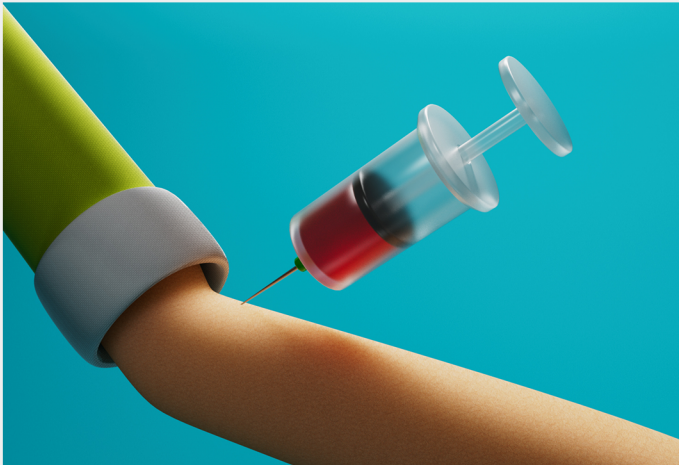


BIONTECH

iNeST

How we produce our individualized Neoantigen Specific Therapies (iNeST*) against cancer



Obtaining blood and tumor sample.

With our iNeST program, we are aiming to develop an individualized cancer therapy for each patient's tumor. For this purpose we receive a blood and tumor sample from the patient for analysis.

01

Extraction of healthy cells.

To obtain the genomic material, the cancer patient's blood is now processed in our biosampling department in order to extract healthy cells.

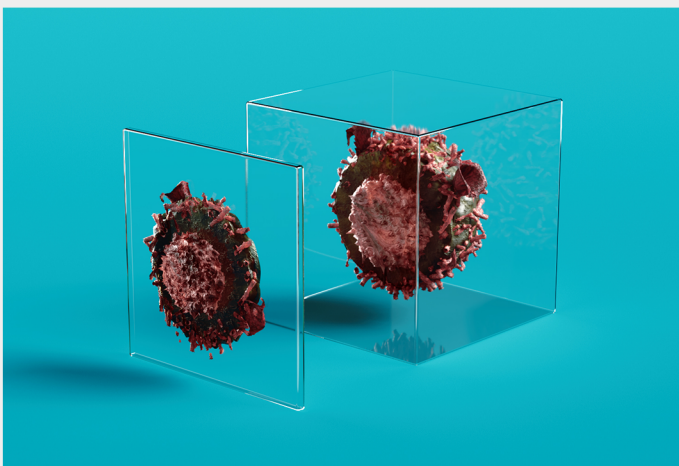
02



Preparation of tumor sample.

In parallel, we prepare fine tissue sections from the tumor sample to investigate the molecular make-up of the tumor.

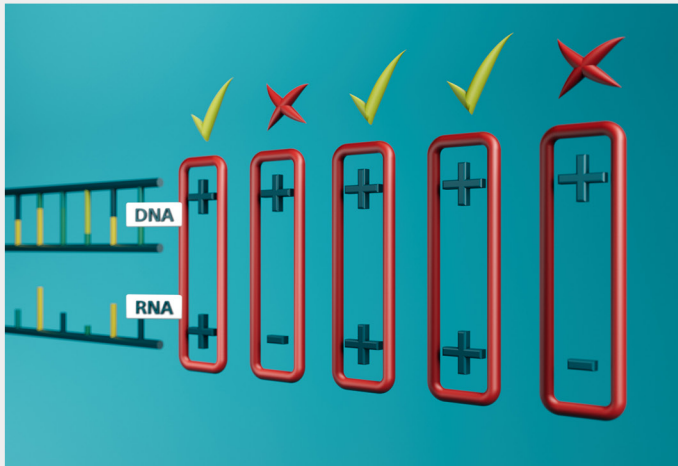
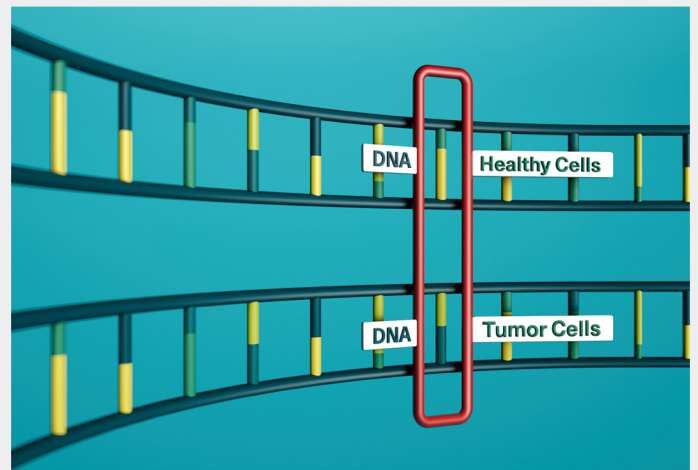
03



Analysis and comparison.

By analyzing and comparing these genomic sequences, we can determine what kind of genetic modifications (=mutations) can be found in the tumor cells compared to healthy cells.

04



Prioritization of mutations.

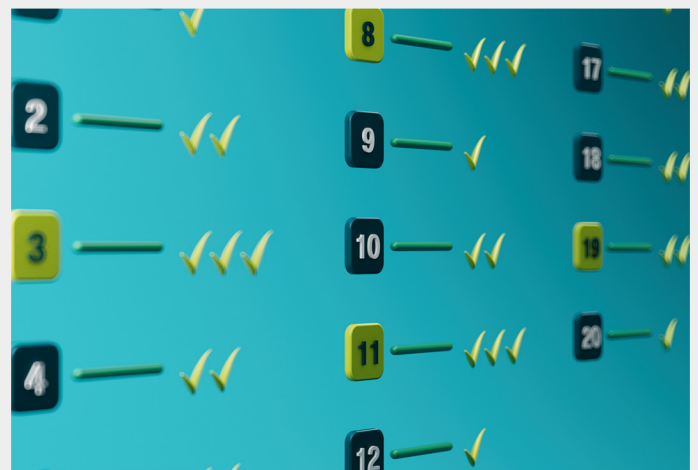
Only mutations which occur both in the DNA as well as in the RNA of the cancer cell are eligible for our mRNA-based cancer therapy, as these will be utilized to help the immune system to identify the tumor cells.

05

Selection of mutations.

Afterwards our proprietary software will select up to 20 of the most promising mutations with the highest possibility to help the immune system to recognize the cancer.

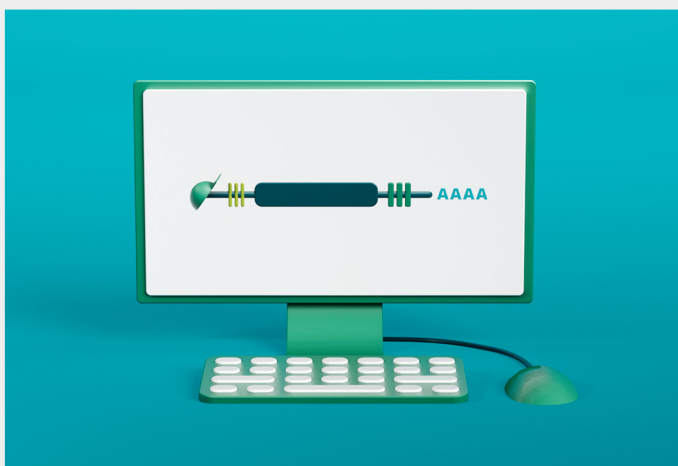
06



Design of lead structure.

Once the selection process is complete, we define and optimize the lead structure for the mRNA-based therapy and manufacture the individualized therapy under Good Manufacturing Practice (GMP) conditions.

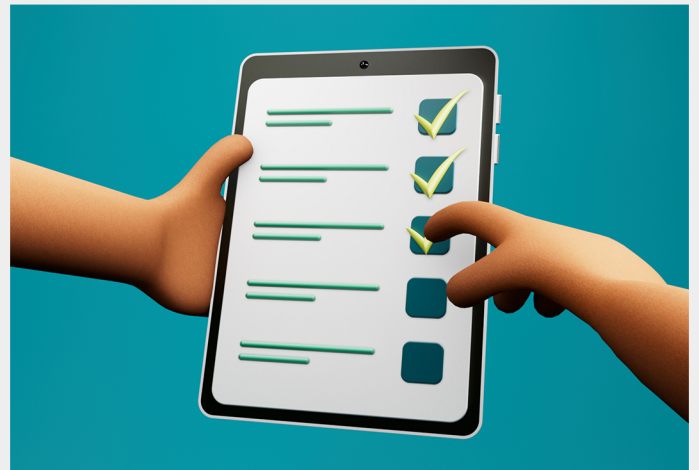
07



Quality controls.

The individualized therapy has to pass different types of quality controls to verify that all requirements for a drug product are fulfilled.

08



Transfer to hospital.

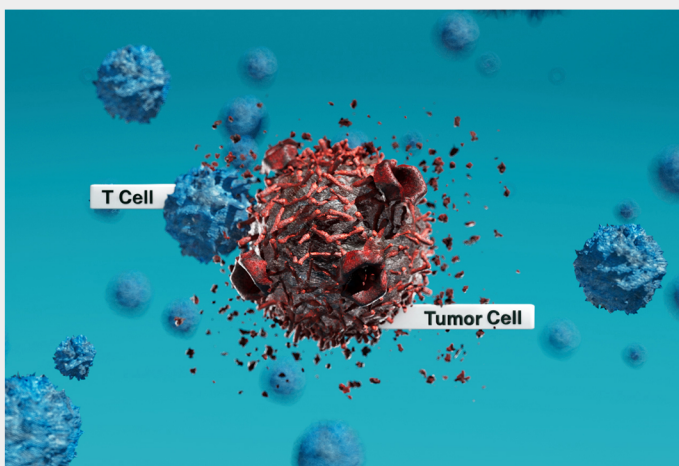
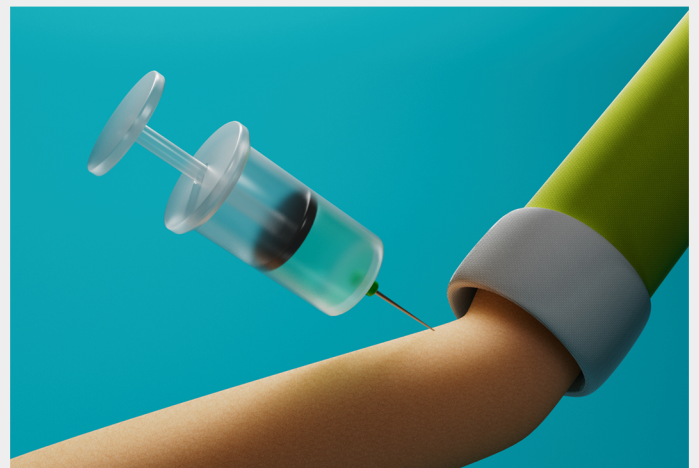
If this process is concluded successfully, the individualized therapy is released and can be transferred to the hospital where the cancer patient is treated.** The whole production process takes about 4-6 weeks.

09

Administration to patient.

At the hospital the individualized mRNA therapy is administered to the patient by a designated healthcare professional.

10



Immune response.

After administration, the patient's immune system will elicit an immune response against the defined, individual target structure of the tumor cell by generating T cell responses. The T cells will attack the tumor and destroy the tumor cells.

11