

# Zelluna Immunotherapy

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# Zelluna Immunotherapy

A Norwegian biopharma company founded in 2016 with a global focus, developing **T-cell receptor (TCR) based cellular immunotherapies** for a broad range of **solid cancers** with high unmet need.

# Adoptive Cell Therapy: Breakthrough Cancer Treatment

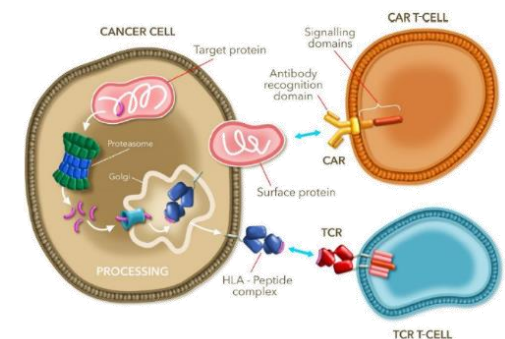
## T-Cells are key for immunosurveillance and the fight against cancer

- **Engaging the immune system in the fight against cancer**
  - Proven clinical value has established immunotherapy as the 5<sup>th</sup> pillar of cancer treatment
- **T-cells are critical to fight viral infections and cancer**
  - T-cells screen the body for cells that are infected or cancerous.
  - T-cells kill thousands of pre-malignant cells every day
- **T-cell based immunotherapies are highly efficient**
  - Intense development activity delivering significant clinical benefit, and two products reimbursed on the market (CAR-T)
- **Solid tumors remain a significant unmet medical need**
  - CAR-T cell therapy proven in certain liquid tumors but is struggling in solid tumors
- **T-cells recognize target cells by their T-cell receptor (TCR)**
  - TCR-T cell therapy can target a much higher number of relevant cancer antigens<sup>3</sup> and is showing promise in the fight against solid tumors



**Emily Whitehead:**  
Suffered from acute lymphoblastic leukemia (ALL).  
First patient to receive CD19 CAR-T treatment at the age of 6.

## CAR-T vs TCR-T



# Adoptive Cell Immunotherapy Has Entered the Mainstream

2017 and 2018 were big years in cancer cell therapy



Clinical & regulatory successes



Market access



Transaction successes

**Aug-17**

Gilead acquires Kite (USD 11.9bn)



**Oct-17**

FDA approval of CAR-T treatment Yescarta



**Jan-18**

Celgene acquires Juno (USD 9bn)



**Aug-18**

EMA approval of Kymriah and Yescarta



**Oct-18**

Allogene completes USD 288m IPO, raising >700m since Apr-18



**Aug-17**

FDA approval of first CAR-T treatment (Kymriah)



**Sep-17**

GSK options TCR NY-ESO



**Dec-17**

Bluebird presents clinical BCMA data



**Feb-18**

Gilead deal with Sangamo (USD 3bn)



**Sep-18**

NICE to reimburse Kymriah and Yescarta



# Company Snapshot

- Focused on developing **TCR** based immunotherapies for a broad range of **solid cancers** with high unmet need
- Core asset is the right to license proprietary non-engineered **tumor specific TCRs** isolated from vaccinated long term surviving cancer patients at the Oslo University Hospital
- Zelluna's **TCRs** target driver antigens that are essential for tumor growth and expressed across a wide range of cancers
- Vision is to first deliver a **TCR autologous adoptive cell therapy** for patients with solid cancers followed by proprietary, **allogeneic TCR targeted cell therapy platform**
- **Leading TCR (H04) targeting hTERT** planned to enter the clinic in the first half of 2020 in adoptive cell immunotherapy for patients with solid cancer.

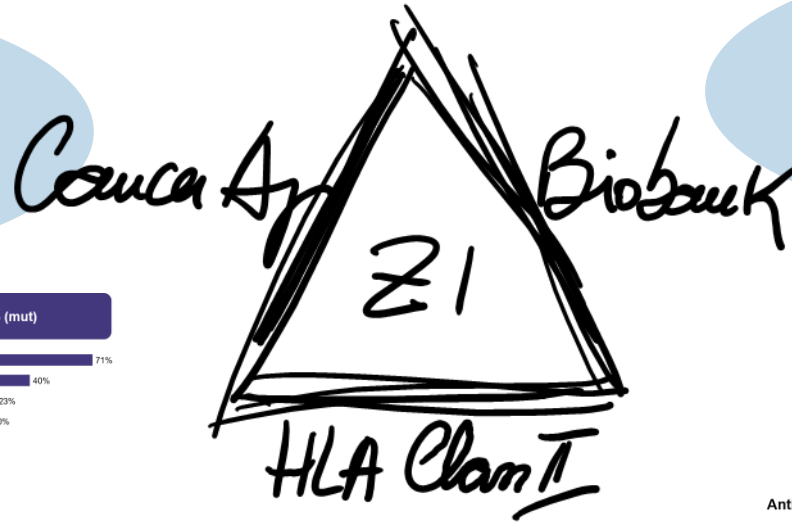
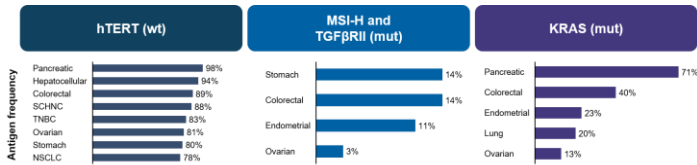


# Compelling and Differentiated Value Proposition

Zelluna is attractively positioned, with a platform of uniquely sourced TCRs with a differentiated mechanism of action

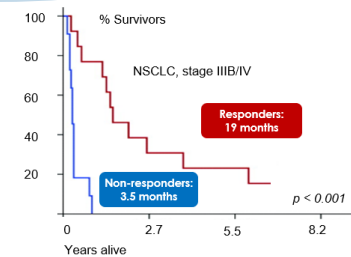
## Cancer Antigen

- TCR-Ts can target intracellular driver antigens
- Broad potential to treat cancers due to many target option



## Biobank

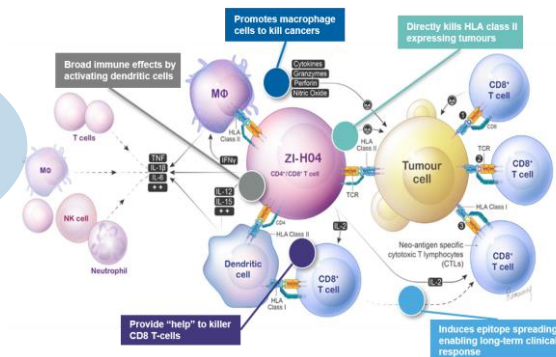
- TCRs from long term surviving vaccinated cancer patients
- Potential for safe and effective treatment



## HLA Class II

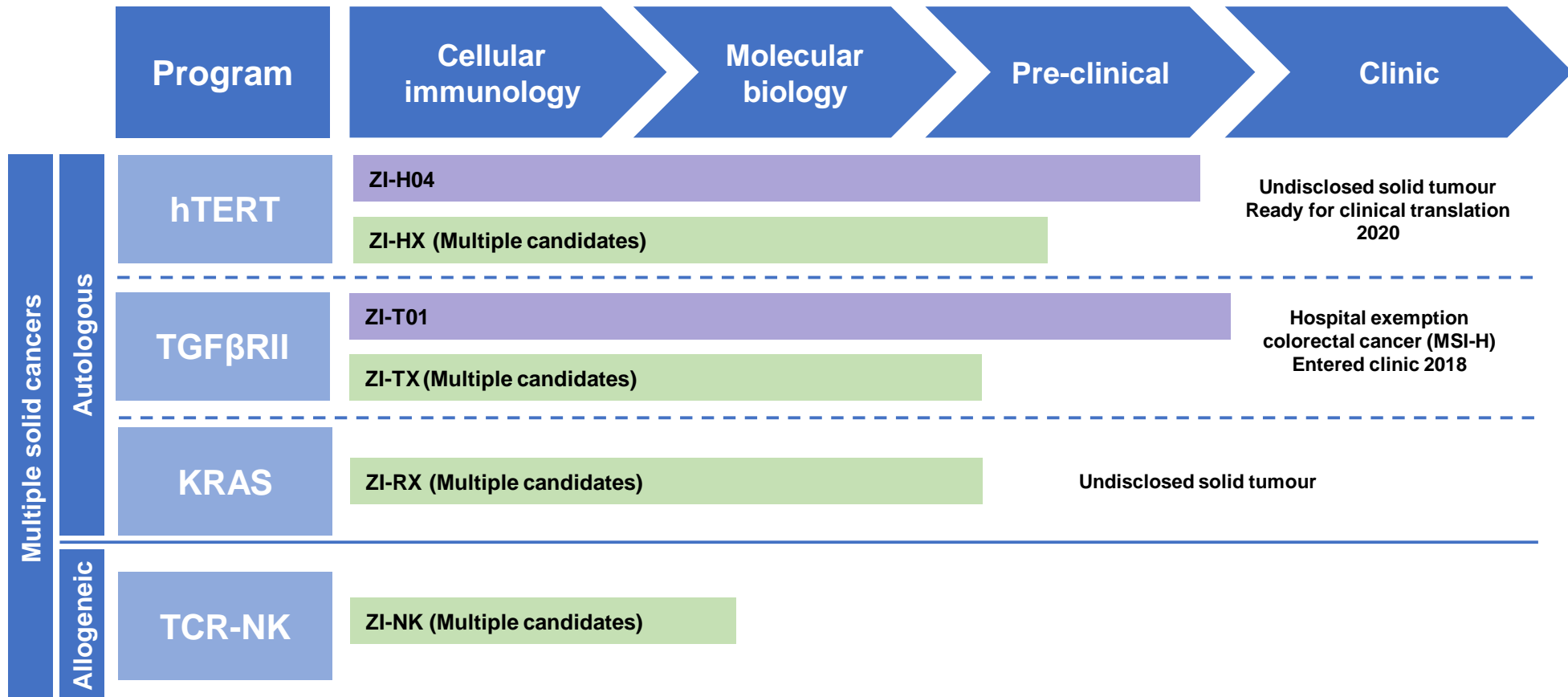
- Targeting HLA Class II
- A broader mechanism of action

## Anticipated mechanism of action



# Strong Pipeline of TCR Based Cell Products








Broad pipeline of TCR candidates, with lead candidate approaching the clinic



Note: TGFβRII = Transforming Growth Factor β receptor II; MSI-H = High Microsatellite Instability; hTERT = human Telomerase Reverse Transcriptase; KRAS = Oncogene in Kirsten RAt Sarcoma virus; NK = Natural Killer (Cell)

# Competitive Landscape

## Selected companies with TCRs in development

	TCR target	Indications	TCR source	Engineered	Mechanism of action	Allogeneic potential	Manufacturing	Development stage
 zelluna IMMUNOTHERAPY	hTERT, KRAS TGFβRII	Multiple solid	Vaccinated patients	No	Class II Class I	Yes	MaSTherCell VIVE Vibotech	Pre-clinical (Hospital Exemption study)
 Adaptimmune TRANSFORMING T CELL THERAPY	MAGE A10/A4 AFP	Multiple solid	Human donor	Yes	Class I	Yes	CMO	Phase I/II
 Bellicum PHARMACEUTICALS	PRAME	AML MDS	GvHD patient	No	Class I	No	In house CMO	Phase I/IIa
 medigene	PRAME MAGE A1	AML MM	Human donor	Yes	Class I	No	CMO	Phase I/IIa
 Kite A GILEAD Company	MAGE A3/A6	Multiple solid	Vaccinated patient	No	Class II	Yes	In house	Phase I/IIa
 Celgene JUNO THERAPEUTICS	WT-1	AML, NSCLC Mesothelioma	N/A	n.a.	Class I	No	In house	Phase I/IIa
 gsk GlaxoSmithKline	NY-ESO1 PRAME	Multiple solid	Human donor	Yes	Class I	No	Construction	Phase II

## Zelluna differentiating factors

### Target antigen

- Zelluna targets driver antigens, while competitors focus on cancer testis antigens

### TCR source

- Only Kite and Zelluna isolate TCRs from vaccinated patients

### Pipeline

- Zelluna has broad antigen and HLA coverage

### Mechanism of action

- Only Kite and Zelluna develop HLA class II targeted TCRs

### Allogeneic opportunity











- Off-the-shelf product



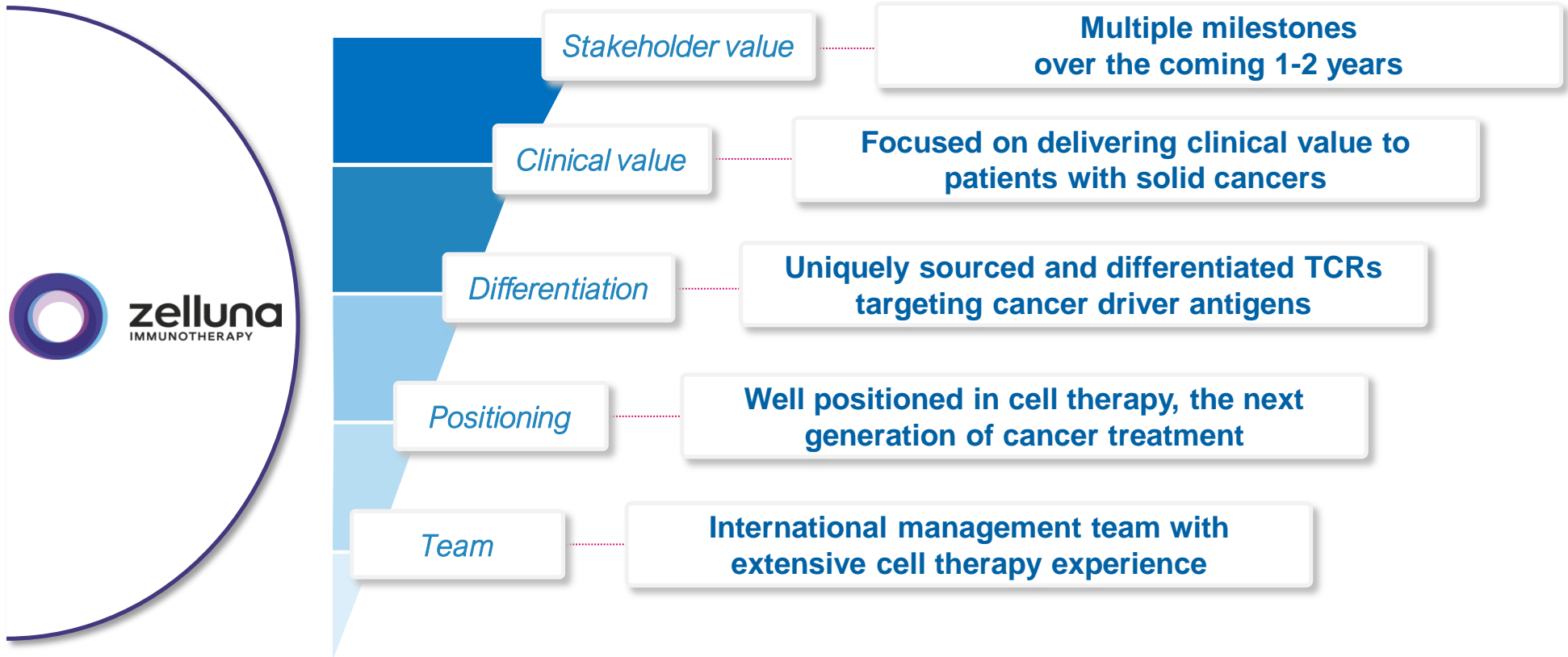
# International Leadership Team

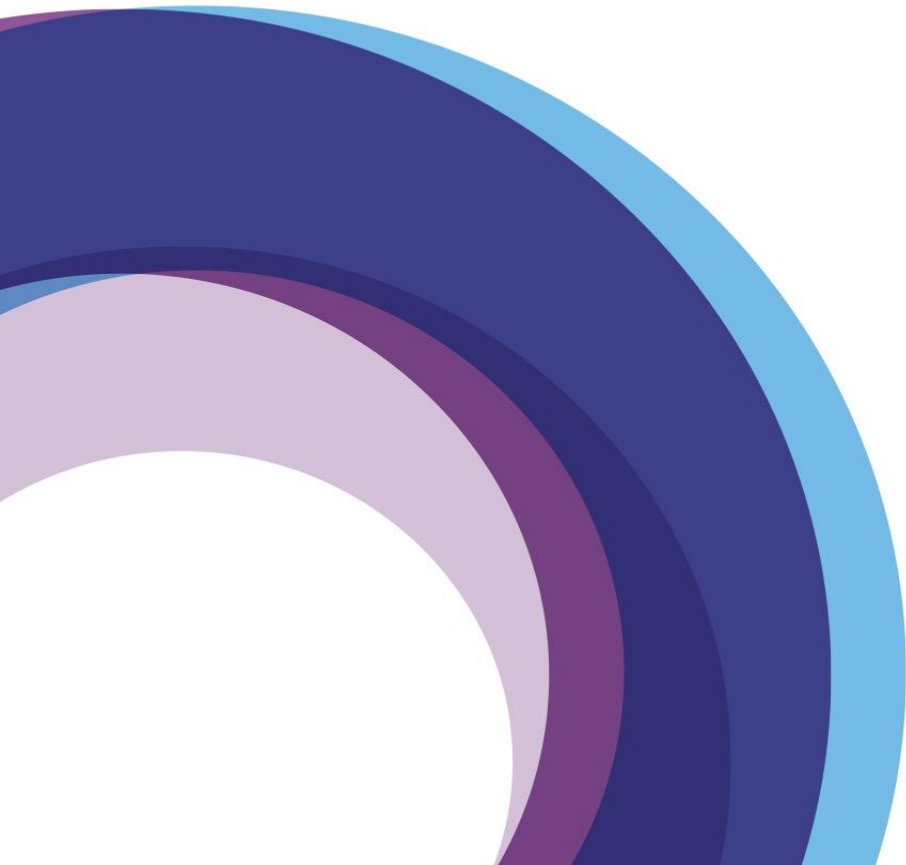
Unique combination of medical and biotech experts with extensive international experience

## Management team

Individual	Years of experience	Select experience	Background
 <p><b>Miguel Forte, MD, PhD</b> Chief Executive Officer</p>	30 Years		<ul style="list-style-type: none"> <li>Clinical, academic, regulatory and biopharma leadership roles in multiple countries in Europe and the US</li> <li>Development leadership experience of small molecules, vaccines, biologics and cell and gene products</li> <li>BoD member of International Society of Cell &amp; Gene Therapy and Alliance for Regenerative Medicine</li> <li>MD and PhD in Immunology (Portugal and UK), FFPM (UK) and HEP (Sweden)</li> </ul>
 <p><b>Namir Hassan, PhD</b> Chief Scientific Officer</p>	15 Years		<ul style="list-style-type: none"> <li>Leadership roles spanning target validation through to early phase Immunotherapy clinical trials</li> <li>Experience in growing scientific businesses to deliver value in T cell therapy field</li> <li>Previous experience as VP at Immunocore; leadership role in the discovery research organization within GSK and the Ludwig Institute for Cancer Research</li> <li>DPhil from the University of Oxford in T-cell Biology</li> </ul>
 <p><b>Anders Holm, PhD</b> Chief Operating Officer</p>	15 Years		<ul style="list-style-type: none"> <li>Technology Strategy Manager at Inven2, where he was responsible for a large portfolio of drug development projects within immunology and immuno-oncology</li> <li>Previously worked for 8 years as a scientist at the Institute of Immunology, Oslo University Hospital, primarily within the fields of autoimmunity and cancer</li> <li>PhD in analytical chemistry at the University of Oslo</li> </ul>
 <p><b>Arjan Roozen</b> Chief Technology Officer</p>	20 Years		<ul style="list-style-type: none"> <li>Extensive experience in GMP manufacturing in the EU and US</li> <li>Previously served as VP GMP Solutions &amp; Manufacturing at Collectis, where he headed up the team responsible for the sourcing of the critical raw materials as well as the manufacturing of the gene modified cell therapy products</li> </ul>
 <p><b>Geir Christian Melen</b> Chief Financial Officer</p>	20 Years		<ul style="list-style-type: none"> <li>Extensive leadership experience from the biotech industry including serving as the CEO of Ostomycure and Clavis Pharma, as well as the CFO of Algeta and Photocure</li> <li>Experience include financing, strategy and corporate development</li> <li>Responsible for the IPO for Algeta and Photocure and several other fund raisings</li> <li>M.Sc. in business and administration from Norwegian School of Economics</li> </ul>

# Unique Opportunity





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