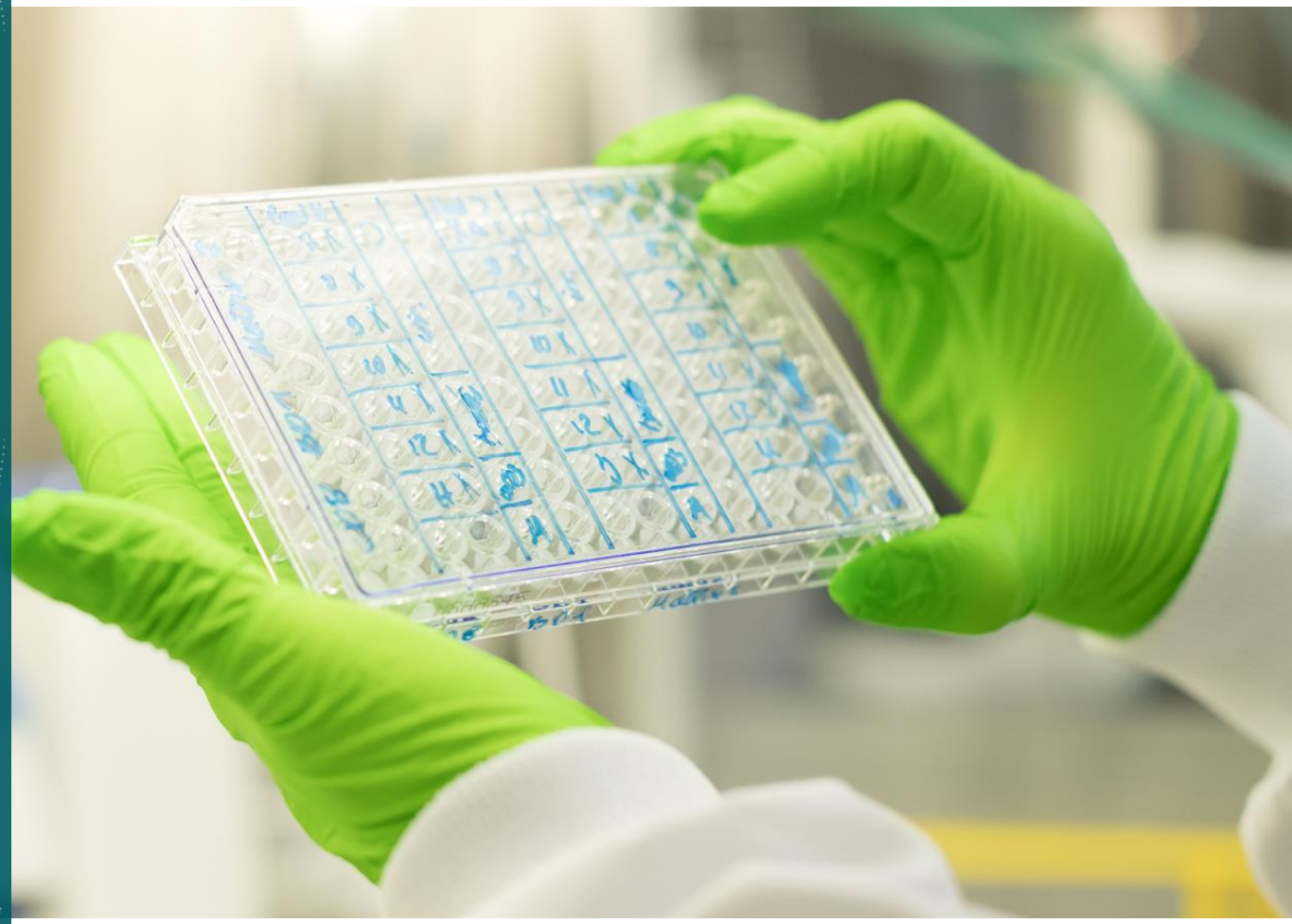
Next Generation Immunotherapy

June 2020



This slide presentation includes forward-looking statements

Forward-Looking Statements

Various statements in this slide presentation concerning the future expectations of BioNTech, its plans and prospects, including the Company's views with respect to the potential for mRNA therapeutics and vaccines, its expectations with respect to the timing and results of clinical trials and release of clinical data (both in respect of its proprietary product candidates and of product candidates of its collaborators), the development of commercial capabilities and the transition of BioNTech to a fully integrated biopharmaceutical company, its expectations with respect to interactions with regulatory authorities such as FDA and EMA, including the potential approval of BioNTech's or its collaborators' current or future drug candidates, and expected royalty and milestone payments in connection with BioNTech's collaborations, constitute forward-looking statements. Words such as "expects," "plans," "potential," "target," "continue" and variations of these words or similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Such statements are based on the current beliefs and assumptions of the management team of BioNTech and on the information currently available to the management team of BioNTech, and are subject to change. The Company will not necessarily inform you of such changes. These forward looking statements are subject to known and unknown risks, uncertainties, assumptions and other factors that could cause the Company's actual results, performance or achievements to be materially different than any future results, performance or achievements expressed or implied by the forward-looking statements. Actual results may differ materially from those indicated by these forward-looking statements as a result of various important factors, including the initiation, timing, progress, results and cost of the Company's research and development programs and its current and future preclinical studies and clinical trials; the timing of and the Company's ability to obtain and maintain regulatory approval for its product candidates; the Company's ability to identify research opportunities and discover and develop investigational medicines; the Company's expectations regarding the size of the patient populations for its product candidates, if approved for commercial use; the Company's estimates of its expenses, ongoing losses, future revenue and capital requirements and its needs for or ability to obtain additional financing; the Company's ability to identify, recruit and retain key personnel; the Company's and its collaborators' ability to protect and enforce its intellectual property protection for its proprietary and collaborative product candidates, and the scope of such protection; the development of and projections relating to the Company's competitors or its industry; the Company's ability to commercialize its product candidates, if approved; the rate and degree of market acceptance of the Company's investigational medicines; the Company's ability to manage its development and expansion; regulatory developments in the United States and foreign countries; the Company's ability to manufacture its product candidates with advantages in turnaround times or manufacturing cost; and the Company's ability to implement, maintain and improve effective internal controls. The preceding list is not intended to be an exhaustive list of all of the Company's forward-looking statements. Any forward-looking statements represent the Company's views only as of today and should not be relied upon as representing its views as of any subsequent date. The Company explicitly disclaims any obligation to update any forward-looking statements. The mRNA vaccines and other product candidates discussed in this slide presentation are investigational products being developed by BioNTech and its collaborators and are not currently approved by the FDA, EMA or any other regulatory authority.

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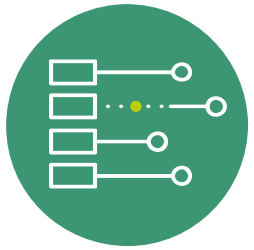
Next generation immunotherapy

Harnessing the full potential of the immune system



Broad suite of novel technology platforms

Immunotherapies for cancer and infectious diseases

Fully integrated with in-house GMP manufacturing

Industry-leading global collaborations

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We collaborate with global leaders in our industry

Oncology Collaborations with at least one program in the clinic

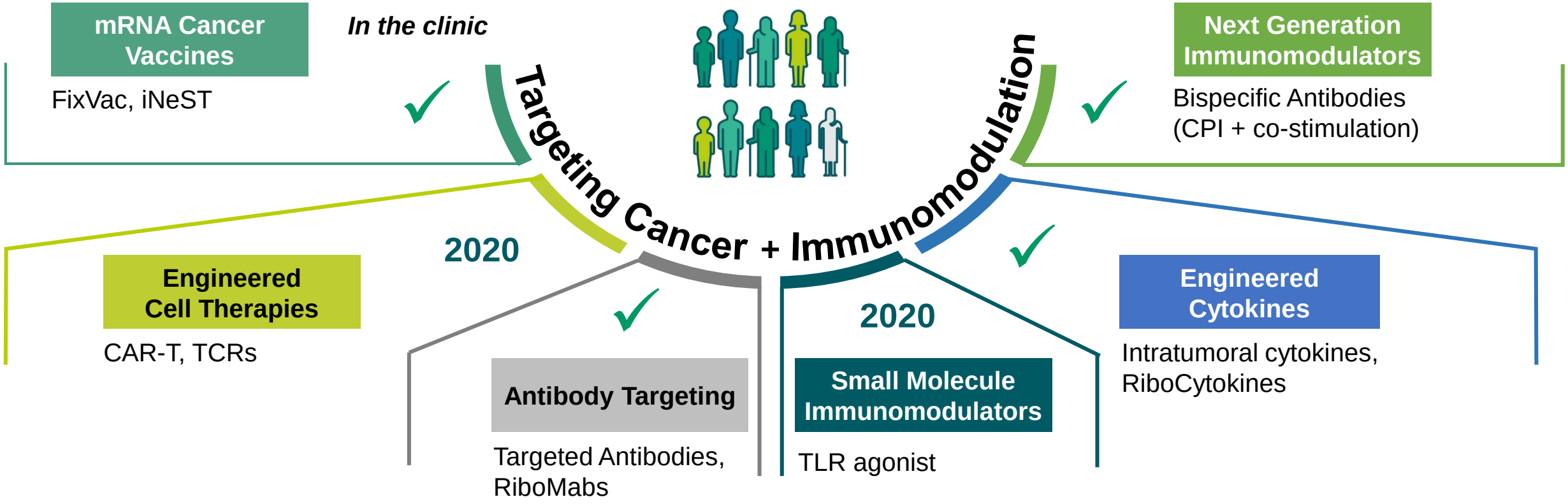
- **50:50 Cost and Profit share (2016)** — Genentech
- **50:50 Cost and Profit share (2015)** — Genmab
- **Cost and Profit share (2015)** — SANOFI

Other Oncology, Infectious Diseases and Rare Diseases Collaborations

- **Co-development Co-commercialization (2018)** — GENEVANT
- **Research Collaboration and License Agreement (2018), Collaboration Agreement (2020)** — Pfizer
- **Strategic R&D Alliance (2018)** — University of Pennsylvania
- **R&D Agreement (2019)** — Bill & Melinda Gates Foundation
- **Licensing Agreement (2015)** — Lilly
- **Co-development in China (2020)** — FOSUNPHARMA

[1]BioNTech and Pfizer have agreed to a Letter of Intent regarding the co-development and distribution (excluding China) of a potential mRNA-based coronavirus vaccine aimed at preventing COVID-19 infection

Our IO strategy exploits complementary therapeutic programs



Potential for multiple blockbuster opportunities with powerful combinations

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Compelling data generated from innovative immunotherapy approaches

Approved PD1-/PD-L1 Inhibitors

+

mRNA Cancer Vaccines

- **FixVac Melanoma (BNT111):** Induces objective responses in CPI-experienced patients
- **iNeST (BNT122):** Currently in Phase 2 in combination with CPI in 1L Melanoma. 2 adjuvant trials planned in 2020

mRNA Cancer Vaccines

+

Engineered Cytokines

- **Ribocytokine IL-2 (BNT151):** Amplification of vaccine induced T cell response in pre-clinical studies

Engineered Cell Therapies

+

mRNA Cancer Vaccines

- **BNT211:** Novel CLDN-6 CAR-T approach utilizing CAR-T Amplifying RNA Vaccine (**CARVac**)
- Significant amplification of CAR-T cells in preclinical studies (published in Science, 2020)

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A technology agnostic approach targets a broader addressable 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	• ***mRNA Neoantigen Immunotherapy*** *(iNeST)*
Low mutational burden cancers	>60% of cancers	Poor response to checkpoint inhibitors	• ***Shared Antigens*** *(FixVac, CAR-T cells, Antibodies)*
"Immune desert" cancers	>40% of high-mutational cancers	Poor infiltration and activation of T-cells in TME[1]	• ***mRNA 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	• ***Antibodies*** • ***CAR-Ts***
Refractory tumors	Patients with large tumors and multiple resistance mechanisms	Few treatment options	• ***Engineered Cell Therapies*** • ***Combination Therapies***

[1]Tumor microenvironment

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11 product candidates in 12 ongoing clinical trials

Drug class	Platform	Product Candidate	Indication (Targets)	Preclinical / Phase 1 / Phase 2	Rights Collaborator	Milestones
Oncology						
mRNA	**FixVac** (fixed combination of shared cancer antigens)	BNT111	advanced melanoma (adjuvant & metastatic)		fully-owned	Report phase 1 data in 1H 2020; Start phase 2 trial with registrational potential H2 2020
		BNT112	prostate cancer		fully-owned	
		BNT113	HPV16+ head and neck cancer[1]		fully-owned	Start phase 2 with registrational potential in 2H 2020
		BNT114	triple negative breast cancer		fully-owned	Data update in 2H 2020
		BNT115	ovarian cancer[1]		fully-owned	
	iNeST (patient specific cancer antigen therapy)	RO7198457 (BNT122[4])	1L melanoma with CPI[2]		Genentech (global 50:50 profit/loss)	Enrollment update in 2H 2020[3]; Interim data update in 2021
			multiple solid tumors			Data update in June 2020; two phase 2 trials planned in adjuvant indications in 2H 2020
	Intratumoral Immunotherapy	SAR441000 (BNT131)	solid tumors *(IL-12sc, IL-15sushi, GM-CSF, IFNα)*		Sanofi (global profit/ loss share)	Data update in 2H 2020[5]
	Infectious Disease Immunotherapy	BNT162	COVID-19		Pfizer/Fosun	Data update in June/July 2020
Antibodies	**Next-Gen CP[6] Immunomodulators**	GEN1046 (BNT311)	multiple solid tumors *(PD-L1×4-1BB)*		Genmab (global 50:50 profit/loss)	Data update in 2H 2020
		GEN1042 (BNT312)	multiple solid tumors *(CD40×4-1BB)*			
	Targeted Cancer Antibodies	BNT321 (MVT-5873)	pancreatic cancer (sLea)		fully-owned	

We intend to initiate up to 4 Phase 2 trials in 2020

[1]BNT113 and BNT115 are currently being studied in investigator-initiated phase 1 trials; [2]Checkpoint Inhibitor; [3]Update on the ongoing study including patient enrollment number, efficacy and safety data for an interim update expected in the second half of 2021; [4]BNT122 (iNeST) is also being investigated in arm 2 (N=15) of the 3 arm TNBC-MERIT trial, with BNT114 as an optional treatment; BNT114 is investigated in arm 1 (N=12) and arm 3 (N=15) of the TNBC-MERIT trial (total patients in study: N=42); [2]As the trial is sponsored and conducted by Sanofi, the timing of data updates is not under our control, and is subject to change by Sanofi; [6]Checkpoint

We plan to initiate FIH[4] trials for our preclinical product candidates across all platforms

Drug class Oncology	Platform	Product Candidate	Indication (Targets)	Rights Collaborator	Milestones
mRNA	**FixVac**	BNT116	NSCLC	fully-owned	
	RiboMabs (mRNA-encoded antibodies)	BNT141	multiple solid tumors	fully-owned	Phase 1 start in 1H 2021
		BNT142	multiple solid tumors *(CD3+CLDN6)*	fully-owned	Phase 1 start in 1H 2021
	RiboCytokines (mRNA-encoded Cytokines)	BNT151	multiple solid tumors *(optimized IL-2)*	fully-owned	Phase 1 start in1H 2021
		BNT152+ BNT153	multiple solid tumors *(IL-7, IL-2)*	fully-owned	Phase 1 start in 1H 2021
Engineered Cell Therapies	**CAR-T Cells**	BNT211	multiple solid tumors (*CLDN6)*	fully-owned	Phase 1/2 start in 2H 2020
		BNT212	pancreatic, other cancers *(CLDN18.2)*	fully-owned	
	TCRs	undisclosed	Solid tumors	Eli Lilly	
		to be selected	all tumors	fully-owned	
SMIM[1]	**Toll-Like Receptor Binding**	BNT411	solid tumors *(TLR7)*	fully-owned	Phase 1 start in 2H 2020

mRNA	**Infectious Disease Immunotherapies**	BNT161	Influenza	Pfizer	Start first study in H1 2021
		undisclosed	up to 10 indications	Penn[2]	First phase 1 trial to start 1H 2021
		undisclosed	HIV and tuberculosis	Bill & Melinda Gates Foundation	
	Rare Disease PRT[3]	BNT171	Not disclosed	Genevant (global 50:50 profit/loss)	First phase 1 trial to start in 1H 2021
		undisclosed	4 additional rare disease indications		

[1]Small Molecule Immunomodulators; [2]We are eligible to receive worldwide licenses; [3]Protein Replacement Therapy; [4]First in Human

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Significant newsflow expected over next 12-18 months

	Platform	Candidate	Indication *(Target)*	Next milestones[3]
mRNA	**FixVac**	BNT111	Advanced Melanoma	Start Phase 2 with registrational potential in 2H 2020 Report Phase 1: publication upcoming
		BNT112	Prostate Cancer	
		BNT113	HPV16+ H&N Cancer	Start Phase 2 with registrational potential in 2H 2020
		BNT114	Triple Negative Breast Cancer	Data update Phase 1 in 2H 2020 [4]
	iNeST	RO7198457 (BNT122)	1L Melanoma with CPI	Enrollment update in 2H 2020 [1]
			Multiple ST (basket trial)	Data update Phase 1/2 at AACR Virtual II in June
			NSCLC (adjuvant)	Start Phase 2 in 2H 2020
			CRC (adjuvant)	Start Phase 2 in 2H 2020
	Intratumoral Immunotherapy	SAR441000 (BNT131)	Solid tumors *(IL-12sc, IL-15sushi, GM-CSF, IFNα)*	Data update Phase 1/2 in 2H 2020 [2]
	RiboMabs	BNT141	Multiple ST	Start Phase 1 in 1H 2021
		BNT142	Multiple ST *(CD3+CLDN6)*	Start Phase 1 in 1H 2021
	RiboCytokines	BNT151	Multiple ST *(Optimized IL-2)*	Start Phase 1 in 1H 2021
		BNT152/153	Multiple Solid Tumors *(IL-7, IL-2)*	Start Phase 1 in 1H 2021
Others	**CAR-T Cells**	BNT211	Multiple ST *(CLDN6)*	Start Phase 1/2 in 2H 2020
	Next-Gen CP Immunomodulators	BNT311	Multiple ST *(PD-L1x4-1BB)*	Data update Phase 1/2 in 2H 2020
	TLR7 Ligand	BNT411	Multiple ST *(TLR7)*	Start Phase 1 in 2H 2020
	Infectious and Rare Diseases	BNT161	Influenza	Start first study in 1H 2021
		BNT162	COVID-19	Data update in June/July 2020
			Up to 10 Infectious Disease Indications	Start phase 1 in 1H 2021
			5 Rare Disease Indications	Start first Phase 1 in 1H 2021

[1]We expect this update to include an update on the ongoing study, including patient enrollment numbers, with full efficacy and safety data for an interim update expected in the second half of 2021; [2]As the trial is sponsored and conducted by Sanofi, the timing of data updates is not under our control, and is subject to change by Sanofi. [3]Our expectations for timing of milestones beyond 2020 are premised on and subject to the achievement of earlier milestones on their expected timelines. Press releases will be issued once first patient has been dosed. [4]BNT122 (iNeST) is also being investigated in arm 2 (N=15) of the 3 arm TNBC-MERIT trial, with BNT114 as an optional treatment; BNT114 is investigated in arm 1 (N=12) and arm 3 (N=15) of the TNBC-MERIT trial (total patients in study: N=42);

ST: solid tumors

Update on estimated COVID-19 impact on ongoing / planned clinical trials

- **Intend to initiate Phase 2 trials for BNT111, BNT113 and BNT 122 (iNeST, adjuvant) as planned**
  - Regulatory and trial start-up activities continuing
  - End of year 2020 anticipated start dates provide time for stabilization of clinical trial environment
- **Managing ongoing Phase 1 exploratory/dose escalation trials to support timely completion**
  - Evidence of slowed enrollment given restrictions at clinical sites and travel restrictions for patients
  - BNT111 and BNT114 less affected given near completion of enrollment
- **Optimizing ability to initiate and conduct FIH studies**
  - Maintaining timing guidance for initiation of FIH trial for CARVac (BNT211) program in 2020
  - Expected delays for several other trial starts of approximately 3-6 months
    BNT141 and BNT142 (RiboMabs), BNT 151 and BNT152/153 (RiboCytokines), BNT161 (Influenza), BNT171 (Rare Disease) and BNT411 (TLR7)

As COVID-19 situation remains dynamic, BioNTech will continue to monitor the situation and provide further updates if necessary

Building a next generation immunotherapy company

- **Rapid progress in key pipeline programs in both oncology and infectious diseases**
- **Multiple data read-outs & late-stage trial starts anticipated in 2H 2020**
- **Expanded transatlantic operations with newly established R&D hub in Cambridge, U.S.**
- **Strong momentum toward our vision of building a global immunotherapy company**

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Agenda

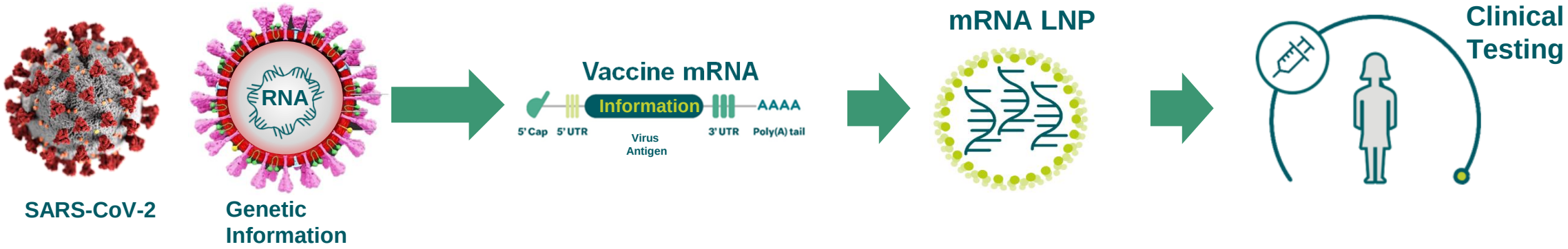
Overview and business outlook

Deeper dive on our key programs

- COVID-19 vaccine program (project “Lightspeed”)
- mRNA vaccines – FixVac and iNeST
- Antibodies
- CARVac platform – CLDN6 CAR-T
- RiboCytokines

mRNA pharmaceuticals as pandemic vaccines

- Synthetic variants of naturally occuring genetic molecules
- Biochemically defined biopharmaceuticals
- High purity and free of animal product
- Inherent immune-activating qualities with no need for additional adjuvant
- Stimulates both antibody and T-cell immune response at low doses
- More than 400 patients does in cancer setting since 2013 (both safety and efficacy)
- Highy scalable production with potential to manufacture hundreds of millions of doses



One of the broadest mRNA toolkits in the industry

Multiple mRNA formats

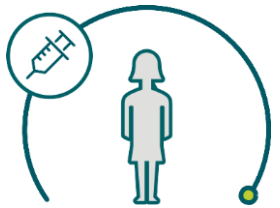
- uRNA
- modRNA
- saRNA
- taRNA

Broad formulation spectrum

- Liposomes / LPX
- LNPs
- Polyplexes

Various delivery routes

- Local
- Intratumoral
- Systemic
- Tissue specific



Adjustable activity in vivo
from minutes up to weeks

Rapid progress for COVID-19 vaccine program with global consortium

- "Lightspeed" program includes both vaccines and therapeutics
- BNT162: mRNA-based vaccine aimed at preventing COVID-19 infection
- Exploits highly potent Lipid-Nano-Particulate (LNP) mRNA vaccine platforms for the prevention of infectious diseases
- Preclinical activity demonstrated in multiple infectious disease models including Influenza, Ebola Virus, Zika Virus, HIV and others
- To be manufactured at state-of-the-art GMP certified mRNA manufacturing facilities in Europe
- First cohorts of BNT162 Phase 1/2 clinical trial have been dosed in Germany and USA

Pfizer

- Collaboration for co-development and distribution outside of China
- R&D sites from both companies
- Builds on previous R&D collaboration for mRNA-based vaccines for influenza

FOSUNPHARMA 复星医药

- Joint development in China and collaboration to conduct trials in China
- BNTX to receive up to $135m in upfront, investment and milestones
- Companies to share gross profits from sales in China

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Global BNT162 clinical development program ongoing

Phase 1/2 trials ongoing in Europe and US

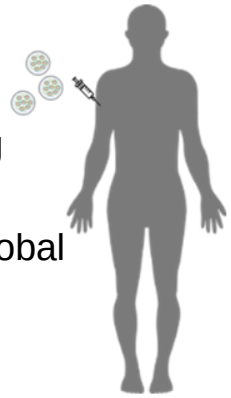
- Testing of 4 vaccine candidates across different countries
- Evaluating safety, efficacy and optimal dose
- Evaluating effects of repeated immunization for 3 candidates using uRNA or modRNA and one prime-only using saRNA
- Potentially accelerated approval pathways being discussed with global regulators

Designs

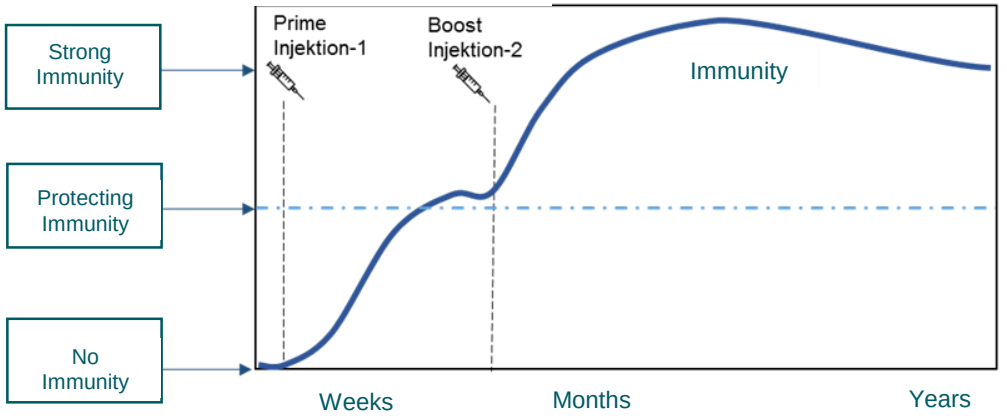
- Europe: dose escalation part up to 200 healthy subjects aged 18 to 55
- US: seamless study design with several thousand subjects;
  Initial dose-finding part up to 360 healthy subjects aged 18-85
- Dose range 1 µg to 100 µg
- Single-dose and 2-dose regimens to be tested in initial trial

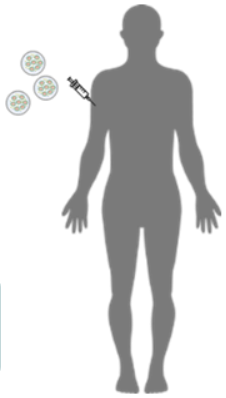
First cohorts dosed in each geography

First clinical data expected June/July 2020

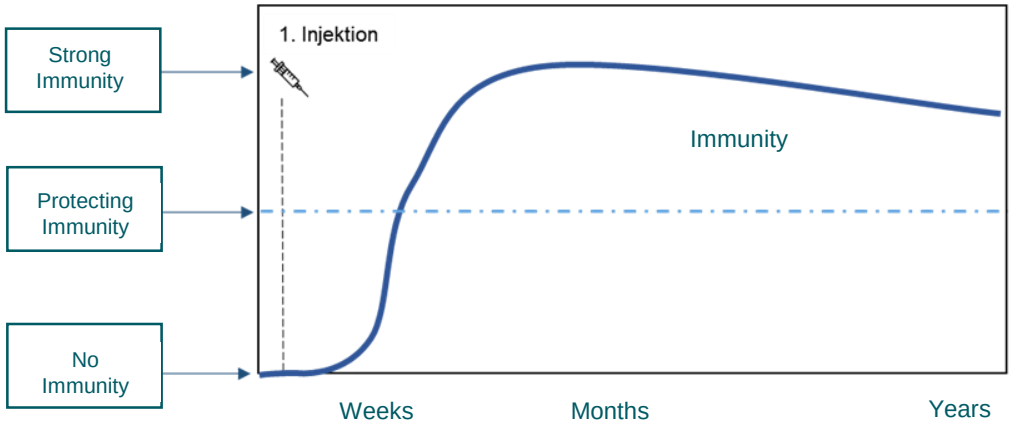


Prime / boost vaccine





Prime-only vaccine



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BNT162 Manufacturing Update

Clinical supply

- BioNTech to manufacture all drug substance for clinical supply at its GMP manufacturing facilities in Idar-Oberstein and Mainz (both in Germany, partially 24/7 manufacturing)
- Drug product supply initially supported by BioNTech‘s formulation partner Polymun, with Pfizer and BioNTech ramping up own capacity

Global pandemic and commercial supply capacities

- Joint establishment of pandemic supply capacities at many network sites
  - BioNTech: At Idar-Oberstein and Mainz facilities in Germany
  - Pfizer: At least at three U.S. sites (Massachusetts, Michigan, Missouri) and at Puurs facility (Belgium)
- BioNTech and Pfizer working closely together (joint teams) on scale-up, supply chain and network planning

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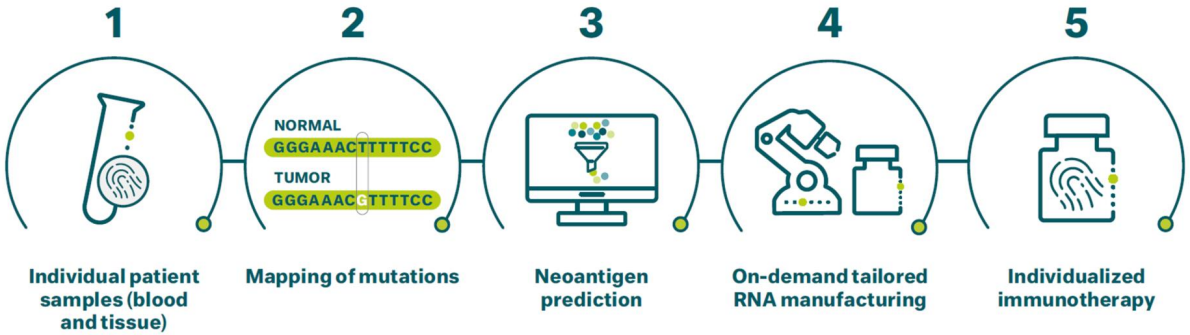
- CARVac platform – CLDN6 CAR-T
- RiboCytokines

Our mRNA vaccine platforms: FixVac and iNeST

FixVac

- **Off-the-shelf mRNA immunotherapy**
- **Targeting a fixed combination of shared antigens**
  - Non-mutated antigens shared among patients with a specific cancer type
  - Applicable for almost all types of tumor antigens

iNeST



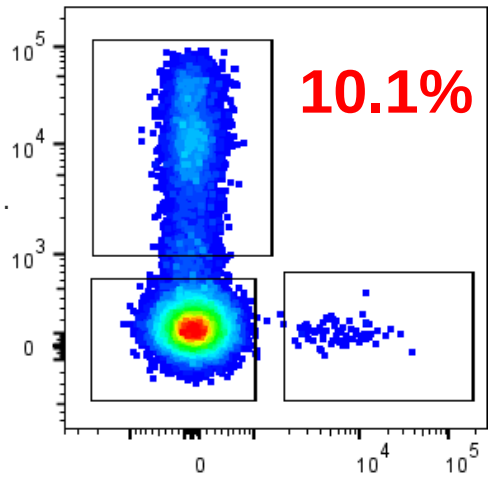
- **Fully individualized mRNA immunotherapy**
- **Targeting 20 neo-antigens unique to each patient**
  - Vast majority of neo-antigens are unique to individual patients
  - Applicable across solid tumor types

- **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**

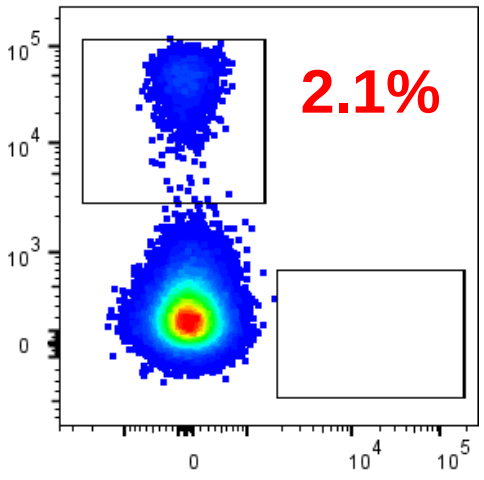
Kranz et al., Nature 2016

Our RNA-LPX vaccine approach

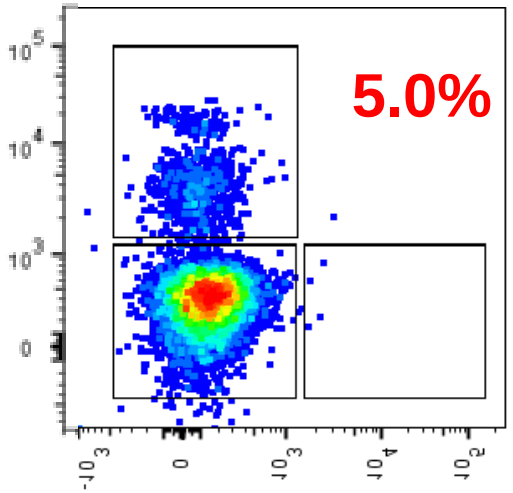
Strong vaccine-induced *ex vivo* CD8+ T cell responses[1] across different cancer types



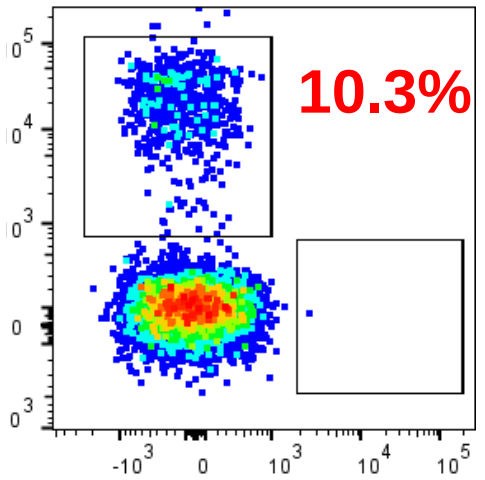
NY-ESO-1
Melanoma
BNT111, Lipo-MERIT trial



MAGE-A3
Melanoma
BNT111, Lipo-MERIT trial



HPV16-E7
Head Neck Cancer
BNT113, HARE40 trial



Mutant Neoantigen
TNBC
BNT114, TNBC MERIT trial

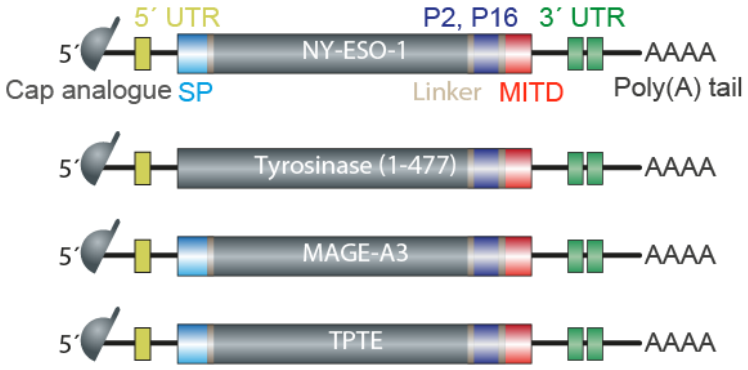
FixVac | **iNeST**

[1]T cell responses analyzed by *ex vivo* multimer staining analysis in blood

FixVac: 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 response[1]
  - 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 phase 2 with registrational potential in 2H 2020

*CPI: Checkpoint inhibitor; [1]based on ^{18}F-FDG-PET/CT analysis

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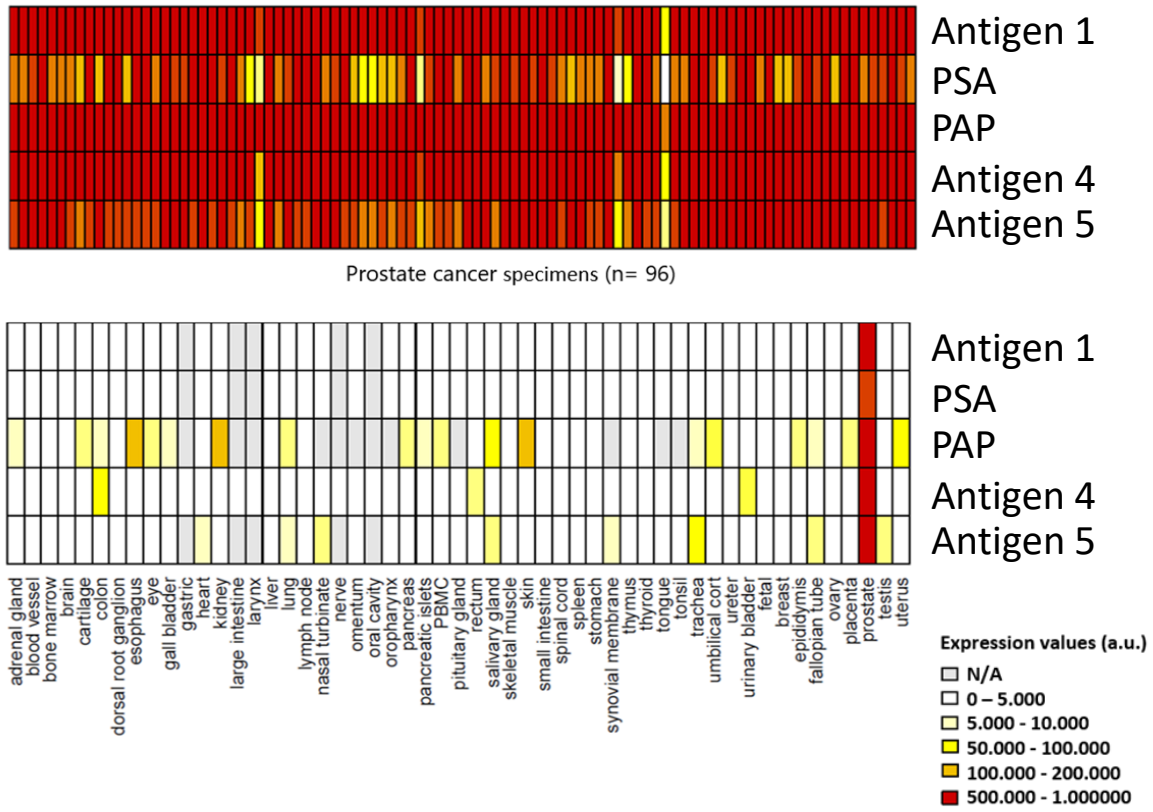
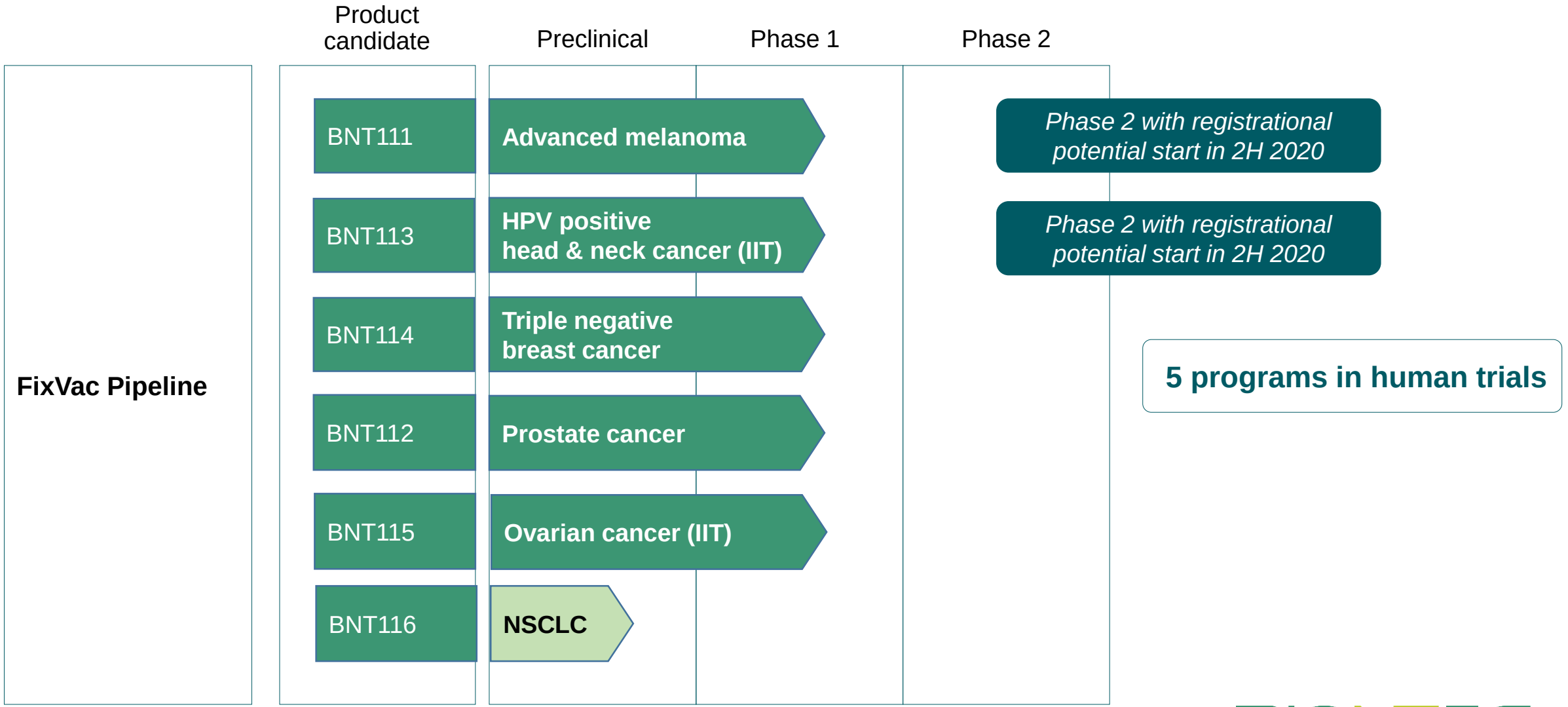
FixVac: BNT112 in Prostate Cancer



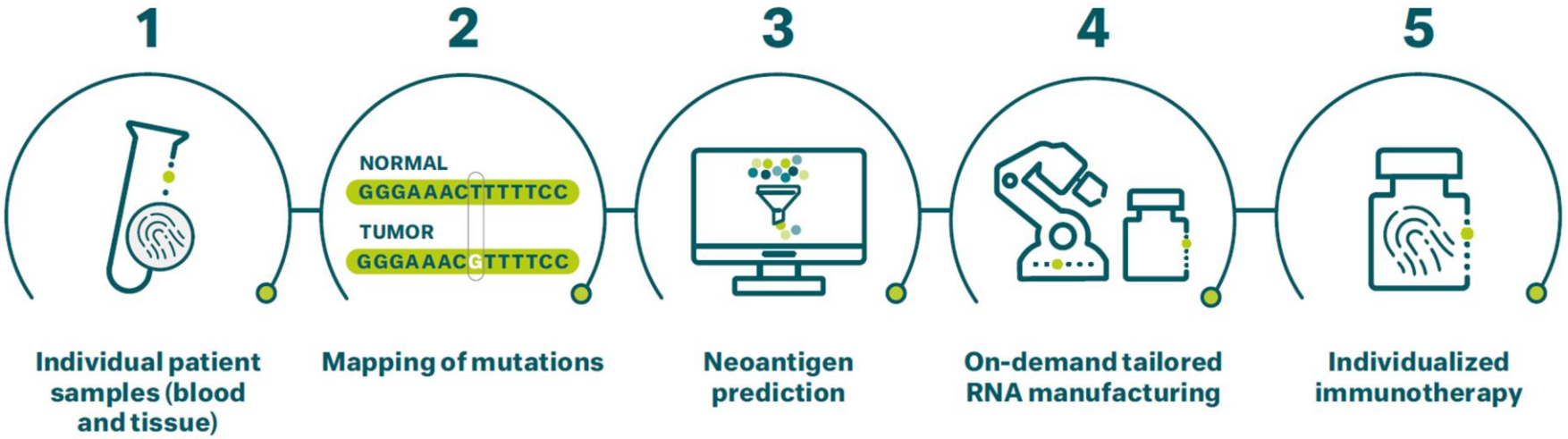
Ph1/2: first patient enrolled in December 2019

- Multipronged vaccine: Targeted antigens of BNT112 are 5 prostate cancer specific antigens (PAP, PSA and 3 undisclosed antigens)
- RNA-LPX vaccine format validated by our FixVac Melanoma program

FixVac: a flexible format designed to be rapidly adapted for different tumors



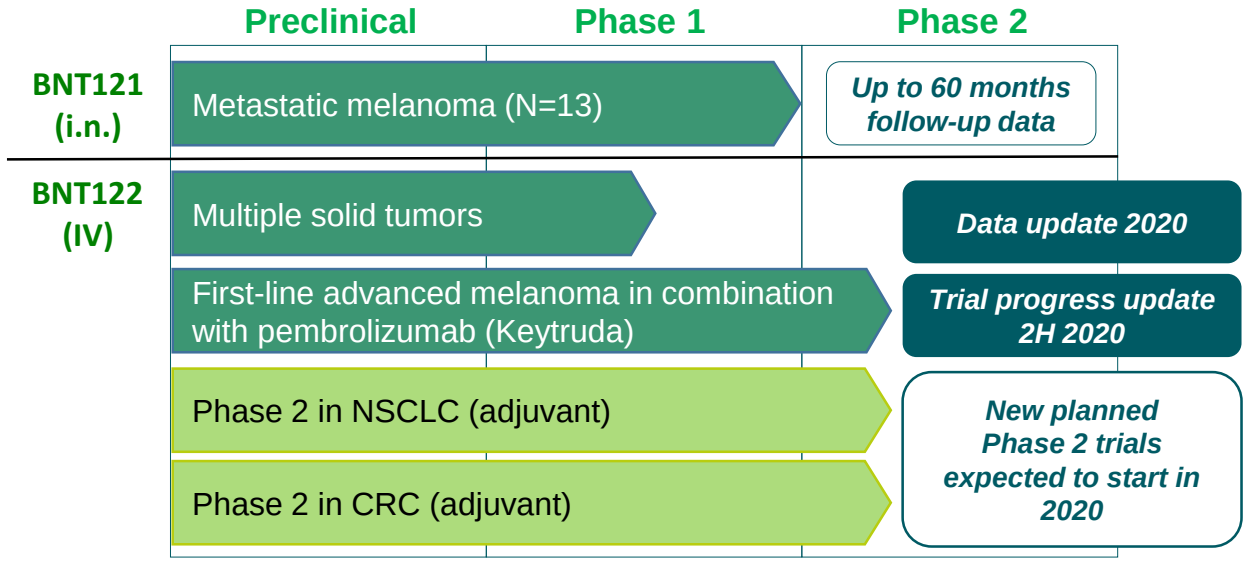
Individualized Neoantigen Specific Immunotherapy (iNeST)



Turnaround time reduced from three months to six weeks

Overview

- Targeting multiple neoantigens
- Intended to be a universal approach applicable for the majority of cancers
- 50:50 profit/loss share with Genentech



Currently being evaluated in ≥ 8 solid tumor indications

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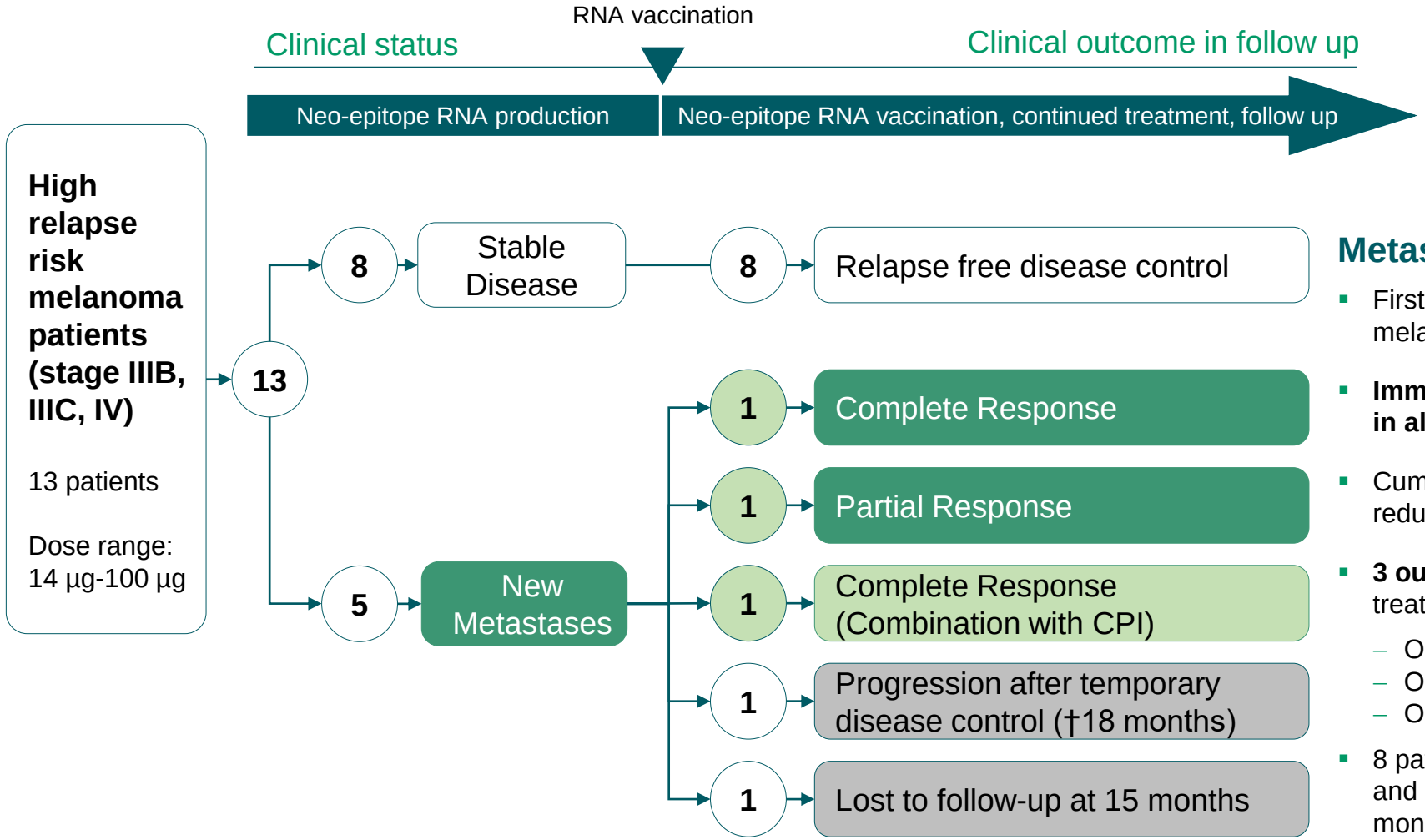
BNT121: Interim clinical activity data



Metastatic melanoma (N=13)

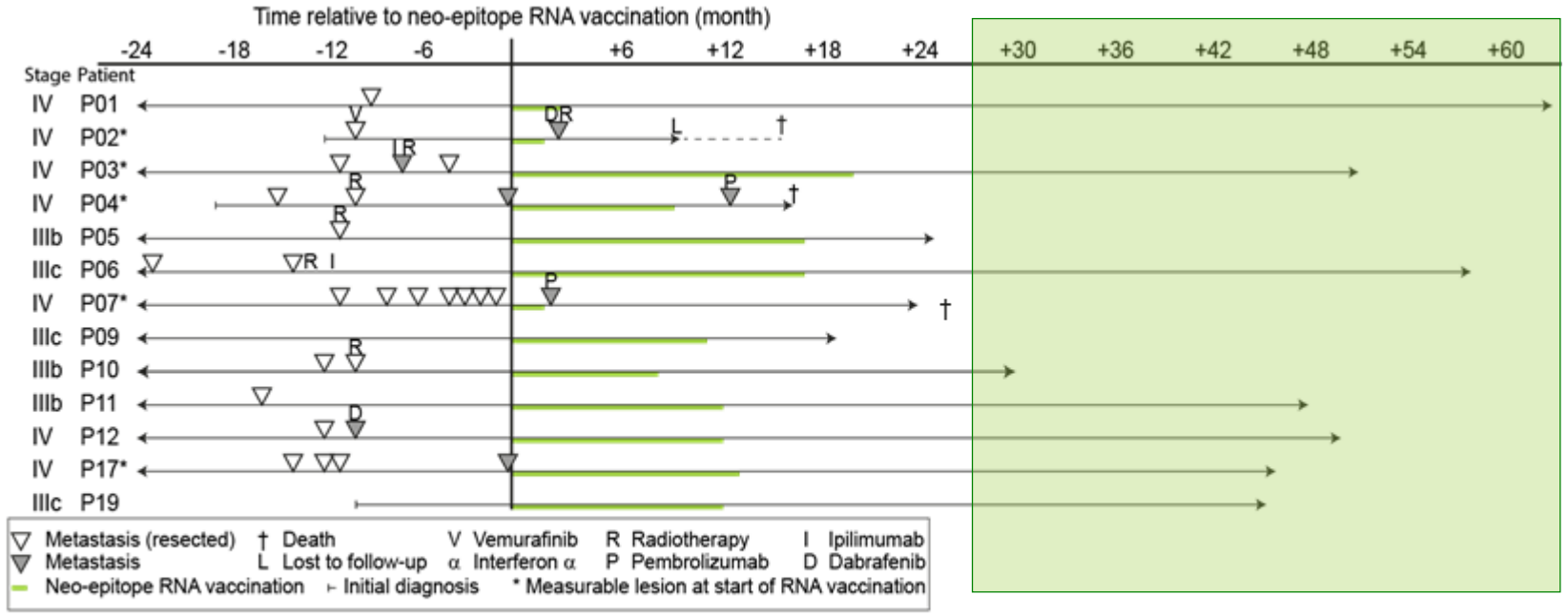
- First-in-human Phase 1 with 13 patients with melanoma stage IIIB, IIIC, and IV; intranodal delivery
- **Immune responses** against at least one neoantigen **in all patients**
- Cumulative rate of metastatic events significantly reduced, resulting in a sustained PFS
- **3 out of 5 pts with melanoma relapses** developed treatment-related **objective clinical responses**
  - One complete response (CR), relapse-free 26 mon
  - One immunotherapy-related partial response (PR)
  - One CR in combination with anti-PD1
- 8 patients (no detectable lesions at start) relapse free and recurrence-free for the whole follow-up (12 to 23 months)

Sahin et. al. Nature 2017

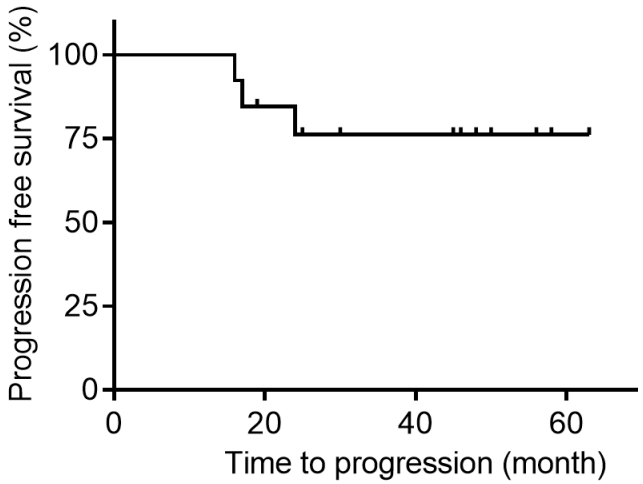
Update for BNT121 (as of October 2019)

Melanoma Stage IIIB, IIIC, and IV, 13 patients, intranodal delivery against 10 neoantigens

Metastatic relapse analyses



9 of 13 patients without documented PFS events



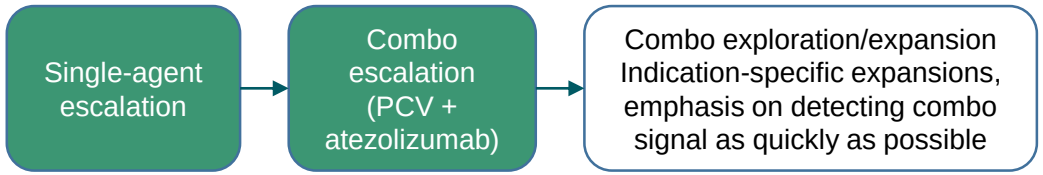
Has shown relapse free disease activity with BNT121 iNeST in adjuvant melanoma

iNeST: BNT122 updates expected for phase 1 in 2020, for phase 2 in 2021

***Phase 1a/1b in Multiple Solid Tumors*:**
Open-label, dose-escalation study of safety and pharmacokinetics

Genentech

- **Enrollment:** **Up to 770**
- **Tumor types:** Melanoma, NSCLC, bladder cancer, CRC, TNBC, renal cancer, H&N cancer, other solid tumors



- Primary outcome measures in iNeST + atezolizumab treated participants compared with iNeST-only participants include:
  - Dose-limiting toxicities
  - Adverse events

Phase 2 in Advanced Melanoma:
Interventional open-label, multicenter randomized study of efficacy and safety

Genentech

- **Enrollment:** **132**
- **Tumor types:** Advanced melanoma

- Evaluate the efficacy and safety of iNeST in combination with pembrolizumab vs. pembrolizumab alone in participants previously untreated in advanced melanoma (first-line)
- Primary endpoint in iNeST+ pembrolizumab treated participants compared with pembrolizumab-only participants: progression-free survival

Preliminary observations in ongoing trials with BNT122 (RO7198457) (IV administration, RNA-LPX):
- iNeST can be manufactured for individual patients with clinically relevant turn-around times across a range of tumor types
- iNeST +/- atezolizumab (Tecentriq) has a manageable safety profile
- Strong immunogenicity across a range of tumor types

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Digitization and automation for neo-antigen vaccine manufacturing

Paperless documentation

Semiautomatic 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

SIEMENS

BIONTECH

Agenda

Overview and business outlook

Deeper dive on our key programs

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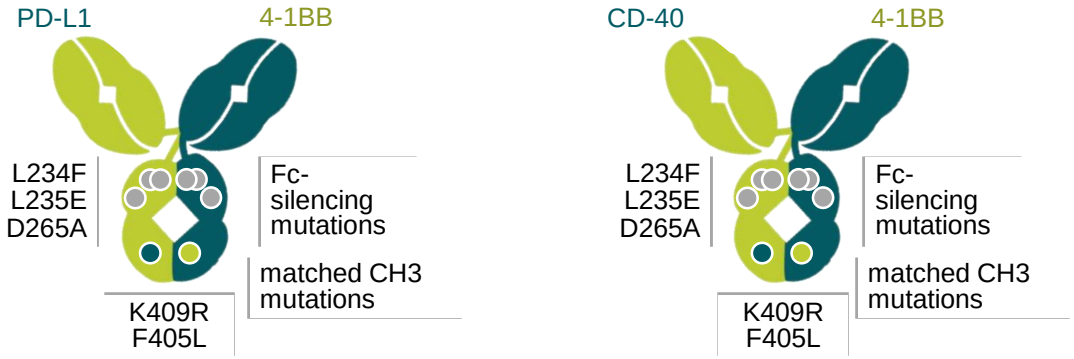
- Antibodies
- CARVac platform – CLDN6 CAR-T
- RiboCytokines

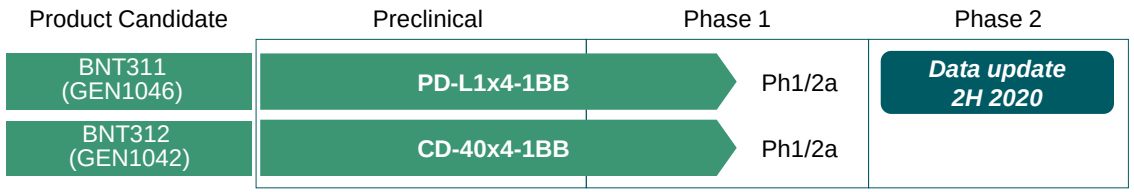
Bispecific Next-Gen CP immunomodulators and targeted cancer antibodies

BNT311 and BNT312: Next-Gen checkpoint immunomodulators

Two bispecific antibodies partnered with Genmab

- Potential “first-in-class” bispecific antibodies
- Conditional activation of immuno-stimulatory checkpoint activity
- 50:50 profit/loss share
- Both programs are now in the clinic





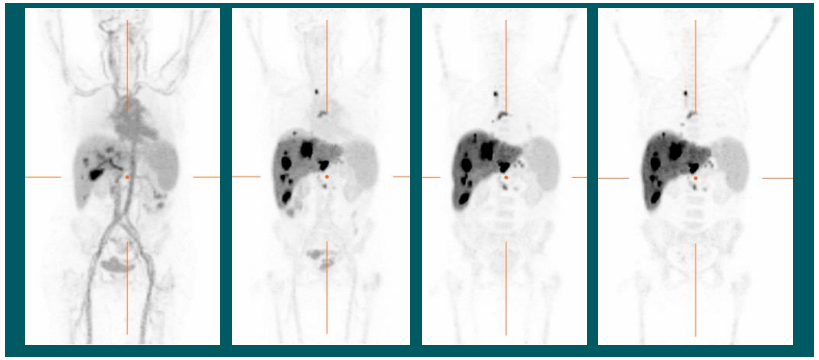
BNT321: Ab targeting Cancer Associated Carbohydrate sLe^a

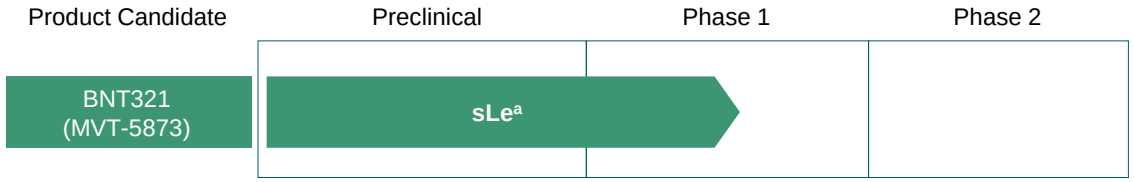
- Subnanomolar affinity, potent cell killing by ADCC &CDC
- Targets sialyl Lewis A epitope (sLe^a) present in a range of glyco-proteins (CA19-9): specifically expressed in pancreatic and other cancers
- CA19-9 also a prognostic marker and functionally associated with carcinogenesis[1]

Preliminary data

- 6 patients evaluated in combo with chemotherapy
  - 4 / 6 met the criteria for PR and 2 / 6 met the criteria for SD
  - BNT321 was generally well tolerated by all 6 patients

PET/CT imaging study with MVT-2163 (PET conjugated Ab version; ^{89}Zr-DFO-HuMab-5B1)





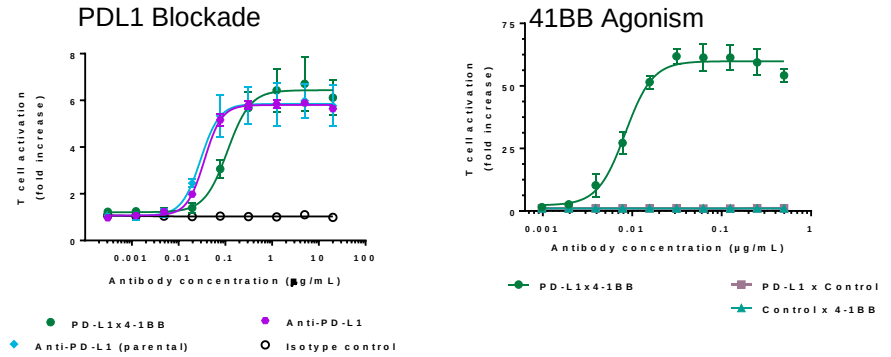
[1] Engle et al, Science 2019: The glycan CA19-9 promotes pancreatitis and pancreatic cancer in mice
CP: checkpoint; PR: partial response; SD: stable disease

Next-Gen checkpoint immunomodulator: GEN1046 (BNT311)

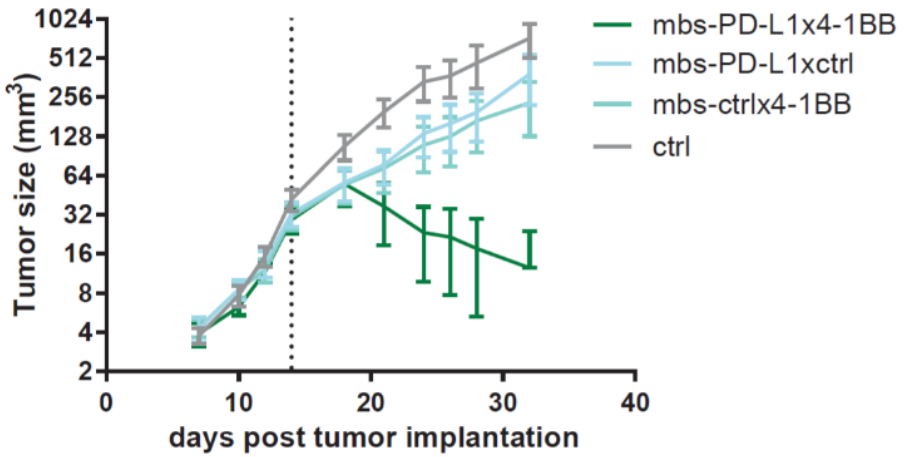
Characteristics

- Bispecific antibody combining constitutive CPI blockade and conditional co-stimulatory activity
- Enhanced proliferation of antigen specific activated T cells in the presence of PD-L1+ cells

Mode of Action



Preclinical antitumor activity beyond PDL1 blockade



1. **Constitutive PD-L1 blockade & conditional 4-1BB agonism**
2. **Increased tumor infiltrating lymphocyte (TIL) expansion in human tumor tissue cultures *ex vivo***
3. **Induced tumor regression of murine tumors superior to pure PD-L1 blockage and is associated with an increase in tumor-specific CD8 T-cells**

*SITC 2018, Altintas et al

Bispecific antibody GEN1046 (BNT311): Phase 1/2a in solid tumors

First-in-human, open-label, dose-escalation trial with expansion cohorts to evaluate safety of GEN1046 (PD-L1x4-1BB) in subjects with malignant solid tumors

- **Enrollment:** 192
- **Data update:** 2H 2020
- **Tumor types:** Malignant Solid Tumors

Intervention:

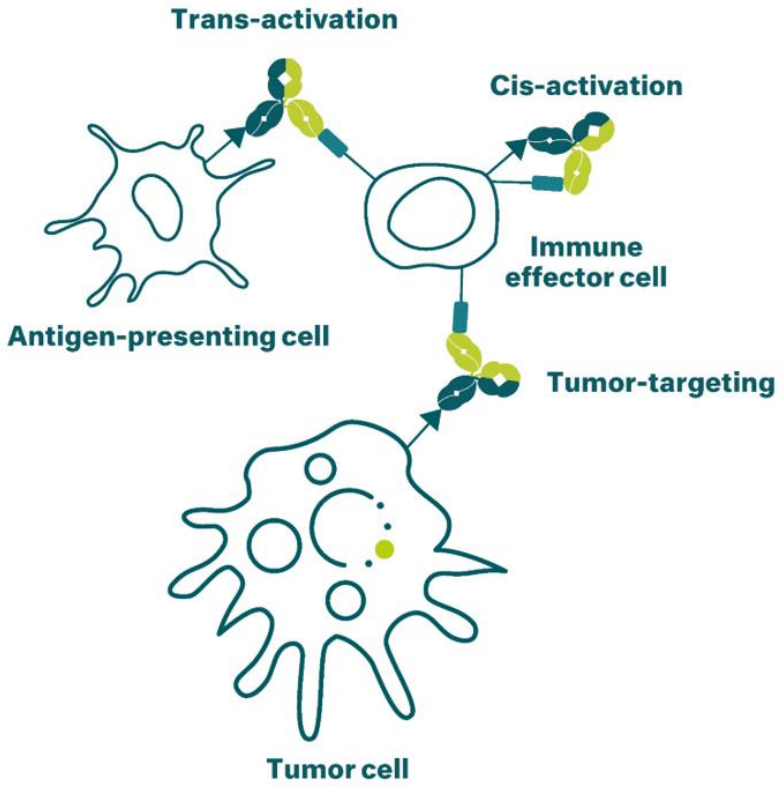
- GEN1046 (BNT311) is a PD-L1x4-1BB bispecific antibody that induces conditional activation of T cells through 4-1BB stimulation which is dependent on simultaneous binding to PD-L1
- GEN1046 (BNT311) IV once every 21 days
- Dose levels determined by the starting dose and the escalation steps taken in the trial

Description:

- Open-label safety trial
- Two parts, a dose escalation (phase 1, first-in-human) and an expansion part (phase 2a)

Key Primary endpoints:

- Dose limiting toxicity
- Adverse events
- Safety laboratory parameters



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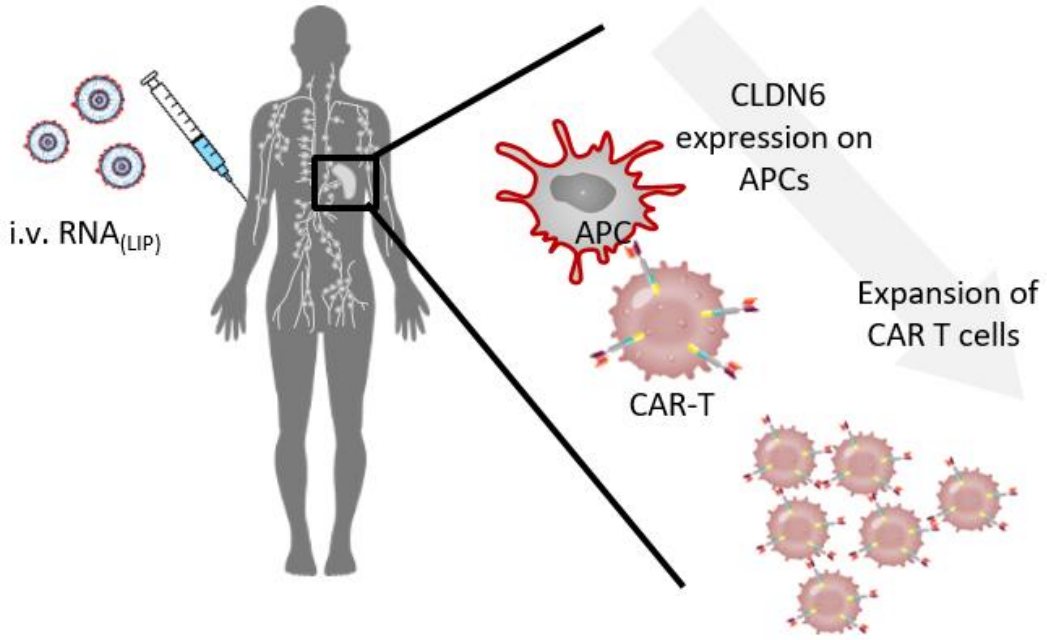
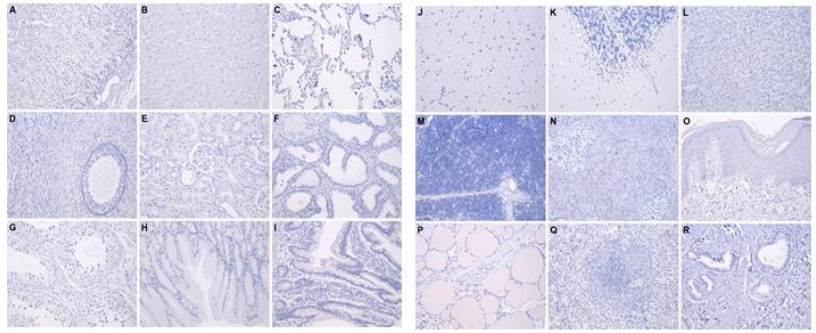
- **CARVac platform – CLDN6 CAR-T**
- RiboCytokines

BNT211: Next generation CAR-T targeting CLDN6 with CARVac “primer”

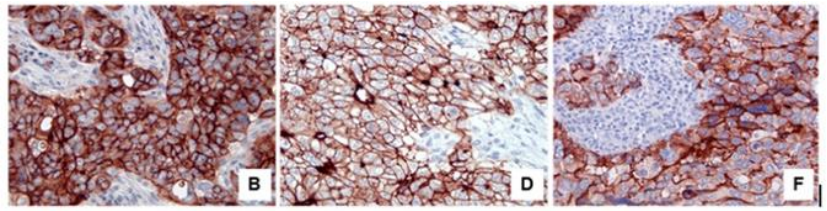


CAR-T cell therapy + RNA Vaccine to amplify CAR-T cell *in vivo*

CLDN6 is <u>not</u> present in healthy tissues



CLDN6 is expressed in multiple cancers



Ovarian cancer Testicular tumor Lung cancer

Eradication of advanced tumors demonstrated in an ovarian carcinoma xenograft model

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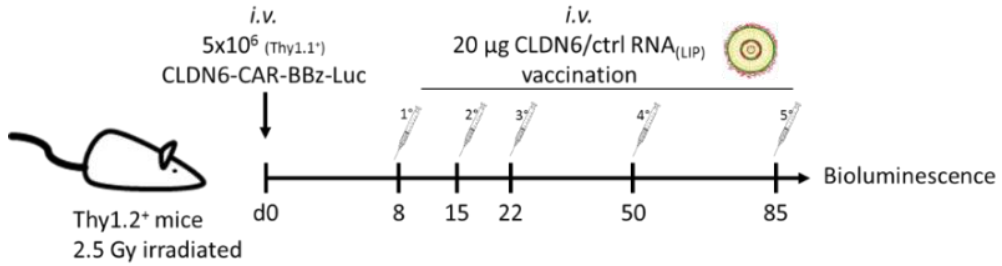
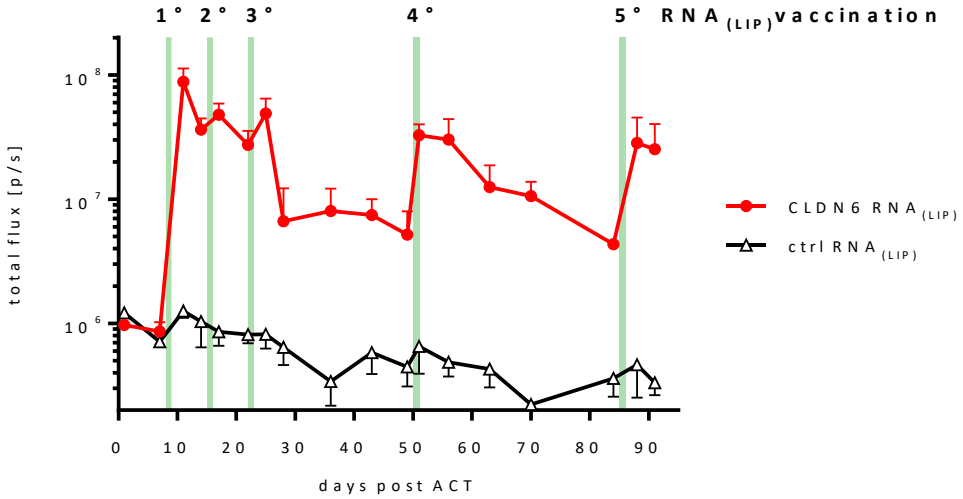
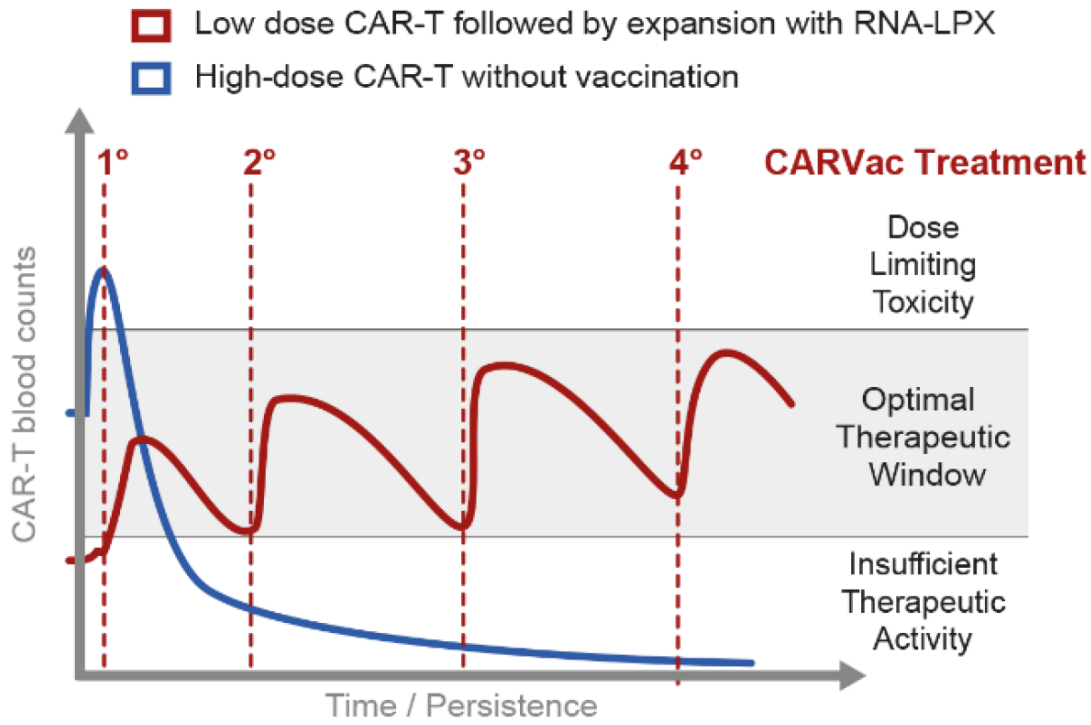
BNT211: Next generation CAR-T targeting CLDN6 with CARVac “primer”







Applicability shown for CLDN6, CLD18.2, CD19 CAR-T cells

RNA-lipoplex vaccine shown to enhance expansion & persistence of CAR-T

[1]Reinhard et al, Science 2020: An RNA vaccine drives expansion and efficacy of claudin-CAR-T cells against solid tumors

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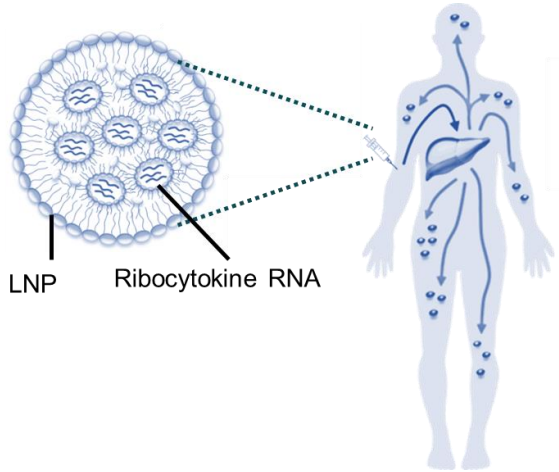
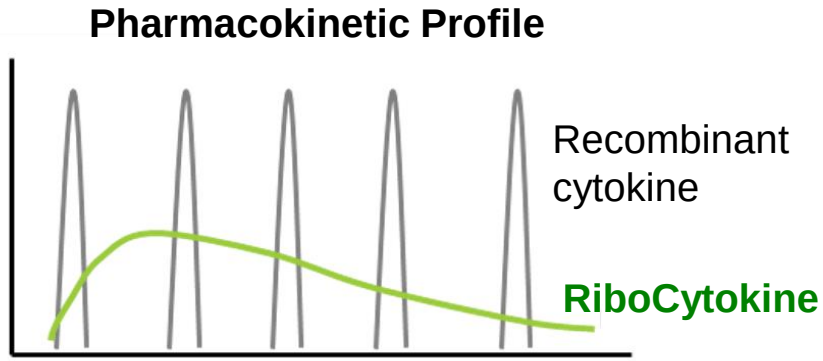
RiboCytokines: a novel therapeutic platform

The Concept

- Cytokines encoded by mRNA and produced in the patient
- Improved PK properties to improve tolerability and activity
- Cytokine design to improve immunological properties and tolerability



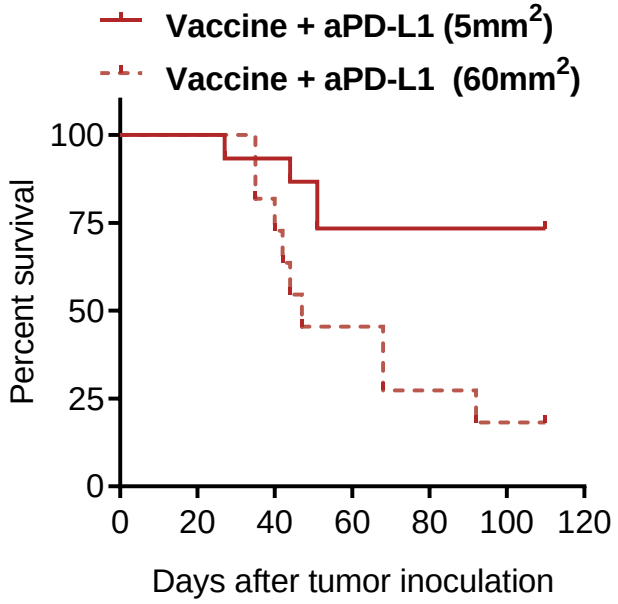


Therapeutic Goals

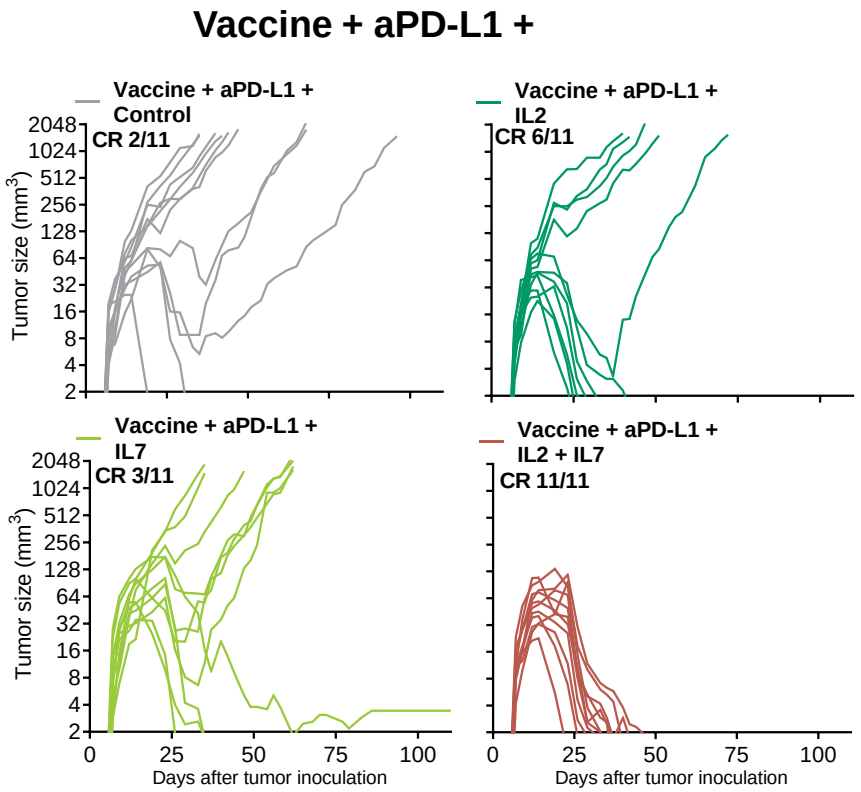
- Overcome resistance mechanisms by therapeutic synergy
- Improve activity of mRNA Vaccines

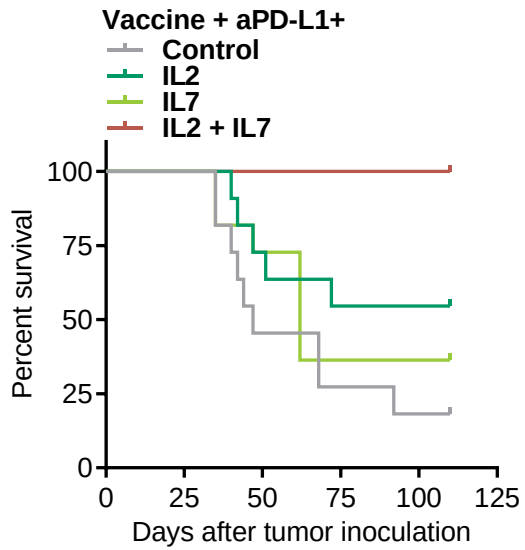
Worldwide rights; wholly owned

RiboCytokines boosted activity of vaccination and PD-L1 blockade in mouse model



CT26 tumor model, vaccine antigen: gp70





CT26 tumor model, tumor size: 60mm^2
CR: complete response,
vaccine antigen:gp70

Effect of tumor size on treatment success of vaccination + aPD-L1

RiboCytokines boost the clinical activity of vaccination + aPD-L1 in large tumors

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