INCITE

Immune Niches for Cancer ImmunoTherapy Enhancement

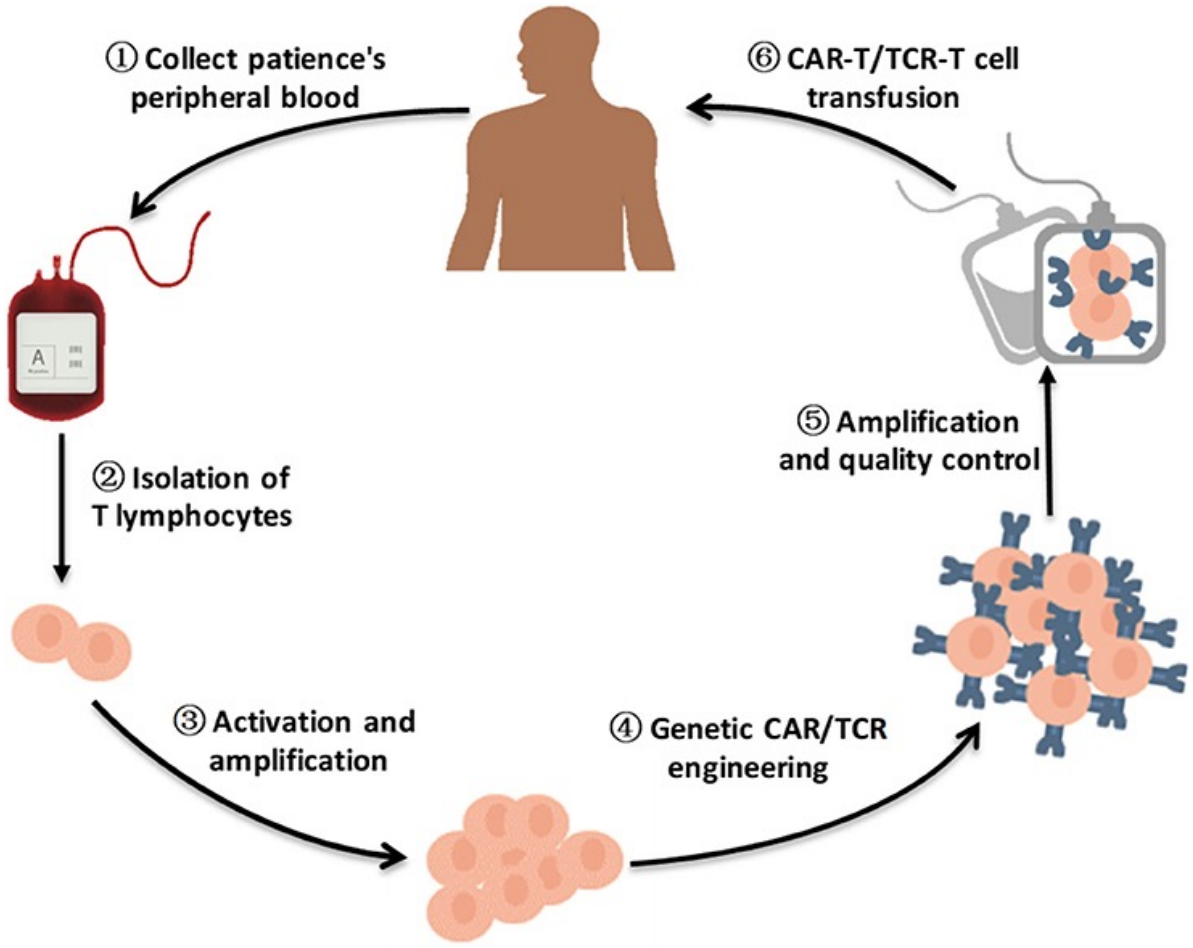
The vision of **INCITE** is to **create** a transformative **immune niche** to aid in **the generation and expansion of the fittest tumor-rejecting T cells** for more **efficient immunotherapy of cancer**

The **long-term vision** is to open up for **targeted cellular immunotherapies** against cancers and infectious diseases by learning how to **rationally manipulate adaptive immune** cell differentiation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 964955

Horizon 2020 EIC Pathfinder
Start May 2021
Period 4 years

Adoptive Cell Transfer immunotherapy

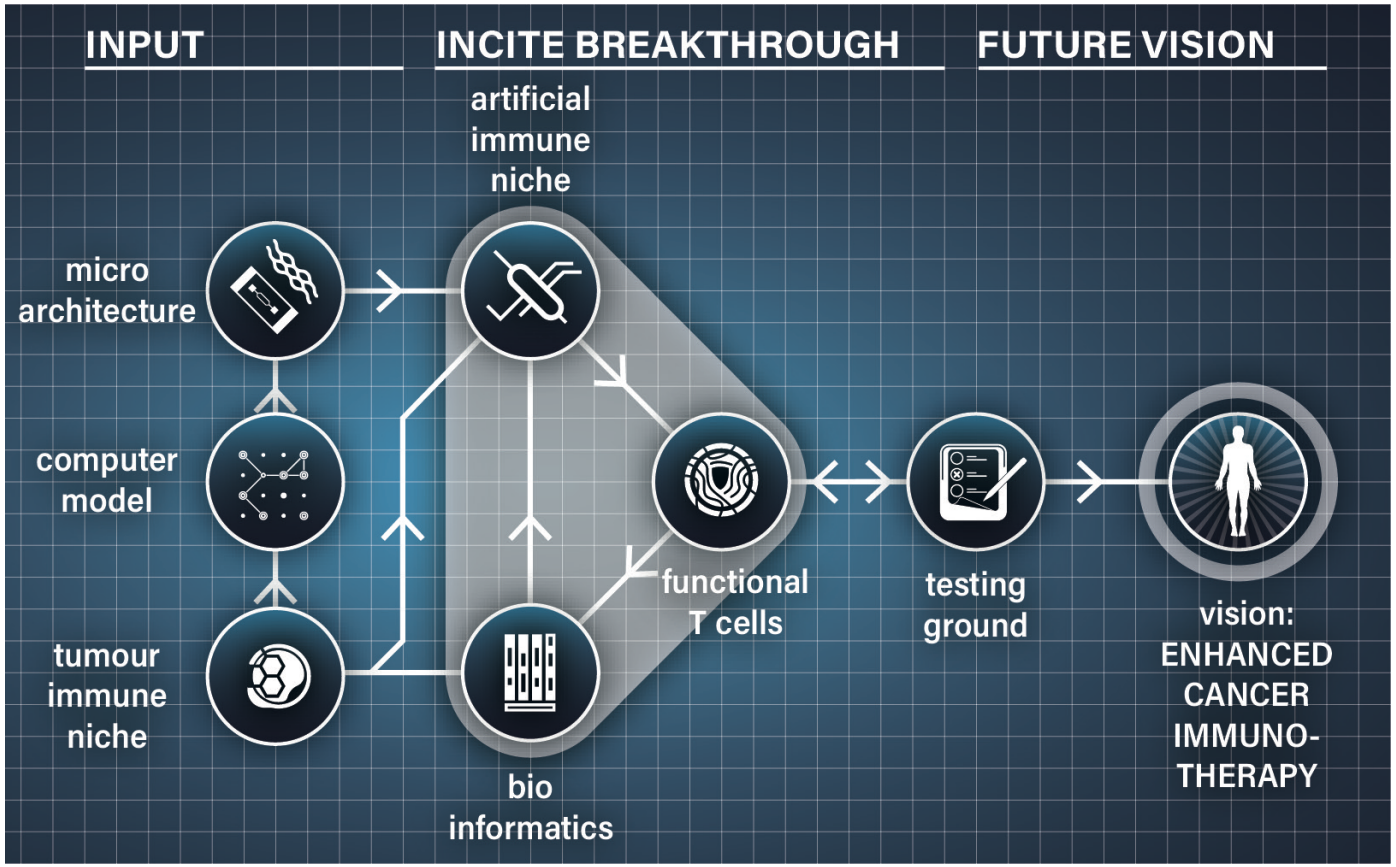


CAR-T/TCR-Tg prduction scheme overview

- Effective against leukemias and partially against lymphomas
- Not effective against solid tumors
- T cells with stem cell features more persistent, resilient
- T stemness is currently not possible to create or maintain *in vitro*
- T stemness is physiologically occuring in secondary/tertiary immune niches

doi.org/10.3389/fimmu.2019.02250

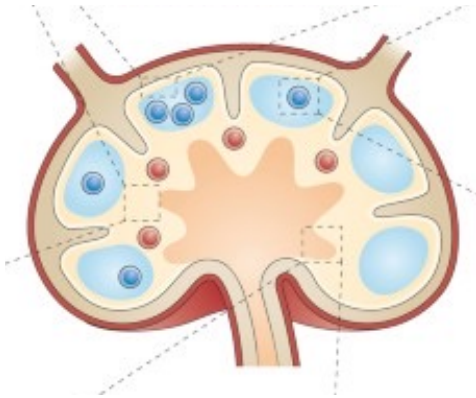
The INCITE project outline and objectives

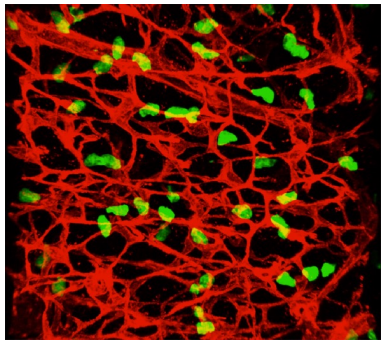


- Description of immune niches
- Fabrication of an artificial immune niche
- Production of more fit T cells
- Profiling of the fittest anti-tumor T cells

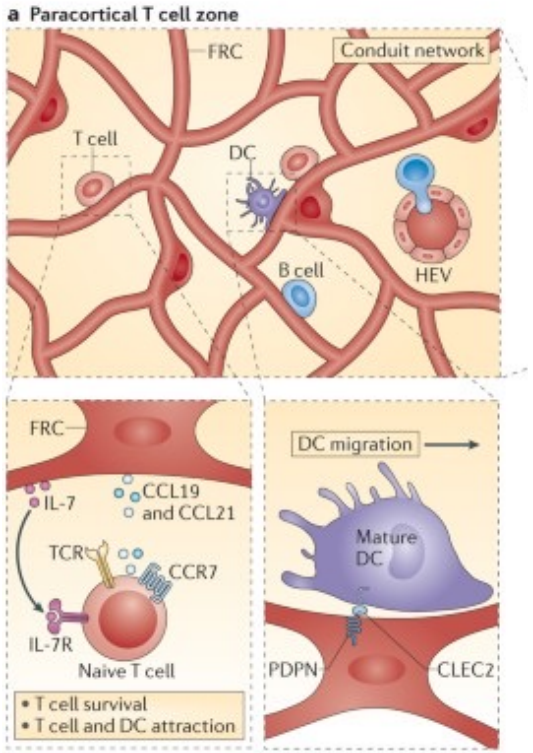
Fabricating the immune niche

The model immune niche



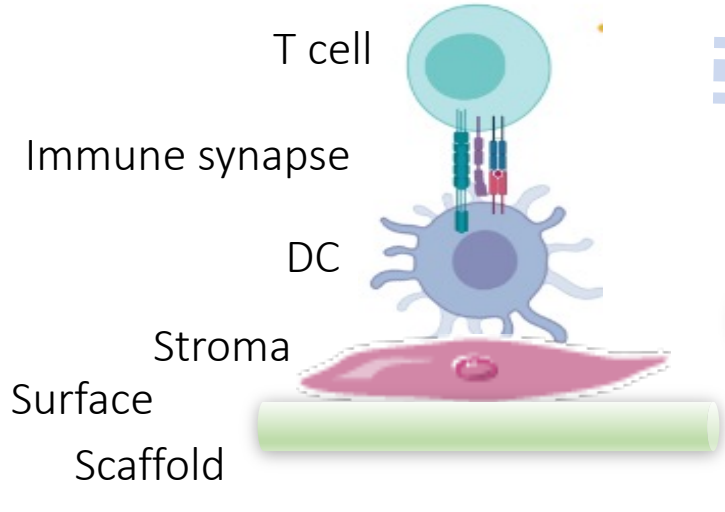


Ramon Roozendaal et al. Int. Immunol. 2008;20:1483-1487

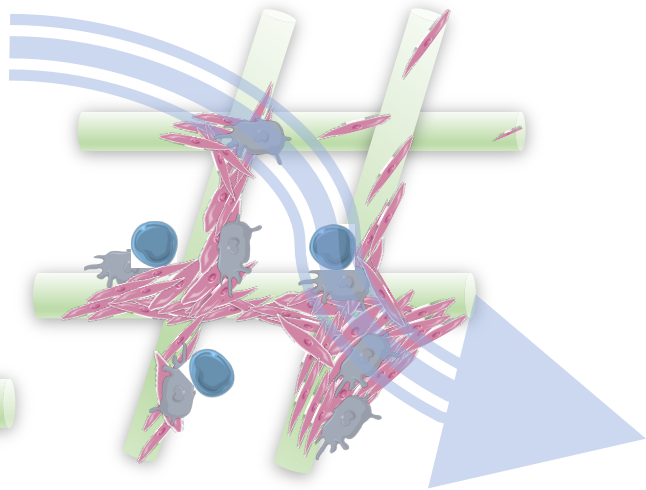


Fletcher, A., *et al. Nat Rev Immunol* **15,** 350–361 (2015). https://doi.org/10.1038/nri3846

The components



The assembly



Readouts

- Transcriptomics (immune niches, T cells)
- T cell phenotyping and functionality
- Tumor killing efficiency *in vitro/in vivo*

INCITE competences

Material science

TU WIEN — wt Institute of Materials Science and Technology

Microphysiological systems

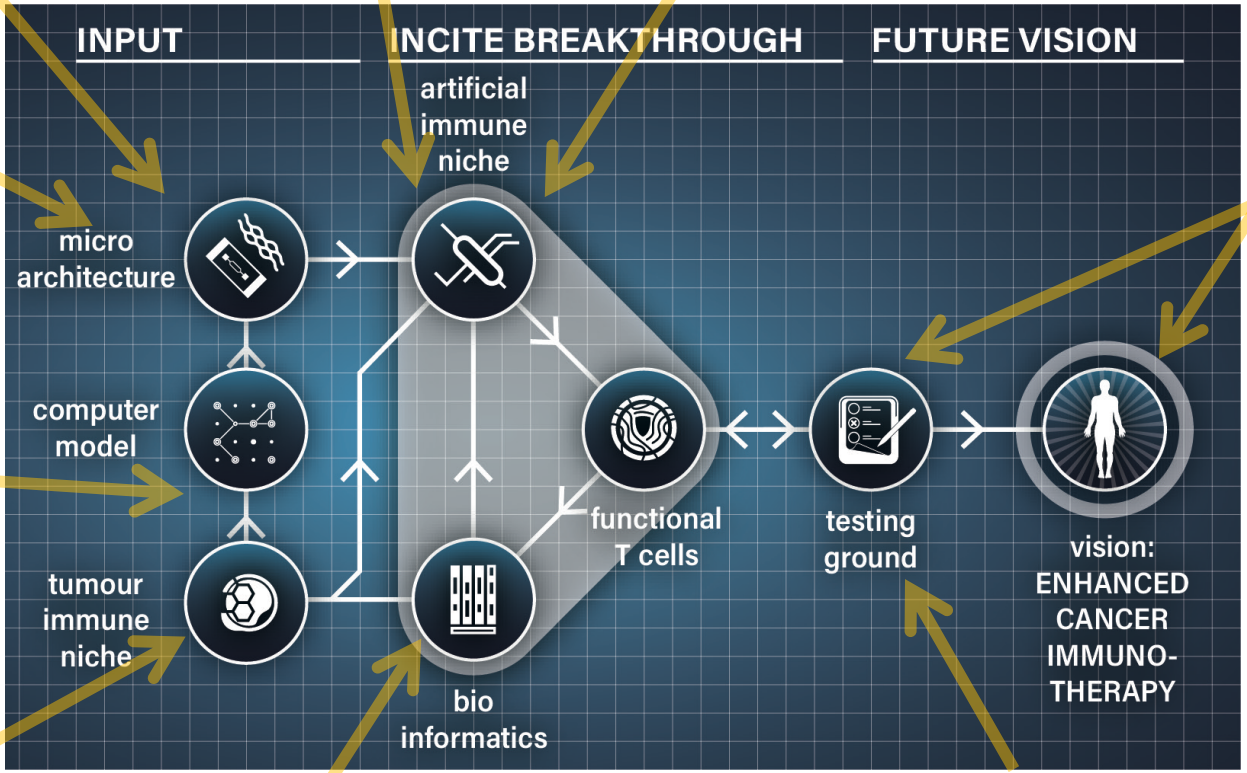
NTNU
Norwegian University of Science and Technology

Lymph node organogenesis

I.R.C.C.S. Ospedale San Raffaele
Gruppo San Donato

3D printing

upnano



I.R.C.C.S. Ospedale San Raffaele
Gruppo San Donato

Adoptive cell therapy

rci
immune cells for life

Fluidic modelling

NTNU
Norwegian University of Science and Technology

Tumor- immune microenvironment

I.R.C.C.S. Ospedale San Raffaele
Gruppo San Donato

Bioinformatics

MEDICAL UNIVERSITY INNSBRUCK

T cell persistence and tumor immunology

de Duve INSTITUTE

INCITE Exploitation and collaboration opportunities

Materials and surfaces for tissue engineering

Artificial lymph nodes for T and B cell differentiation

Disease model for cancers and infections

Tumor metasases

3D printing/ microfluidics

Drug testing

Fluidic design and modelling

Adoptive cell therapy

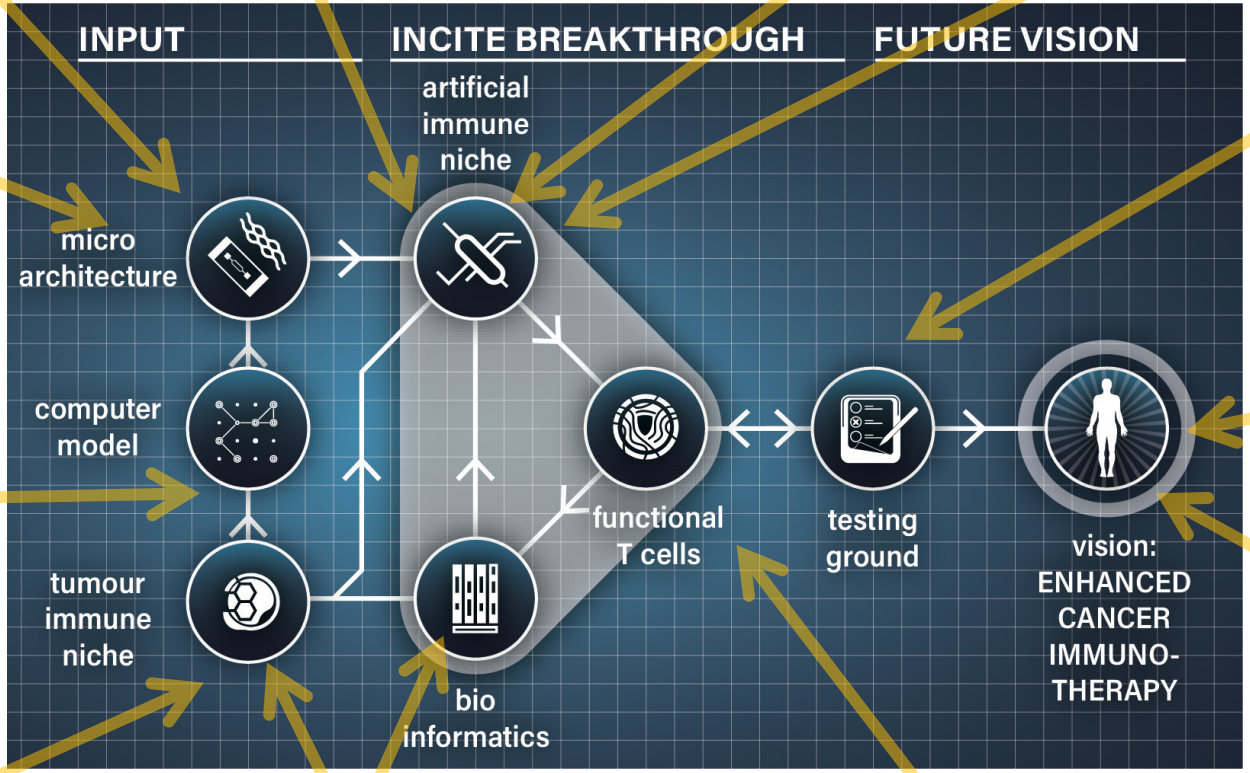
Vaccines

Tumor- immune microenvironment

Drug target identification

T cell manipulation technologies

Upscaling



INCITE Team

Horizon 2020 EIC Pathfinder
European Union Funding
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