentiation; HLA = human leucocyte antigen; TCR = T-cell receptor; MHC = major histocompatibility complex.

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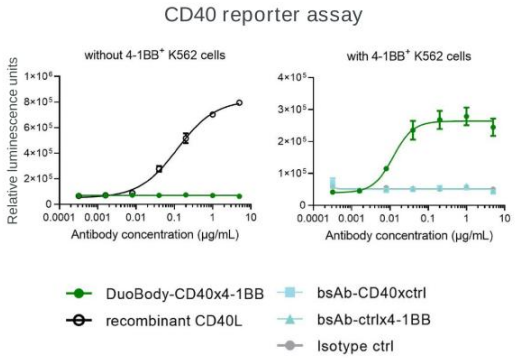
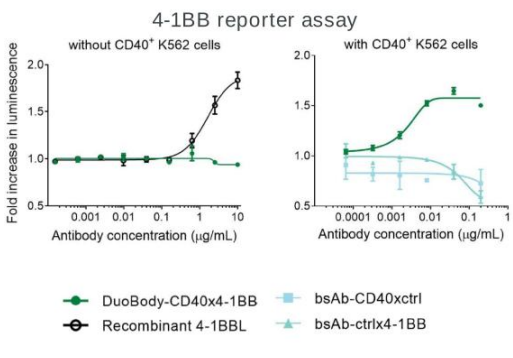
BNT312/GEN1042[1] – Double-Conditional Dual-Agonist Molecule

In the absence of CD40+ cells,
BNT312 does not exhibit any 4-1BB activation



In the absence of 4-1BB+ cells,
BNT312 does not exhibit any CD40 activation



Muik A, et al. J Immuno Ther Cancer 2022; 10:e004322.

1. Partnered with Genmab APC = antigen-presenting cell; CD = cluster of differentiation; bsAb = bispecific antibody.

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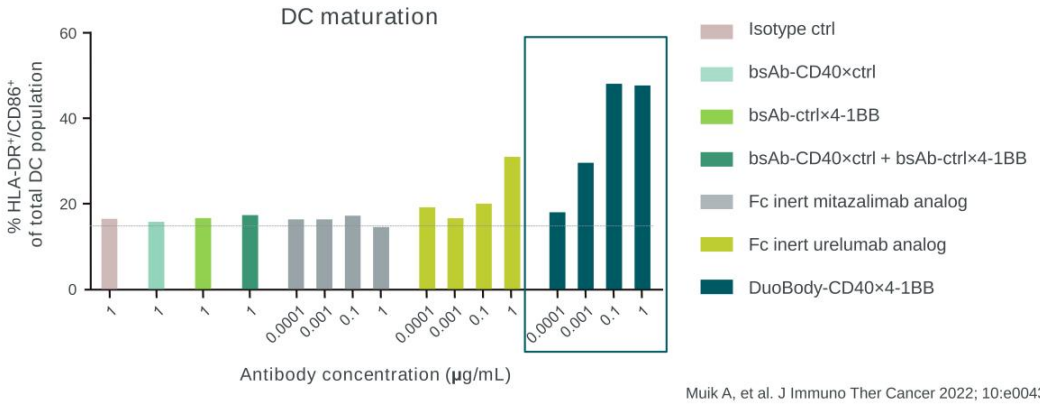
BNT312/GEN1042[1] Shows Higher Ability to Promote DC Maturation vs either Monoclonal Antibody or their Combination



Muik A, et al. J Immuno Ther Cancer 2022; 10:e004322.

1. Partnered with Genmab
Measured by flow cytometry. Data from one donor are shown. Dotted line shows percentage of HLA-DR+CD86+ DCs in DC-T-cell cultures in the absence of treatment.
DC = dendritic cell; HLA = human leucocyte antigen; CD = cluster if differentiation; bsAb = bispecific antibody; Fc = fragment crystallizable region

BIONTECH

Data from Dose Escalation of BNT312/GEN1042[1] in Patients with Metastatic or Unresectable Solid Tumors

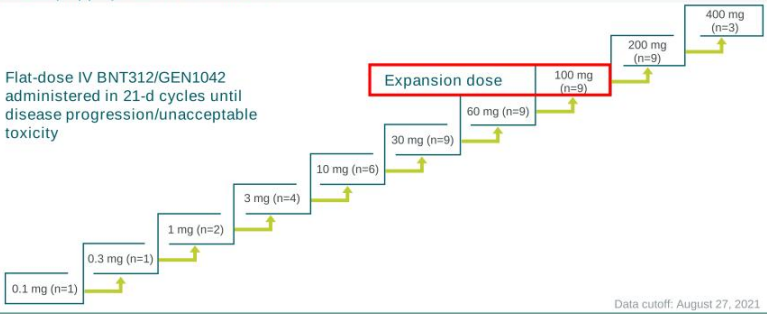
Phase 1/2a trial design (NCT04083599), multicenter, non-randomized, open-label: Dose escalation[a]

Johnson M, et al. J Immunother Cancer. 2021;9(suppl2):A525. Abstract 493.

Inclusion criteria

- Age ≥18y
- Histologically or cytologically confirmed, metastatic or unresectable, non-CNS solid tumor
- Not candidate for standard therapy
- Measurable disease according to RECIST v1.1[b]
- ECOG PS 0–1
- Aqeduate renal, hepatic, and hematologic function

Flat-dose IV BNT312/GEN1042 administered in 21-d cycles until disease progression/unacceptable toxicity



Data cutoff: August 27, 2021

Key endpoints

Primary: MTD, RP2D

Secondary: Safety (tolerability), Antitumor activity by RECIST v1.1; PK, Immunogenicity

Exploratory: Pharmacodynamics (safety biomarkers), Biomakers for response, Antitumor activity by iRECIST

1. Partnered with Genmab; a. Starts with an accelerated titration phase consisting of single-patient cohorts followed by larger cohorts informed by the modified continuous reassessment method and escalation with overdose control design; b. CTor MRI: every 6wk for 50 wk, and every 12 wk thereafter. CNS = central nervous system; RECIST = Response Evaluation Criteria In Solid Tumors; ECOG PS = Eastern Cooperative Oncology Group performance status ; MTD = maximum tolerated dose; RP2D = recommended phase 2 dose; PK = pharmacokinetic.

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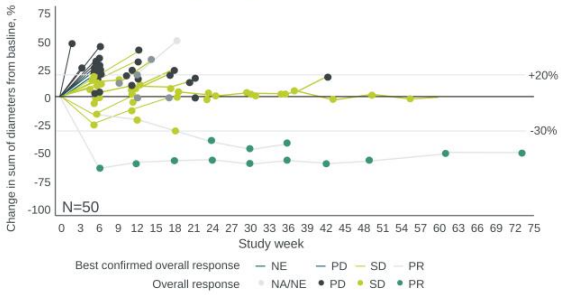
BNT312/GEN1042[1] Shows Manageable Safety Profile and Encouraging Clinical Activity in a Heavily Pretreated Heterogenous Patient Population

Antitumor activity as a single agent: Dose escalation (n=50)



- Disease control rate 50%
- 2 patients with confirmed PR (melanoma, neuroendocrine lung cancer)

Safety as a single agent: Dose escalation (n=50)

- 1 DLT (grade 4 transaminase elevation at 200 mg) that resolved with corticosteroids
- MTD not reached
- No drug-related grade ≥3 thrombocytopenia or CRS
- No treatment-related deaths

Johnson M, et al. J Immunother Cancer. 2021;9(suppl2):A525. Abstract 493.

100mg Q3W was identified as the expansion dose

1. Partnered with Genmab.
DLT = dose limiting toxicity; MTD = maximum tolerated dose; CRS = cytokine release syndrome; PD = progressive disease; SD = stable disease; PR = partial response; NE = not evaluable; NA = npt applicable.

BIONTECH

Dose Expansion of BNT312/GEN1042[1] in Patients with Metastatic or Unresectable Solid Tumors

Phase 1/2 trial designs (NCT04083599, NCT05491317), open-label, multi-center, open-label

Melero et al. Presented at ESMO-IO 2022. Poster#692.

Inclusion criteria

- Selected metastatic or unresectable solid tumors
- Measurable disease (per RECIST v1.1)
- ECOG PS 0–1
- Adequate renal, hepatic, and bone marrow function
- No prior therapy for metastatic diseases and no prior anti-PD(L)1 or other checkpoint inhibitor therapy

Expansion dose
100 mg Q3W

Expansion cohorts - combination

BNT312/GEN1046 + pembrolizumab:
1L Melanoma
1L NSCLC PD-L1+ TPS 1–49%
1L NSCLC PD-L1+ TPS ≥50%
1L HNSCC PD-L1+ CPS ≥1

BNT312/GEN1046 + pembrolizumab+ chemotherapy:
1L HNSCC PD-L1+ CPS ≥1
1L NSCLC squamous
1L NSCLC non-squamous
1L Pancreatic ductal adenocarcinoma

Key endpoints

Primary: DLT, ORR per RECIST v1.1
Secondary: DOR, DCR, PFS, AEs, PK/PD

Status

Two trials recruiting for expansion cohorts

1. Partnered with Genmab.

5-FU, 5-fluorouracil; AEs, adverse events; Carbo, carboplatin; Cis, cisplatin; DCR, disease control rate; DLT, dose-limiting toxicity; DOR, duration of response; ECOG PS, Eastern Cooperative Oncology Group performance status; GEM, gemcitabine; Gr, grade; HNSCC, head and neck squamous cell carcinoma; MTD, maximum tolerated dose; nab-PAC, nab-paclitaxel; NSCLC, non-small cell lung cancer; ORR, overall response rate; PD, progressive disease; PD-1, programmed cell death protein 1; PD-L1, programmed death-ligand 1; PEM, pembrolizumab; PFS, progression-free survival; PK/PD, pharmacokinetics/pharmacodynamics; Q3W, every 3 weeks; RECIST, Response Evaluation Criteria in Solid Tumours.

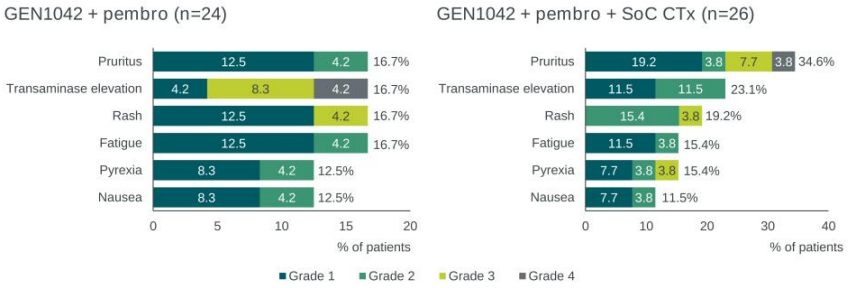
BIONTECH

Safety Run-in Results of BNT312/GEN1042[1] in Combination with Pembrolizumab and SoC Chemotherapy Show Favorable Safety Profile

BNT312/GEN1042 (NCT04083599): Safety

Melero et al. Presented at ESMO-IO 2022. Poster#692.

Treatment-related adverse events in ≥10%



No DLTs were observed during the safety run-in

AEs were primarily grade 1/2

Immune-related AEs were as expected and manageable

Transaminase elevations resolved with corticosteroids

- In combination with pembrolizumab +/- SoC chemotherapy BNT312/GEN1042 was well tolerated across a wide range of dose levels
- 100mg was selected for dose expansion phase

Data cut-off: October 2, 2022.
1. Partnered with Genmab; 50:50 profit/loss collaboration.
DLT = dose-limiting toxicity; MTD = maximum tolerated dose; AE = adverse event.
Transaminase elevation includes the preferred terms: alanine aminotransferase increased and aspartate aminotransferase increased. Rash includes the preferred terms: rash and rash maculo-popular. Fatigue includes asthenia and fatigue.

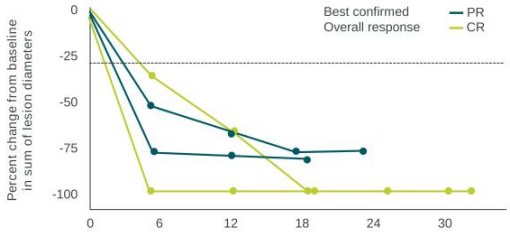
BIONTECH

Safety Run-in Results of BNT312/GEN1042[1] in Combination with Pembrolizumab and SoC Chemotherapy Show Preliminary Activity in Patients with HNSCC

BNT312/GEN1042 (NCT04083599): Efficacy

Melero et al. Presented at ESMO-IO 2022. Poster#692.

- Deep responses in 4/4 evaluable patients with advanced/metastatic HNSCC
- Responses were seen in tumors with both low and high PD-L1 expression; all 4 patients were HPV negative



Data cut-off date: October 3, 2022.

Next steps

Data readout of expansion cohorts of Phase1/2 trial planned for 2024

1. Partnered with Genmab.
HNSCC = Head and neck squamous cell carcinomas; PD-L1 = programmed cell death ligand 1; PR = partial response; CR = complete response; HPV = human papillomavirus.

BIONTECH

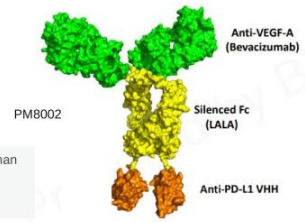
Well-Positioned in Immuno-Oncology with Therapeutic Candidates Across Multiple Tumors

1. Partnered with Genmab; 2. Partnered with OncoC4; 3. Partnered with Biotheus. CTLA4 = Cytotoxic T-Lymphocyte-Associated Protein 4; CD27, CD40, 4-1BB = members of the tumor necrosis factor receptor superfamily; PD-1 =Programmed cell death protein 1; HER2 = human epidermal growth factor receptor 2; ADCC = Antibody dependent cell-mediated cytotoxicity; ADCP = Antibody dependent cellular phagocytosis; PROC = platinum-resistant ovarian cancer; NSCLC = non-small cell lung cancer; EC = endometrial cancer APC = antigen presenting cells; VEGF = vascular endothelial growth factor; TME = tumor microenvironment; CTx = chemotherapy; LALA = IgG1 variant L234A/L235A.

BIONTECH

PM8002[1] – A Next-Gen IO Agent that Combines Two Clinically Validated MoA

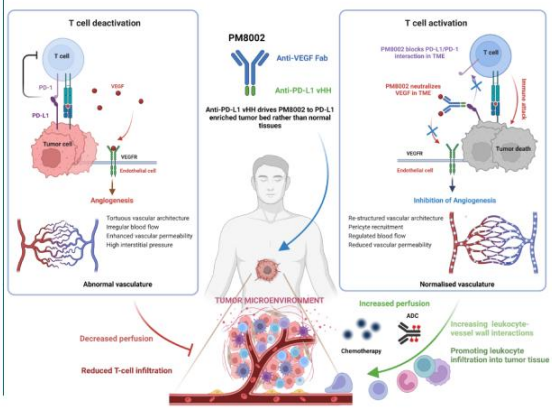
Dual blockade of PD-L1 and VEGF-A have been proven synergistic



Protein binding activity (K_D) for human
- PD-L1: 5.5 nM
- VEGF-A: <0.4 nM

- Compelling profile with over 500 patients treated to date
- Monotherapy activity and synergy in combination therapy observed in early clinical studies
- Encouraging safety profile vs PDL1 + VEGF inhibition or PD1 alone

"Two in one" MoA synergies with ADCs

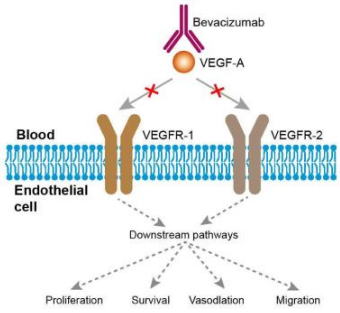


1. Partnered with Biotheus. MoA = Mode of Action TME = Tumor Microenvironment 2. The MoA graph generated by Biorender.com

BIONTECH

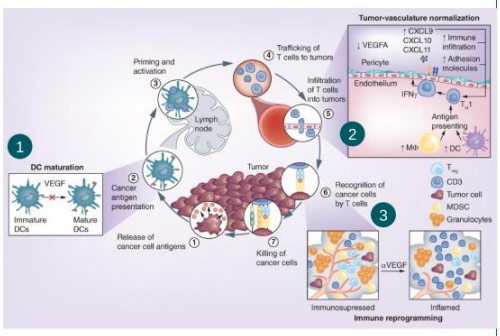
Anti-VEGF Treatment Impacts Tumor Vasculature and Tumor Microenvironment

Reversion of tumor-angiogenesis promoting effects of VEGF



Reversion of multi-level immune-suppressive effects of VEGF

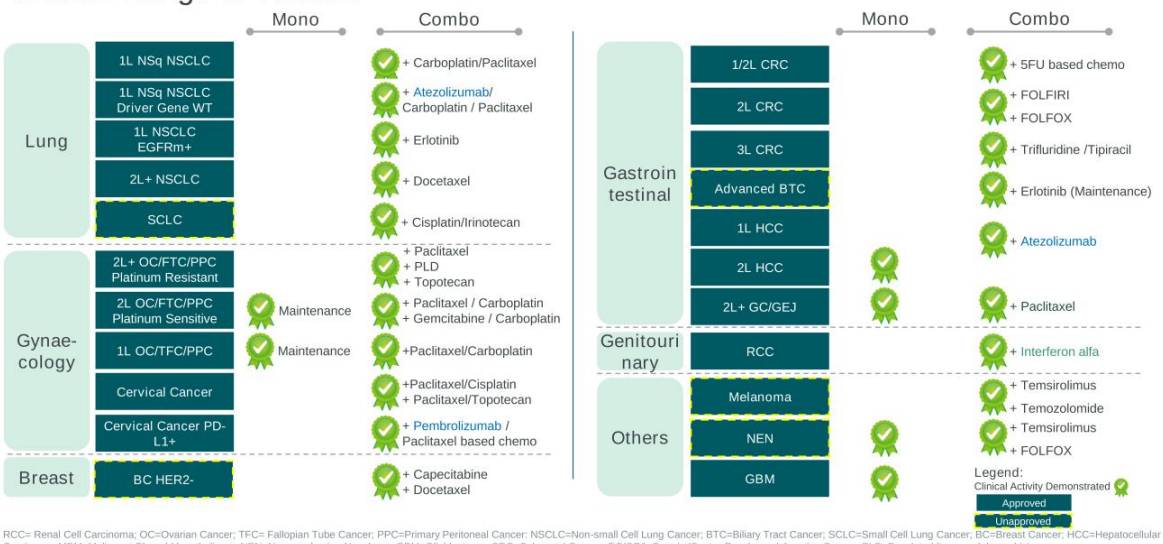
1. Downregulating T-cell activation via inhibition of DC maturation
2. Reducing T-cell tumor infiltration
3. Increasing inhibitory cells such as myeloid derived suppressor cells (MDSCs) and regulatory T cells (Tregs) in the tumor microenvironment



Hegde P. et al. Seminars in Cancer Biology. 2018.

Sourced from https://www.creativebiolabs.net/bevacizumab-overview.htm
VEGF(R) = vascular endothelial growth factor (receptor); DC = dendritic cell; Treg = regulatory T cells; CXCL = chemokine (C-X-C motif) ligand; IFN = interferon; CD3 = cluster of differentiation 3; MSDC = myeloid derived suppressor cells.

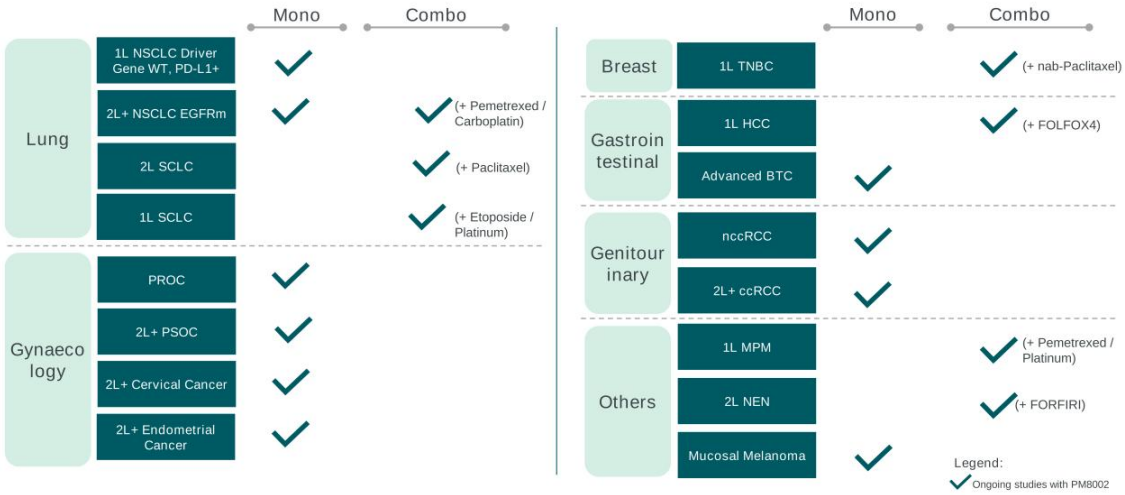
Anti-VEGF is a Validated Mechanism Approved in or Shown Clinical Activity in a Wide Range of Tumors



RCC= Renal Cell Carcinoma; OC=Ovarian Cancer; TFC= Fallopian Tube Cancer; PPC=Primary Peritoneal Cancer: NSCLC=Non-small Cell Lung Cancer; BTC=Biliary Tract Cancer; SCLC=Small Cell Lung Cancer; BC=Breast Cancer; HCC=Hepatocellular Carcinoma; MPM=Malignant Pleural Mesothelioma; NEN=Neuroendocrine Neoplasm, GBM=Glioblastoma, CRC=Colorectal Cancer, GC/GEJ=Gastric /Gastro-Esophageal Junction Cancer; PLD: Pegylated liposomal doxorubicin,
Anti-VEGF includes bevacizumab and ramucirumab.

BIONTECH

PM8002 Mono and Combo Have Been Investigated in 10+ Indications in More Than 500 Patients



nccRCC=Non-Clear Cell Renal Cell Carcinoma; RCC= Renal Cell Carcinoma; PROC=Platinum-resistant Ovarian Cancer; PSOC=Platinum-sensitive Ovarian Cancer; NSCLC=Non-small Cell Lung Cancer; BTC=Biliary Tract Cancer; SCLC=Small Cell Lung Cancer; TNBC=Triple-negative Breast Cancer; HCC=Hepatocellular Carcinoma; MPM=Malignant Pleural Mesothelioma; NEN=Neuroendocrine Neoplasm.

BIONTECH

PM8002[1] Monotherapy in Patients with Advanced Solid Tumors

Phase 1/2 trial design, open-label, monotherapy

Inclusion criteria

- Advanced or metastatic tumors
- Age 18-75 years
- ECOG PS 0-1
- Adequate organ function
- Exclude evidence of significant bleeding and coagulation disorder or other significant bleeding risk

Part 1: Dose Escalation

Dose levels from 1 mg/kg Q2W to 45 mg/kg Q3W were evaluated in 310 patients

Part 2: Dose expansion

RP2D 20 mg/kg Q2W and 30 mg/kg Q3W

Indications

- Mucosal melanoma
- Ovarian cancer
- Endometrial cancer
- Cervical cancer
- Renal cell cancer
- Non-small cell lung cancer
- Hepatocellular carcinoma
- Small cell lung cancer
- Others

Disease progression, withdrawal of consent, unacceptable toxicity

Key endpoints:

Primary endpoints: adverse events according to CTCAE5.0 and ORR per RECIST1.1
Secondary endpoint: testing for anti-drug antibodies (ADA)

1. Partnered with Biotheus. Trial registration: ChiCTR2000040552.
QxW = every x weeks; RP2D = recommended phase 2 dose; ECOG PS = ORR = objective response rate; ECOG PS= eastern cooperative oncology group performance status.

BIONTECH

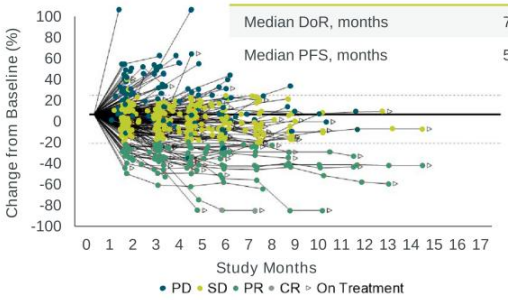
PM8002[1] Monotherapy Shows Encouraging Antitumor Activity and Safety Profile in Patients with Advanced Solid Tumors in a Phase 1/2 Trial

PM8002 in Ph1/2: Clinical activity of monotherapy

Ye Guo et al. Presented at ASCO 2023. Poster#378

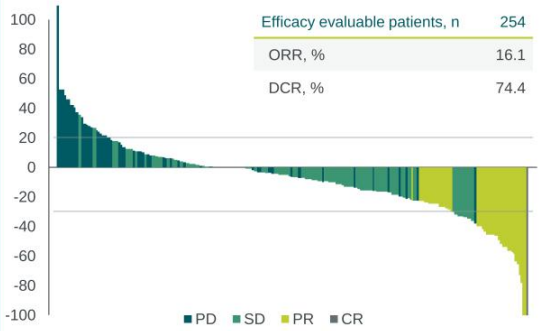
- ECOG PS 1: ~62%
- Prior # received ≥1 anticancer therapies: ~76%
- Prior IO therapy: ~ 5%

Efficacy evaluable patients, n	254
Median DoR, months	7.4
Median PFS, months	5.6



Best tumor response for evaluable patients (n=254):

Efficacy evaluable patients, n	254
ORR, %	16.1
DCR, %	74.4



1. Partnered with Biotheus.
ORR = objective response rate; DCR = disease control rate, DoR = duration of response; PFS = progression free survival; PD = progressive disease; SD = stable disease; PR = partial response; CR = complete response.

BIONTECH

PM8002[1] Monotherapy is Well Tolerated in Patients with Advanced Solid Tumors in a Phase 1/2 Trial

PM8002 in Ph1/2: Safety for monotherapy

Ye Guo et al. Presented at ASCO 2023. Poster#378

All TRAEs, n (%)	239 (77.1%)
TRAE ≥3, n (%)	64 (20.6)
SAE, n (%)	35 (11.3)
TRAE leading to dose discontinuation, n (%)	17 (5.5)

- 1 grade 4 event: anemia
- No grade 5 events

TRAE ≥10% of patients	All grades, n (%)	Grade 3, n (%)
Aspartate aminotransferase increased	42 (13.5)	2 (0.6)
Alanine aminotransferase increased	39 (12.6)	1 (0.3)
Hypercholesteremia	38 (12.3)	0
Hypoalbuminemia	35 (11.3)	0
Hypertriglyceridemia	31 (10)	2 (0.6)
Proteinuria	82 (26.5)	4 (1.3)
Hypertension	60 (19.4)	20 (6.5)
Hypothyroidism	34 (11)	0
Anemia	32 (10.3)	0

Ph1b/2 dose expansion monotherapy and Ph2 chemotherapy combination trials ongoing for multiple indications in China

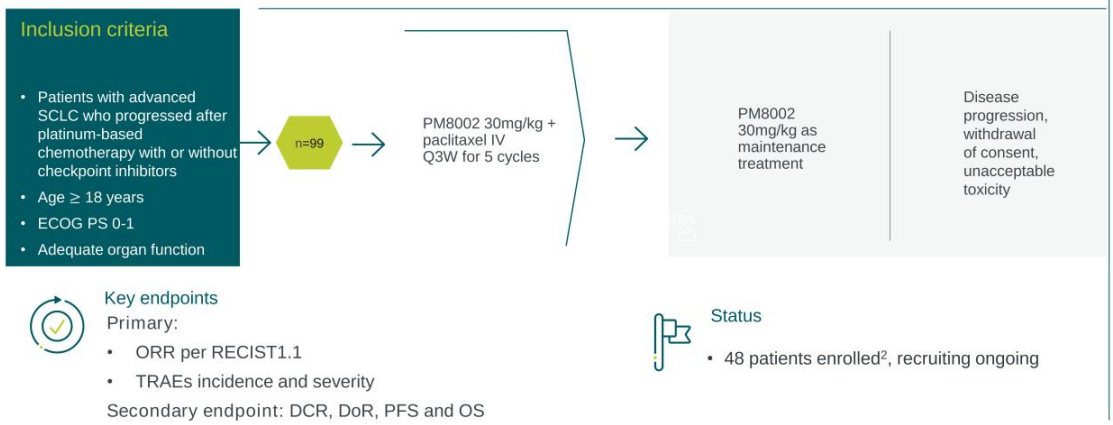
IND accepted for further studies in the US

1. Partnered with Biotheus.
TRAE = treatment related adverse event, SAE = serious adverse event.

BIONTECH

PM8002[1] in Combination with Paclitaxel as Second Line Treatment for SCLC

Phase 2 trial, open-label, single-arm combination (NCT05879068)



Key endpoints

Primary:

- ORR per RECIST1.1
- TRAEs incidence and severity

Secondary endpoint: DCR, DoR, PFS and OS

Status

- 48 patients enrolled[2], recruiting ongoing

1. Partnered with Biotheus; 2. As of September 08, 2023. Small Cell Lung Cancer = Small Cell Lung Cancer ECOG PS= eastern cooperative oncology group performance status. ORR = Overall response rate; DCR = Disease control rate; TRAE = treatment-related adverse events; DoR = Durability of Response PFS = Progression Free Survival OS = Overall Survival qxw = every X week(s).

BIONTECH

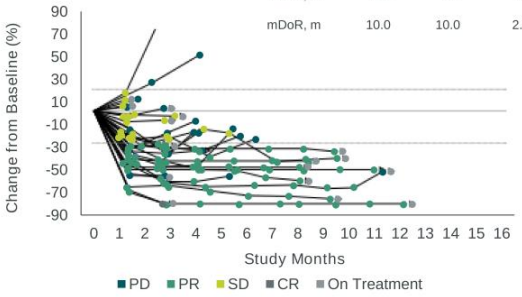
PM8002[1] Combined with Paclitaxel Shows Encouraging Antitumor Activity as Second Line Therapy in Patients with SCLC

Phase 2 (NCT05879068): clinical activity of PM8002 in combination with paclitaxel

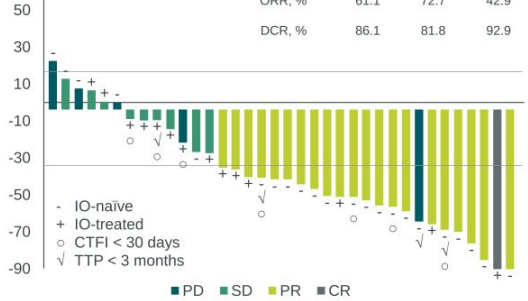
Ying Cheng et al. Presented at ESMO 2023. Poster#1992P

- ECOG PS 1: ~62%
- Prior # received ≥1 anticancer therapies: ~46%

Response	Efficacy Evaluation Population: ITT (n=36)	IO-naïve (n=22)	IO-treated (n=14)
mPFS, m	5.5	5.9	3.9
mDoR, m	10.0	10.0	2.6



Response	Efficacy Evaluation Population: ITT (n=36)	IO-naïve (n=22)	IO-treated (n=14)
ORR, %	61.1	72.7	42.9
DCR, %	86.1	81.8	92.9



1. Partnered with Biotheus; SCLC = small cell lung cancer; IO = immuno oncology; ORR = objective response rate; DCR = disease control rate, DoR = duration of response; PFS = progression free survival; CTFI = chemotherapy-free interval; TTP = time to progression; PD = progressive disease; SD = stable disease; PR = partial response; CR = complete response

BIONTECH

PM8002 Combined with Paclitaxel Shows Acceptable Toxicity as Second Line Therapy in Patients with SCLC

Phase 2, open-label, single-arm, trial (NCT05879068)
Ying Cheng et al. Presented at ESMO 2023. Poster#1992P

N=48	n (%)
All TRAEs	45 (93.8)
TRAE ≥3	30 (62.5)
SAE	16 (33.3)
TRAE leading to dose discontinuation	1 (2.1)

TRAE ≥10% of patients	All grades, n (%)	Grade 3, n (%)	Grade 4, n (%)	Grade 5, n (%)
Neutropenia	23 (47.9)	15 (31.3)	7 (14.6)	0
Leukopenia	23 (47.9)	10 (20.8)	2 (4.2)	0
Decreased platelet count	12 (25.0)	1 (2.1)	0	0
Anemia	11 (22.9)	0	0	0
Proteinuria	9 (18.8)	2 (4.2)	0	0
Pneumonitis	6 (12.5)	0	0	1 (2.1)

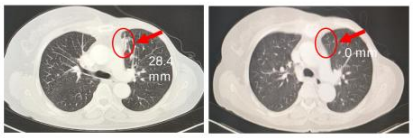
Next steps

- Phase 2 trial ongoing with near-term plans to enter Phase 3 trials

1. Partnered with Biotheus.
TRAE = treatment related adverse event, SAE = serious adverse event.

Significant Tumor Shrinkage in Patients Treated by PM8002 as Monotherapy and in Combination with Chemotherapy

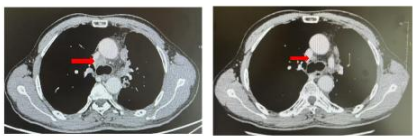
1L TNBC: PM8002 + nab-paclitaxel



Base line
Lesion diameter: 28.4 mm

Week 32
Lesion diameter: 0 mm

EGFR-TKI treated NSCLC: PM8002 monotherapy

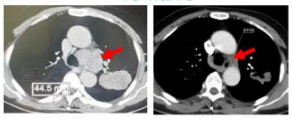


Base line
Lesion diameter: 16.8mm

Week 19
Lesion diameter: 6.2mm

2L SCLC: PM8002 + paclitaxel

IO-naïve

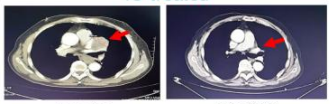


Base line
Lesion diameter: 44.5mm

Week 18
Lesion diameter: 8.5mm

IO-treated

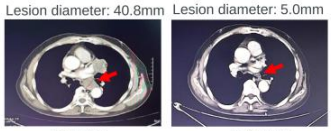
Lesion 1



Base line
Lesion diameter: 40.8mm

Week 18
Lesion diameter: 5.0mm

Lesion 2



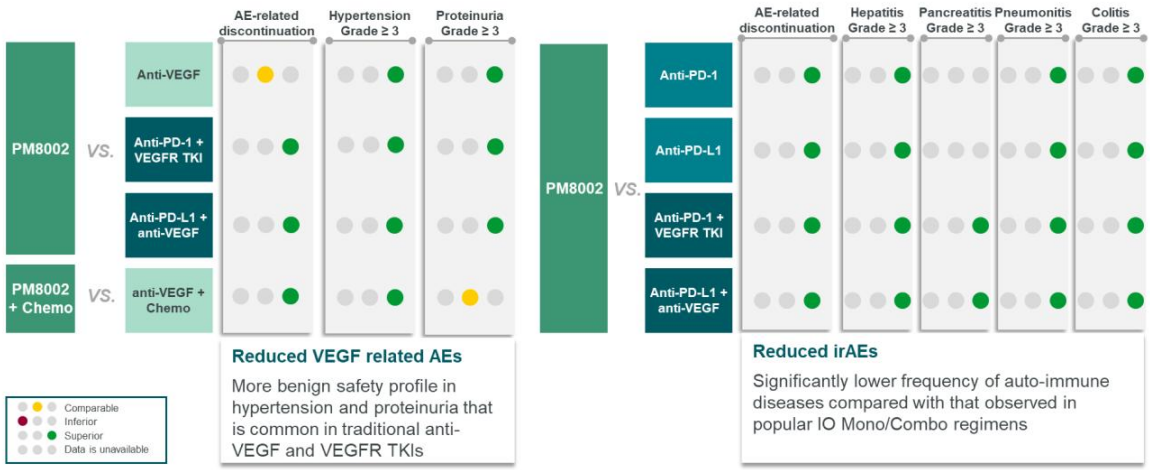
Base line
Lesion diameter: 30.9mm

Week 18
Lesion diameter: 5.0mm

Data on file.1L/1L = First Line, Second Line

BIONTECH

PM8002 Safety Profile Appears Favorable with Regard to AEs and irAEs Related to its Two Targets



Literature research, [illegible] VEGF TKI includes lenvatinib and axitinib.

BIONTECH

Immunomodulators: Key Takeaways

Targeted Milestones

BNT316/ONC-392 (gotistobart)[1]

- Additional data readouts planned in 2024
- Potential registrational trials planned in 2024 and beyond

BNT311/GEN10406[2]

- Engage with health authorities on the design of a pivotal trial in post-IO non-small cell lung cancer
- Plan to present data at a medical conference in 2024

BNT312/GEN10421[2]

- Provide a clinical data and pivotal development plan update next year

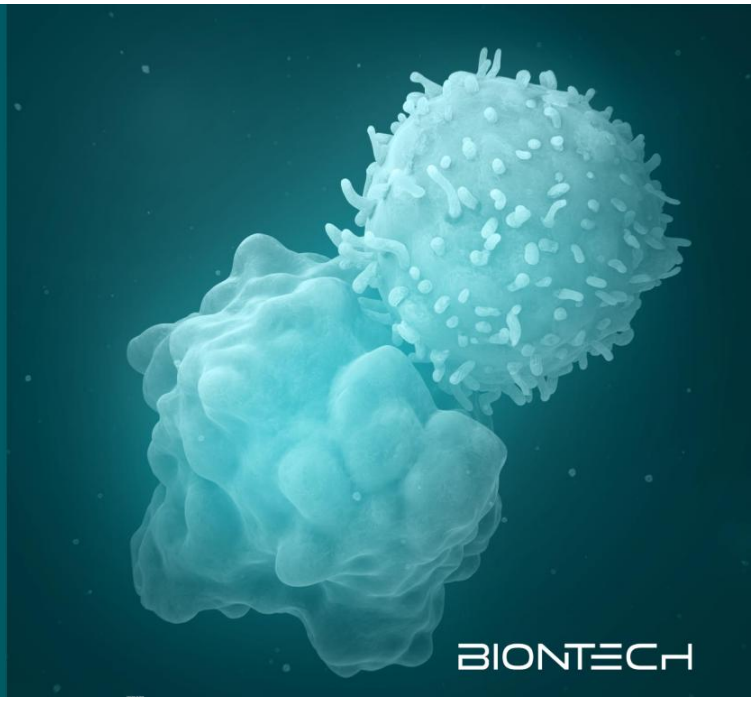
Strategy

- Leverage our next-generation immunomodulators to unlock potential in novel patient populations
- Potential to act as an improved backbone for novel combinations

1. Partnered with OncoC4. 2. Partnered with Genmab

7

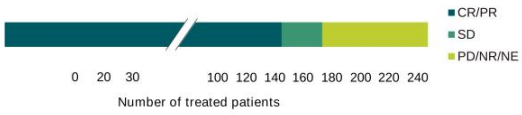
Solid Tumor Cell Therapy



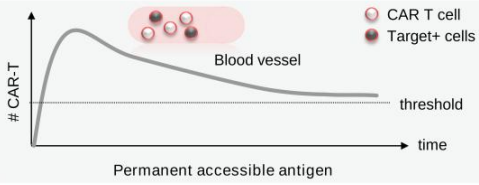
Solid Cancers Pose a Special Challenge for CAR-T cells

Liquid tumors

Best clinical outcome, target antigen CD19 (n=243)



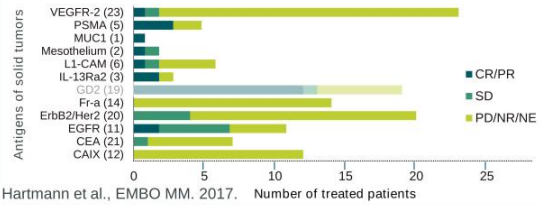
Hartmann et al., EMBO MM. 2017.



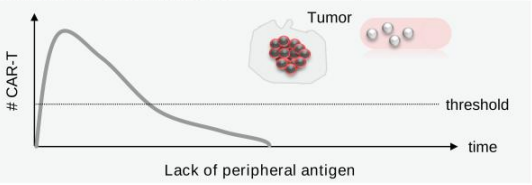
Permanent accessible antigen

Solid tumors

Best clinical outcome



Hartmann et al., EMBO MM. 2017.

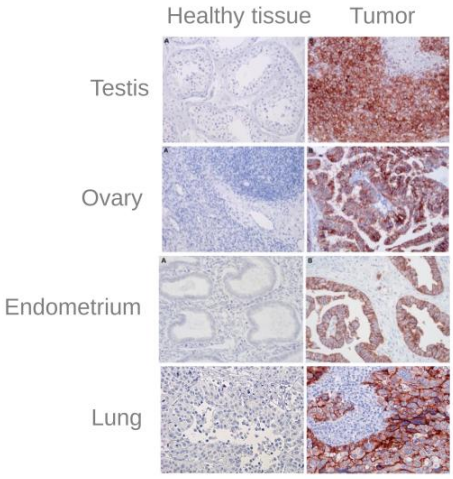


Lack of peripheral antigen

CR = complete response; NE = not evaluable; NR = no response; PD = progressive disease; PR = partial response; SD = stable disease.

BIONTECH

Frequencies of CLDN6 expression in high medical need cancers



Indication	CLDN6^{+}	CLDN6^{high}
Testicular Cancer*	93 %	90-93 %
Ovarian Cancer*	56 %	25-30 %
Uterine Cancer*	23 %	10-15 %
Lung Cancer**	11 %	2-5 %
Gastric Cancer***	9 %	2-5 %

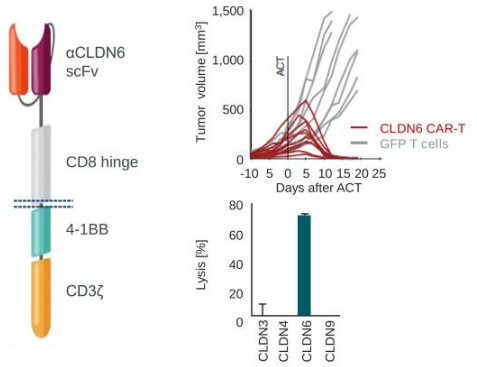
*	Majority of subtypes
**	Primarily adeno and large cell cancer
***	α-fetoprotein^{+} subtype
CLDN6^{high}	50% of tumor cells expressing ≥2+ CLDN6 protein (IHC)

Reinhard, Rengstl et al. Science 2020

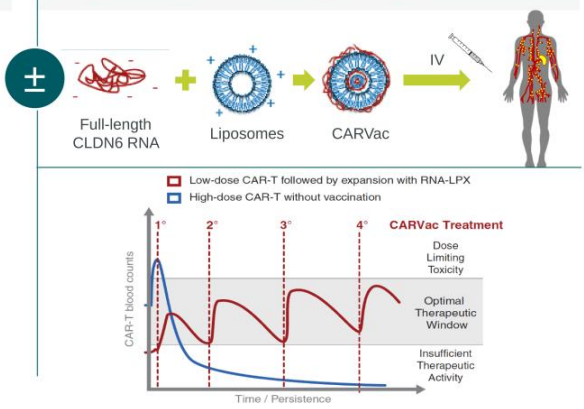
BNT211: A CLDN6 CAR-T-Cell Therapy + CLDN6-Encoding CARVac that Enhances Expansion and Persistence of the Infused CAR-T Cells

Potent 2nd generation CAR with high sensitivity and specificity

Reinhard K, et al. Science 2020, 367:446–453



Combined with CARVac (CAR-T cell amplifying RNA vaccine) to target APCs, Reinhard K, et al. Science 2020, 367:446–453; Kranz LM, et al. Nature 2016; 534:396–401



ACT = adoptive cell transfer; APC = antigen-presenting cell; CAR = chimeric antigen receptor; CARVac = CAR-T cell-amplifying RNA vaccine; CLDN6 = claudin 6.

BIONTECH

BNT211-01: Phase 1/2a, FIH, Open-Label, Multicenter, Dose Escalation Trial in R/R Advanced CLDN6+ Solid Tumors (NCT04503278)

Inclusion criteria

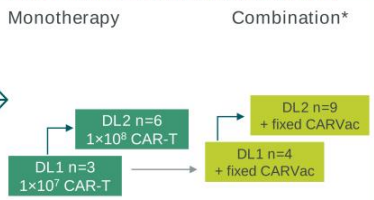
≥50% tumor cells with 2+/3+ CLDN6 positivity (immunohistochemistry)

Measurable disease per RECIST v1.1 or elevated tumor marker

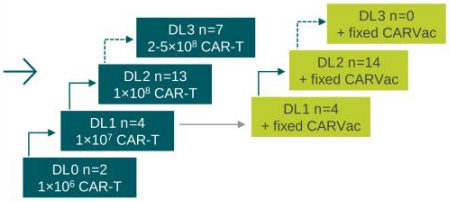
ECOG PS 0–1

Phase I dose escalation (manual product): Completed ✓ — ESMO 2022 (n=22)

Mackensen et al. Nature Medicine. 2023.



Phase I dose escalation with an (automated product): Ongoing — ESMO 2023 (n=44)



Data published in Mackensen et al. Nature Medicine. 2023.

Key endpoints

Primary: Safety and tolerability, DLTs

Secondary: Immunogenicity, ORR, DCR, DoR, PFS

Dosing:

- Escalating doses of CLDN6 CAR-T cells ± CLDN6 CARVac
- Lymphodepletion prior to CAR-T cell infusion on Day 1 (DLTs assessed for 28 days)
- CLDN6 CARVac fixed dose repeatedly after CAR T transfer

Assessments: Efficacy assessments Q6W (RECIST v1.1) & tumor marker monitoring

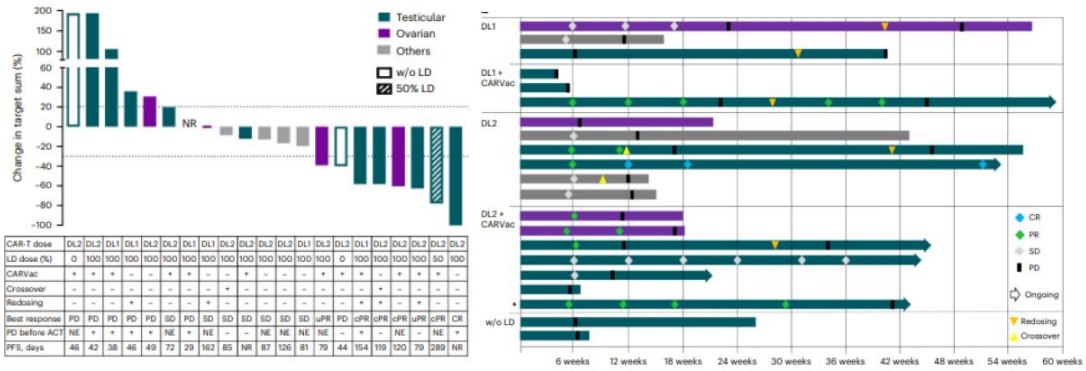
Data cut-off: 10 Sep 2023. * Crossover to combination not indicated. CAR = chimeric antigen receptor; CARVac = CAR T-cell amplifying RNA vaccine; CLDN6 = claudin-6; DCR = disease control rate; DL = dose level; DLT = dose-limiting toxicity; DoR = duration of response; ECOG PS = Eastern Cooperative Oncology Group performance status; ORR = objective response rate; PFS = progression-free survival; RECIST = response evaluation criteria in solid tumors; R/R = relapsed/refractory.

BIONTECH

Clinical Benefit Seen in Patients with Manual Manufacturing Process

Phase 1/2 FIH study (NCT04503278): Clinical activity of BNT211 +/- CARVac

Mackensen et al. Nat. Med. 2023.



CAR-T dose	DL2	DL2	DL1	DL1	DL2	DL2	DL1	DL1	DL2	DL2	DL2	DL2	DL1	DL2	DL1	DL2	DL2	DL2	DL2
LD dose (%)	0	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	50	100
CARVac	+	+	+	–	–	+	+	–	–	+	–	–	–	+	+	+	–	+	+	+	–
Crossover	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	+	–	–	–	–
Redosing	–	–	–	+	–	–	–	+	–	–	–	–	–	–	–	+	+	–	+	–	–
Best response	PD	PD	PD	PD	PD	SD	PD	SD	SD	SD	SD	SD	SD	uPR	PD	cPR	cPR	cPR	uPR	cPR	CR
PD before ACT	NE	+	+	+	+	NE	+	NE	–	–	NE	NE	NE	NE	–	+	–	NE	–	NE	+
PFS, days	46	42	38	46	49	72	29	162	85	NR	87	126	81	79	44	154	119	120	79	289	NR

LD= lymphodepletion; CR = complete response; PR = partial response; SD = stable disease; PD = progressive disease.

BIONTECH

Case Report Demonstrates Clinical Response to BNT211

Case report

Mackensen et al. Nature Medicine. 2023.

Diagnosis	Mixed germ cell tumor; 80% tumor cells with ≥2 + CLDN6 membrane staining positivity.
Prior Therapy	• Heavily pretreated (5 lines of chemotherapy in total) including cisplatinum-based chemotherapy, HDCT/ASCT gemcitabine/oxaliplatin/paclitaxel, multiple surgeries and radiotherapy • 5 years later after the 3rd line CTx with HDCT carboplatine/etoposide late disease relapse (teratoma and yolk-sac tumor) • Another relapse of a yolk-sac tumor component prior to trial entry, for the first time with multiple lung metastases • Rapidly progressing disease at accrual: 37% target sum increase between screening and ACT
Sites of Metastases	Lung

HDCT = high-dose chemotherapy; ASCT = autologous hematopoietic stemm cell transplant.

BIONTECH

BNT211-01: CAR T Cell-Dose-Dependent Adverse Event Profile, Dose Evaluation Ongoing to Determine RP2D

Phase 1/2 FIH study (NCT04503278): Baseline characteristics and safety (automated process)

Haanen J. et al. Presented at ESMO 2023. Abstract #LBA35.

Cohort	DL0 (n=2)	DL1 (n=4)	DL1 + CARVac (n=4)	DL2 (n=13)[1]	DL2 + CARVac (n=14)[2]	DL3 (n=7)	Total (n=44)
Patient baseline characteristics							
Age, years	55.5 (50–61)	54.5 (36–62)	51.0 (42–65)	45.0 (30–69)	48.0 (26–60)	50.5 (29–63)	48.0 (26–69)
Gender, male/female	1/1	3/1	2/2	7/6	8/6	4/3	25/19
Indication, n							
Epithelial ovarian cancer (EOC)	1	1	2	6	5	2	17
Germ cell tumor (GCT)	1	0	1	5	6	3	16
Other indications[3]	0	3	1	2	3	2	11
CLDN6 2+/3+ cells, %	82.5 (80–85)	97.5 (80–100)	97.5 (50–100)	95.0 (80–100)	100 (70–100)	80.0 (50–100)	95 (50–100)
Prior treatment lines	3.0 (2–4)	4.0 (3–7)	4.0 (2–9)	4.0 (2–7)	4.0 (2–9)	3.5 (2-6)	4.0 (2–9)
Treatment and safety outcome							
Duration of follow-up, days	321.5 (242-401)	44.5 (22-87)	90.5 (13-189)	71.5 (30-317)	120.5 (9-199)	90 (44-121)	94.5 (9-401)
CARVac injections[4], n	NA	NA	3 (1-5)	NA	4 (1-7)	NA	4 (1-7)
Patients with TEAEs ≥G3 related to IMPs[5], n	1	1	1	12	9	6	30
Patients with TESAEs related to IMPs[6], n	1	0	0	4	4	5	14
Patients with DLTs[7], n	0	0	0	1	2	1	4
Patients with CRS[8], n	1	0	2	6	9	5	23
Patients with ICANS[9], n	0	0	0	1	1	0	2
Deaths[10], n	1	3	2	2	4	0	12

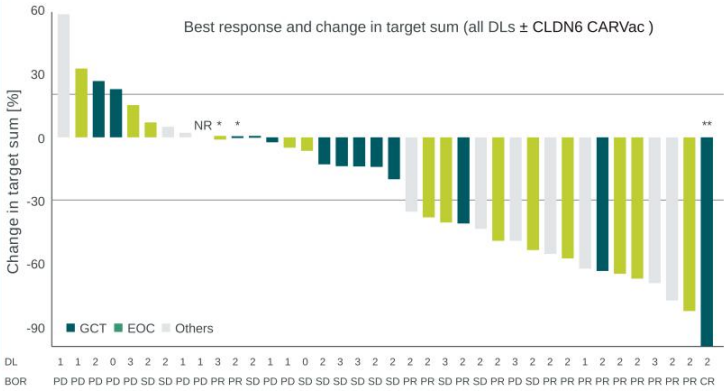
Data cut-off: 10 Sep 2023. 1 Cohort includes 3 patients dosed with 5×107 CAR-T. 2 Cohort includes 1 patient that did not reach full dose (2×107) and 1 patient treated that received full dose after 50% reduced lymphodepletion. 3 Other indications: 4 patients with lung cancer (different subtypes), 3 with desmoplastic round cell tumors, 2 with esophageal cancer, 1 with endometrial carcinoma and 1 with sinonasal carcinoma. 4 Crossover of patients is not indicated, as option was enabled by safety review committee decision after dose decision for monotherapy cohort without impacting efficacy read out. 5 Most TEAEs ≥G3 were attributed to CAR-T IMP (27/30). Most frequent TEAEs were laboratory findings (43.2%) including decreased blood cell counts, elevated liver function tests as well as levels of bilirubin and ferritin. Accordingly, cytopenia (25%) together with immune system (7%) and hepatobiliary disorders (5%) were reported frequently. 6 Most frequent non-related TESAEs were infections. 7 DLTs include 2 cases of pancytopenia, 1 case of hemophagocytic lymphohistiocytosis and 1 case of liver toxicity together with sepsis. 8 CRS was limited to G1-2 for 21/23 patients with 1 G3 and 1 G4 event. 9 Neurotoxicity was mild and self-limiting in 2 patients. 10 Most patient deaths (11/12) were related to disease progression and 1 patient died from sepsis. Values given as median (range). CAR = chimeric antigen receptor; CLDN6 = claudin-6; CRS = cytokine release syndrome; DL = dose level; DLT = dose-limiting toxicity; G = Grade; ICANS = immune effector cell-associated neurotoxicity syndrome; IMP = investigational medicinal product; TESAE = treatment-emergent (serious) adverse event.

BIONTECH

BNT211-01: Signals of Activity at All Dose Levels

Phase 1/2 FIH study (NCT04503278): Efficacy at all dose levels

Haanen J. et al. Presented at ESMO 2023. Abstract #LBA35.



CLDN6 CAR-T	<DL2	DL2	>DL2	Total
Safety evaluable patients, n	10	27	7	44
Efficacy evaluable patients, n	9	22	7	38
Patients with PR/CR, n	1	13	3	17
Patients with SD, n	1	8	2	11
Patients with PD, n	7	1	2	10
ORR, %	11.1	59.1	42.9	44.7
DCR, %	22.2	95.5	71.4	73.7

Data cut-off: 10 Sep 2023. Waterfall plot showing best percent change from baseline in sum of target lesion diameters for patients treated with CLDN6 CAR-T (N = 38). One patient died prior to first assessment (NR = not reached) and BOR was defined as PD. * Patients had non-measurable disease per RECIST 1.1 and BOR was assessed by tumor marker response. ** Patient achieved complete response after surgical removal of tumors. Response data was pending for 6 patients at the data cutoff. Dotted lines show standard response evaluation criteria used to determine objective tumor response for target lesions per RECIST 1.1 (CR = –100%, PR = 30 to –100%, SD = –30 to 20%, and PD = 20% or higher). Graph contains additional data from 5 patients entered manually into the database following the data cut-off date that was not available in formal outputs. BOR = best overall response; CR = complete response; DCR = disease control rate; DL = dose level; EOC = epithelial ovarian cancer; GCT = germ cell tumor; PD = progressive disease; ORR = objective response rate; PR = partial response; SD = stable disease.

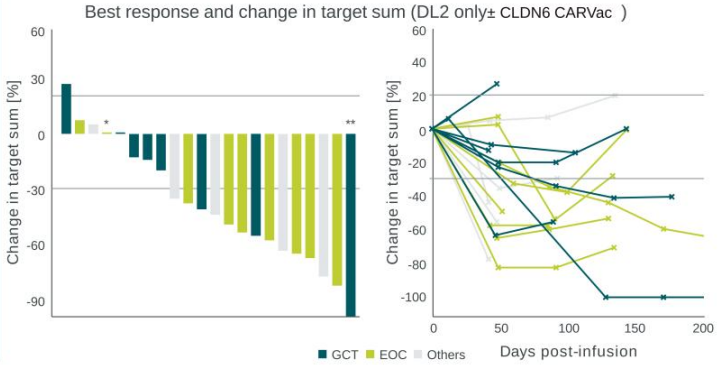
BIONTECH

BNT211-01: Encouraging Signals of Activity at Dose Level 2

Phase 1/2 FIH study (NCT04503278): Efficacy at all dose levels

Haanen J. et al. Presented at ESMO 2023. Abstract #LBA35.

Best response and change in target sum (DL2 only± CLDN6 CARVac)



CLDN6 CAR-T	<DL2	DL2	>DL2	Total
Safety evaluable patients, n	10	27	7	44
Efficacy evaluable patients, n	9	22	7	38
Patients with PR/CR, n	1	13	3	17
Patients with SD, n	1	8	2	11
Patients with PD, n	7	1	2	10
ORR, %	11.1	59.1	42.9	44.7
DCR, %	22.2	95.5	71.4	73.7

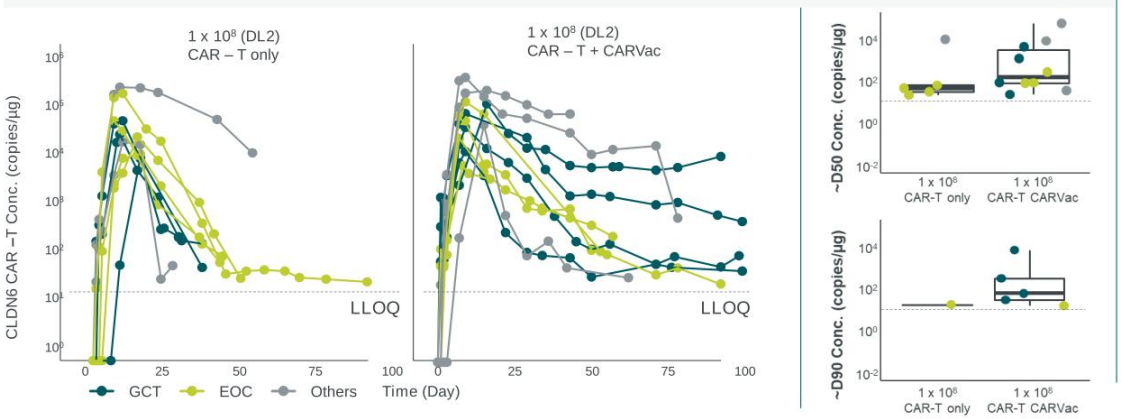
Data cut-off: 10 Sep 2023. Waterfall plot showing best percent change from baseline in sum of target lesion diameters and spider plot showing percent change in target sum from baseline over time for patients treated with CLDN6 CAR-T ± CLDN6 CARVac at DL2 (N = 22). * Patient had non-measurable disease per RECIST 1.1 and BOR was assessed by tumor marker response. ** Patient achieved complete response after surgical removal of tumors. Response data was pending for 5 patients at the data cut-off. Dotted lines show standard response evaluation criteria used to determine objective tumor response for target lesions per RECIST 1.1 (CR = –100%, PR = 30 to –100%, SD = –30 to 20%, and PD = 20% or higher). Graphs contains additional data entered manually into the database following the data cut-off date that was not available in formal outputs. BOR = best overall response; CR = complete response; DCR = disease control rate; DL = dose level; EOC = epithelial ovarian cancer; GCT = germ cell tumor; PD = progressive disease; ORR = objective response rate; PR = partial response; SD = stable disease.

BIONTECH

BNT211-01: CARVac Improves CAR-T Persistence at Dose Level 2

Phase 1/2 FIH study (NCT04503278): Pharmacokinetic data

Haanen J. et al. Presented at ESMO 2023. Abstract #LBA35.



Data cut-off: 1 Sep 2023. BioNTech data on file derived from peripheral blood applying semi-quantitative PCR directed against CAR transgene. Displayed as copies of transgene per µg of DNA input of isolated PBMC. Pending data up to day 50: 2 patients each in monotherapy and combination cohort. Pending data up to day 90: 3 patients for monotherapy, and 4 patients for combination cohort. CAR = chimeric antigen receptor; CARVac = CAR T-cell amplifying RNA vaccine; DL = dose level; EOC = epithelial ovarian cancer; GCT = germ cell tumor; LLOQ = lower limit of quantification; PBMC = peripheral blood mononuclear cells.

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BNT211 Key Takeaway Messages

- ✓ Safety: Manageable AE profile. Dose-dependent AE profile further evaluation of safety via backfilling into dose level several cohorts
- ✓ Efficacy: Encouraging signs of activity with 13 responses in 22 evaluable patients at DL2 (ORR 59%, DCR 95%)
- ✓ Pharmacokinetics: CARVac improved CAR-T persistence with sustained, ongoing detection up to 100 days in several patients at DL2
- ✓ Outlook: Determination of RP2D for CLDN6 CAR-T cells ongoing

CAR = chimeric antigen receptors; CARVac = CAR T-cell amplifying RNA vaccine; CLDN6 = claudin-6; DCR = disease control rate; DL = dose level; GCT = germ cell tumor; ORR = objective response rate; RPD2 = recommended Phase II dose.

CAR T-Cells Outlook

Unmet medical need in R/R germ cell tumors (GCT)

- No curative treatment options for R/R GCT post salvage cisplatin-based chemotherapy regimens[1]
- Lack of new developments in the past decades
- Checkpoint inhibitors failed in these patients[2]

CAR-T cell strategy

Achievements:

- Presented PoC data for BNT211 in CLDN6+ indications

Near-term strategy:

- Aim to establish CLDN6 as proven target in solid tumors
- Aim to establish first CAR T-cell therapy in first solid tumor indication (R/R GCT)

Mid- to long-term strategy:

- Explore expansion into other solid tumor indications

A pivotal trial in R/R GCT is planned to be initiated in 2024
EMA PRIME designation in testicular cancer

Published data showing anti-tumor efficacy among multiple CLDN6+ tumor types[3,4]

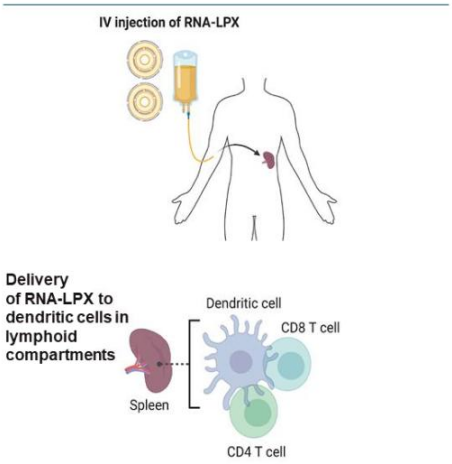
1. Feldman, et al. Cancer 2012; 2. Adra, et al. Ann Oncol 2018; 3. Mackensen, et al. Nature Medicine. 2023; 4. Haanen, et al. Presented at ESMO 2023 (LBA35). PoC = Proof of Concept;

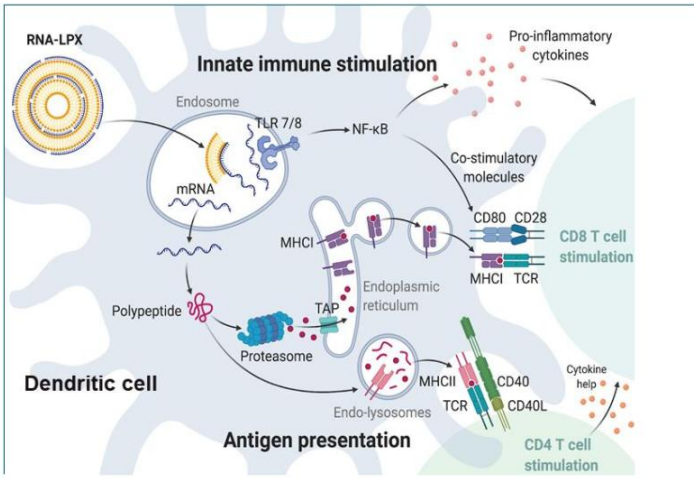
8

mRNA Cancer Vaccines

Prof. Özlem Türeci, M.D.
CMO and Co-founder

Uridine-based mRNA-LPX Vaccines for Systemic Delivery and Induction of Potent Polyspecific Immune Responses against Cancer





Kranz LM, et al. Nature 2016; 534:396–401; Lopez J, et al. AACR Annual Meeting 2020; Oral presentation CT301.

RNA-LPX = RNA+lipoplex; CD = cluster of differentiation; TLR = toll-like receptor; NF = necrosis factor; MHC = major histocompatibility complex; TCR = T cell receptor; TAP = transporter associated with antigen processing.

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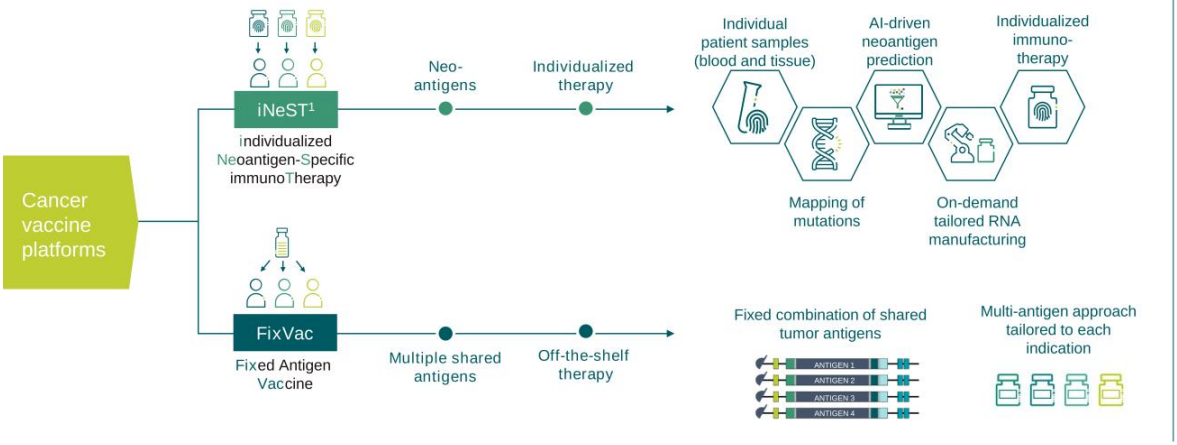
mRNA Cancer Vaccines May Enable Highly Specific and Potent Activation of the Immune System Against Shared Tumor Antigens or Individual Neoantigens



1. iNeST is being developed in collaboration with Genentech, a member of the Roche Group.
mRNA = messenger RNA; AI = artificial intelligence.

BIONTECH

Growing Portfolio of Cancer Vaccine Candidates Across Multiple Solid Tumors

Six ongoing Phase 2 trials with cancer vaccine candidates in multiple disease settings

iNeST[1]				FixVac			
Adjuvant		1L	R/R	R/R	Neo-adj, mCR	1L	1L, 2L+
CRC	PDAC	Melanoma	Multiple Solid Tumors	Melanoma	Prostate Cancer	HPV16+ HNSCC	NSCLC
Autogene cevumeran/ BNT122 Monotherapy	Autogene cevumeran/ BNT122 + 1x Atezolizumab	Autogene cevumeran/ BNT122 + Pembrolizumab	Autogene cevumeran/ BNT122 + Atezolizumab	BNT111 +/- Cemiplimab	BNT112 Monotherapy & + Cemiplimab + ADT	Pembrolizumab +/- BNT113	BNT116 Monotherapy & Cemiplimab or CTx
Ph 2 study is ongoing	Data presented from investigator-initiated Ph 1 study at ASCO 2022 and published (Rojas et al. Nature.2023) ——— Ph 2 started in Q4 2023	Ph 2 enrollment completed ——— Analysis of PFS as primary endpoint will be triggered event-based and defines when we will report results	Ph 1 data presented	Ph 2 study is ongoing ——— Published data from Ph1 (Sahin et al. Nature.2020)	Ph 1/2 is ongoing	Ph 2 study is ongoing	Ph 1 basket study is ongoing ——— Ph 2 in 1L NSCLC started in Q3 2023[2]

1. Partnered with Genentech, member of Roche Group; 2. Sponsored by Regeneron.
iNeST = individualized NeoAntigen Specific Immunotherapy;1L = first line; R/R = relapsed/refractory; CRC = colorectal cancer; PDAC = pancreatic ductal adenocarcinoma; HPV = human papillomavirus; HNSCC = head and neck squamous carcinoma; NSCLC = non-small cell lung cancer; ADT = androgen deprivation therapy; CTx = Chemotherapy.

BIONTECH

Our Strategy for Potential Leadership in mRNA Cancer Vaccines

Aim to establish commercial manufacturing capacity

Aim to establish BioNTech commercial manufacturing facility
Aim to increase clinical manufacturing capability

Continue to decrease manufacturing time

Moving to fully automatic platform to further reduce cycle time

Continue to improve neoantigen selection

Further improving AI / ML capabilities, improving analytics of clinical samples through high-throughput sequencing and genomics technology development

Continue to advance pipeline

Aim to initiate additional late-stage clinical trials in the adjuvant setting

AI = artificial intelligence; ML = machine learning.

BIONTECH

First-in-Human Phase 1 Study with an Intranodal Version of Our individualized mRNA Neoantigen Vaccine

LETTER

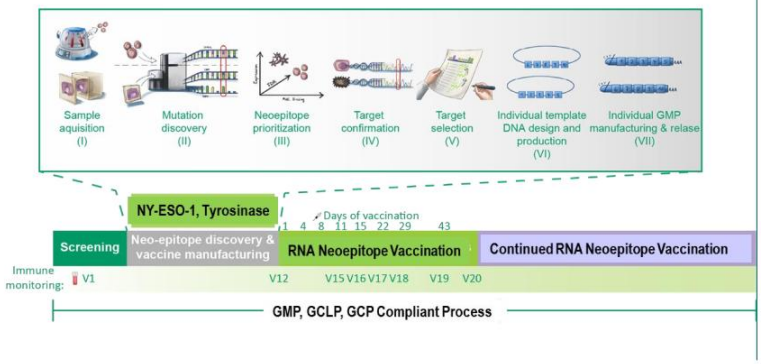
doi:10.1038/nature23003

Personalized RNA mutanome vaccines mobilize poly-specific therapeutic immunity against cancer

Ugur Sahin[1,2,3], Evdoxia Derhovanessian[1], Matthias Miller[1], Björn-Philipp Kloke[1], Petra Simon[1], Martin Löwer[1], Valesca Bukur[1,2], Arbel D. Tadmor[1], Ulrich Luxemburger[1], Barbara Schrörs[1], Tana Omokoko[1], Mathias Vormehr[1,3], Christian Albrecht[1], Anna Paruzynski[1], Andreas N. Kuhn[1], Janina Buck[1], Sandra Heesch[1], Katharina H. Schreeb[1], Felicitas Müller[1], Inga Ortseifer[1], Isabel Vogler[1], Eva Godehardt[1], Sebastian Attig[1,2], Richard Rae[1], Andrea Breitkreuz[1], Claudia Tolliver[1], Martin Suchan[1], Goran Martic[1], Alexander Hohberger[1], Patrick Sorn[1], Jan Diekmann[1], Jankes Ciesla[1], Olga Waksmann[1], Alexandra-Kemmer Brück[1], Meike Witt[1], Martina Zillgen[1], Andree Rothermel[1], Barbara Kasemann[1], David Langer[1], Stefanie Bolte[1], Mustafa Diken[1,2], Sebastian Kreiter[1,2], Romina Nemecek[1], Christoffer Gebhardt[4,5], Stephan Grabbe[5], Christoph Höller[1], Jochen Utikal[4,5], Christoph Huber[1,2,3], Carmen Loquai[5,6] & Özlem Türeci[1,6]

Evaluating the safety, tolerability & immunogenicity of intra-nodal administration of an individualized neoantigen-specific mRNA vaccine with or without initial treatment with NY-ESO-1/tyrosinase vaccine in patients with advanced melanoma (NCT01684241)

13 patients with stage IIIa-c (6 patients), IV (7 patients) melanoma treated

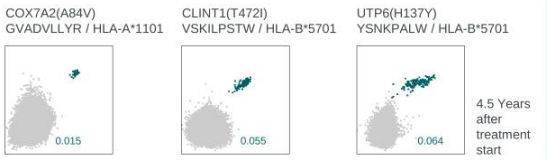


Sahin et al. Nature. 2017.

BIONTECH

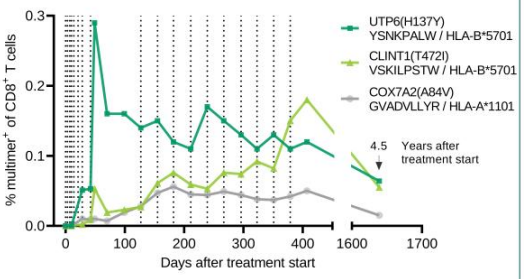
Long Term Persistence of Vaccine Induced T cell Responses Induced by Intra-Nodal Vaccination with a Naked Individualized mRNA-base Neoantigen Vaccine

ex vivo Multimer staining



post-IVS CD8⁺ T cells ELISPOT

Neoantigen T cells persist for more than 4 years

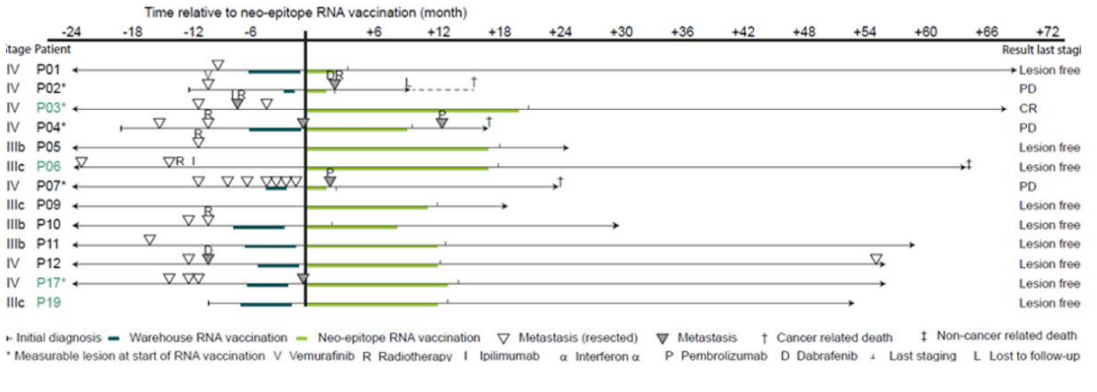


Türeci, presented at CICON2023.

BIONTECH

6-Year Passive Follow Up of Patients After Intranodal Vaccination with a Naked Individualized mRNA-based Neoantigen Vaccine

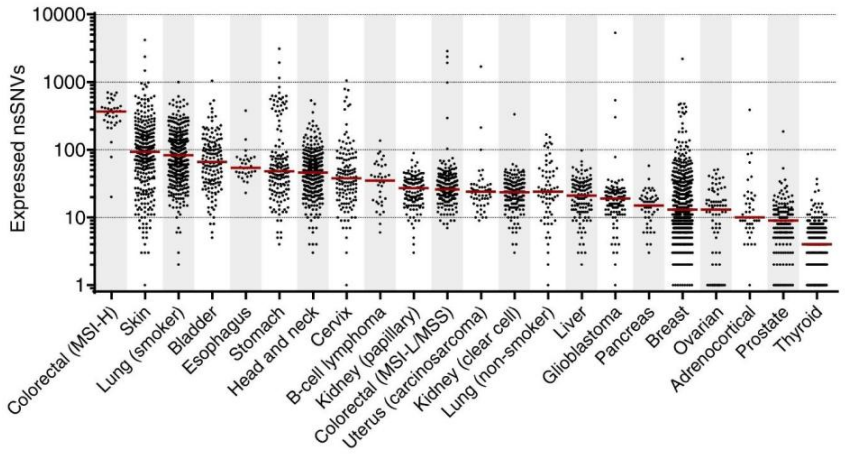
Passive follow up for 6 years



Sahin et al. Nature. 2017, Türeci, presented at CICON23

BIONTECH

Exploiting Somatic Cancer Mutations for mRNA-LPX based Neoantigen Vaccines



Vormehr et al., Curr Opin Immunol 39:14-22 (2016).

MSI = microsatelite instability; MSI-h = microsatellite instability high; non-synonymous single nucleotide variant. MSS = microsatellite stable; LPX = lipoplex

BIONTECH

High Unmet Medical Need in Early-Stage Cancer Indications

Pancreatic Ductal Adenocarcinoma	Triple Negative Breast Cancer	Colorectal Cancer
69−75% relapse rate within 5 years after adjuvant therapy	35-45% relapse rate within 4 years after adjuvant therapy	20-35% relapse rate within 4 years after adjuvant therapy
• To become the 2nd leading cause of cancer-related death in the US by 2030 • 5-yr survival rates after resection alone is ~10%[1,2] • CPI resistant due to low mutation burden and consecutively few mutation-derived neoantigens	• Neoadjuvant treatment regimens combining chemo + pembro increase the number of patients reaching pCR • Poor prognosis for patients not reaching pCR after neo-adjuvant treatment	• 5-year survival rates of locoregional disease is ~70% • ctDNA is a marker for minimal residual disease and thus can identify patients at high risk of disease recurrence • In ctDNA-positive, Stage 2 (high risk) and Stage 3 CRC post adjuvant chemotherapy, duration of disease-free
Phase 1 trial completed in adj. PDAC Randomized Phase 2 trial started	Phase 1 trial completed in post (neo) adjuvant TNBC	Randomized Phase 2 trial initiated and recruiting

CPI = Checkpoint inhibitor; pCR = pathological complete response; CRC = colorectal cancer, TNBC = triple negative breast cancer; PDAC = pancreatic ductal adenocarcinoma.
1. Oettle, H. et al. JAMA 2013; 2. Neoptolemos, J. P. et al. NEJM 2004.

Exploratory Phase 1 Trial of BNT122 in TNBC Patients Post (Neo-)Adjuvant Treatment

Trial design

Inclusion criteria

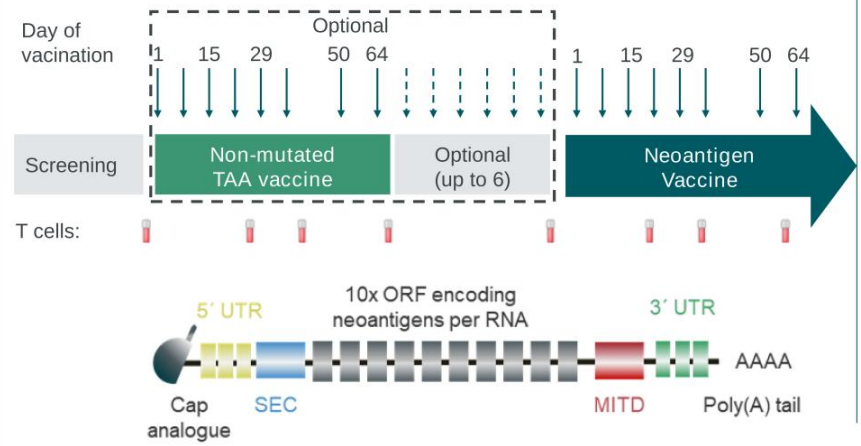
Invasive adenocarcinoma TNBC (pT1cB0M0 - any TanyNM0)

Screening

- > 5 neoantigens identified (neoantigen vaccine)
- (Neo)adjuvant chemotherapy (and radiotherapy)
- No recurrence of breast cancer prior to treatment start

Treatment

- Optional: Non-mutated TAA vaccine treatment
- Neoantigen vaccine treatment

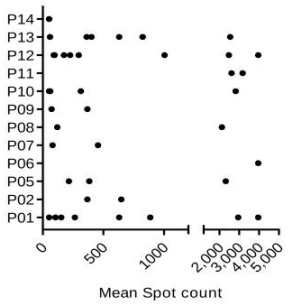


TNBC = triple-negative breast cancer; TAA = tumor-associated antigen; UTR = untranslated region; ORF = open reading frame; MITD = MHC I-targeting domain.

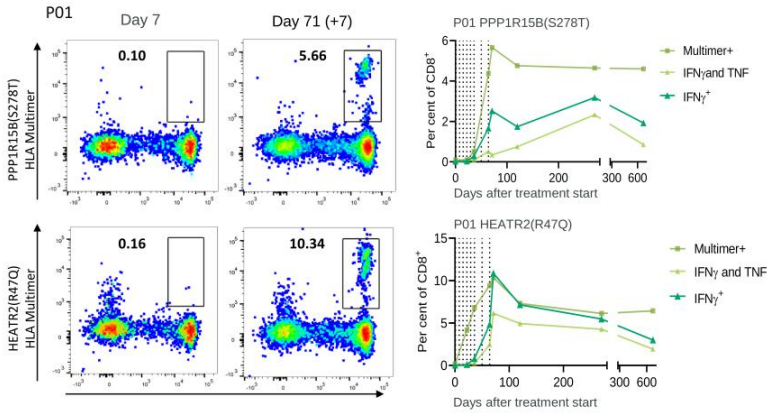
BIONTECH

Induction of Persistent Neoantigen-Specific Immune Responses in Patients with TNBC Treated with BNT122 in the Post (Neo-)Adjuvant Setting

Ex vivo IFNγ ELISpot counts



Induced T cell responses were both of high magnitude and persistent up to 600 days



Türeci, presented at CICON2023.

TNBC = triple-negative breast cancer; HLA = human leukocyte antigen; IFN = interferon; TNF = tumor necrosis factor.

BIONTECH

BNT122/Autogene Cevumeran[1] in Adjuvant Pancreatic Ductal Adenocarcinoma

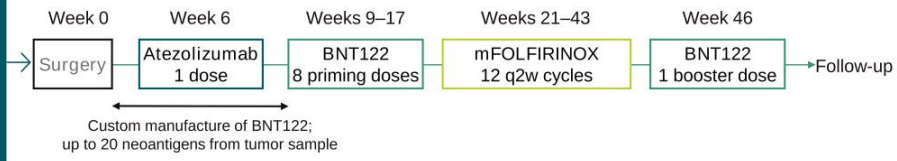
Phase 1, open-label, investigator-initiated trial (NCT04161755)

Inclusion criteria

Surgically resectable PDAC

- No borderline resectable
- No locally advanced or metastatic
- No neoadjuvant therapy

≥5 neoantigens



Key endpoints

Primary: Safety, immunogenicity, feasibility

18-month recurrence-free survival (RFS)

Status

Active, not recruiting

Investigator-initiated single-center study (MSKCC)

Data published in Nature (Rojas et al. 2023)

1. Partnered with Genentech, member of Roche Group; 2. Rojas et al. Nature. 2023.
mFOLFIRINOX = modified FOLFIRINOX; PDAC = pancreatic ductal adenocarcinoma; q2w = every 2 weeks.

BIONTECH

Autogene Cevumeran/BNT122[1] Induces Immune Responses in Adjuvant Pancreatic Cancer

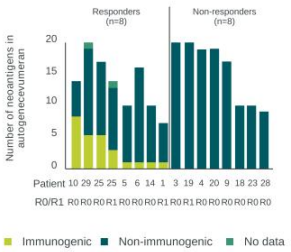
BNT122 induces functional neoantigen-specific T cells

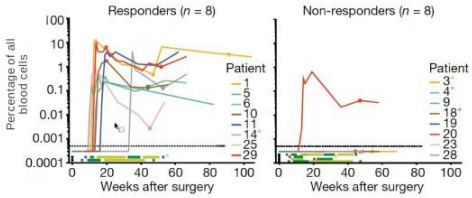
Rojas et al. Nature. 2023

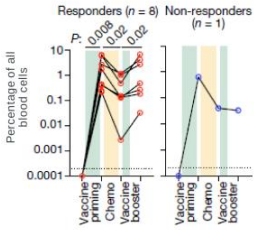
Half of all the patients who received the vaccine mount neoantigen-specific de novo T cell responses against at least one vaccine neoantigen

Vaccine-expanded T cells are durable and persist for up to 2 years

Vaccine-expanded T cells persist despite mFOLFIRINOX treatment







Immunogenic ■ Non-immunogenic ■ No data

■ Surgery ■ Atezolizumab ■ Autogene cevumeran ■ mFOLFIRINOX

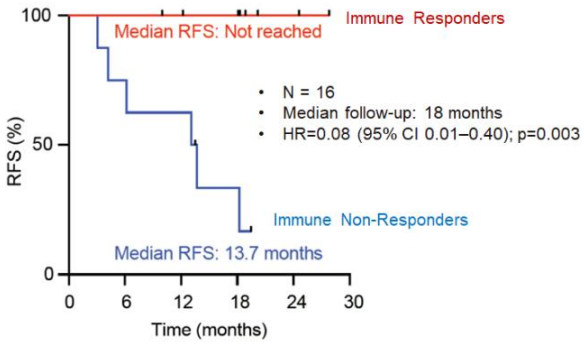
1. Partnered with Genentech, member of Roche Group.

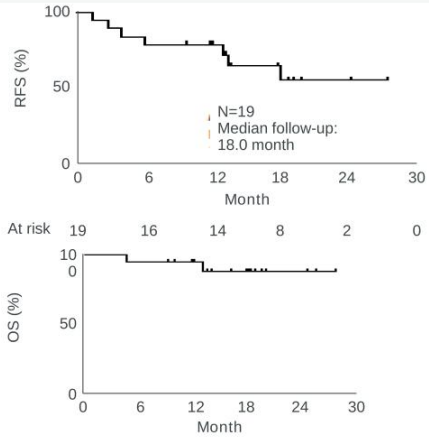
BIONTECH

Autogene Cevumeran/BNT122[1] Demonstrates Clinical Activity in Adjuvant Pancreatic Cancer

BNT122 vaccine response correlates with delayed PDAC recurrence

Rojas et al. Nature. 2023





1. Partnered with Genentech, member of Roche Group.
PDAC = Pancreatic ductal adenocarcinoma; OS = overall survival, RFS = relapse-free survival.

BIONTECH

BNT122/Autogene Cevumeran[1] Investigated in a Phase 2 Randomized Trial vs SoC in Resected PDAC

IMCODE003: Phase 2, open-label, multicenter, randomized trial (NCT05968326)

Inclusion criteria

- Patients with resected PDAC
- No prior systemic anti-cancer treatment for PDAC
- No evidence of disease after surgery

Randomization

6-12 weeks following surgery

Screening Part A

Determine ≥5 neo-epitopes from blood and tumor samples for custom manufacture of BNT122

Screening Part B

Confirm patient eligibility based IN/EX criteria

n=260
R 1:1

Treatment phases and dosing schedules

During the study, patients are monitored at scheduled intervals until recurrence of PDAC, occurrence of new cancers, or unacceptable toxicity, whichever occurs first.

Arm 1
Autogene cevumeran + atezolizumab + mFOLFIRINOX

Arm 2
mFOLFIRINOX

Stratification factors

Resection margin, nodal involvement

Key endpoints

Primary: DFS
Secondary: DFS rates, OS, OS rates and safety

Status

- Recruitment ongoing
- FPD October 2023

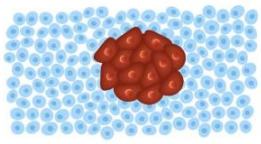
1. Partnered with Genentech, member of Roche Group.
SoC = standard of care; PDAC = pancreatic ductal adenocarcinoma; ; CT = computer tomography CTx = chemotherapy.

BIONTECH

Personalized mRNA Cancer Vaccines: Key Takeaways

We aim to bring personalized cancer vaccines into the adjuvant treatment setting for multiple cancer indications including tumors with low mutational burden and cold tumor types

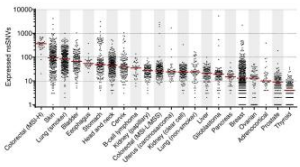
Adjuvant Setting



Rationale:

- Low tumor mass, with residual cancer cells
- Tumor resistance mechanisms not fully established
- Healthier immune system allows for functional T cell responses

Low Mutational Burden



High unmet need, not addressed by approved immunotherapies

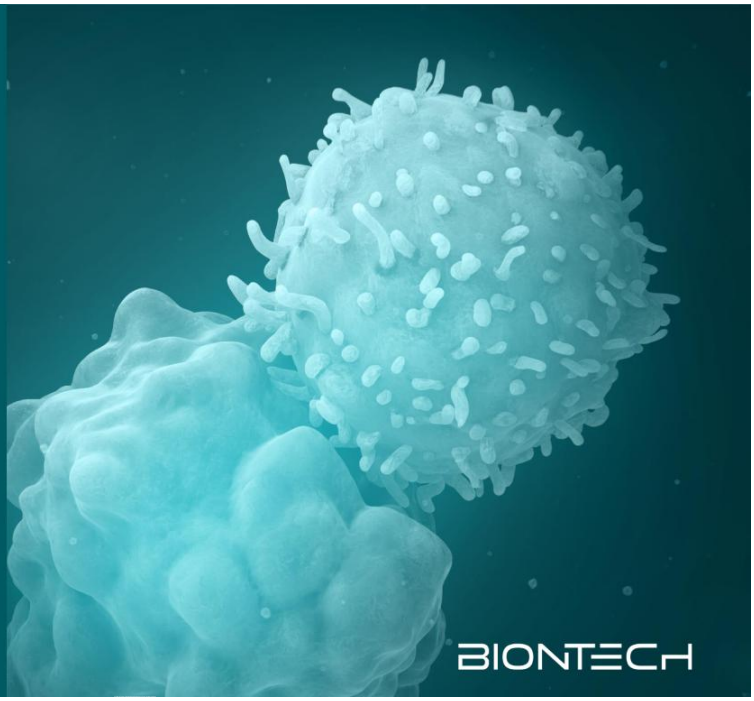
Demonstrated ability to generate durable de novo neoantigen specific poly-epitope T cell responses in multiple cold tumor types

BIONTECH

9

Path to Value Creation

Ryan Richardson
Chief Strategy Officer



Strategic Outlook

	COVID-19[1]	Immuno-oncology	Infectious diseases
Strategy	Drive leadership in COVID-19 vaccine franchise leveraging Pfizer's global infrastructure	Build fully integrated global organization to discover, develop and commercialize a multi-product portfolio	Advance pipeline of innovative mRNA prophylactic and therapeutic vaccine candidates
Planned Next-Stage	Advance commercial franchise into combination and next-generation vaccines	Execute pivotal trials and launch multiple products from 2026 onwards	Initiate first late-stage development programs

1. Partnered with Pfizer.

Strategic Vision for 2030

Key value drivers	Cash position[1]	COVID-19 Vaccine Franchise	Oncology Pipeline	Infectious Disease Pipeline
Today 	€17bn cash €2bn trade receivables[2] Interest income	Market-leading vaccine Cashflow generating	Expanding late-stage pipeline	Early-stage ex-COVID-19 pipeline
2030 Vision 	Strong balance sheet	Multi-vaccine portfolio	Multiple commercial products and novel late-stage pipeline	First approved products and late-stage pipeline
		Diversified, cashflow-generating multi-product portfolio		

1. As of September 30, 2023; 2. Figure is pre-tax.

Path to Sustained Long-term Growth

2023

- Expect to be profitable if full-year 2023 revenue guidance is achieved
- ~€1bn investment in BD/M&A
- Cash position of ~€17bn[1]

2024

- Increase oncology R&D investment in pivotal trials
- Maintain lean SG&A cost base
- Continue active BD/M&A strategy
- Maintain strong balance sheet

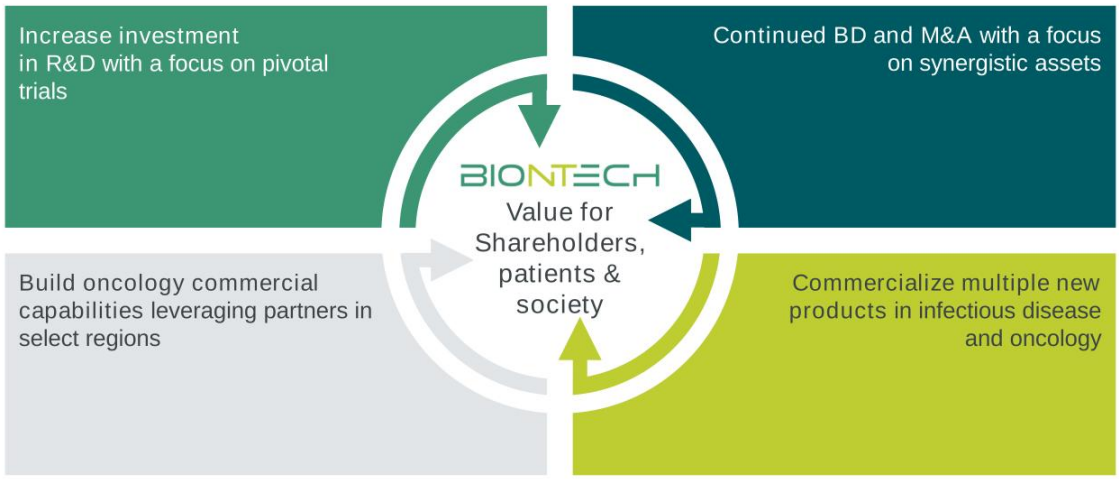
2025-2028

Goal of sustainable strategic growth through:

- Multiple new product approvals
- Revenue growth from first oncology launches and combination vaccines
- Profitable and cashflow positive
- Maintain strong balance sheet

1. As of September 30, 2023.
S&M = sales & marketing; BD = business development; M&A = mergers & acquisitions.

Path to Value Creation



Innovation Series 2023

THANK YOU

Contact us at investors@biontech.de

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