Asgard Therapeutics' Journey in Healthcare Innovation:

A reflection on key success factors, from scientific excellence to open innovation collaborations.

Fábio Rosa, PhD
Co-founder and Head of Research
Asgard Therapeutics AB

IPN Coimbra, Portugal

Agenda

- Introduction to Asgard Therapeutics
- Reflexion of key factors dictating the success of Asgard
  - Entrepreneurial spirit
  - Scientific excellence
  - Strong, committed team
  - Capacity to attract grants and “high tier” investment
  - Opportunities from open innovation
- Q&A

asgard

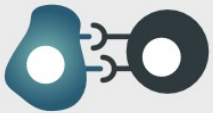
THERAPEUTICS

=



DIRECT REPROGRAMMING

+



CANCER IMMUNOTHERAPY

De-novo recreation of immune cell fates in-vivo

- **Innovative off-the-shelf and personalized immunotherapies**
- **Lead program AT-108 with validated preclinical POC**
  Demonstrated long-term systemic efficacy and MoA in ICI-ineligible tumors
- **Tumor-agnostic platform**
  Pipeline of immune cell programs across multiple modalities and therapeutic indications
- **Dominant patent position covering immune-cell reprogramming**
  29 patents, 6 granted, across 5 patent families, all fully owned by the company
- **Experienced team and advisors**
  9 employees and network of advisors, with expertise in reprogramming, IO and drug development

EUR 30M SERIES A ROUND, EUR 6M SEED ROUND

Johnson & Johnson INNOVATION | JJDC

RV INVEST

novo holdings

Boehringer Ingelheim

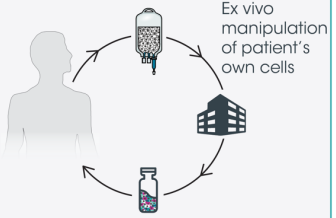
Industrifonden

NEXT INFLECTION POINT IND READINESS Q2 2026

In vivo direct reprogramming as a next-generation cell therapy bypassing traditional hurdles of the field

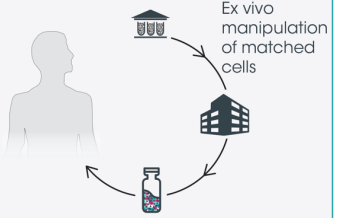
1st Generation

AUTOLOGOUS IMMUNE CELL THERAPY



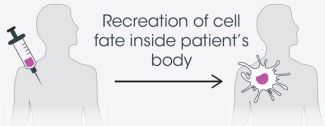
2nd Generation

ALLOGENEIC IMMUNE CELL THERAPY



Next Generation

IN VIVO DIRECT REPROGRAMMING



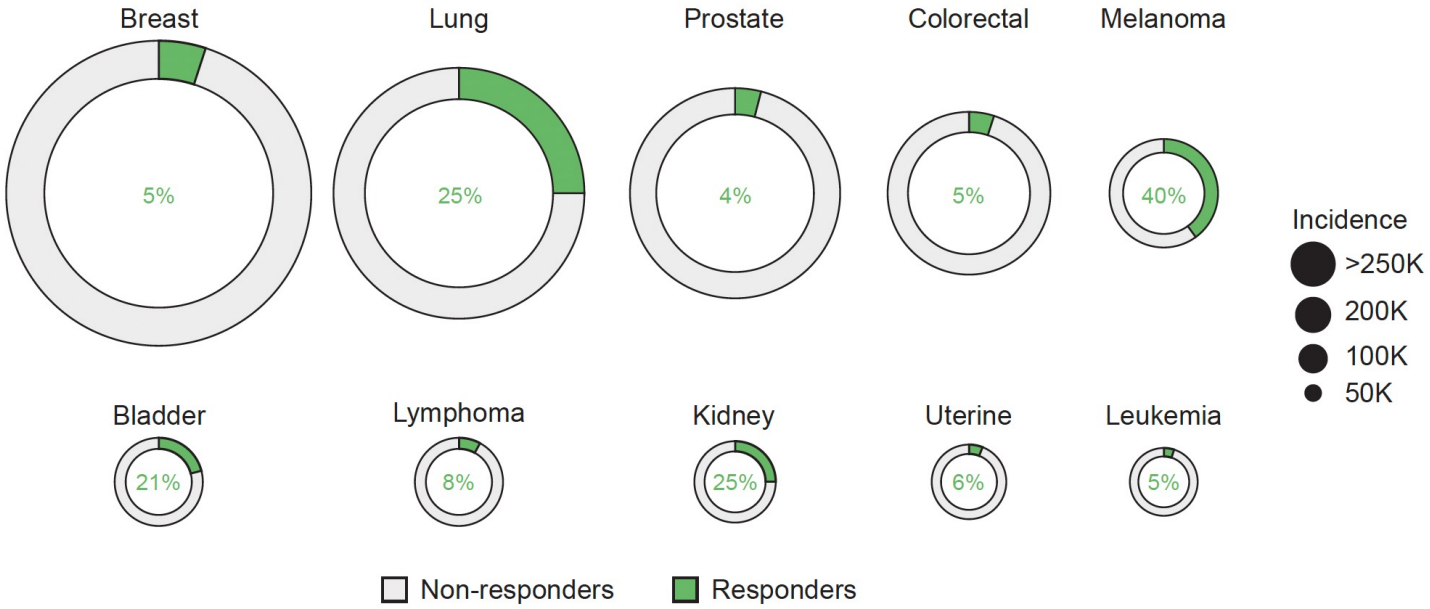
asgard THERAPEUTICS

A potent cell therapy without the traditional hurdles of cell therapies

- Easy manufacturing and logistics
- Off-the-shelf yet personalized
- Harness unique functional specialization of immune cells
- Multi-armed mode of action

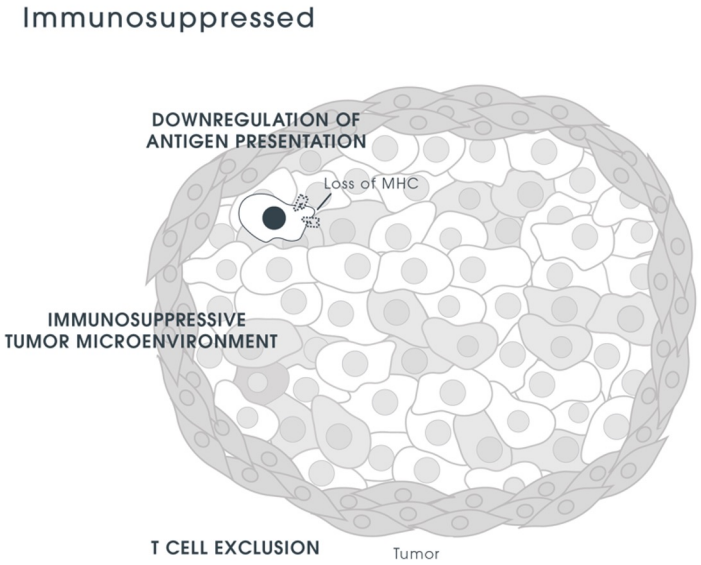
Harnessing in vivo direct reprogramming to develop novel solutions for cancer therapy

Most patients do not respond to available cancer immunotherapies



Immunotherapy has revolutionized cancer treatment BUT most patients still do not benefit from it

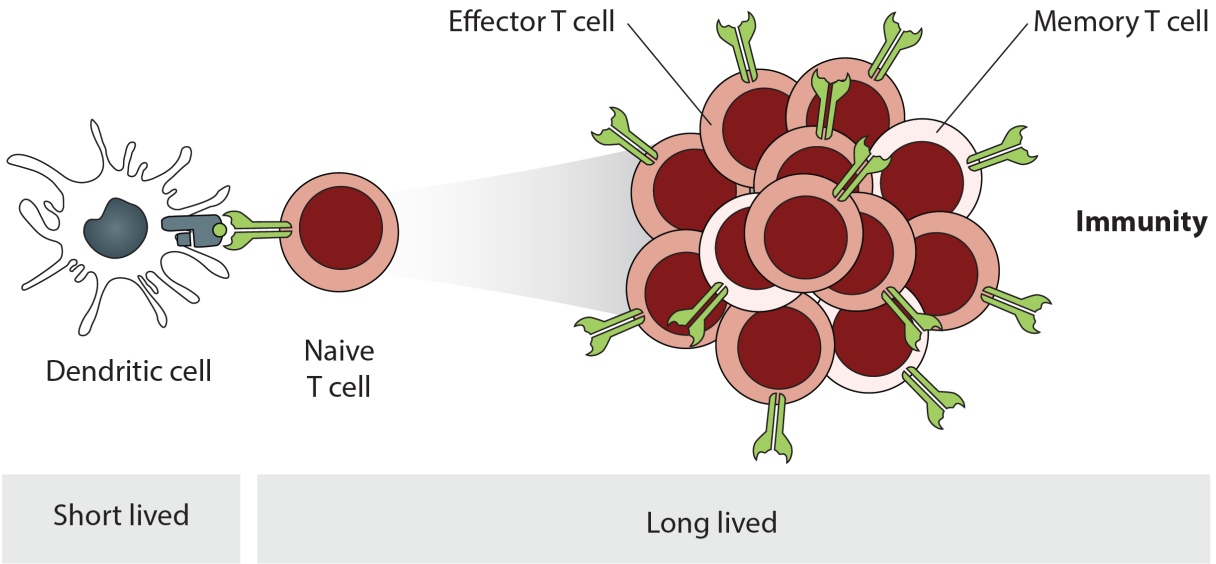
Poor immunogenicity of tumors underlies intrinsic resistance to available cancer immunotherapies



Tumor evasion mechanisms make tumors invisible to immune recognition, contributing to lack of response to immunotherapy and poor survival in patients with solid tumors.

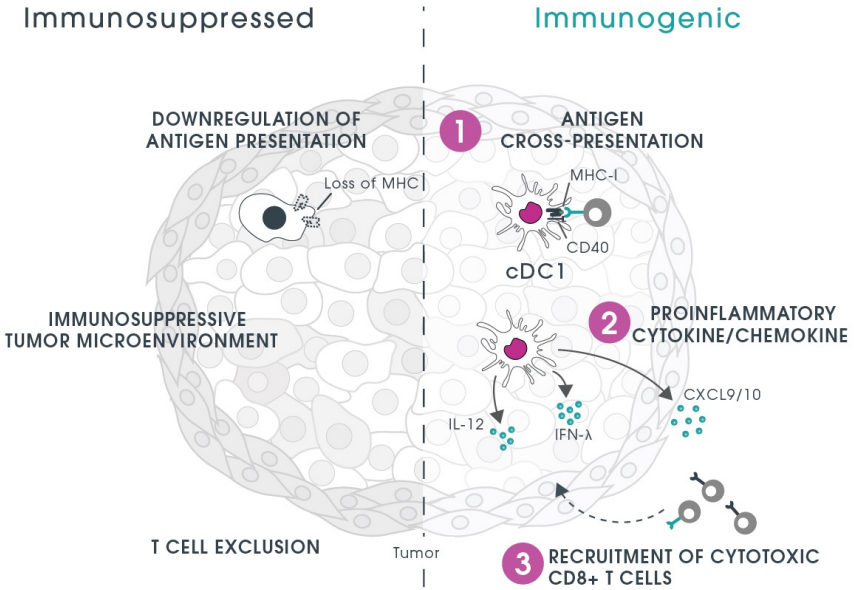
Jhunjhunwala et al. Nature Rev Cancer 2021; Haslam & Prasad JAMA Network Open 2019.

Dendritic cells are immune sentinels able to detect cancer cells and to activate long-lived antitumor responses



Dendritic cells are sentinels of the immune system able to detect cancer cells and present their identity to effector cells of the immune system, allowing induction of long-lived immune responses targeting cancer

Conventional Type 1 Dendritic Cells (cDC1s) as major orchestrators of anti-tumor immunity



Conventional Type 1 Dendritic Cells (cDC1) are majors orchestrators of anti-tumor immunity

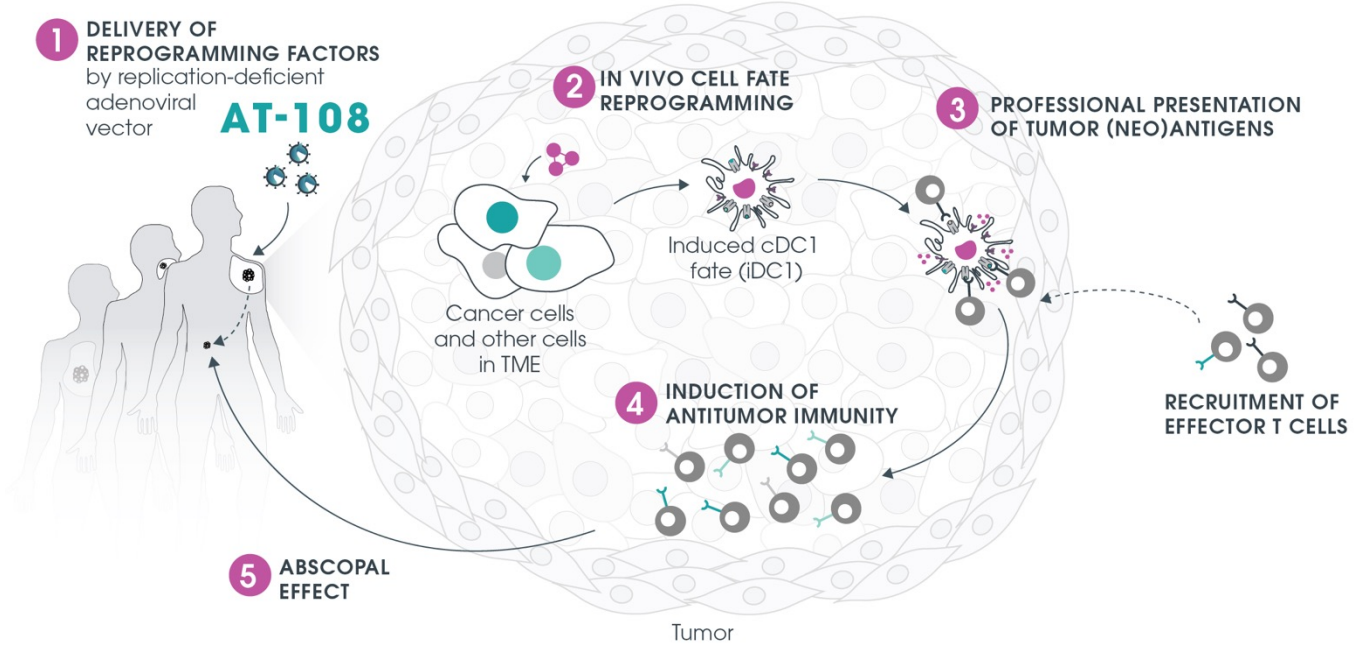
1. Professional antigen (cross)-presentation
2. Secretion of pro-inflammatory cytokines and chemokines
3. Recruitment and activation of cytotoxic CD8+ T cells

cDC1s are short-lived and rare in tumors (<0.1%)
Yet sufficient to elicit efficient and long-term anti-cancer immunity and improved survival in patients

Zhang Trends in Immunol 2021, Broz Cancer Cell 2014, Salmon Immunity 2016, Spranger Cancer Cell 2017, Theisen Cancer Immunol Res 2019, Ferris Cancer Immunol Res 2022.

Hubert Sci Immunol 2020, Mayoux Sci Transl Med 2020, Oh Nature Cancer 2020.

AT-108 lead program orchestrates systemic anti-tumor immunity via in-vivo reprogramming of tumor cells into cDC1s



Off-the-shelf product that elicits a personalized immune response

A potent cell therapy without the hurdles of manufacturing and logistics

Demonstration of PoC for AT-108 efficacy in ICI-ineligible tumors

IN VITRO → **IN VIVO** → **IN HUMAN**

Reprogramming concept and mechanisms

- Identification of transcription factors
- Characterization of reprogramming mechanisms
- Induction of cDC1 program across 30+ primary cancer cells
- Endogenous tumor antigen presentation with induction of cytotoxic T-cell responses

Rosa & Pires et al. Science Immunol 2018

Rosa et al. Science Immunol 2022

Zimmermannova & Ferreira et al. Science Immunol 2023

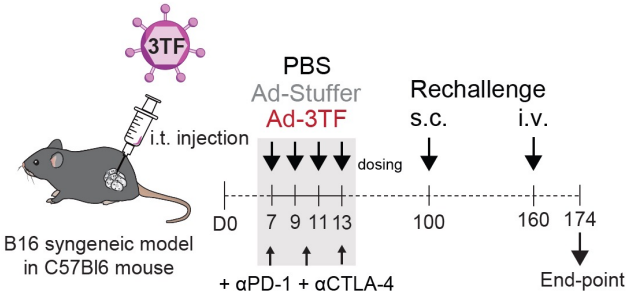
AT-108 lead candidate selection and PoC

- Demonstration of reprogramming of tumor cells to cDC1 in-situ
- Remodeling of TME
- Complete responses in ICI-ineligible models, as mono and ICI combo
- Systemic immunity, long-term memory and abscopal effect
- <1% iDC1s sufficient for efficacy

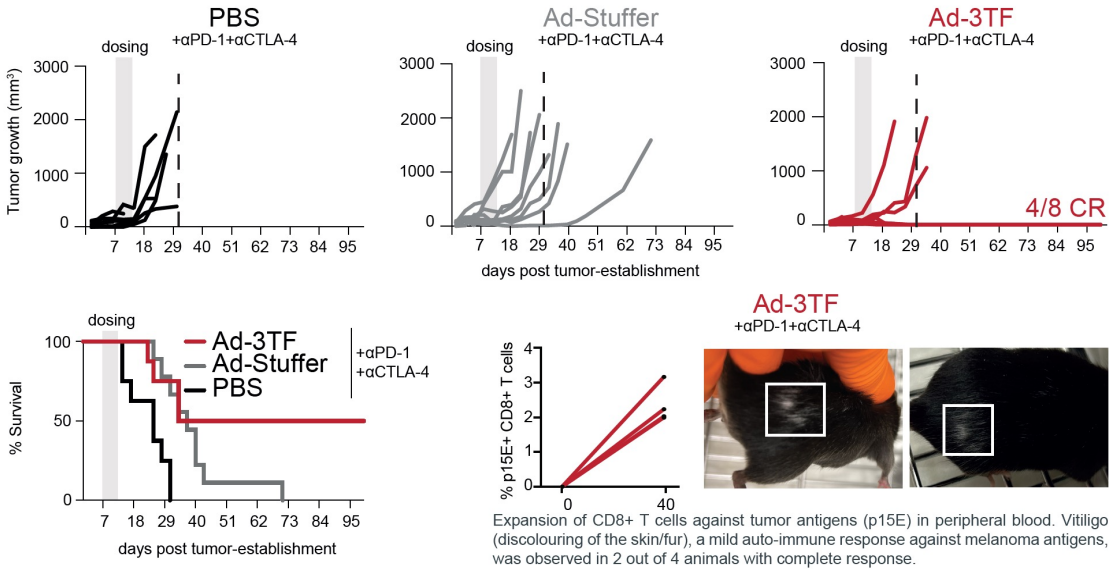
- Regulatory scientific advice validation of plans

Ascic et al. In revision.

AT-108 induces complete responses in non-immunogenic tumors with only 4 initial doses



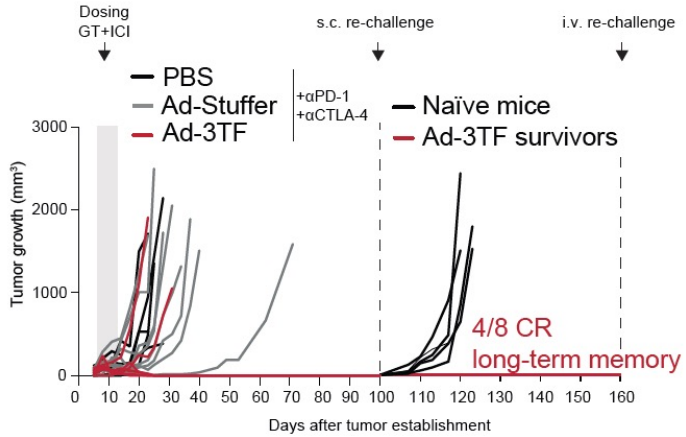
50% CR with AT-108 in ICI-resistant non-T cell inflamed MHC-I^{low} tumors in combination setting



Expansion of CD8+ T cells against tumor antigens (p15E) in peripheral blood. Vitiligo (discolouring of the skin/fur), a mild auto-immune response against melanoma antigens, was observed in 2 out of 4 animals with complete response.

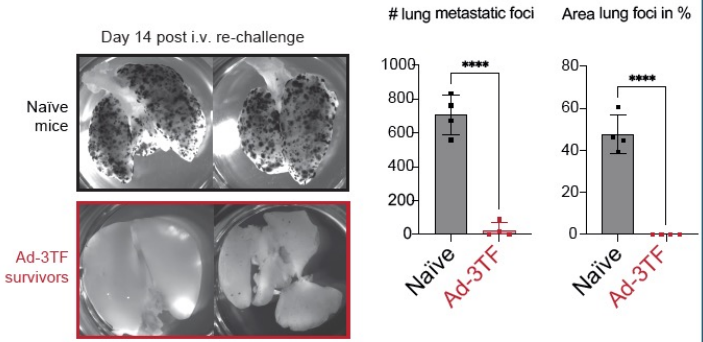
AT-108 induces systemic immunity and long-term memory

Protection against subcutaneous re-challenge at day 100



Tumor growth after subcutanous (s.c) re-challenge with parental B16 cells of Ad-3TF-treated animals (complete responders at day 100. Naive animals included as controls.

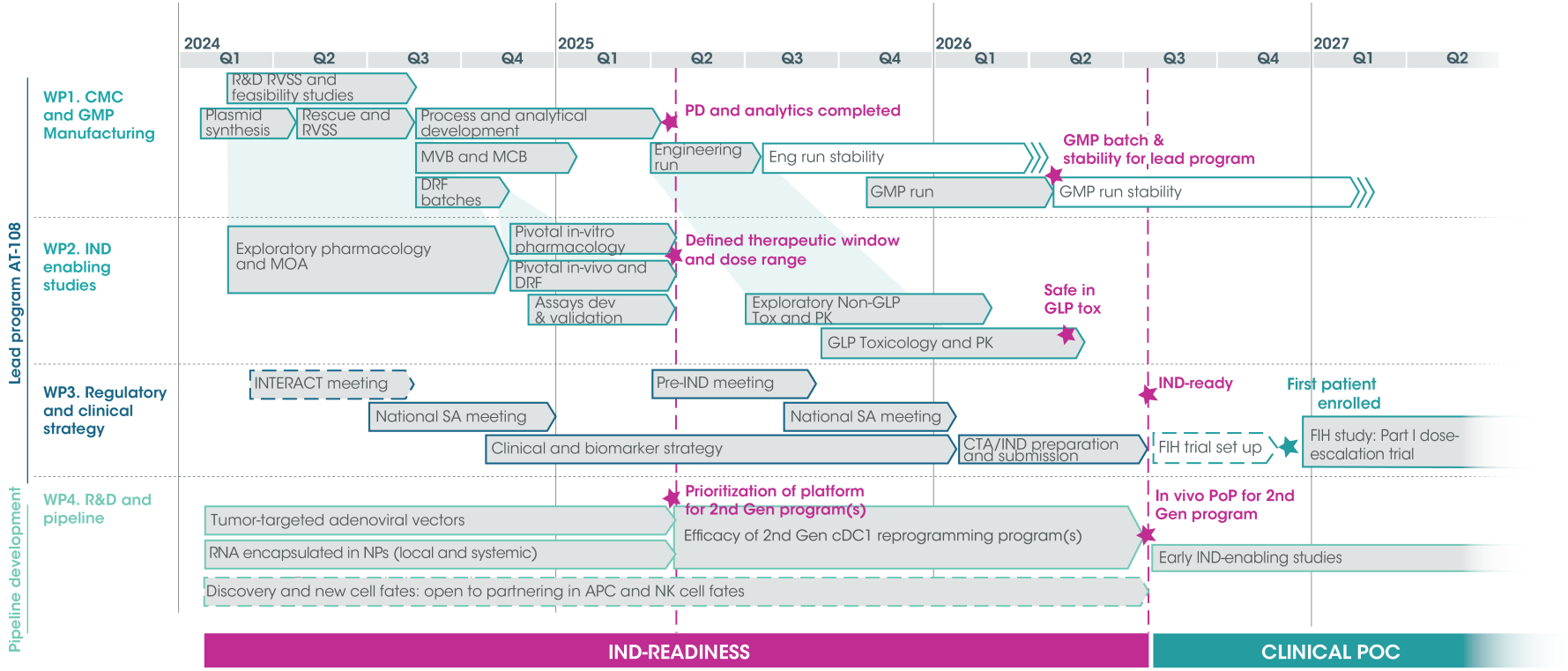
Protection against orthotopic metastasis upon intravenous re-challenge



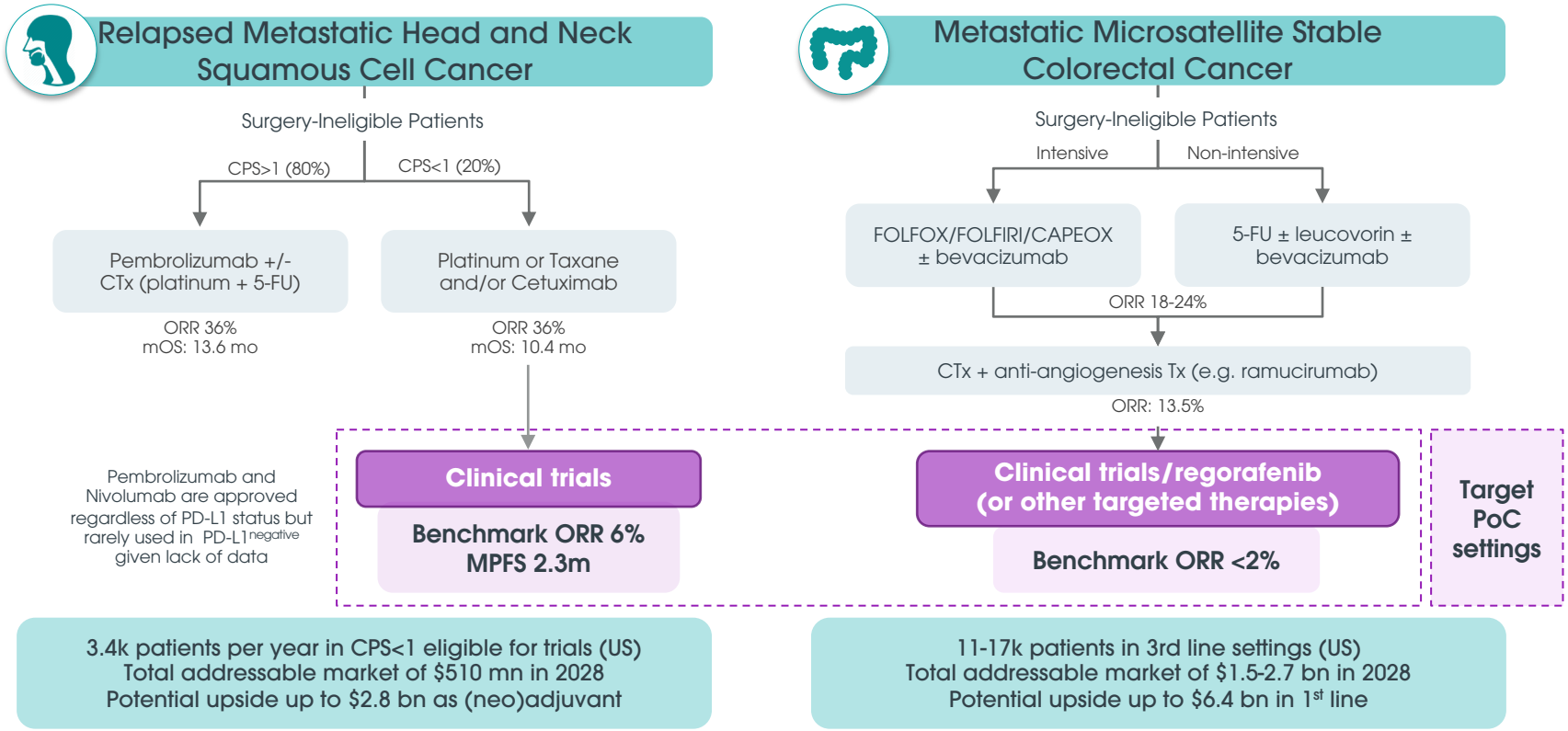
Ad-3TF-treated mice at day 160 were re-challenged with parental B16 cells intra-venous (i.v.), which are known to form lung metastasis. Animals were sacrified at day 14 and tumors analysed to quantify lung metastatic foci. Naive mice transplanted with B16 cells were included as controls. 100% of long-term complete responders were protected against metastatic tumor growth in the lungs.

Ascic et al. In revision.
3TF – proprietary combination of reprogramming factors.

Next inflection point is to reach IND-readiness for lead program and de-risking of pipeline



Targeting R/M HNSCC PD-L1neg and metastatic MSS-CRC as entry PoC settings with significant commercial potential



Key Factors dictating the success of Asgard Therapeutics

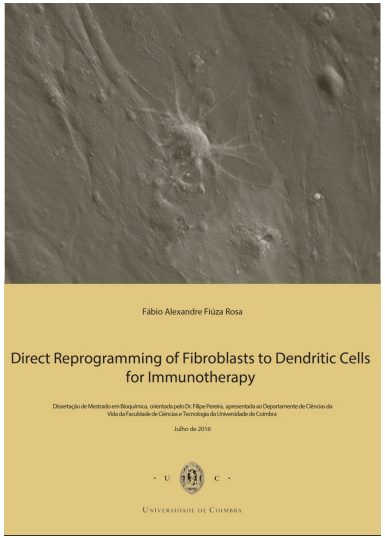
A REFLEXION

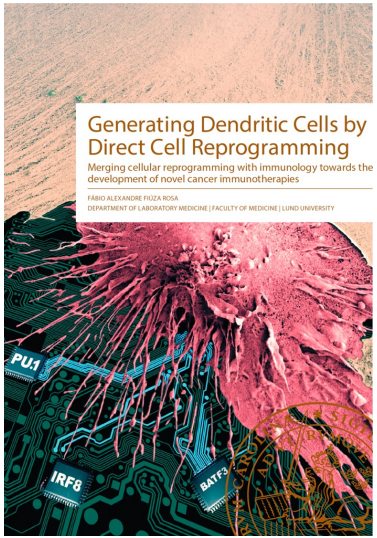
Strong background in cell fate reprogramming acquired during masters, PhD and beyond

2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 → Market entry

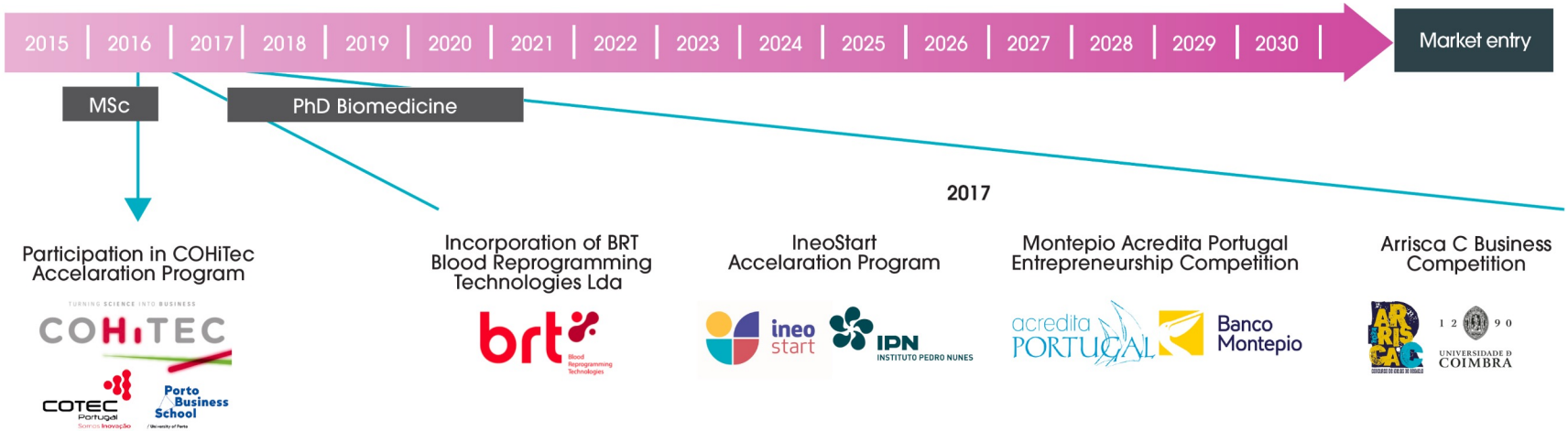
MSc

PhD Biomedicine





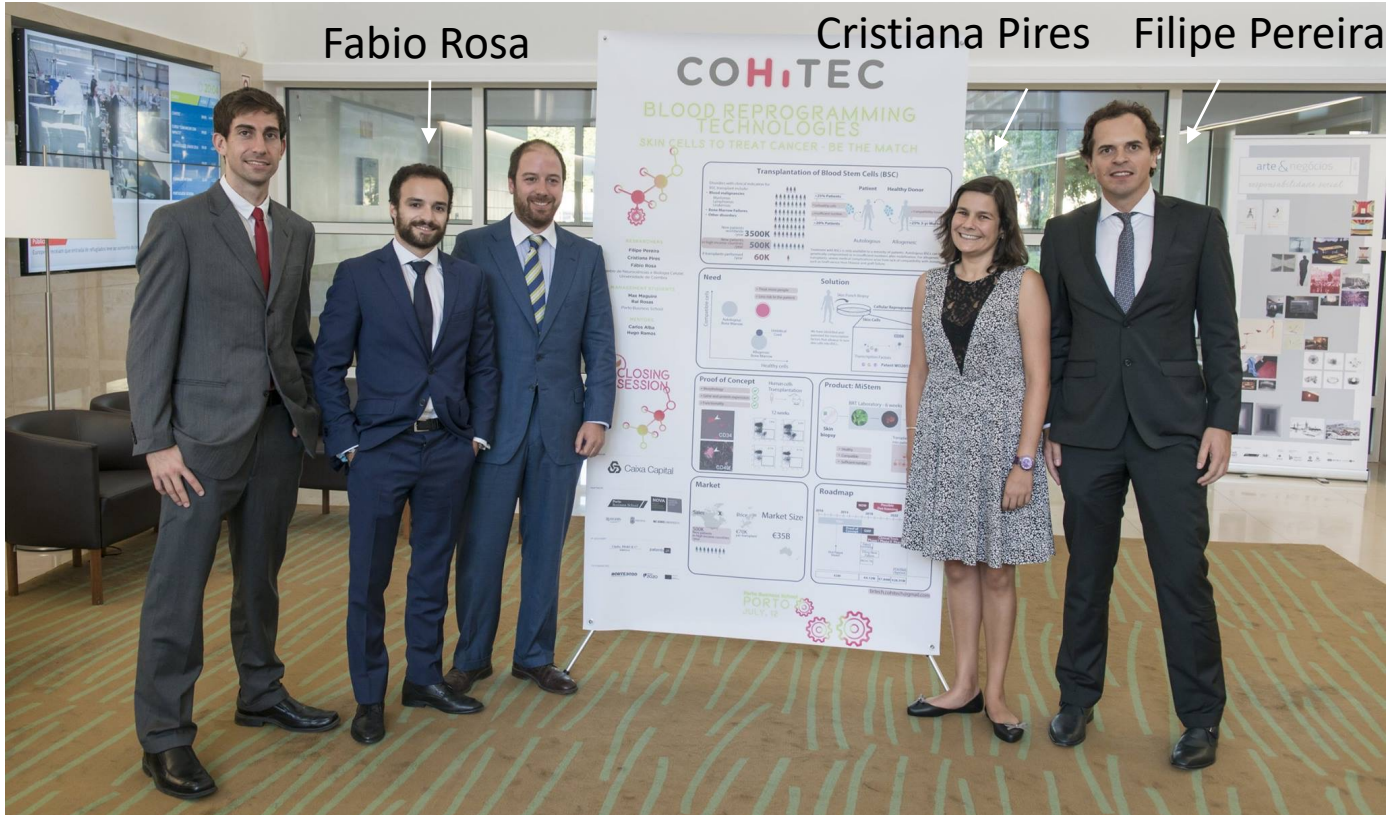
Participation in acceleration programs fostered our innovation and entrepreneurship potential



Committed core team was a critical factor of success from the beginning

July 2016

Participation in COHiTec Accelaration Program



"Sexy" treatment clearly differentiated from the competition was a strong point of our project since the beggining

Merging Cell Reprogramming and Cancer Immunotherapy – Learning from the Trojan War



Incorporation of Asgard Therapeutics with support of Lund University strimlined natigation of the Swedish ecosystem



Incorporation of Asgard Therapeutics AB

asgard THERAPEUTICS

Supported by Lund University

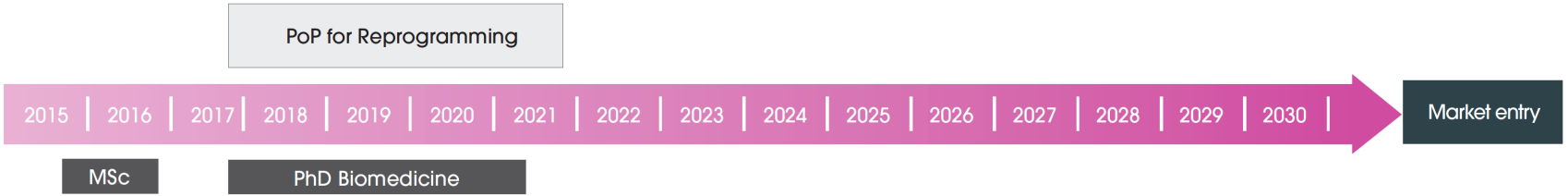
LU INNOVATION
THE LINK BETWEEN ACADEMIA AND BUSINESS

-Company creation
-Funding
  -StemTherapy LU Innovation Award
  -VFT funds
  -IKS Accelerator
  -LU Holding AB

-Legal support
-IP advice
-Business development
-Access to their network

Attracting funding from relevant parties was key to advance early R&D and establish first interactions with Pharma

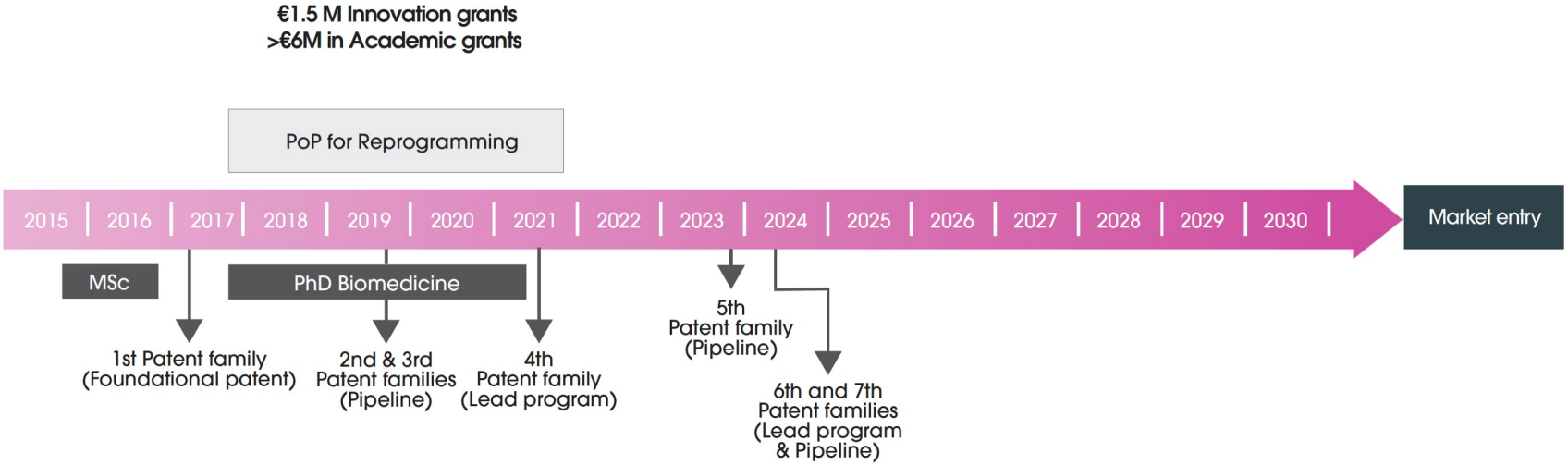
€1.5 M Innovation grants
>€6M in Academic grants



Academic Grants

Innovation Grants

Strong IP position from the beginning of the project with all patents fully owned by Asgard



Publication of our science in high impact journals increased traction within investors and key opinion leaders

€1.5 M Innovation grants
>€6M in Academic grants

PoP for Reprogramming

2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 → Market entry

MSc

PhD Biomedicine

1st Patent family (Foundational patent)

2nd & 3rd Patent families (Pipeline)

4th Patent family (Lead program)

5th Patent family (Pipeline)

6th and 7th Patent families (Lead program & Pipeline)

Rosa & Pires et al., Sci. Immunol. 2018
Science Immunology

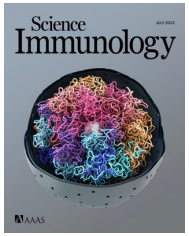
Rosa et al., Sci. Immunol. 2022
Science Immunology

Zimmermannova et al., Sci. Immunol. 2022
Science Immunology

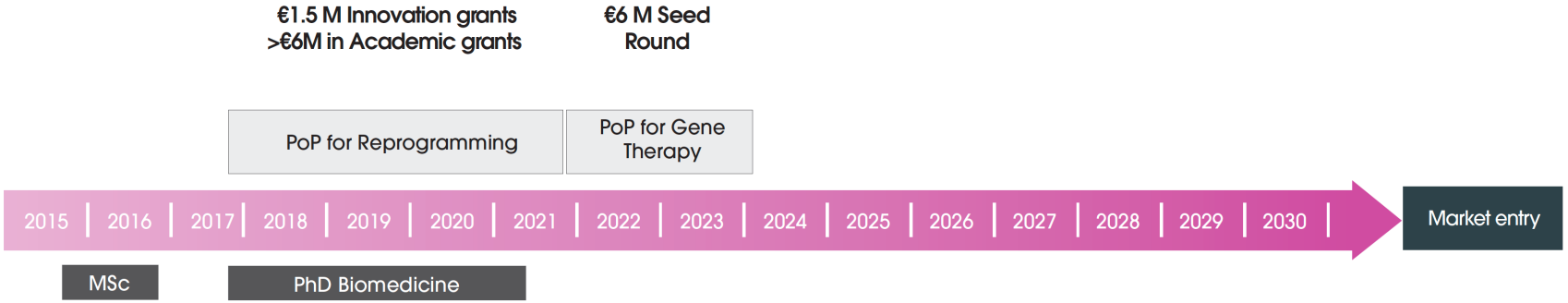
Ascic et al., in revision







Support from seasoned investors in Seed round was key to increase network within Venture & Venture Capital Funds



EUR 6 MILLION SEED ROUND

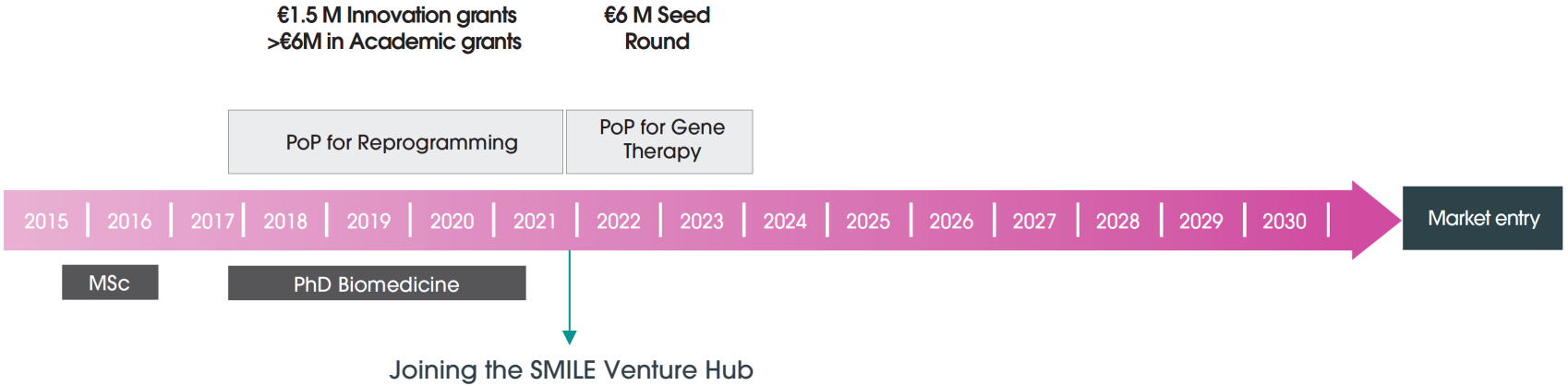
Supported by seasoned investors since Nov 2021

novo holdings

Boehringer Ingelheim

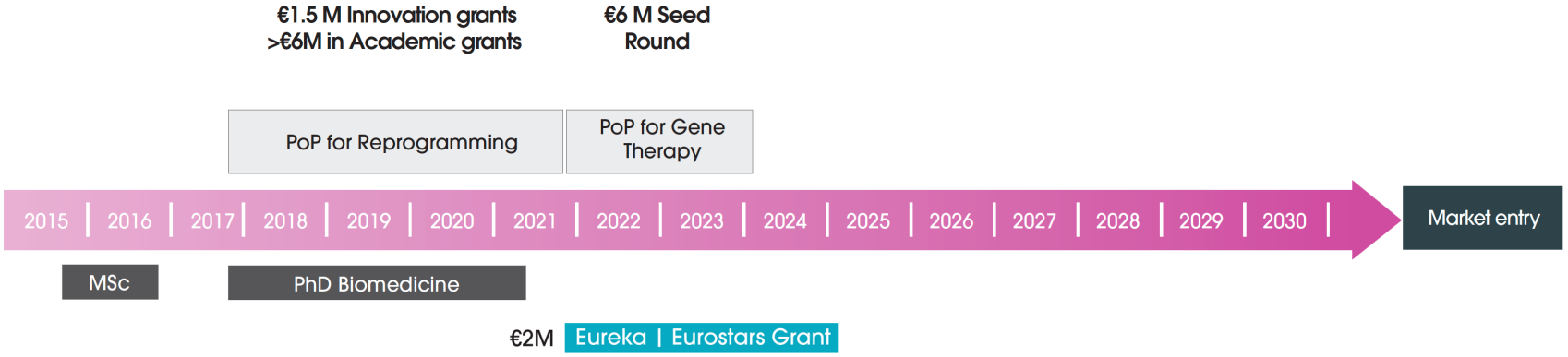
Industrifonden

Support from seasoned investors in Seed round was key to increase network within Venture & Venture Capital Funds



- Access to state-of-the-art labs (& offices)
  - Cell culture
  - Virus lab
  - Molecular Biology
  - etc
- Technical support
- Assess to IP, legal, commercial, HR advice

International collaborations allowed faster internal R&D and generation of PoP for Gene therapy



The REPRINT Consortium: Complementary Expertise

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- Direct cell reprogramming techniques
- Lentiviral vector development
- In-vivo efficacy validation

Antineo

- Safety pharmacology testing
- 3D bioprinted models of human cancer cells
- GLP-like toxicology studies

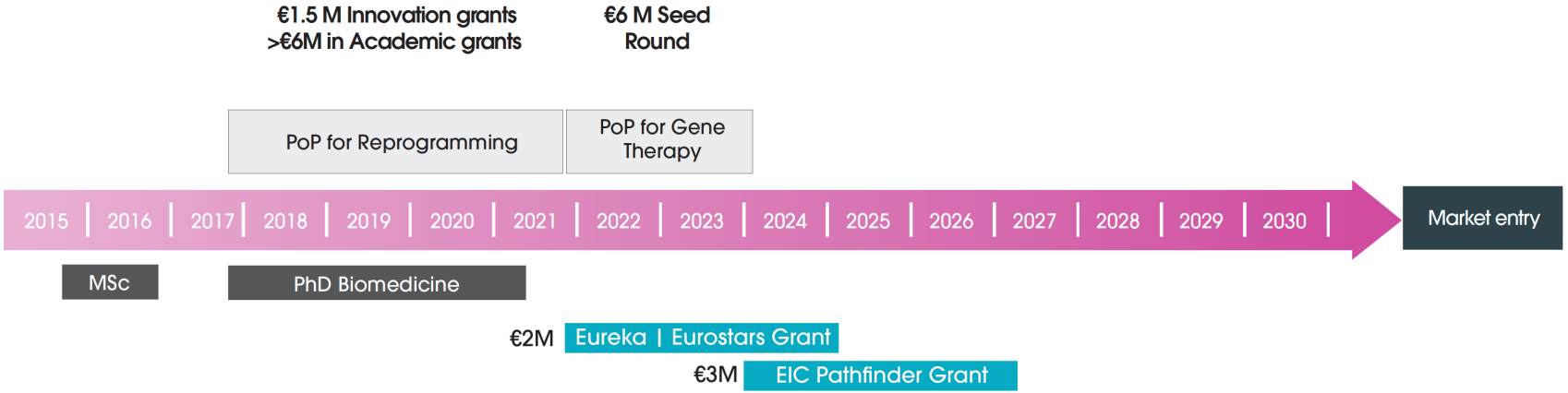
inSphero

- 10+ years experience in 3D microtissue models
- 3D organoids of human cancer cells
- Assays to validate efficacy in 3D models for immune-oncology

Lund University

- Cell reprogramming Research Group
- €5M+ funding for cell reprogramming research
- 40+ high impact publication on cell reprogramming

European innovation council (EIC)-funded RESYNC project arising from **open innovation** to create pipeline opportunities

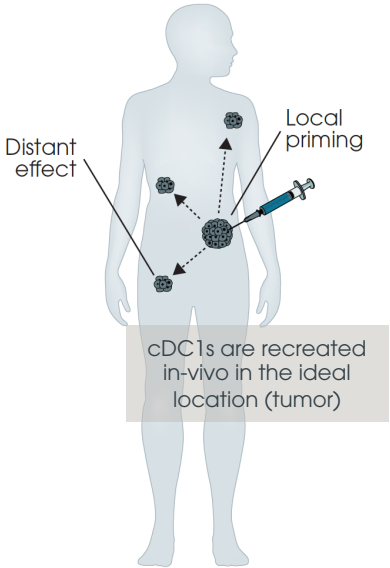


RESYNC

Functional Chemical Reprogramming of Cancer Cells to Induce Antitumor Immunity

Small molecules encapsulated in nanoparticles to enable systemic tumor-targeted cancer cell reprogramming

Intratumoural



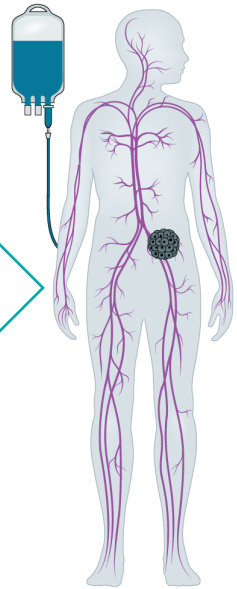
cDC1s are recreated in-vivo in the ideal location (tumor)

Local ROA – AT-108 Lead Program

- Maximize delivery to tumor cells to allow higher reprogramming efficiency
- Recreation of cDC1s' professional antigen presentation ability within the TME
- Local priming but also abscopal effect in non-injected lesions
- MOA is aligned with ROA
- Selection of delivery platform with prior manufacturing, regulatory and clinical track-record

Establish proof-of-concept for first-in-class in vivo cDC1 reprogramming approach

Tumour-targeted



Systemic ROA – Second Generation

- **Facilitate administration**
- **Expansion to additional indications**
- **More attractive to subset of pharma/partners**
- Focus on:
  - Tumor-targeted viral vectors
  - RNA or SMs encapsulated in nanoparticles.

Delivery is yet to be demonstrated

Expand beyond local ROA

Low added risk in delivery

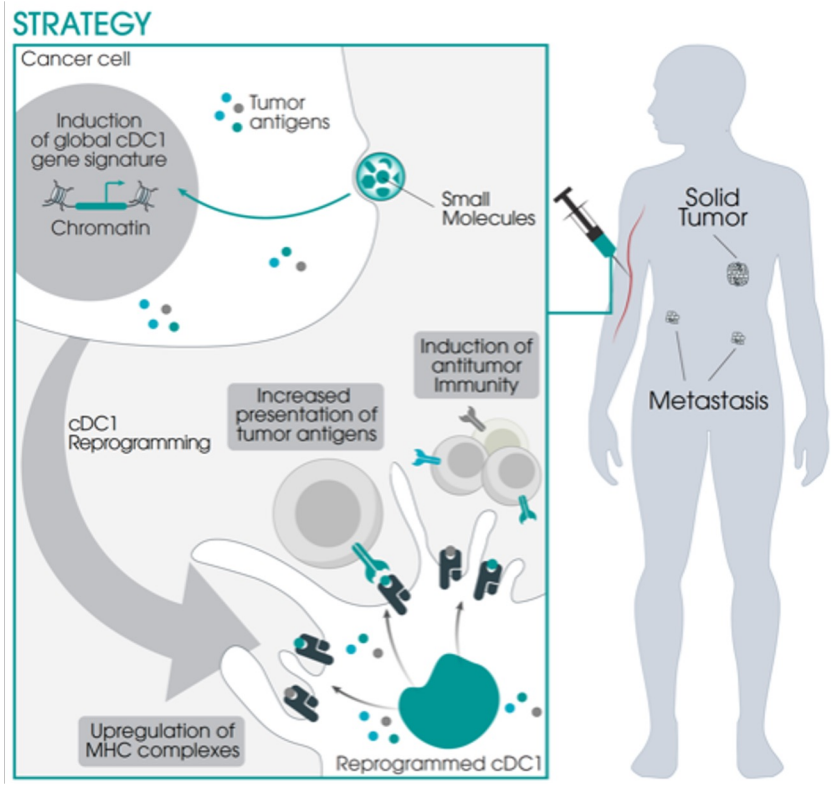
Higher risk in delivery

RESYNC Vision

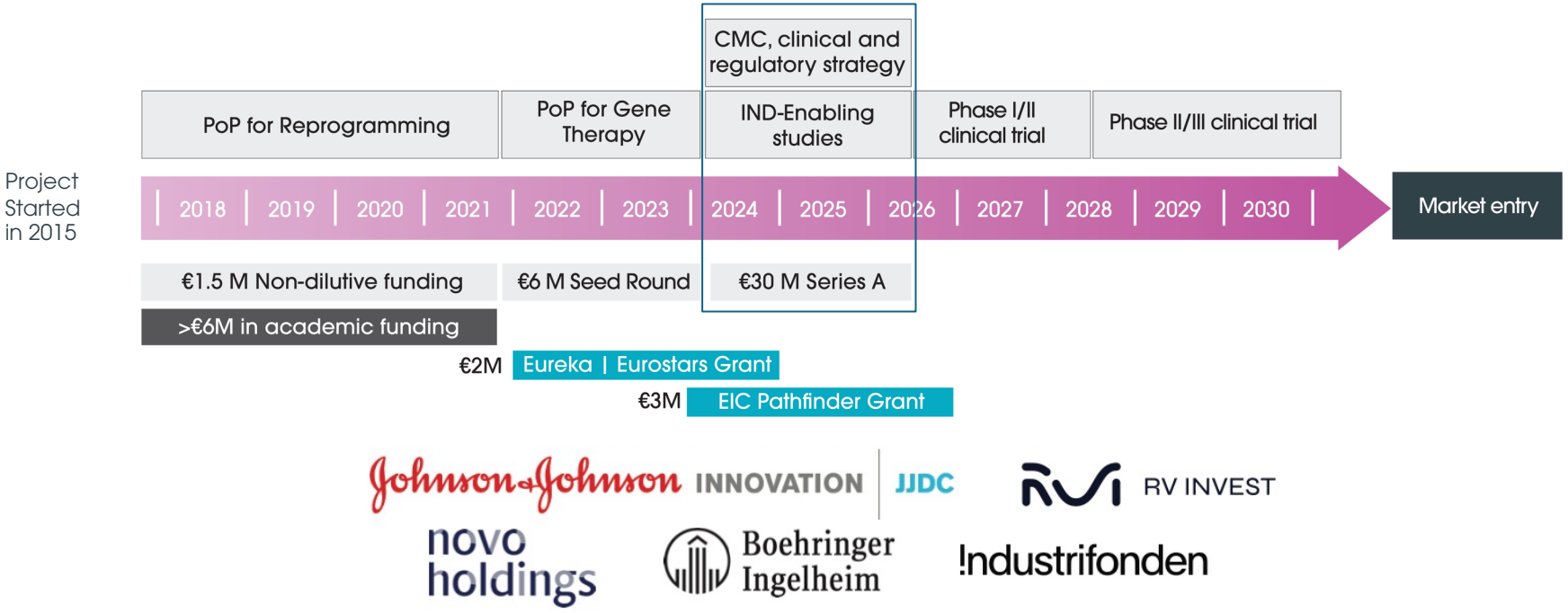
To develop a **nanoparticle formulation containing a combinations of small molecules (drugs)** able to induce cell fate conversation of cancer cells to dendritic cells.

This therapy will ultimately:

1. Replace the use of viral vectors;
2. Be cheap to produce and manufacture;
3. Target solid tumors after simple intravenous administration, bypassing the need for intra-tumoral administration.



Fundraising of Series A is critical to progress the technology towards clinical application



Aknowledgements



Asgard Team: Zoé Klein, André Rosa, Emilie Renaud, Xavier Catena, Iveta Mikalajūnaitė, Fritiof Åkerström, Xiaoli Huang, Fábio Rosa, Cristiana Pires, Filipe Pereira, Jan Villadsen, Frank Hennecke (not in the picture)

Interreg España – Portugal
Cofinanciado por la Unión Europea
Cofinanciado pela União Europeia
DRIVEN Open Innovation Driven Economy

Collaborators

PEREIRA LAB CELL REPROGRAMMING & IMMUNITY

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Ervin Ascic
Malavika Sreekumar Nair
Ilia Kurochkin
Inês Caiado
Rita Silva
Olga Zimmermannova

Lund University
Lennart Greiff
Malin Lindstedt

CCIT
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Özcan Met

Antineo
InSphero

SAB members and consultants

Joshua Brody
Johanna Olweus
Ulrich Lauer
Aurelien Marabelle
David Curiel

Funding

Johnson & Johnson INNOVATION JJDC
RV INVEST
novo holdings
Boehringer Ingelheim
Industrifonden
VINNOVA Sweden's Innovation Agency
SWElife
This project has received funding from the Eurostars-2 joint programme with co-funding from the European Union Horizon 2020 research and innovation programme
eurostars™

asgard

THERAPEUTICS

Asgard Therapeutics is positioned for success

- First-in-class immunotherapy based on novel mechanism of action
- A potent cell therapy without the traditional manufacturing and logistic hurdles
- Proprietary direct reprogramming technology with platform potential
- Lead program recreates unique functional properties of cDC1 cells in-vivo

"No drug has been able to clinically demonstrate that immune activation at the tumour site can affect distant metastases in the past, but we believe that your DC may be able to do so."

Big pharma

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THERAPEUTICS

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