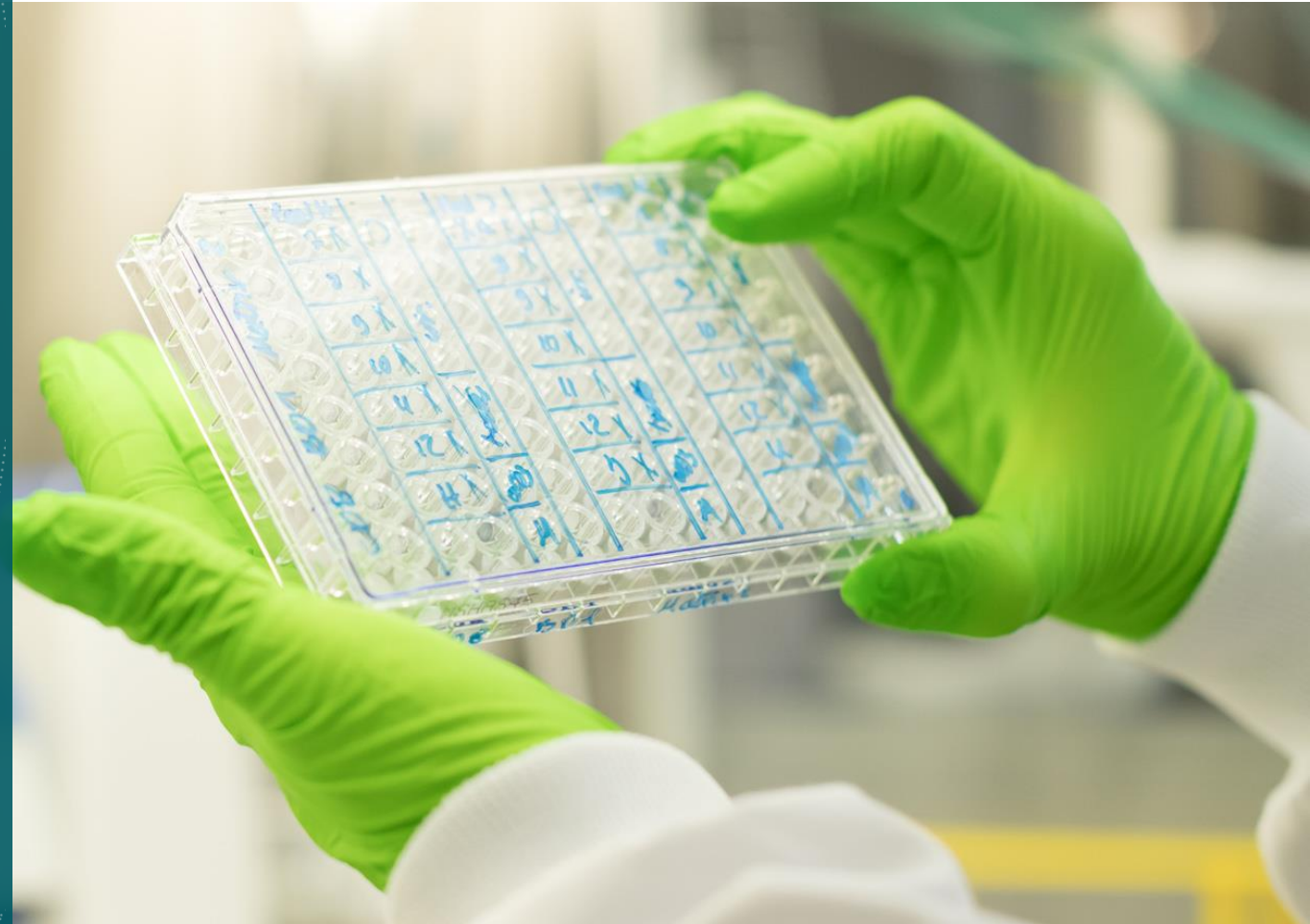


Next Generation Immunotherapy

April 2021



This slide presentation includes forward-looking statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including BioNTech's expected revenues and net profit related to sales of BioNTech and Pfizer's COVID-19 vaccine, referred to as COMIRNATY® in the European Union as authorized for use under conditional marketing approval, in territories controlled by BioNTech's collaboration partners, particularly those such figures that are derived from preliminary estimates provided by BioNTech's partners; the extent to which a COVID-19 vaccine continues to be necessary in the future; 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 pricing and reimbursement of BioNTech and Pfizer's COVID-19 vaccine and BioNTech's investigational medicines, if approved; the rate and degree of market acceptance of BioNTech and Pfizer's COVID-19 vaccine and BioNTech's investigational medicines, if approved; the initiation, timing, progress, results, and cost of BioNTech's research and development programs 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, the period during which the results of the trials will become available and BioNTech's research and development programs; the timing of and BioNTech's ability to obtain and maintain regulatory approval for BioNTech's product candidates; 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 personal injury or death arising from the use of BioNTech and Pfizer's COVID-19 vaccine, and other products and product candidates developed or manufactured by BioNTech; the development of and projections relating to BioNTech's competitors or its industry; BioNTech's ability to effectively scale its production capabilities and manufacture its products, including BioNTech and Pfizer's COVID-19 vaccine, and BioNTech's product candidates; and BioNTech's target vaccine production for 2021. 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 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. You should review the risks and uncertainties described under the heading "Risk Factors" in BioNTech's Annual Report on Form 20-F filed with the US Securities and Exchange Commission (SEC) on March 31, 2020 and in subsequent filings made by BioNTech with the SEC, including the third quarter report, which are available on the SEC's website at 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 press release 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.

Safety Information

AUTHORIZED USE IN THE U.S.:

The Pfizer-BioNTech COVID-19 Vaccine is authorized for use under an Emergency Use Authorization (EUA) for active immunization to prevent coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in individuals 16 years of age and older.

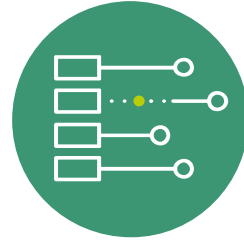
IMPORTANT SAFETY INFORMATION FROM U.S. FDA EMERGENCY USE AUTHORIZATION PRESCRIBING INFORMATION:

- Do not administer Pfizer-BioNTech COVID-19 Vaccine to individuals with known history of a severe allergic reaction (e.g., anaphylaxis) to any component of the Pfizer-BioNTech COVID-19 Vaccine.
- Appropriate medical treatment used to manage immediate allergic reactions must be immediately available in the event an acute anaphylactic reaction occurs following administration of Pfizer- BioNTech COVID-19 Vaccine.
- Monitor Pfizer-BioNTech COVID-19 Vaccine recipients for the occurrence of immediate adverse reactions according to the Centers for Disease Control and Prevention guidelines (<https://www.cdc.gov/vaccines/covid-19/>).
- Immunocompromised persons, including individuals receiving immunosuppressant therapy, may have a diminished immune response to the Pfizer-BioNTech COVID-19 Vaccine.
- The Pfizer-BioNTech COVID-19 Vaccine may not protect all vaccine recipients.
- In clinical studies, adverse reactions in participants 16 years of age and older included pain at the injection site (84.1%), fatigue (62.9%), headache (55.1%), muscle pain (38.3%), chills (31.9%), joint pain (23.6%), fever (14.2%), injection site swelling (10.5%), injection site redness (9.5%), nausea (1.1%), malaise (0.5%), and lymphadenopathy (0.3%).
- Severe allergic reactions, including anaphylaxis, have been reported following the Pfizer-BioNTech COVID-19 Vaccine during mass vaccination outside of clinical trials.
- Additional adverse reactions, some of which may be serious, may become apparent with more widespread use of the Pfizer-BioNTech COVID-19 Vaccine.
- Available data on Pfizer-BioNTech COVID-19 Vaccine administered to pregnant women are insufficient to inform vaccine-associated risks in pregnancy.
- Data are not available to assess the effects of Pfizer-BioNTech COVID-19 Vaccine on the breastfed infant or on milk production/excretion.
- There are no data available on the interchangeability of the Pfizer-BioNTech COVID-19 Vaccine with other COVID-19 vaccines to complete the vaccination series. Individuals who have received one dose of Pfizer-BioNTech COVID-19 Vaccine should receive a second dose of Pfizer-BioNTech COVID-19 Vaccine to complete the vaccination series.
- Vaccination providers must report Adverse Events in accordance with the Fact Sheet to VAERS at <https://vaers.hhs.gov/reportevent.html> or by calling 1-800-822-7967. The reports should include the words "Pfizer-BioNTech COVID-19 Vaccine EUA" in the description section of the report.
- Vaccination providers should review the Fact Sheet for *Information to Provide to Vaccine Recipients/Caregivers and Mandatory Requirements for Pfizer-BioNTech COVID-19 Vaccine Administration Under Emergency Use Authorization*.

Please see Emergency Use Authorization (EUA) Fact Sheet for Healthcare Providers Administering Vaccine (Vaccination Providers) including Full EUA Prescribing Information available at www.cvdvaccine-us.com.

Next generation Immunotherapy

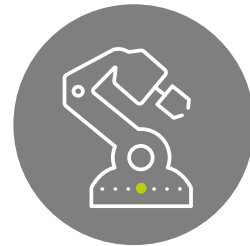
Harnessing the full
potential of the
immune system



**Building a fully integrated
biopharmaceutical company**



**Immunotherapies for cancer &
infectious diseases and beyond**



**Broad suite of novel
technologies**



**Industry-leading global
collaborations**

Opportunity in 2021 and beyond

**Building a global,
multi-product, immunotherapy powerhouse**

Poised to usher in new era of vaccines and immunotherapies in multiple therapeutic areas

Advance broad pipeline of >20 product candidates

Ability to invest COVID-19 vaccine cash flows to accelerate diverse portfolio

Proven execution capabilities and maturation toward a commercial organization

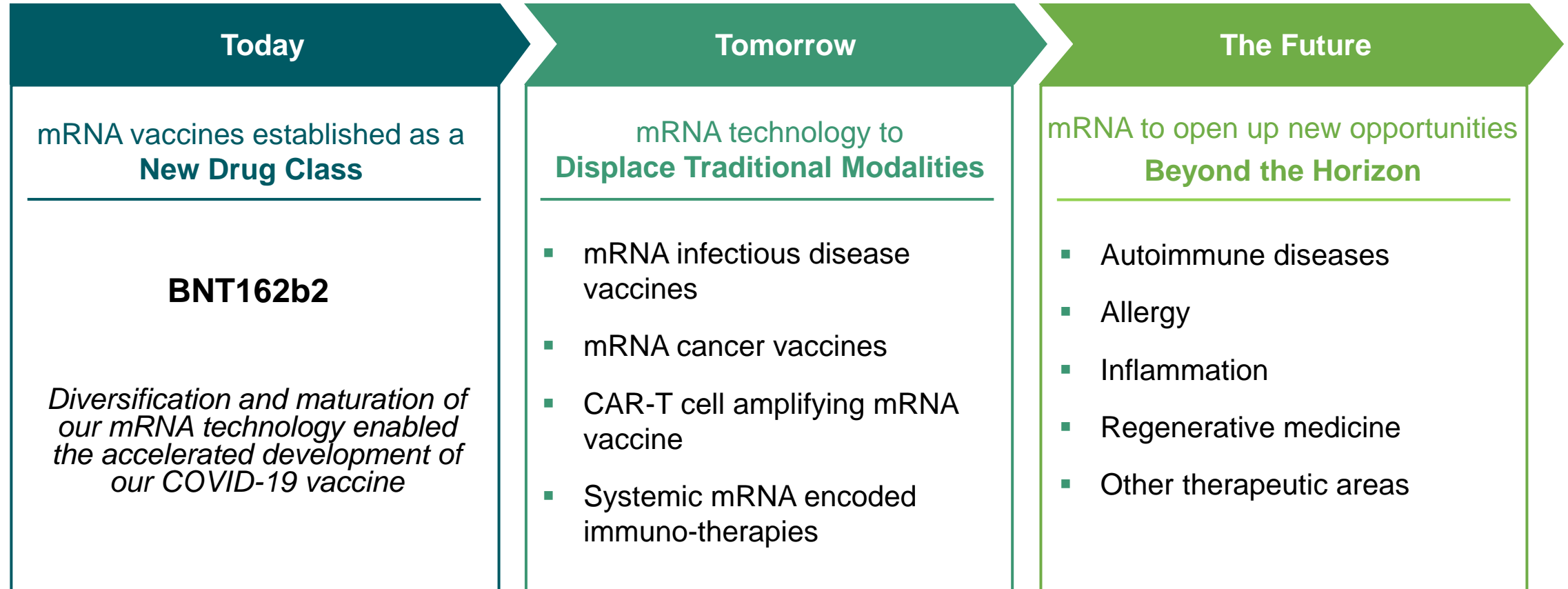
**Deep expertise in
immunology**

**Cutting edge
platforms across 4
drug classes**

**Bioinformatics
driven approach
leveraging AI and
machine learning**

**In-house GMP
manufacturing of
mRNA and cell
therapies**

mRNA technology poised to revolutionize immunotherapy



uRNA

modRNA

saRNA

taRNA

**Broad IP portfolio covering technologies, targets and formulations.
Deep expertise and know-how built over the course of more than a decade.**

Infectious diseases represent a long-term growth pillar

Unmet Medical Needs

- Increasing number of highly unaddressed indications
- Only 7 infectious disease vaccines approved by the FDA from 2017 to 2020
- Many high incident infections with no vaccine or therapy approved
- Efficacy of multiple approved vaccines is suboptimal

BioNTech infectious diseases portfolio

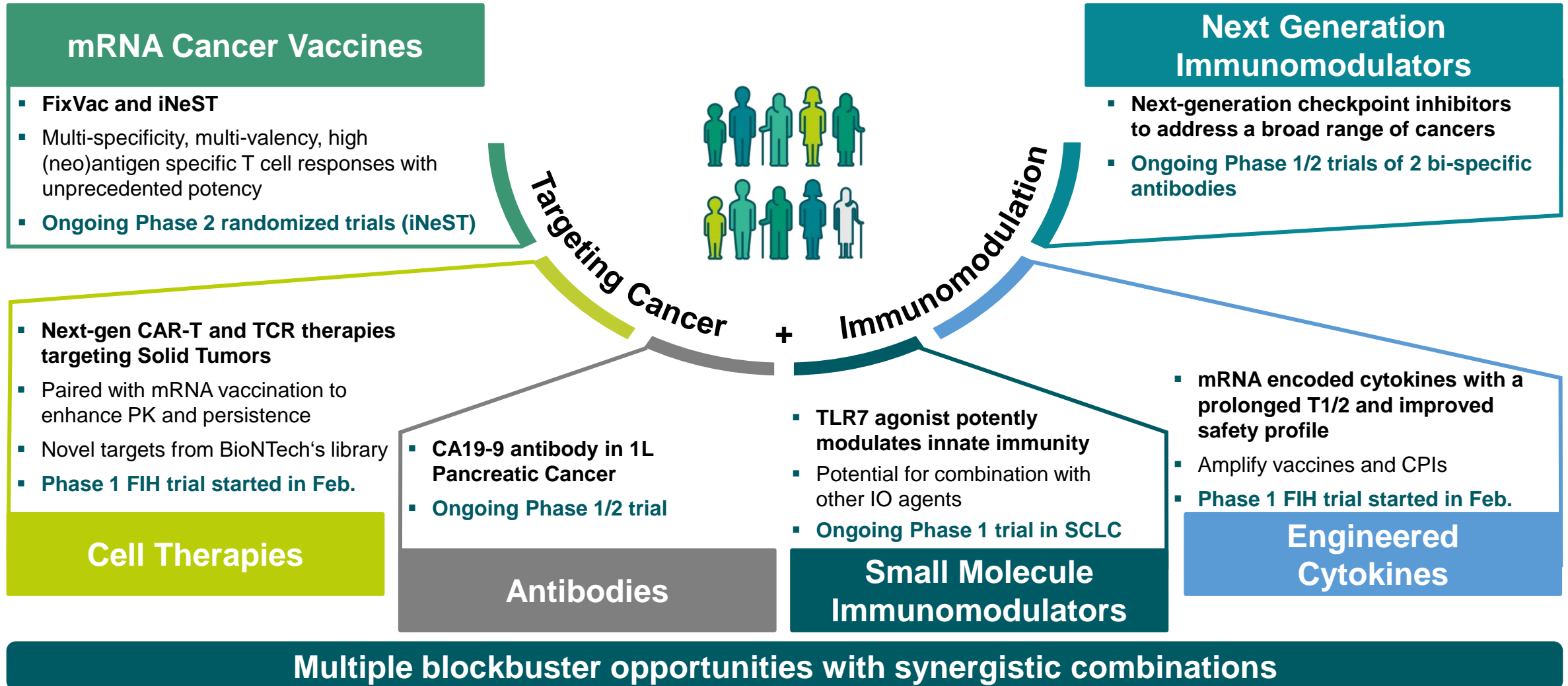
COVID-19 vaccine

Next generation COVID-19 vaccines

Influenza, HIV and TB vaccines

6 undisclosed programs

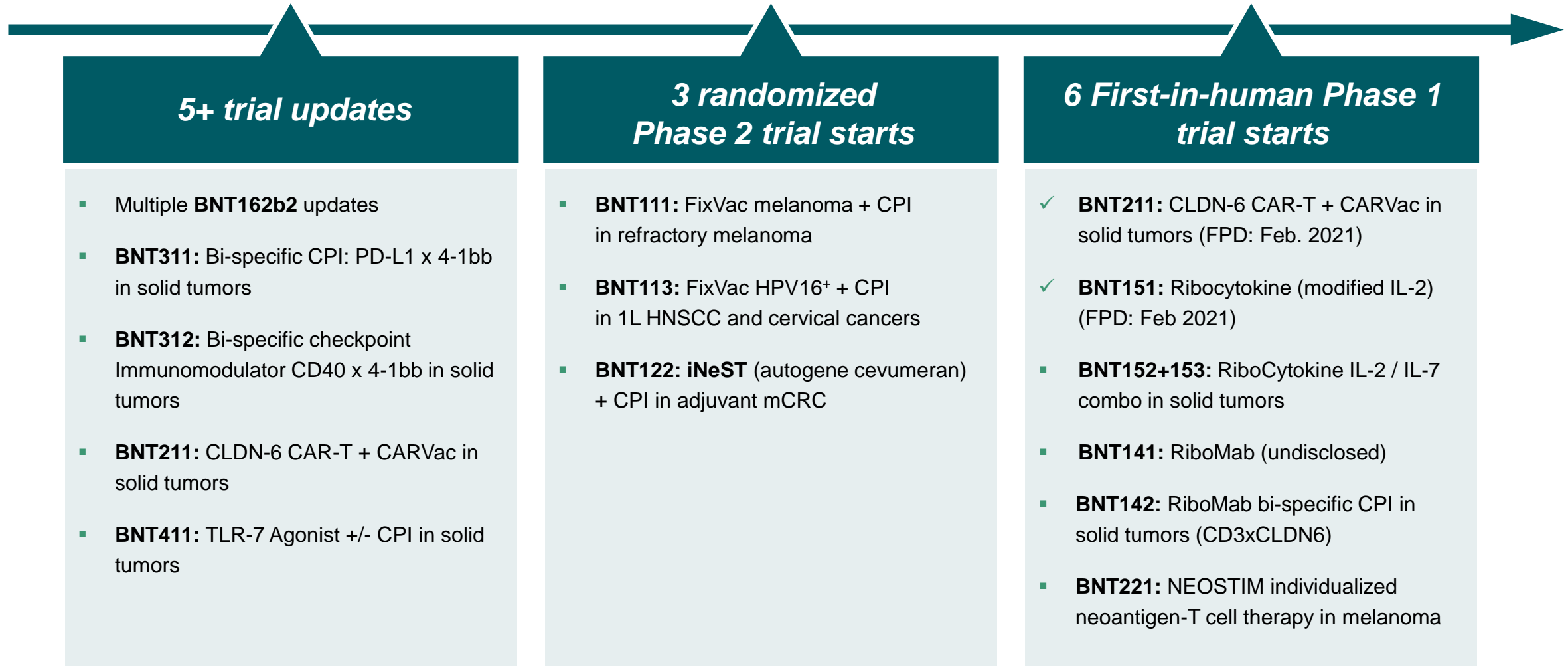
Oncology remains focus: Rationally designed multi-platform immuno-oncology strategy



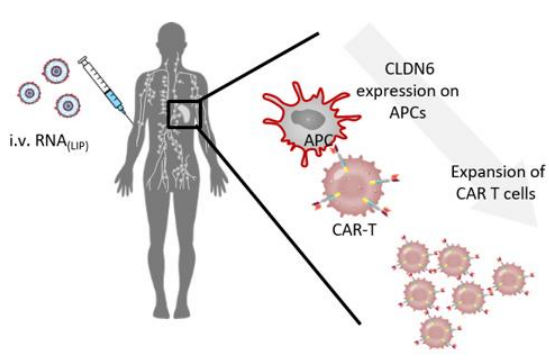
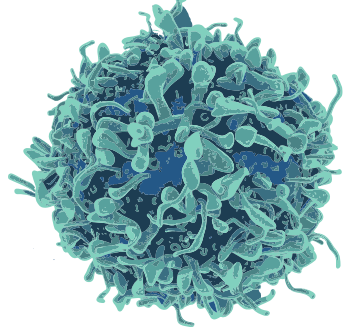
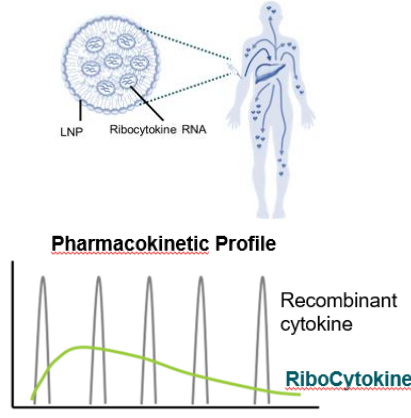
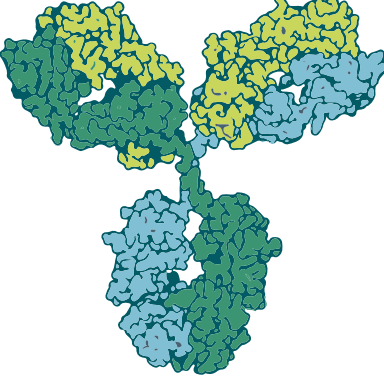
A technology agnostic approach targets a broader addressable cancer market

Cancer segment	Patient Population	Challenge	Our Therapeutic Strategies
High mutational burden/ adjuvant stage cancers	Significant portion of cancer patients	Poor risk-benefit profile of checkpoint inhibitors	<ul style="list-style-type: none"> • mRNA Neoantigen Immunotherapy (iNeST)
Low mutational burden cancers	>60% of cancers	Poor response to checkpoint inhibitors	<ul style="list-style-type: none"> • Shared Antigens (FixVac, CAR-T cells, Neoantigen-targeted T cells, Antibodies)
“Immune desert” cancers	>40% of high-mutational cancers	Poor infiltration and activation of T-cells in TME ¹	<ul style="list-style-type: none"> • RNA Immunotherapy • Immunostimulatory Compounds (intratumoral, RiboCytokines)
Cancers with MHC / B2M loss	20-30% of CPI-experienced advanced cancers	Failure of immune system to recognize tumor cells	<ul style="list-style-type: none"> • Antibodies • CAR-Ts
Refractory tumors	Patients with large tumors and multiple resistance mechanisms	Few treatment options	<ul style="list-style-type: none"> • Cell Therapies • Combination Therapies

Expected pipeline milestones in 2021



Next wave oncology advancing innovation beyond current boundaries

<p>CARVac <i>CAR-T cell amplifying mRNA therapy for solid tumors¹</i></p>	<p>NEOSTIM T cell therapy <i>Individualized Neoantigen specific T cell therapy</i></p>	<p>RiboCytokines <i>mRNA encoded Cytokines</i></p>	<p>RiboMabs² <i>mRNA encoded Antibodies</i></p>
 <p>i.v. RNA_(LIP)</p> <p>CLDN6 expression on APCs</p> <p>APC</p> <p>CAR-T</p> <p>Expansion of CAR T cells</p>		 <p>LNP</p> <p>Ribocytokine RNA</p> <p>Pharmacokinetic Profile</p> <p>Recombinant cytokine</p> <p>RiboCytokine</p>	
<ul style="list-style-type: none"> ▪ BNT211 (CLDN 6 CAR) Next generation CAR-T targeting CLDN6 with CARVac “primer” 	<ul style="list-style-type: none"> ▪ BNT221 (PBMC derived ex vivo T cell therapy) 	<ul style="list-style-type: none"> ▪ BNT151 (modified IL-2) ▪ BNT152 + BNT153 (IL-2/IL-7) 	<ul style="list-style-type: none"> ▪ BNT141 (undisclosed) ▪ BNT142 (CD3xCLDN6)
<p>Wholly owned: ✓</p>	<p>✓</p>	<p>✓</p>	<p>✓</p>
<p>FIH start: FPD Feb. 2021</p>	<p>1H 2021</p>	<p>FPD Feb. 2021</p>	<p>2H 2021</p>

We collaborate with global leaders in our industry

Collaborations for clinical stage programs

Covid-19 Vaccine
50:50 gross profit share¹

FixVac Melanoma
Each company to keep 100%
of rights to own product

iNeST
50:50 cost & profit share

Bispecific mABs
50:50 cost & profit share

Intra-tumoral mRNA
cost & profit share



REGENERON

Genentech



SANOFI

Pre-clinical collaborations

Seasonal Influenza
royalties & milestones

**Up to 10 Infectious
Disease Indications**
worldwide opt-in right

HIV, Tuberculosis
developed world rights

**5 Rare Disease
Indications**
50:50 cost & profit share



University of
Pennsylvania

BILL & MELINDA
GATES foundation

GENEVANT

Our strategic priorities for 2021



Continue to execute while driving iterative innovation against COVID-19

- Execute against our goal to deliver our COVID-19 vaccine to more than 1 billion people in 2021
- Continue to innovate to build sustained global market leadership position

Broaden and diversify early- and late-stage pipeline of next generation immunotherapies

- **Accelerate pipeline in core therapeutic areas:**
 - Infectious Disease: *Advance mRNA vaccines to address many infectious diseases*
 - Immuno-oncology: *Usher in new era of individualized cancer medicine and cell therapy*
- **Further optimize platforms and initiate early product development in emerging areas:**
 - Autoimmunity and Inflammatory Diseases
 - Regenerative Medicine

Better positioned than ever to bring innovation to patients



Re-invest BNT162b2 proceeds to build long-term value for Patients, Shareholders, and Society

Expand global footprint in the U.S., Europe, and Asia

- Establish new offices in strategic locations globally

Expand clinical, commercial and manufacturing infrastructure to support future product launches

- Invest in digital infrastructure and capabilities

Ramp up our investment in innovation

- Complement internal R&D with external innovation

Agenda

Overview and business outlook

Pipeline

Deeper dive on our key programs

COVID-19 vaccine program (project “Lightspeed”)

mRNA vaccines – FixVac and iNeST

Antibodies

Small Molecule Immunomodulators

CARVac platform – CLDN6 CAR-T

RiboCytokines

Oncology pipeline: 13 product candidates in 14 ongoing clinical trials

Drug class	Platform	Product Candidate	Indication (Targets)	Preclinical	Phase 1	Phase 2	Phase 3	Rights Collaborator	Milestones
mRNA	FixVac (fixed combination of shared cancer antigens)	BNT111	advanced melanoma					fully-owned	FPD ⁴ phase 2: 1H 2021
		BNT112	prostate cancer					fully-owned	
		BNT113	HPV16+ head and neck cancer ¹					fully-owned	FPD ⁴ phase 2: 1H 2021
		BNT114	triple negative breast cancer					fully-owned	
		BNT115	ovarian cancer ¹					fully-owned	
	iNeST (patient specific cancer antigen therapy)	autogene cevumeran (BNT122)	1L melanoma					Genentech (global 50:50 profit/loss)	Phase 2 trial planned in adjuvant CRC: FPD ⁴ in 1H 2021
			solid tumors						
	Intratumoral Immunotherapy	SAR441000 (BNT131)	solid tumors (<i>IL-12sc, IL-15sushi, GM-CSF, IFNα</i>)					Sanofi (global profit/loss share)	
RiboCytokines (mRNA-encoded Cytokines)	BNT151	solid tumors (optimized IL-2)					fully-owned		
Antibodies	Next-Gen CP ² Immunomodulators	GEN1046 (BNT311)	solid tumors (<i>PD-L1×4-1BB</i>)					Genmab (global 50:50 profit/loss)	Data update 2H 2021
		GEN1042 (BNT312)	solid tumors (<i>CD40×4-1BB</i>)						Data update 2H 2021
	Targeted Cancer Antibodies	BNT321 (MVT-5873)	pancreatic cancer (sLea)					fully-owned	
SMIM ³	Toll-Like Receptor Binding	BNT411	solid tumors (<i>TLR7</i>)					fully-owned	Data update 2H 2021
Cell Therapies	CAR-T Cells	BNT211	solid tumors (CLDN6)					fully-owned	Data update 2H 2021

¹BNT113 and BNT115 are currently being studied in investigator-initiated Phase 1 trials.

²Checkpoint Inhibitor.

³Small Molecule Immunomodulators.

⁴FPD = First Patient Dosed

Early-stage oncology pipeline: 4 additional FIH¹ trials to begin in 2021

Drug class	Platform	Product Candidate	Indication (Targets)	Rights Collaborator	Milestones
mRNA	FixVac	BNT116	NSCLC	fully-owned	
	RiboMabs (mRNA-encoded antibodies)	BNT141	solid tumors	fully-owned	Phase 1 start in 2H 2021
		BNT142	solid tumors (<i>CD3+CLDN6</i>)	fully-owned	Phase 1 start in 2H 2021
	RiboCytokines (mRNA-encoded Cytokines)	BNT152, BNT153	solid tumors (<i>IL-7, IL-2</i>)	fully-owned	Phase 1 start in 1H 2021
Cell Therapies	CAR-T Cells	BNT212	pancreatic, other cancers (<i>CLDN18.2</i>)	fully-owned	
	Neoantigen-based T cell therapy	BNT221 (NEO-PTC-01)	solid tumors	fully-owned	Phase 1 start in 1H 2021
	TCRs	to be selected	all tumors	fully-owned	

¹first-in-human

Broad infectious disease pipeline

Drug Class	Product Candidate	Indication (Targets)	Pre-clinical	Phase 1	Phase 2	Phase 3	Commercial	Rights / Collaborator
mRNA Vaccine	COMIRNATY	COVID-19						Pfizer/Fosun
	BNT162b3 (modRNA)	COVID-19						Pfizer/Fosun
	BNT161	Seasonal Influenza						Pfizer
	Un-named program	Tuberculosis						BMGF*
	Un-named program	HIV						BMGF*
	5 un-named programs	Undisclosed indications						Fully-owned
Antibodies	Undisclosed program	COVID-19						Fully-owned

*BMGF= Bill & Melinda Gates Foundation

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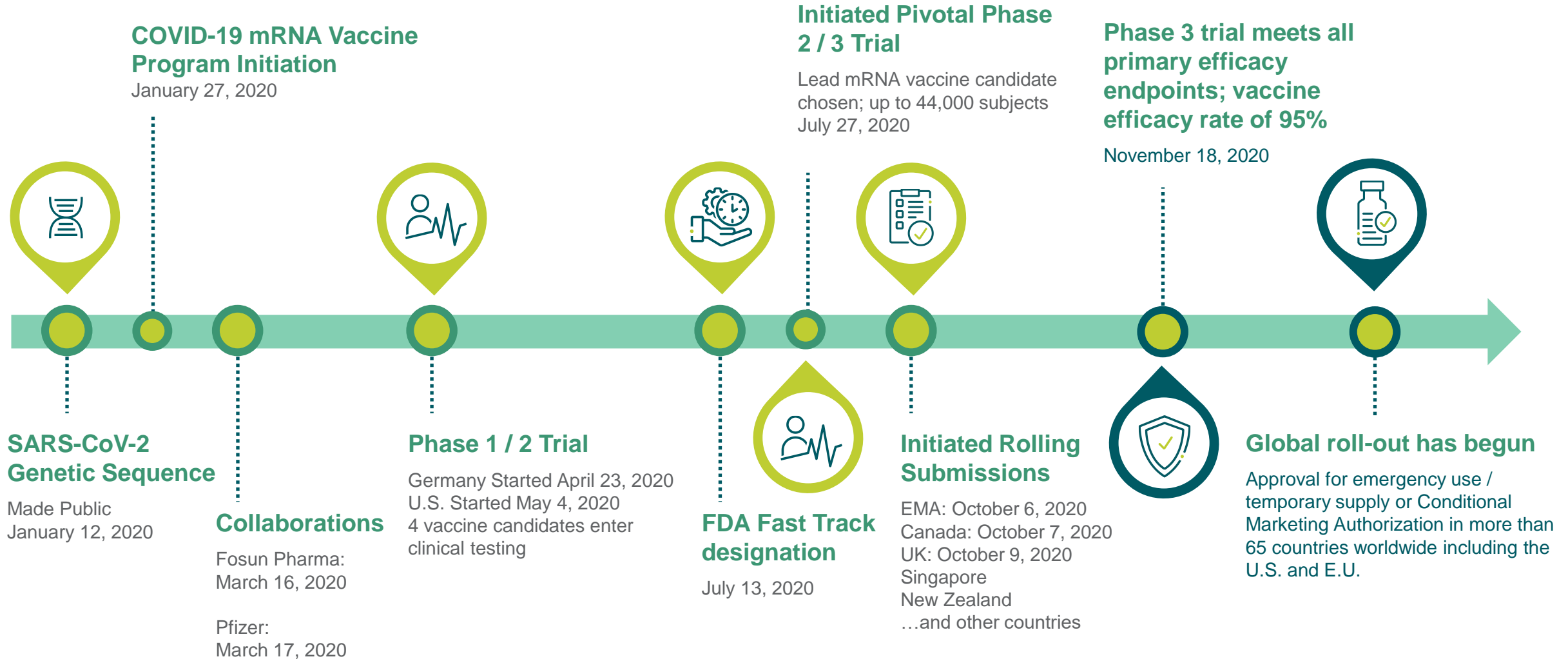
Antibodies

Small Molecule Immunomodulators

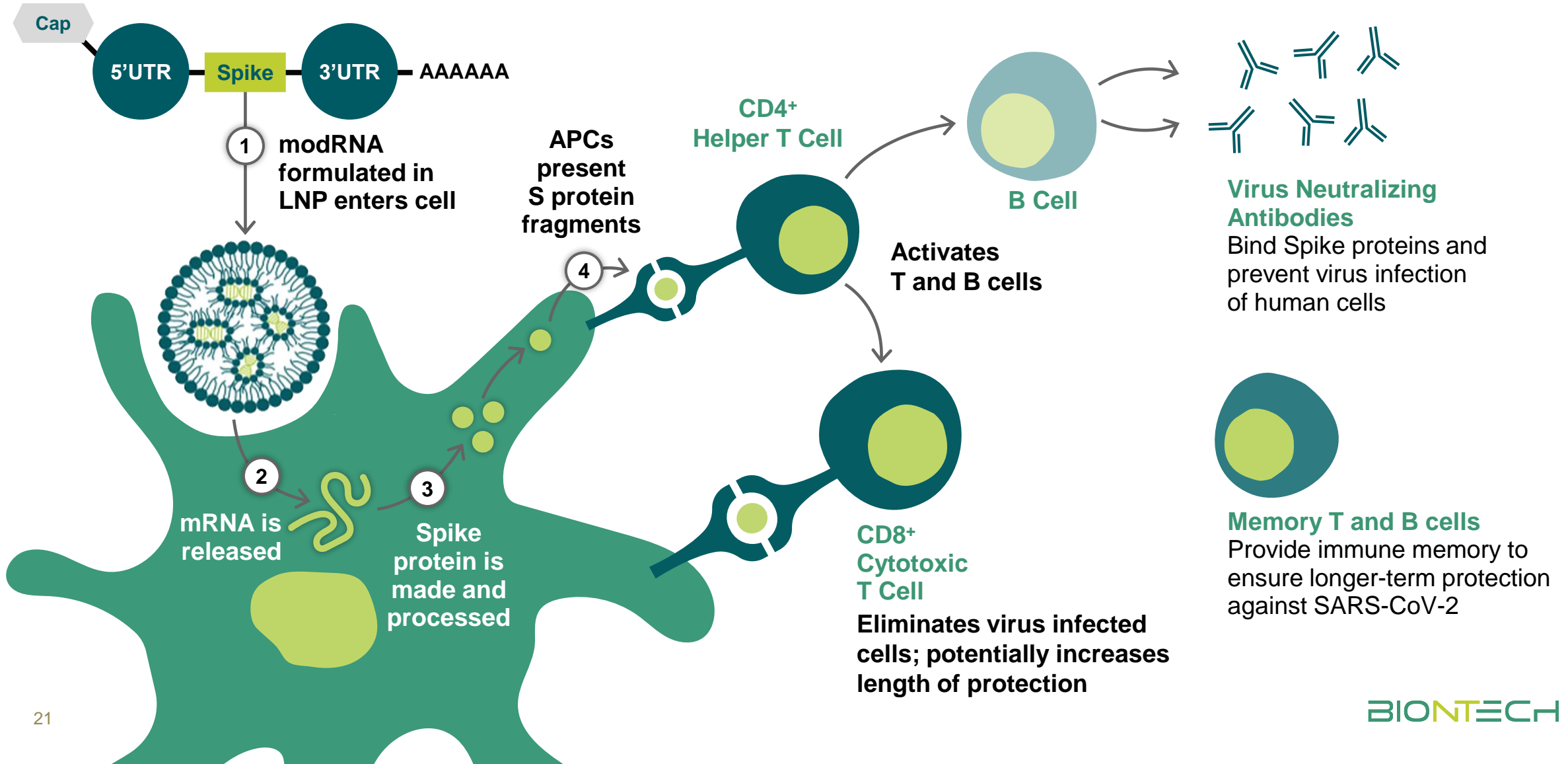
CARVac platform – CLDN6 CAR-T

RiboCytokines

Project Lightspeed – a 10-month journey to an effective and safe vaccine



How mRNA vaccines work – training the immune system for a real infection



mRNA is a natural solution for vaccines especially in a pandemic

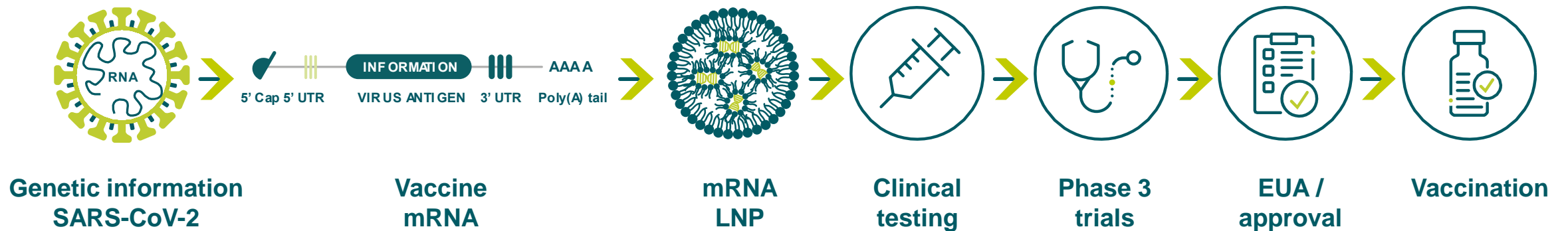
Natural molecule with well-characterized **bio-safety properties**

Does not require addition of adjuvants or use of a vector for administration

Highly scalable production

High purity and animal free

non-integrating into DNA and non-infectious unlike attenuated live virus and DNA based vaccines



Strong clinical results



Clinical profile

- 95% effective against symptomatic COVID-19 infections¹
- 94% efficacy in participants >65 years
- Well tolerated safety profile
- High titers of neutralizing antibodies
- Robust and poly-epitopic CD8+ and Th1 CD4+ T-cell responses²



Compelling real-world evidence



Real-world data from
observational study
conducted by
Israel Ministry of Health

Two weeks post-dose 2

- About 97% effective in preventing
 - symptomatic COVID-19
 - severe/critical COVID 19
 - Hospitalizations
 - Deaths
- 94% effective against asymptomatic infection
- Protective against B.1.1.7 variant

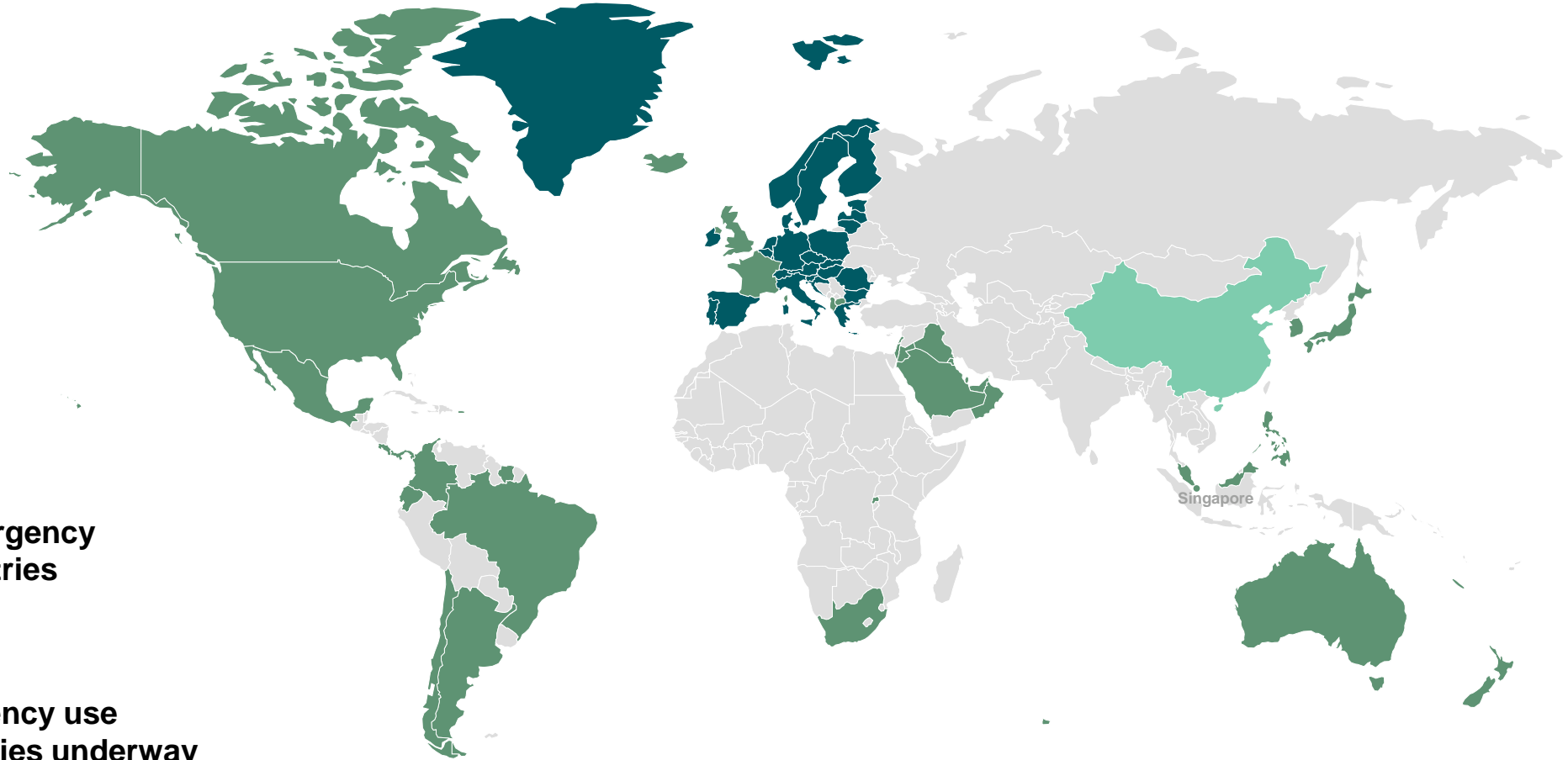


Project Lightspeed: A concerted and large-scale global effort

- Conditional Marketing Authorization in the EU and Switzerland¹
- Approved Emergency Use Authorization / Temporary Use Approval
- Ongoing Phase 2 trial in China

Conditional marketing or emergency use authorization in **>65** countries with **>200M** doses delivered²

Rolling application for emergency use authorization in further countries underway



25 ¹The vaccine is indicated for active immunisation to prevent COVID-19 caused by SARS-CoV-2 virus, in individuals 16 years of age and older. ²As of March 30, 2021.

Focused on six key levers to expand COVID-19 vaccine reach

Increased manufacturing capacity

- Up to 2.5 billion doses by end of 2021
- Continuous process improvements, expansion of supplier and CMO network

Additional populations

- Global Phase 2/3 trial in healthy pregnant women ≥ 18 years of age ongoing
- Data in children 12-15 years of age to regulatory authorities in Q2
- Study in children 6 months to 11 years of age started

Additional geographies

- Approved in more than 65 countries
- Japan's Health Ministry approved BNT162b2
- Submission to regulatory authorities in Mainland China in process

Broadened & decentralized vaccine access

- U.S. FDA and EMA updated label with 2-week storage and transport at -25°C to -15°C
- Stability optimized, ready-to-use and lyophilized formulations expected in 2021
- BLA submission expected in United States in Q2

Addressing SARS-CoV-2 variants

- Initiated variant-specific registration-enabling trial
- Additional variant-specific trials expected to be initiated in Q2

Addressing waning immune responses

- Initiated trial to evaluate effect of third dose of BNT162b2 at 6 to 12 months post-dose 2

COVID-19 will likely become endemic. Re-vaccination may also be required.

Observation

Implication

1 Waning immune responses

Re-boostings may be required

2 Variants are driving new infections

Variant-specific vaccines may be needed

3 New mRNA vaccines can be rapidly designed and produced at scale

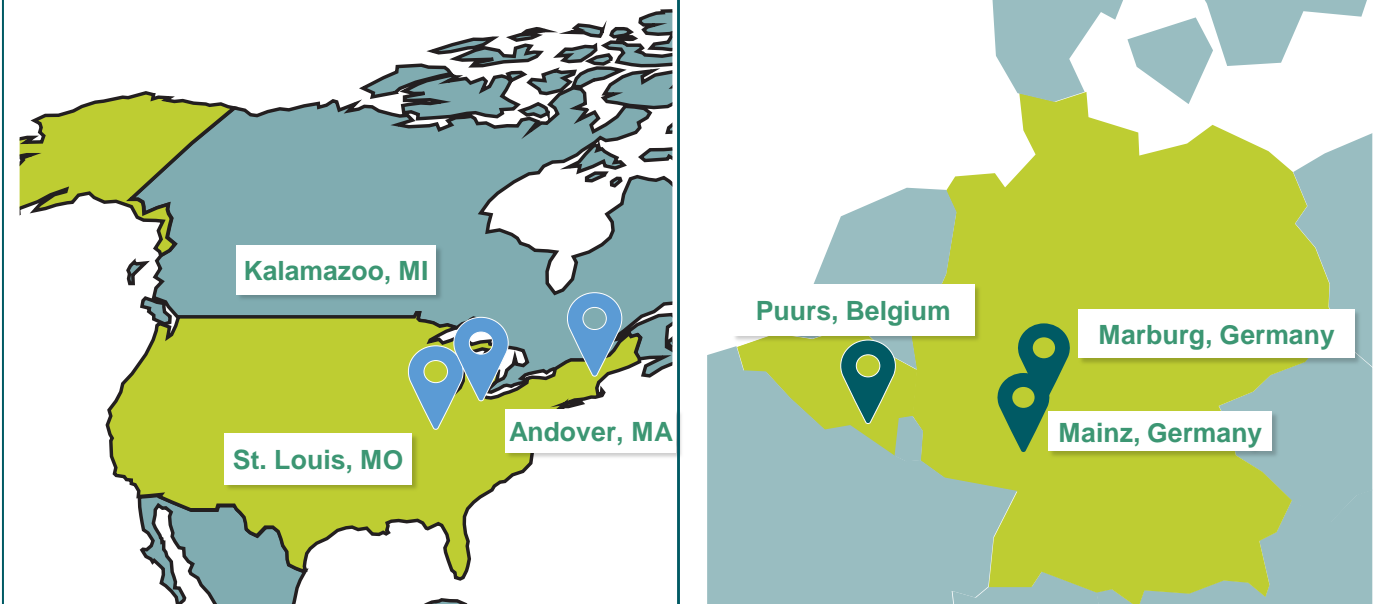
mRNA vaccines are well suited for long-term challenge

Scaling up manufacturing capacity to address pandemic demand

1.4 billion doses contracted to date for 2021¹

Selected Regions	Current Orders
EU	500M confirmed 100M option
US	300M
Japan	144M
UK	30M
Other	~450M
Ongoing discussions for additional doses in 2021/2022	

Up to 2.5 billion doses* manufacturing capacity



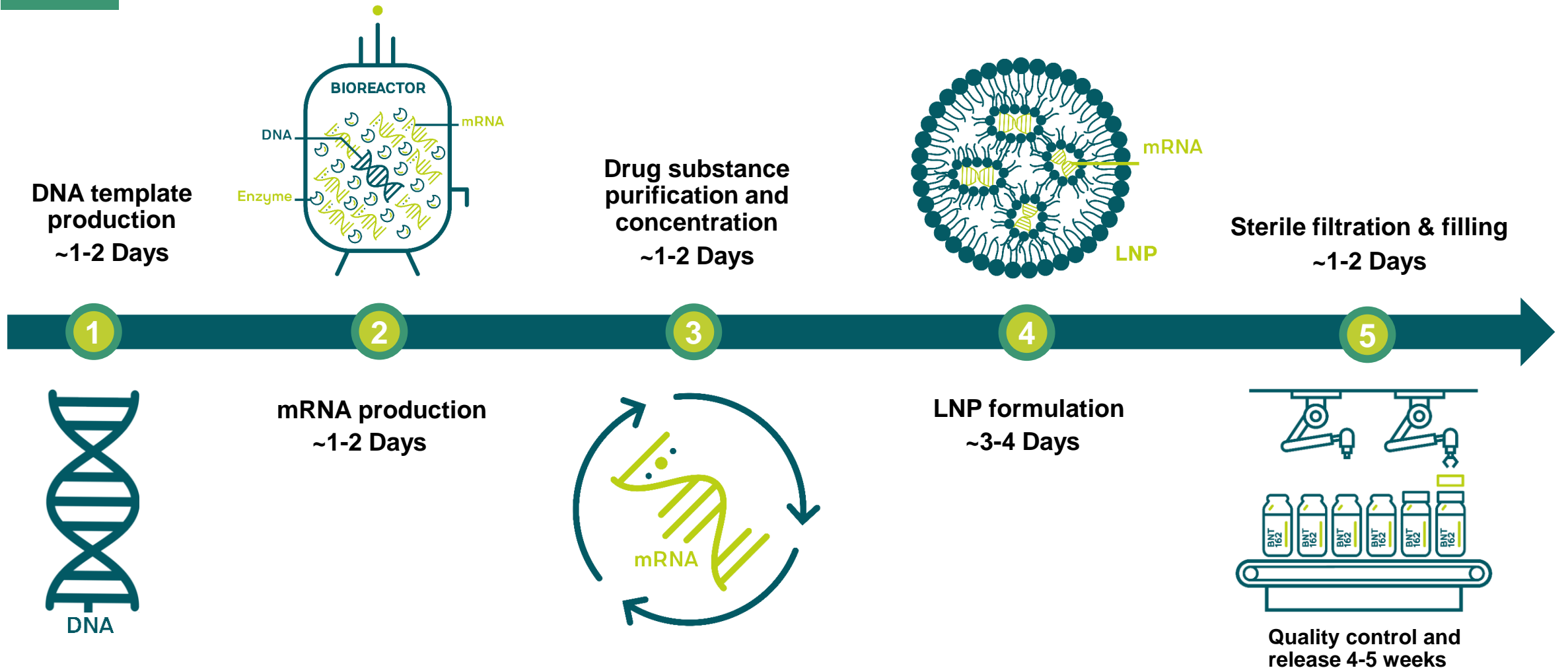
Marburg facility

- Up to 1 billion doses in annual run-rate capacity
- First vaccines scheduled for distribution in April

¹As of March 30, 2021.

*We along with Pfizer are targeting total supply capacity of approximately 2.5 billion doses by the end of 2021, which incorporates the updated 6-dose label. This assumes continuous process improvements and expansion at our current facilities and contingent upon adding more suppliers and contract manufacturers.

Flexible manufacturing allows rapid adaptation to variants



Global consortium to address pandemic - BNT162 global collaborations



- Co-development and co-commercialization worldwide (ex China) if approved
- Combined upfront payment and equity investment of \$185 million to BioNTech received in April
- Capital expenditures to be funded by each party independently
- Companies to share development expenses and gross profits on a 50:50 basis
- BioNTech eligible to receive further development & sales milestones up to \$563 million



- Co-development with Fosun Pharma to hold exclusive marketing rights in China if approved
- Combined upfront payment and equity investment of \$51 million to BioNTech received in April
- Fosun Pharma to fund development expenses in China
- BioNTech and Fosun to share gross profits on the sale of the vaccine in China
- BioNTech eligible to receive further China development & sales milestones up to \$84 million

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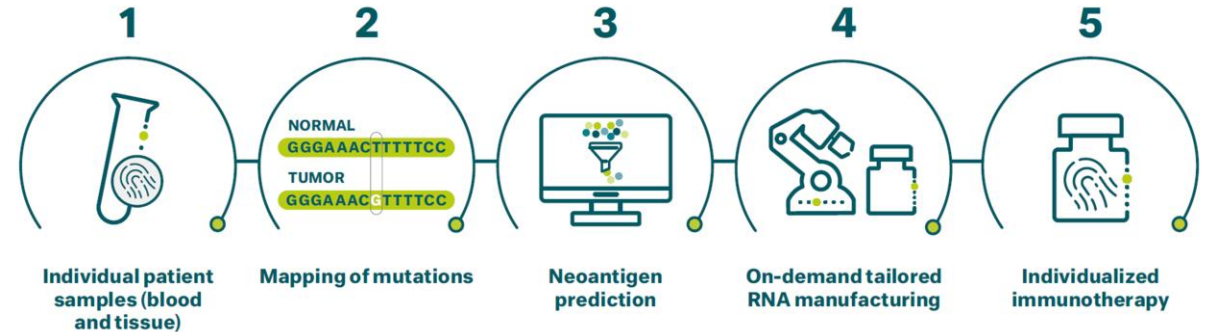
Our mRNA vaccine platforms: FixVac and iNeST

FixVac



- Off-the-shelf mRNA immunotherapy
- Targeting a fixed combination of shared antigens
 - Non-mutated shared antigens shared across patients
 - Applicable for almost all types of tumor antigens

iNeST



- Fully individualized mRNA immunotherapy
- Targeting 20 neo-antigens unique to each patient
 - Vast majority of neo-antigens are unique to individual patients
 - Applicable across solid tumor types

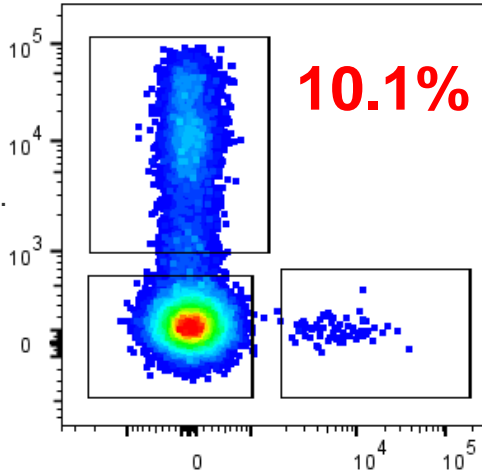
Proprietary RNA-LPX formulation for systemic dendritic cell targeting

Strong immunogenicity observed *in vivo* via TLR7-driven adjuvant effect

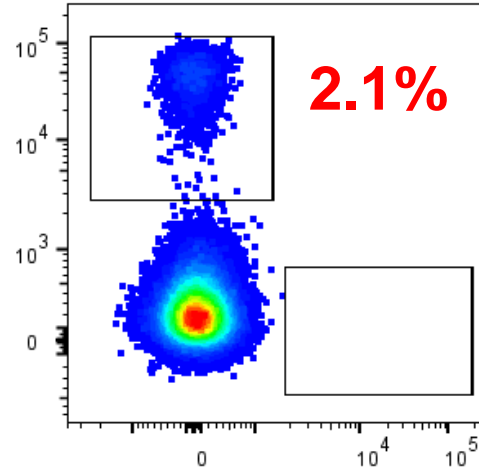
Potent induction of strong *ex vivo* CD4+ and CD8+ T cell responses

Our RNA-LPX vaccine approach

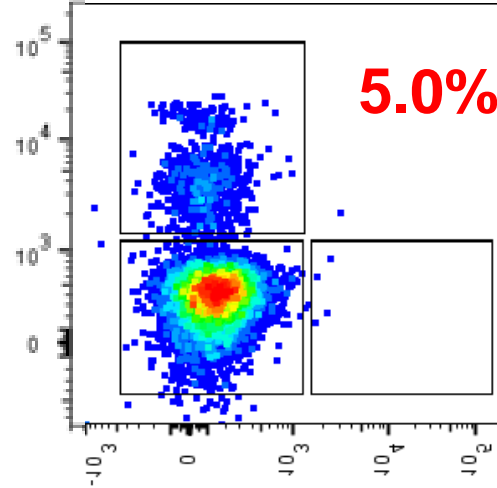
Strong vaccine-induced *ex vivo* CD8+ T cell responses¹ across different cancer types



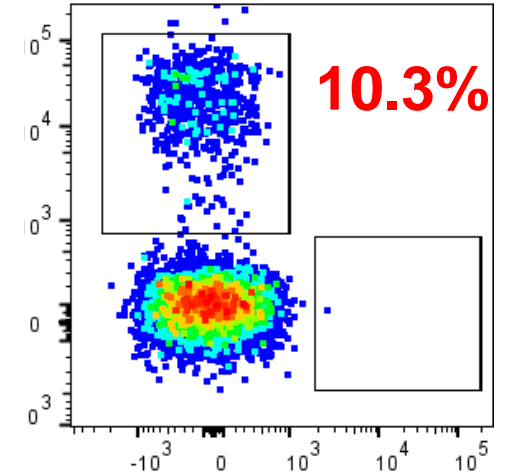
NY-ESO-1
Melanoma
BNT111, Lipo-MERIT trial



MAGE-A3
Melanoma
BNT111, Lipo-MERIT trial



HPV16-E7
Head Neck Cancer
BNT113, HARE40 trial



Mutant Neoantigen
TNBC
BNT114, TNBC MERIT trial

FixVac

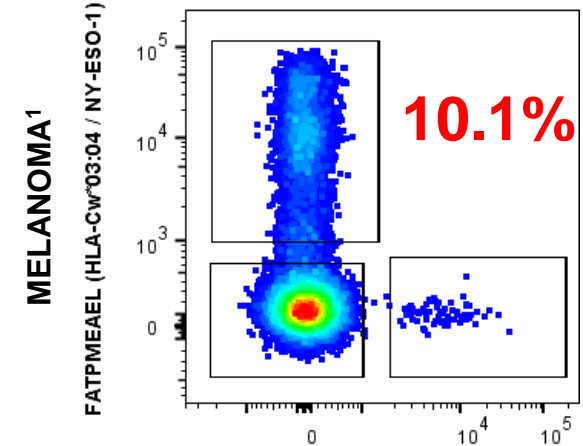
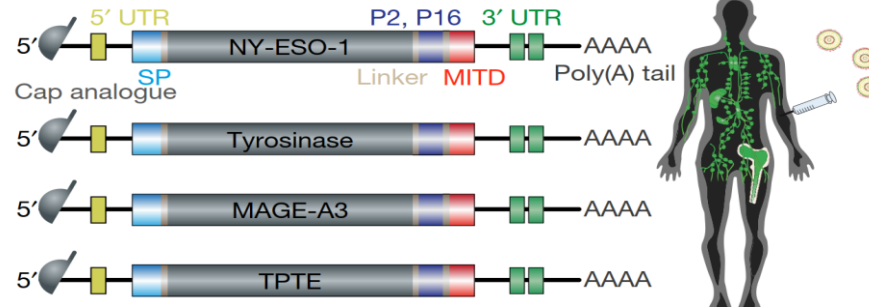
iNeST

FixVac: Leveraging shared antigens to break immune tolerance

Novel Structure

FixVac

- Multi-valency + Off-the-shelf
- Applicable for almost all types of tumor antigens



Product candidate²

BNT111

BNT113

BNT112

BNT116

Preclinical

Advanced melanoma *NY-ESO-1, MAGE-A3, Tyrosinase, TPTE*

HPV+ head & neck cancer *HPV E6 and E7 oncoproteins*

Prostate cancer *PSA, PAP, 3 addition undisclosed antigens*

NSCLC

Phase 1

Phase 2

BNT111 FixVac Melanoma: Planning to initiate randomized phase 2 trial

Ongoing Phase 1 trial in Advanced Melanoma published in Nature

- Phase 1 trial data in CPI-experienced patients in monotherapy and in combination with anti-PD1 previously reported in July 2020 and published in Nature
- All patients showed tumor associated antigen (TAA) specific T cell responses with In vitro stimulation, and > 75% of patients showed immune responses against ≥ 1 TAA on an ex vivo basis
 - T cells responses ramped up over 4-8 weeks and increased or remained stable up to over one year with monthly maintenance therapy
- ***Reported durable clinical responses in monotherapy and in combination with anti-PD1 accompanied by high magnitude CD4+ and CD8+ response***

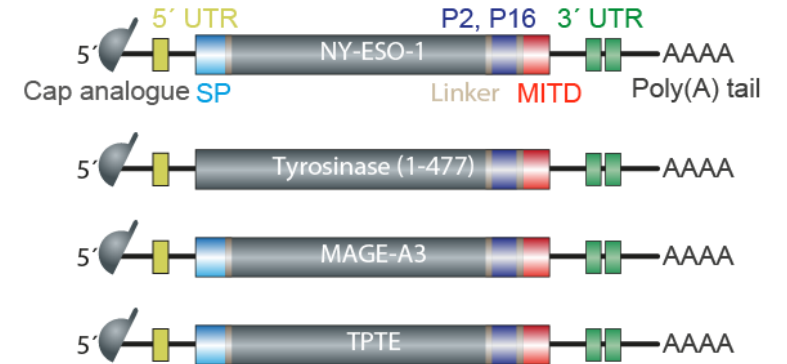
Regeneron strategic collaboration and planned Phase 2 trial

- Signed strategic collaboration to jointly conduct randomized Phase 2 trial with BNT111 and Libtayo® (cemiplimab anti-PD-1 therapy)
- Targeting patients with anti-PD1-refractory/relapsed, unresectable Stage III or IV cutaneous melanoma
- Companies to share development costs equally and keep full commercial rights to own programs
- ***Plan to initiate randomized Phase 2 trial in the first half of 2021***

BNT111 interim clinical activity data in advanced melanoma

Summary

- Advanced melanoma patients (stage III, IV); dose range: 14µg -100µg
- Out of **74 patients** with available follow-up radiological imaging **42 patients** were assessed for preliminary analysis as of July 29, 2019
- of 25 patients** with metastatic melanoma who received **BNT111 monotherapy** following progression on CPI* and in some cases other therapies
 - 3 patients with partial response (PR)
 - 1 patient with metabolic complete response¹
 - 7 patients with stable disease (SD)
 - 14 progressive disease (PD)
- of 17 patients** with metastatic melanoma who received **BNT111 in combination** with CPI after progression on CPI monotherapy
 - 6 patients with partial response (PR)
 - 2 patients with stable disease (SD)
 - 9 progressive disease (PD)
- Adjuvant cohort of 32 patients still in study



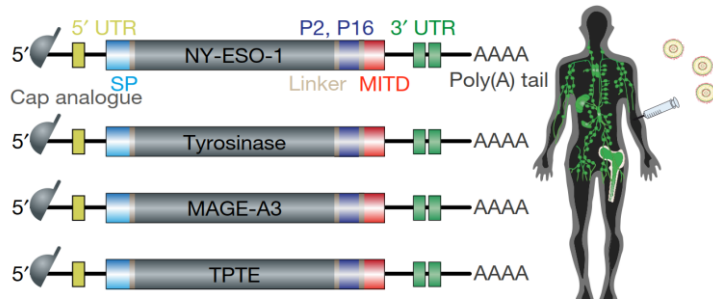
Cumulative patient coverage of FixVac melanoma targets is over 90%

Report phase 1 data 1H 2020

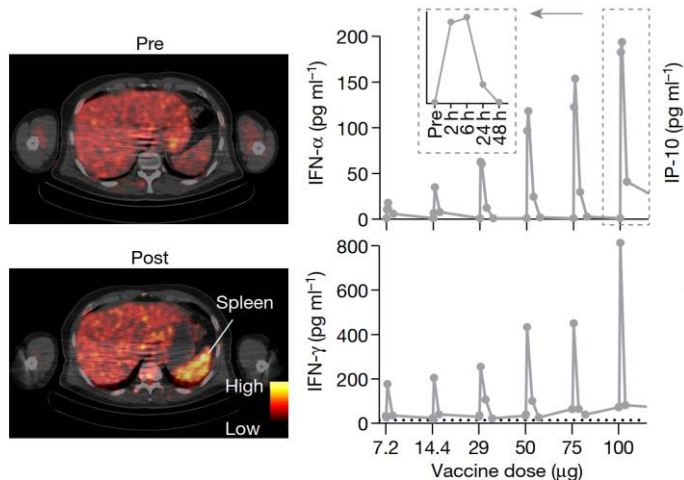
Start randomized phase 2 trial in 1H 2021

BNT111 publication in Nature highlights

Targeting of lymphoid DC for vaccine delivery & type I IFN activity



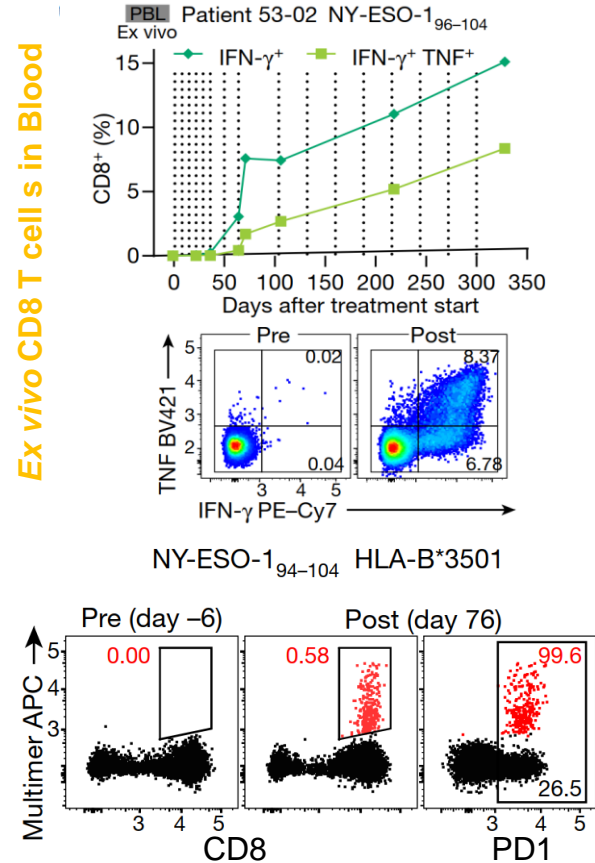
Vaccine constructs



FDG PET

Blood Cytokines

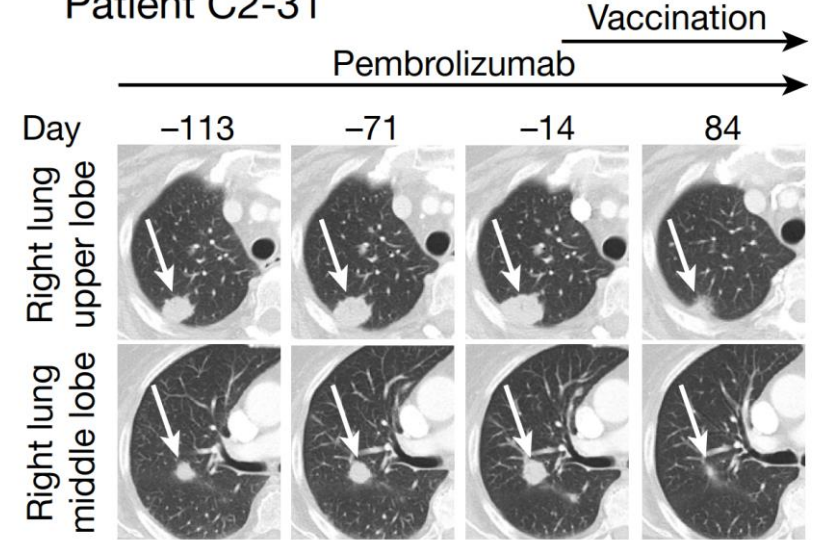
Strong CD4+, CD8+ T cell responses Multifunctional CD8+ PD1+ T cells



Objective responses in CPI-experienced melanoma patients with evaluable disease at baseline:

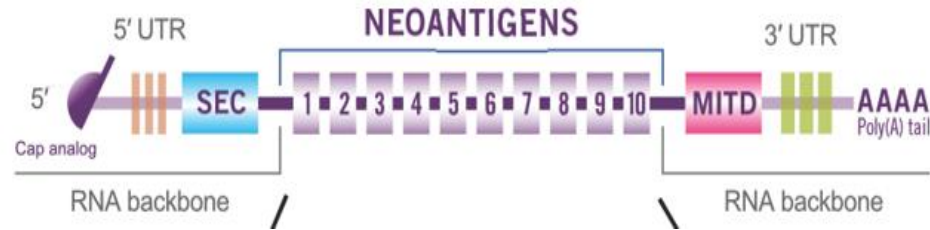
- ORR of BNT111 monotherapy: 4/25
- ORR of BNT111 + anti-PD1: 6/17 (35%) (CPI resensitizing activity of BNT111)

Patient C2-31



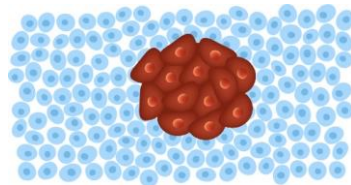
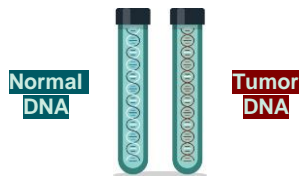
Lung CT scans before & after BNT111

iNeST¹: Tailored treatment to exploit individual targets



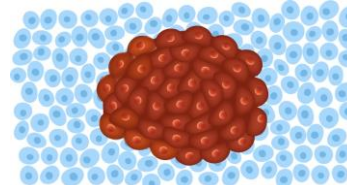
- Fully customized to the individual Patient
- Targeting 20 neo-antigens per patient

ADJUVANT



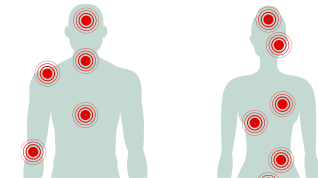
Residual cancer cells may remain – emphasis on recurrence free survival

1L METASTATIC



Rapidly growing but often still in early phase of metastases

LATE-LINE METASTATIC



Bulky tumors with multiple organs involved

iNeST

- *Phase 2 trial planned*
- *8 of 8 stage III/IV melanoma patients with stable disease cancer free for up to 60 months (BNT121)¹*

- *Ongoing Phase 2 trial in 1L melanoma*

- **Single agent activity** in melanoma² and gastric³ cancer
- **Encouraging efficacy signal** validates iNeST potential in early settings

iNeST: Recent update from BNT122 reported at AACR

Phase 1a dose escalation: Monotherapy in locally advanced or metastatic solid tumors

- **31 patients** enrolled, cohorts with **doses ranging from 25-100ug**
 - Most common tumor types were HR+/HER2+ breast, prostate, and ovarian cancer
 - **Median of 5 lines of prior therapies (range 1-17)**
 - Most patients enrolled had low **level of PD-L1 expression** in tumor
- Neoantigen-specific **T cell responses** observed in peripheral blood in **86%** of patients, significant T cell expansion and **both naïve and memory activated phenotype**
- Of 26 patients with at least one tumor assessment,
 - **1 patient with gastric cancer and metastatic liver lesions had confirmed CR** (ongoing for 10 months)
 - **12 patients had SD**

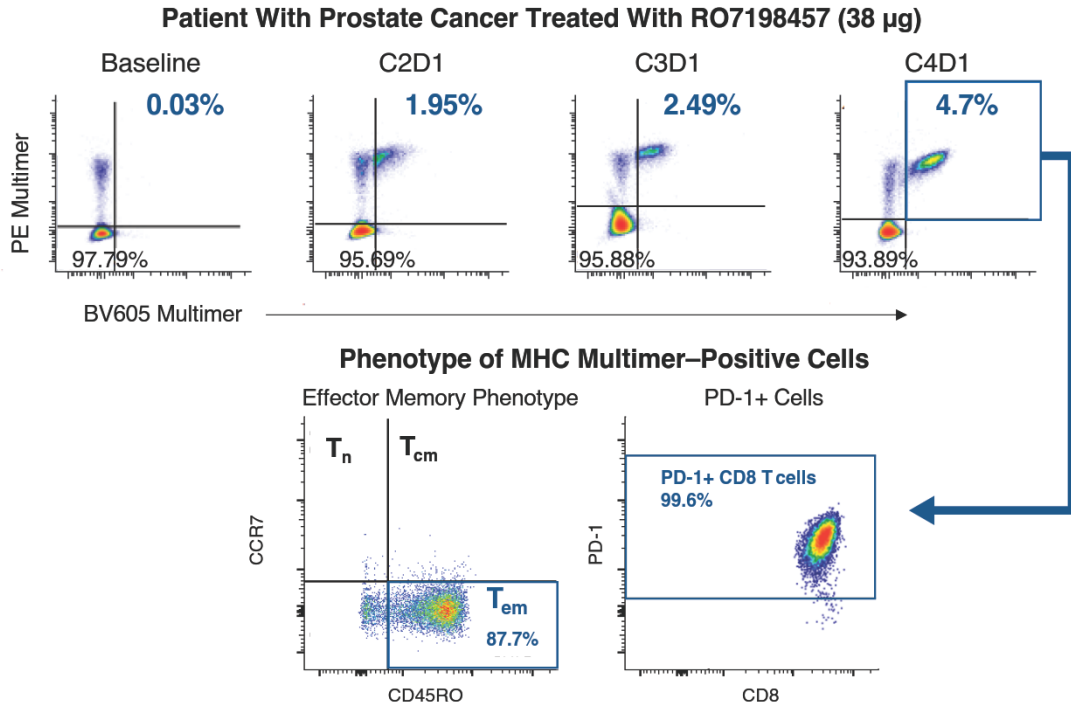
Phase 1b combination with atezolizumab demonstrated clinical activity in heavily pre-treated patients

- **132 patients** enrolled, cohorts with **doses ranging from 15-50µg**
- Heavily pre-treated patient population
 - Both CPI experienced and inexperienced
 - **Most patients with low PD-1**
- Clinical responses associated with T cell response, correlating immune profiling of patients' T cells to cancer-specific response
- Of 108 patients with at least one tumor assessment
 - **1 patient had CR as best response** (0.9%),
 - **8 patients had PR** (7.4%), and
 - **53 patients had SD** (49.1%)

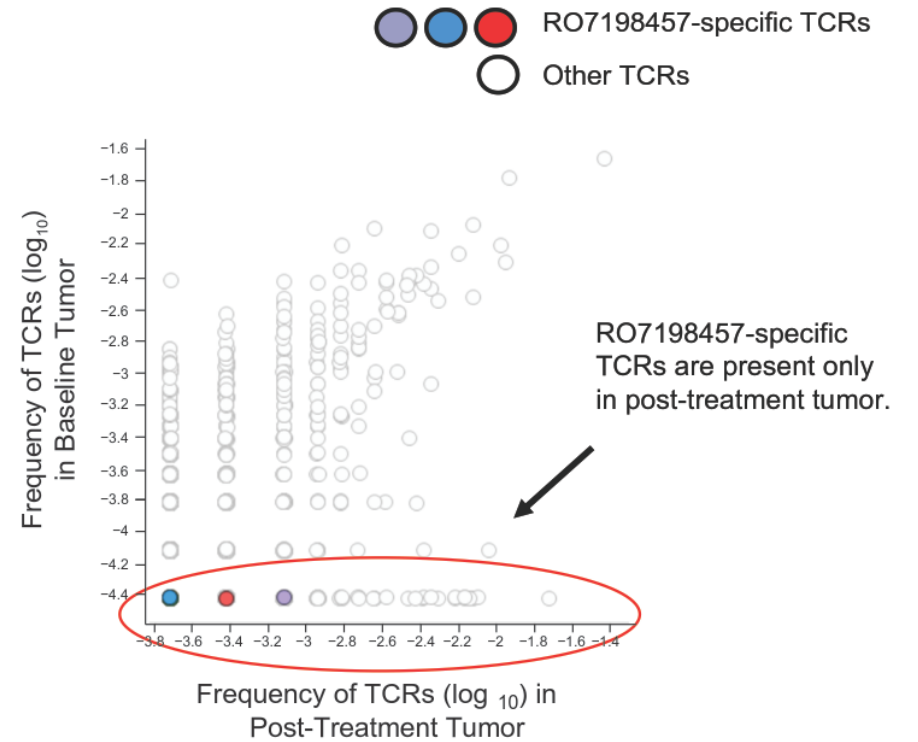
- **Demonstrates ability to elicit significant T cell responses of both effector and memory phenotype as monotherapy and in combination**
- **Treatment-related adverse events were primarily transient systemic reactions, manifesting as low grade CRS, IRR or flu-like symptoms**
- **Early evidence of clinical activity in highly refractory patient population**

iNeST: Recent update from BNT122 reported at AACR (Cont'd)

BNT122 induces CD8+ T cells in CPI-sensitive and CPI-insensitive tumor types



BNT122 induces CD8+ T cell infiltrates in tumors



BNT122 iNeST randomized Phase 2 trials ongoing and planned

	First-line advanced melanoma	Adjuvant colorectal cancer
Study design and patient population	A Phase 2, open-label, multicenter randomized trial of the efficacy and safety of BNT122 in combination with pembrolizumab vs. pembrolizumab in patients with previously untreated Advanced Melanoma	A Phase 2, open-label, multicenter randomized trial to compare the efficacy of BNT122 versus watchful waiting in patients with ctDNA positive, surgically resected Stage 2/3 rectal cancer, or Stage 2 high risk/stage 3 colon cancer
Rationale	<ul style="list-style-type: none">▪ Evaluate added benefit of 1L BNT122 in an advanced CPI-sensitive tumor (PFS, ORR)▪ Success un gates 1L use of iNeST in CPI-sensitive advanced cancers for combination therapy	<ul style="list-style-type: none">▪ Evaluate added benefit of BNT122 in a micrometastatic CPI-insensitive tumor (RFS)▪ Success un gates adjuvant use of iNeST for CPI-insensitive ctDNA+ cancer types
Status	<i>Currently enrolling</i>	<i>To start in 1H 2021</i>

Digitalization and automation for neo-antigen vaccine manufacturing



Paperless documentation



Semi-automatic manufacturing

- 2 mRNA GMP production facilities: Idar-Oberstein (GMP since 2011) and Mainz (GMP since 2018)
- Construction and GMP licensure of new Mainz facility for iNeST expected in 2022/2023
- Partnered with Siemens to develop automated production processes

Agenda

Overview and business outlook

Pipeline

Deeper dive on our key programs

COVID-19 vaccine program (project “Lightspeed”)

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Antibodies

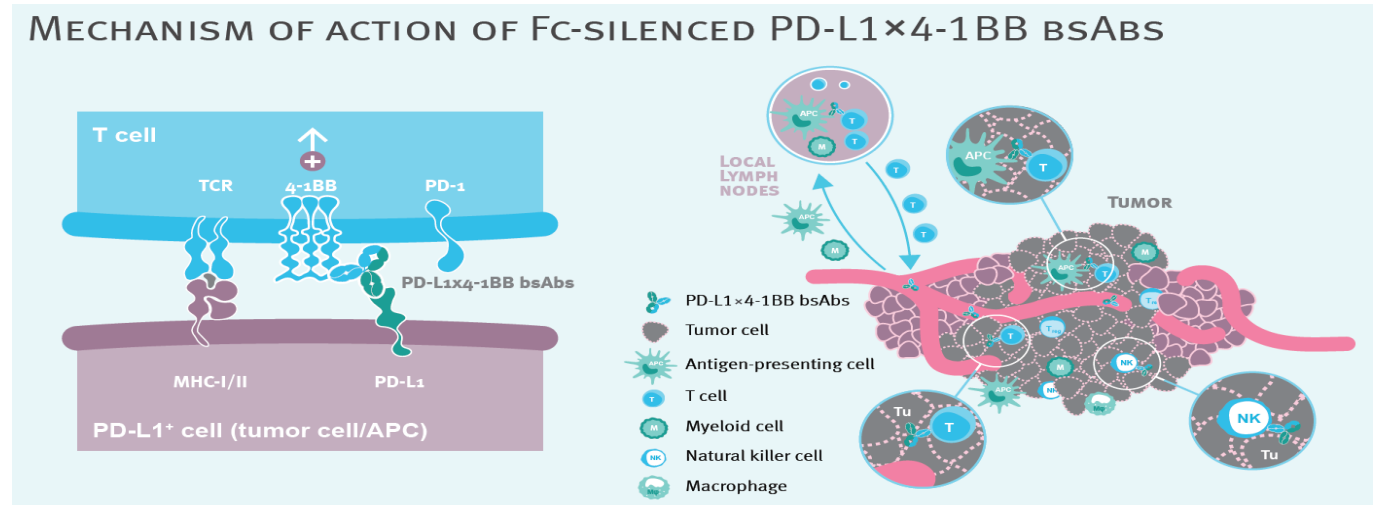
Small Molecule Immunomodulators

CARVac platform – CLDN6 CAR-T

RiboCytokines

BNT311: Next-generation bispecific antibody PD-L1x4-1BB

- **Next-generation immunotherapy** designed to enhance T cell and NK cell function through conditional 4-1BB co-stimulation while simultaneously blocking PD-L1 axis
- Bispecific antibody is 50:50 profit/loss share partnered with Genmab

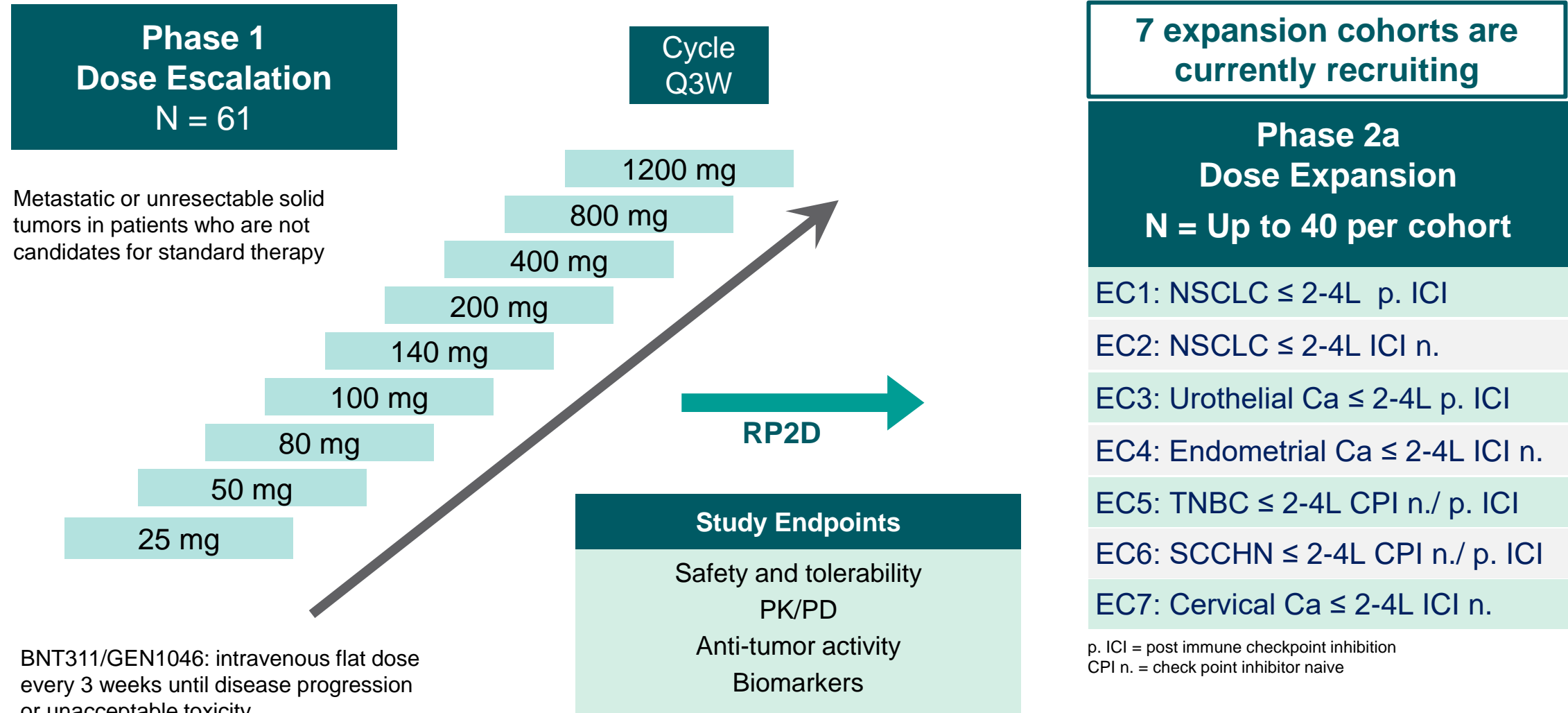


**Interim results
of ongoing
Phase 1/2a trial
presented at
SITC 2020**

Phase 1/2a dose escalation and expansion trial in heavily pretreated patients with advanced solid tumors to evaluate safety and initial anti-tumor activity

- Dose escalation (n=61) data demonstrated **manageable safety profile** and **preliminary clinical activity** across advanced solid tumors
- Expansion cohort (n=24) in NSCLC patients demonstrated **encouraging preliminary responses**

BNT311: Safety trial in patients with malignant solid tumors (NCT03917381)



BNT311: Interim results of ongoing Phase 1/2a trial

Manageable safety profile and initial clinical activity in FIH trial

Safety

- Most treatment-related AEs **mild to moderate**
- **No treatment-related bilirubin increases** or Grade-4 transaminase elevations
 - Grade-3 elevations resolved
 - 6 patients had DLTs
 - **MTD not reached**

Dose escalation

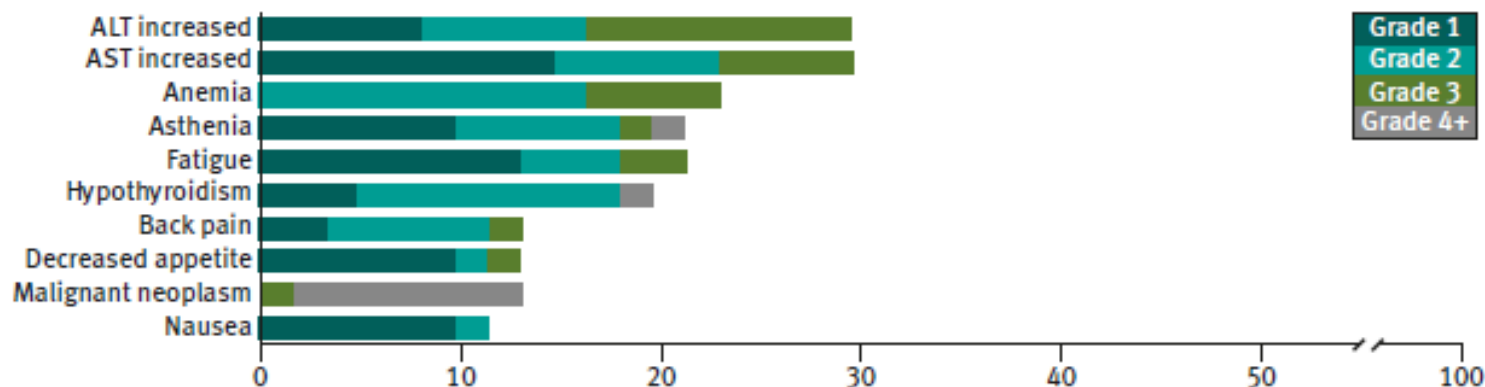
- Clinical benefit **across different dose levels and solid tumor types**
- Disease control in **65.6% of patients**
- **4 partial responses:**
 - TNBC (1), ovarian cancer (1), CPI* pre-treated NSCLC (2)
- Modulation of **circulating CD8+ T cells** and serum levels of interferon gamma and IP10 observed
 - Maximal induction 8-15 days after treatment

Dose expansion

- **Encouraging preliminary efficacy** in 12 **PD-L1 relapsed/refractory NSCLC** patients
 - **2 confirmed partial responses**
 - **1 unconfirmed partial response**
 - **4 patients demonstrated stable disease**
- Enrollment ongoing in 6 additional cohorts

BNT311: Interim results of ongoing Phase 1/2a – safety profile

TEAEs occurring in ≥10% of patients



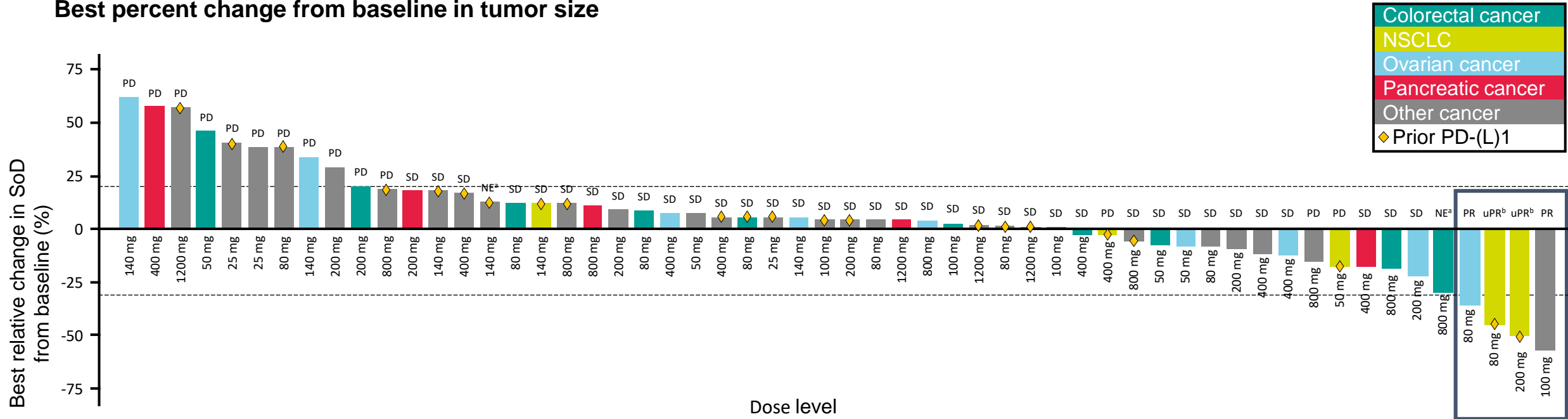
- The most common treatment-related adverse events were transaminase elevations, hypothyroidism and fatigue
- Treatment-related transaminase elevations occurred in 26.2% of patients (9.8% of patients had grade 3 transaminase elevations)
- There were no patients with Grade 4 transaminase, or treatment-related bilirubin increases
- MTD has not been reached

TRAEs occurring in ≥10% of patients

Dose escalation cohort	All patients (N=61)		
	All grades, n (%)	Grade 3, n (%)	Grade 4, n (%)
Any TRAE	43 (70.5)	15 (24.6)	3 (4.9)
TRAEs in ≥10% of patients, by preferred term			
Transaminase elevation	16 (26.2)	6 (9.8)	0
Hypothyroidism	11 (18.0)	0	1 (1.6)
Fatigue	8 (13.1)	1 (1.6)	0

BNT311: Interim results of ongoing phase 1/2a- anti-tumor activity dose escalation

Best percent change from baseline in tumor size



Disease control achieved in 65.6% of patients; four patients with PR
 Includes 4 early partial responses in TNBC (1), ovarian cancer (1), and ICI-pre treated NSCLC (2) patients

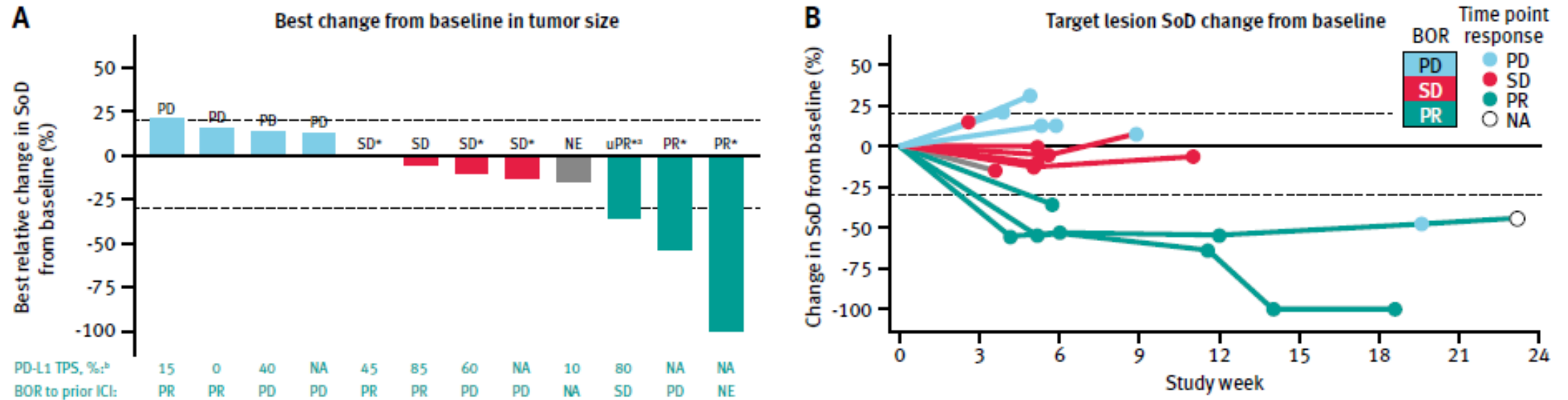
Data cut-off: September 29, 2020. Post-baseline scans were not conducted for five patients.

^aMinimum duration of response (5 weeks) per RECIST v1.1 not reached.

^bPR was not confirmed on a subsequent scan.

NE, non-evaluable; NSCLC, non-small cell lung cancer; PD, progressive disease; PD-(L)1, programmed death (ligand) 1; PR, partial response; SD, stable disease; SoD, sum of diameters; uPR, unconfirmed partial response.

BNT311: Interim results of ongoing phase 1/2a – anti-tumor activity in CPI recurrent/refractory NSCLC expansion



As of October 12, 2020, 24 patients were enrolled in expansion cohort 1, which includes patients with NSCLC with progression on or after ICI therapy

- 12 patients had post-baseline scans; 6 patients were still on treatment with BNT311/GEN1046, 6 patients discontinued
- Preliminary efficacy in 12 patients who could be objectively assessed showed two patients who achieved confirmed PR, one with unconfirmed PR, and four patients with SD

Data cut-off: October 12, 2020.

*Denotes patients with ongoing treatment.

^aPR was not confirmed by a subsequent scan.

Includes all patients who had at least one post-baseline tumor assessment (schedule is every 6 weeks), and thus could be assessed for clinical benefit; 6 of 12 patients are still on treatment.

BOR, best overall response; ICI, immune checkpoint inhibitor; NA, not available; NE, non-evaluable; NSCLC, non-small cell lung cancer; PD, progressive disease; PD-(L)1, programmed death (ligand) 1; PR, partial response; RECIST, Response Evaluation Criteria in Solid Tumors; SD, stable disease; SoD, sum of diameters; TPS, tumor proportion score; uPR, unconfirmed partial response.

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mRNA vaccines – FixVac and iNeST

Antibodies

Small Molecule Immunomodulators

CARVac platform – CLDN6 CAR-T

RiboCytokines

BNT411: initiated FIH Phase 1 trial for our TLR7 agonist in July 2020

- BNT411 is an intravenously administered small molecule TLR7 (toll-like receptor 7) agonist
- Engineered for high potency and high TLR7 receptor-selectivity at the therapeutically active dose range
- Activation of both adaptive and innate immune system has been observed, in particular in combination with cytotoxic therapies and CPIs
- Type 1 interferon-dominated release of cytokines and chemokines and potent stimulation of antigen-specific CD8+ T cells, B cells and innate immune cells such as NK cells and macrophages
- Expected to have therapeutic potential across various solid tumor indications
- Phase 1/2a clinical trial as a mono and combination therapy initiated in July 2020

Study design:

- Phase 1/2a, first-in-human, open-label, dose-escalation trial
- Evaluation of safety, pharmacokinetics, pharmacodynamics, and preliminary efficacy of BNT411 as a monotherapy in patients with solid tumors and in combination with atezolizumab, carboplatin and etoposide in patients with chemotherapy-naïve extensive-stage small cell lung cancer (ES-SCLC)
- Enrollment: ~60 participants

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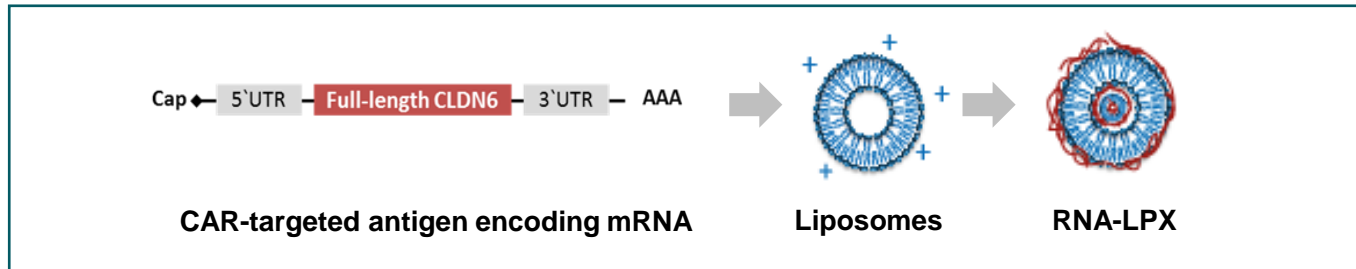
CARVac platform – CLDN6 CAR-T

RiboCytokines

BNT211: Repeated CARVac dosing enables tunable expansion of CAR-T cells

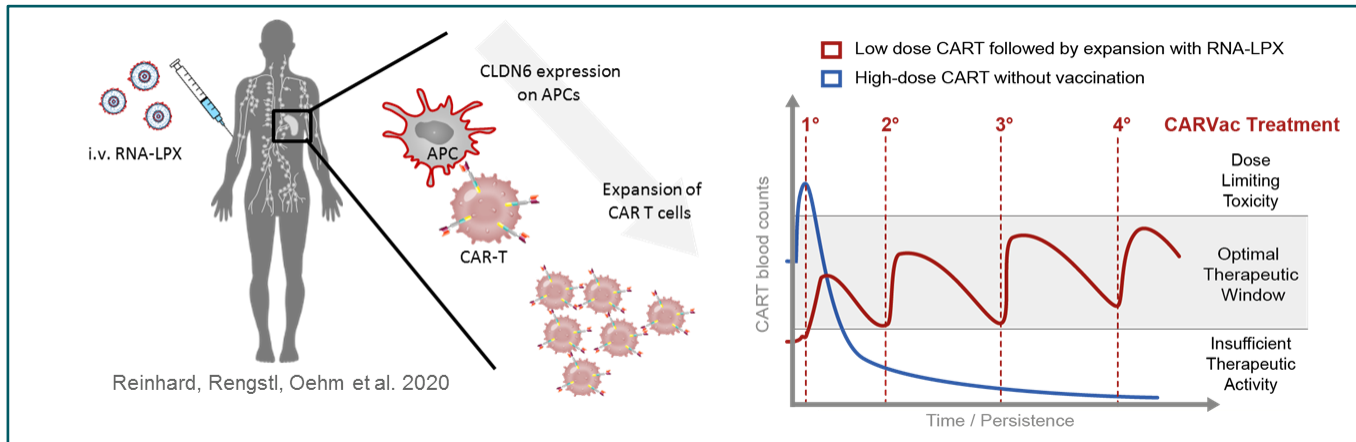
CAR-T cell Amplifying RNA Vaccine (CARVac) drives in vivo expansion and efficacy of CAR-T against solid tumors

CARVac production



- CARVac is based on RNA-LPX that selectively targets secondary lymphoid organs
- I.V. administration of CLDN6 RNA-LPX results in **expression of CAR antigen on APCs**

CARVac based CAR-T expansion



- Repetitive administration of CARVac results in **increased frequency, persistence and activity of CAR-T cells** with a memory phenotype
- Combination of sub-therapeutic CAR-T dose and CARVac demonstrated **eradication of advanced tumors in mice**

BNT211: CLDN6-CAR demonstrates potent and robust target recognition

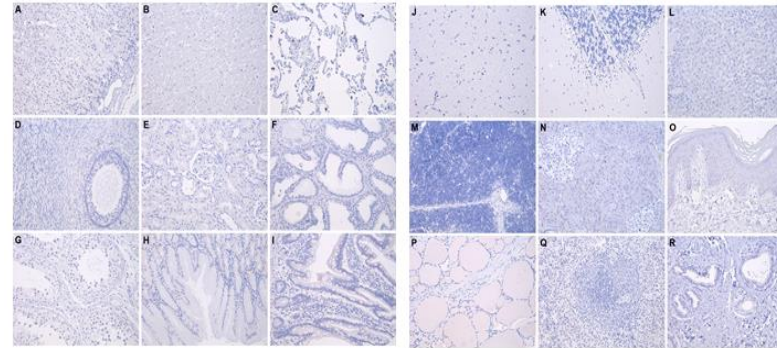
CANCER IMMUNOTHERAPY

An RNA vaccine drives expansion and efficacy of claudin-CAR-T cells against solid tumors

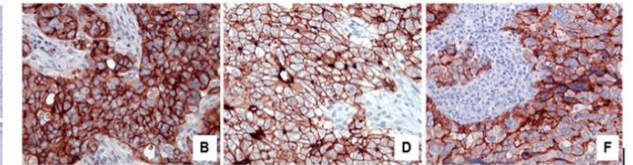
Katharina Reinhard^{1*}, Benjamin Rengstl^{1*}, Petra Oehm^{1*}, Kristina Michel¹, Arne Billmeier¹, Nina Hayduk¹, Oliver Klein¹, Kathrin Kuna², Yasmina Ouchan¹, Stefan Wöll¹, Elmar Christ¹, David Weber², Martin Suchan², Thomas Bukur², Matthias Birtel¹, Veronika Jahndel¹, Karolina Mroz¹, Kathleen Hobohm¹, Lena Kranz¹, Mustafa Diken², Klaus Kühlcke¹, Özlem Türeci^{1,†}, Ugur Sahin^{1,2,3,†,‡}

Science

CLDN6 not present in healthy tissues



CLDN6 expressed in multiple cancers



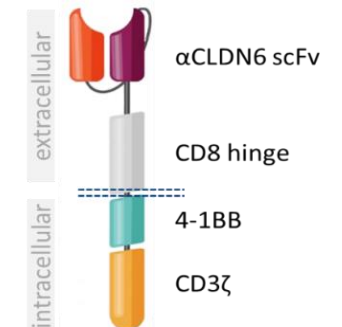
Ovarian

Testicular

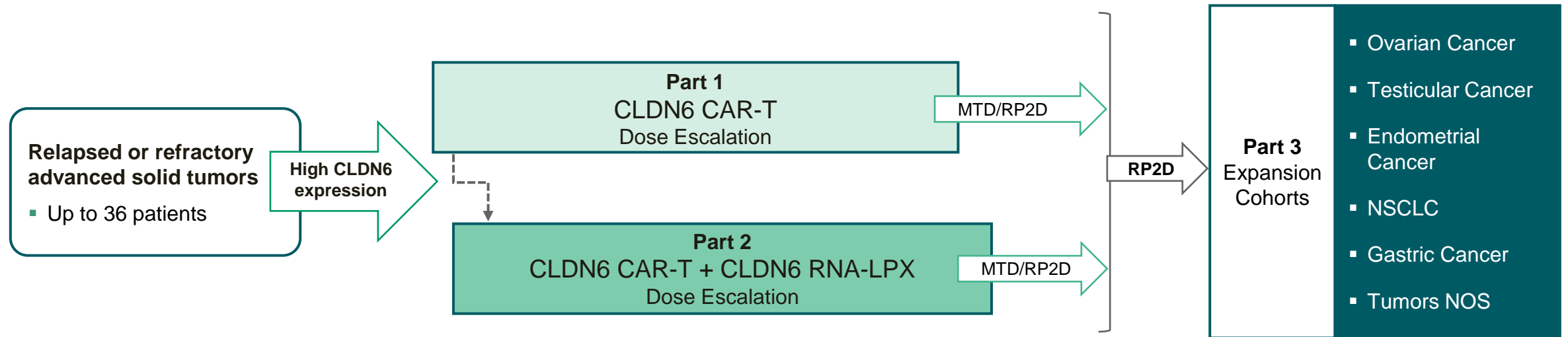
Lung

- Directed against new carcino-embryonic antigen CLDN6
- 2nd generation CAR functionalized with antibody-derived CLDN6-binding domain (α CLDN6-scFv)
- Binding domain mediates exclusive specificity and high sensitivity for CLDN6
- Costimulatory domain (4-1BB) mediates prolonged survival and repetitive killing ability
- CLDN6-CAR showed strong recognition and lysis of CLDN6-positive target cells in preclinical studies

BNT211 CAR Structure



BNT211: First-in-human CARVac trial with first data expected this year



- Phase 1/2a: Evaluation of safety and tolerability of CLDN6 CAR-T +/- CLDN6 RNA-LPX in patients with CLDN6-positive relapsed or refractory advanced solid tumors
- 3+3 dose escalation with bifurcated trial design

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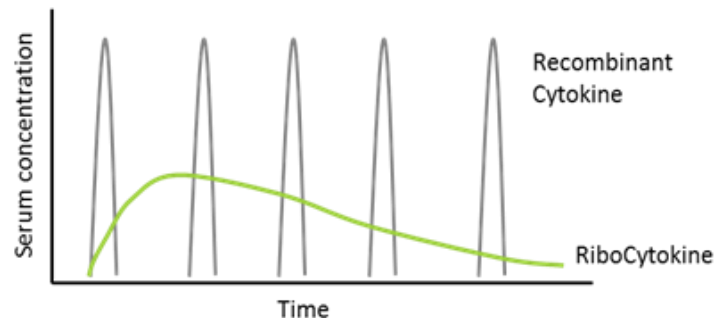
CARVac platform – CLDN6 CAR-T

RiboCytokines

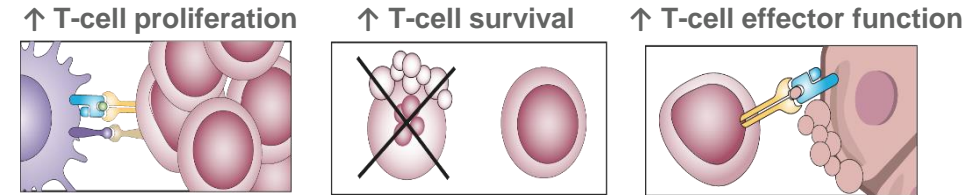
BNT151: Designed to overcome limitations of recombinant cytokine therapy

RiboCytokines: A novel therapeutic concept

- Cytokines encoded by mRNA and produced in patient
- Major improvements over recombinant cytokine therapies
 - Prolonged serum half-life
 - High bioavailability
 - Lower and less frequent dosing
 - Lower Toxicity
 - Sequence modifications easy to introduce

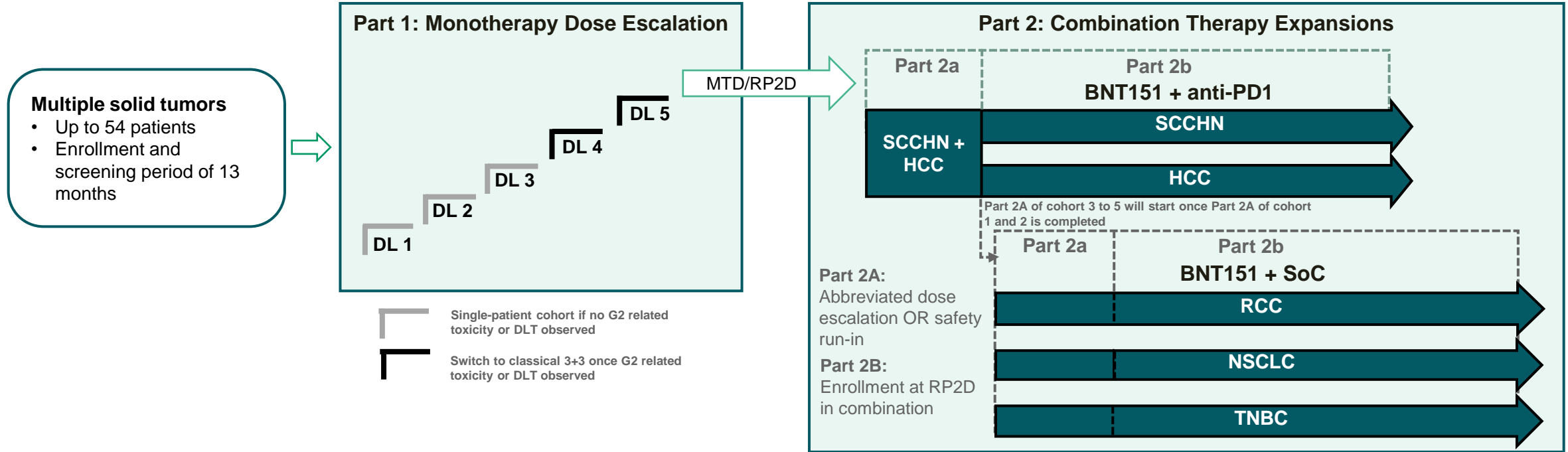


BNT151: Optimized mRNA-encoded IL-2



- **BNT151** is nucleoside-modified mRNA encoding human **IL-2 variant fused to human albumin**
- **IL-2 is a key cytokine** in T cell immunity, supporting differentiation, proliferation, survival and effector functions of T cells
- **BNT151 stimulates anti-tumoral T cells without extensively triggering immunosuppressive T_{regs}**
- **First patient dosed** in first-in-human Phase 1/2a Trial

BNT151-01 Open-label, multicenter Phase 1/2a, first-in-human trial



Evaluation of dose escalation, safety, pharmacokinetics and pharmacodynamics of BNT151 with expansion cohorts in multiple solid tumor indications

The Biontech logo is displayed in a bold, sans-serif font. The letters 'B', 'I', 'O', 'N', 'T', 'E', and 'C' are in a light blue color, while the letters 'H' and 'H' are in a yellow color. The logo is positioned in the upper left quadrant of the slide.

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