

# *MolMed S.p.A.*

## *Company Overview*

*Leading the way in Cell & Gene therapy*

*September, 2018*



## Disclaimer

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The presentation contains certain forward-looking statements. Although the Company believes its expectations are based on reasonable assumptions, these forward-looking statements are subject to numerous risks and uncertainties, including scientific, business, economic and financial factors, which could cause actual results to differ materially from those anticipated in the forward-looking statements.

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# Cell & Gene: 2017 – 18 momentum



**\$7.5 Billion\***  
**Total Amount**  
**Raised in 2017**

*\$4.2 Billion raised in 2016*



**78% increase in**  
**Global Investments**

## Major 2017/18 M&A deals



*Oct 2017*

**Gilead Sciences** acquired **Kite Pharma, Inc.** for **11.9 \$ Bn**



*Jan 2018*

**Sanofi SA** agreed to buy **Bioverativ Inc.** to gain treatments for rare blood disorders ~**11.6 \$ Bn**



*Jan 2018*

**Celgene Corporation** acquired **Juno Therapeutics** advancing Global Leadership in cellular Immunotherapy ~**9 \$ Bn**

Source: 2017 ARM Industry Survey, Data provided by INFORMA

\*Data does not include M&A transactions

# Cell & Gene: major regulatory approvals confirmed positive risk-benefit ratio



July 2016



**STRIMVELIS** gene therapy\* for the treatment of ADA-SCID: EU market authorization  
**Reimbursed Price in Italy: 594,000 € /patient**



\* MolMed developed and manufactures Gsk' Strimvelis

Aug 2016



**Zalmoxis** patient-specific cell therapy obtained the EU market authorization form  
**Reimbursed price in Italy: 149,000 € /infusion**  
(clinical trial average dose ~ 2 infusions/patient)



Aug 2017



**Kymriah** CAR T cell therapy for children and young adults with ALL **475,000 \$ / patient**  
(**373,000 \$ / patient** in DLBCL in May 2018)

Oct 2017



**Yescarta** CAR T cell therapy for the adult patients with relapsed/refractory large B cell lymphoma after two or more lines of systemic therapy **373,000 \$ / patient**

Dec 2017



**Luxturna** gene therapy for biallelic RPE65-mediated inherited retinal disease **425,000 \$/eye**



Aug 2018

CAR T cell therapies **Kymriah** and **Yescarta** obtained EU market authorization: **price obtained by Kymryah in UK 361,750 \$ / patient** (282,000 £).

# *MolMed: recognized leader in Cell & Gene research, development and manufacturing*

- ❑ Biotechnology company focused on research, development, manufacturing and clinical validation of innovative anticancer and rare diseases therapies, listed on the main market (MTA) of the Milan Stock Exchange since 2008 (MLMD.MI)
- ❑ Pioneering research & development approach in viral vectors and cells engineering
- ❑ Strong Leadership Team and ~ 200 scientists and support staff
- ❑ Development and Manufacturing services: high profile network of partners and solid revenue grow (+39% 2011-17 CAGR)
- ❑ Relevant pre-clinical, clinical and regulatory achievements
- ❑ Growing and diversified proprietary pipeline



# MolMed's Leadership Team and Scientific Advisory Board

## Management Team



**Carlo Incerti, MD**  
*Chairman*

- MolMed' Chairman
- 1991-2018 Head of Global Medical and Chief Medical Officer Affairs at **Sanofi Genzyme**
- Member of the **Board of EuropaBio**, the European Association for Bioindustries
- Member of the Governing Board of **IMI (Innovative Medicine Initiative)**



**Riccardo Palmisano, MD**  
*CEO*

- Since 2015 **CEO at MolMed S.p.A.**
- Since 2016 President of **Assobiotech** (Italian biotech industries Trade Association)
- 2005 - 15 Vice President, Managing Director and GM at **Genzyme Italy**
- 2003 - 05 VP Commercial Retail Market at **GSK Italy**
- 2000 - 03 Managing Director and GM at **Shire Italy**



**Luca Alberici, PhD, MBA**  
*CBO*

- Since 2015 CBO at **MolMed**
- 2013-15 **Bain & Co**
- 2011-12 Research Associate at **Sanford B. P. Medical Discovery Institute** (La Jolla, CA)



**Salvatore Calabrese**  
*CFO*

- Since Sept 2018 CFO at **MolMed**
- 2014-18 General Manager at **Jazz Pharma Italy**
- 2005-14 COO and at **Gentium (NASD)**
- 2003-05 **Cell Therapeutics Europe**
- 1996-2003 **PWC**



**Fabio Ciceri, MD**  
*Clinical Research Consultant*

- Clinical research coordinator and Head of Hematology and Hematopoietic Stem Cell Transplantation Unit at **Ospedale S. Raffaele**
- Full professor, **University San Raffaele**

## Scientific Advisory Board



**Claudio Bordignon**  
*MolMed Founder and SAB Chairman*

- Chairman of the SAB
- Member of the Scientific Council of the European Research Council
- Full Professor of hematology at the University San Raffaele in Milan



**Malcolm K. Brenner**

Director of the Center for Cell and Gene Therapy and Professor of Medicine and of Pediatrics at Baylor College of Medicine, Houston, TX



**Miguel-Angel Perales**

Deputy Chief, Adult Bone Marrow Transplant Service at Memorial Sloan Kettering Cancer Center, NY, USA



**Mohamad Mohty**






















Professor of Hematology and Head of the Hematology and cellular therapy Department at the Saint-Antoine Hospital and University Pierre & Marie Curie, Paris



**Gianpietro Dotti**

Member of the UNC Lineberger Comprehensive Cancer Center and Professor of the Microbiology and Immunology Director of the UNC Immunotherapy Program at the Univ. of North Carolina, NC

# MolMed GMP Development and Manufacturing partners

Product/Therapy	Service	Partner	Preclinical	PhI/II	Pre-MAA	Market		
MPS	LVV+HSC							
GLD	LVV+HSC							
CGD	LVV+HSC							
Strimvelis	LVV+HSC							
MLD	LVV+HSC							
WAS	LVV+HSC							
BTHAL	LVV+HSC							
MPS IIIA	Und.							
MPS IIIB								
IFN	LVV+HSC							
FA	LVV							
LAD	LVV							
UCART	LVV+T cells							
Rare diseases	LVV							
Oncology	LVV							



## Excellent GMP capacity

MolMed obtained **the GMP manufacturing authorization** for Cell & Gene Therapies for its proprietary products as well as for third parties and/or in partnership

### San Raffaele Facility (MI)



- ❑ **1,500 SQM** and **9 grade B/C suites**
- ❑ Authorized GMP manufacturing facility since 2003 for **clinical programs**
- ❑ Authorized GMP manufacturing facility since 2015 for the **Commercial products**

### Bresso New Facility



- ❑ **3,300 SQM** and **>20 Grade B/C suites**
- ❑ Qualified Officina Farmaceutica, authorized for **GMP manufacturing** and quality control activities for the production of **clinical and commercial products**



## MolMed relevant achievements

- ✓ **9 proprietary patent families** including 244 granted patents
- ✓ **Zalmoxis®**, Aug 2016: **EMA conditional market authorization**, first negotiated price & reimbursement (Italy €149,000 per infusion)
- ✓ **Strimvelis**, July 2016: **EMA market authorization**, MolMed is the exclusive manufacturer for vector and medicinal product
- ✓ **CAR T CD44v6**, Aug 2018: **IMPD submitted for 1st in-man clinical trial**



*«MolMed Spa is uniquely endowed in the EU with the knowhow and experience necessary to meet this ambitious objective, as demonstrated by its unparalleled track record»*

*«To be successful, EURE-CART proposes the early involvement of National regulatory **authorities for accelerating the approval of CAR T-cell immunotherapy, as well as the centralisation of its production by the MolMed Spa**»\_Horizon 2020 EURECART Project funding commission.*

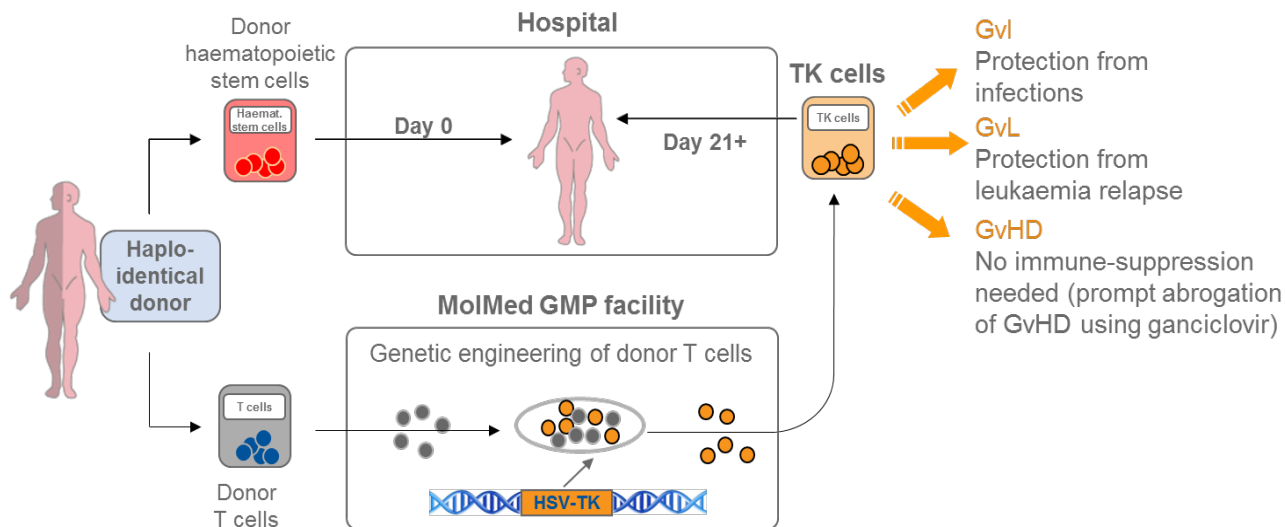
# MolMed Onco-hematology proprietary pipeline

Product portfolio includes **proprietary anti-tumor cell & gene therapies** in **clinical and preclinical** development:

		Proprietary pipeline				
<i>Product/ Therapy</i>	<i>Indication</i>	<i>Disc/ Feas</i>	<i>Precl</i>	<i>PhI/II</i>	<i>PhIII</i>	<i>Market</i>
Autologous	<b>Zalmoxis®</b>	Haplo identical Transplant in Hematological Malignancies	→ EU CMA			
	<b>CAR-T CD44v6</b> hematological tumor	Acute Myeloid Leukemia; Multiple Myeloma	→			
	<b>CAR-T CD44v6</b> Solid tumor	Lung, breast adenocarcinomas, head and neck, ovary carcinomas	→			
	<b>CAR-T</b> (2 undisclosed targets)	Undisclosed	→			
Allogeneic	<b>Allogeneic CAR-NK</b> (3 undisclosed targets)	Undisclosed	→			

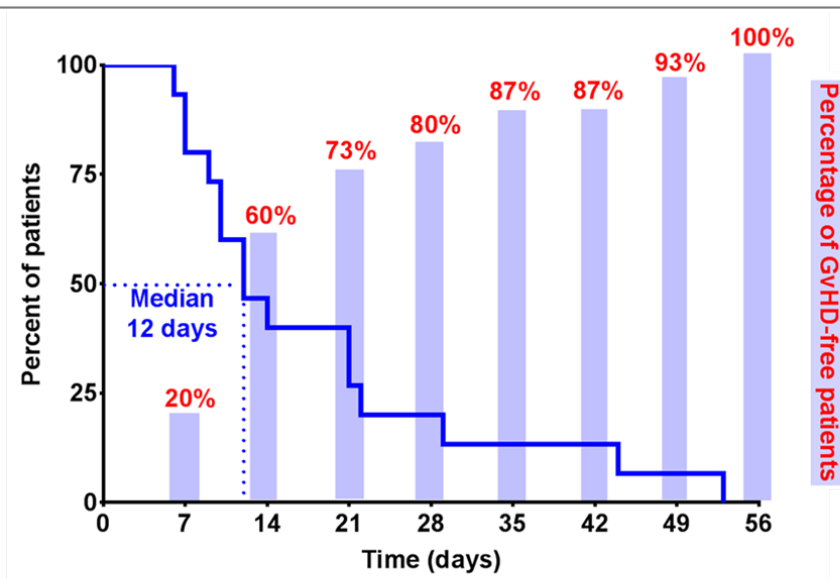
# Zalmoxis®: a first in class orphan drug with a specific mechanism of action to address the limits of partially compatible stem cell transplantation

Zalmoxis® (TK) is an ex vivo cell therapy based on donor T cells genetically engineered to enable bone marrow transplants from **partially compatible donors**, inducing a rapid **immune reconstitution**



# Zalmoxis® efficacy: 100% of acute GvHD resolution

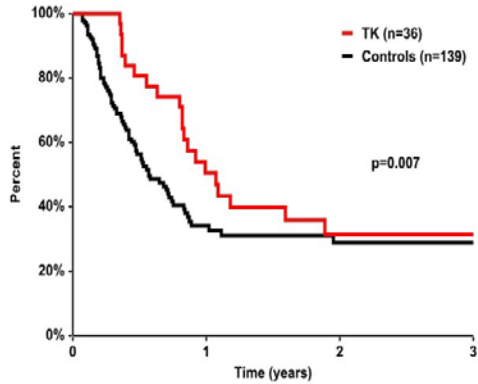
## TIME TO RESOLUTION AND % OF PATIENTS GvHD FREE FROM GvHD ONSET (DAYS; N=16)



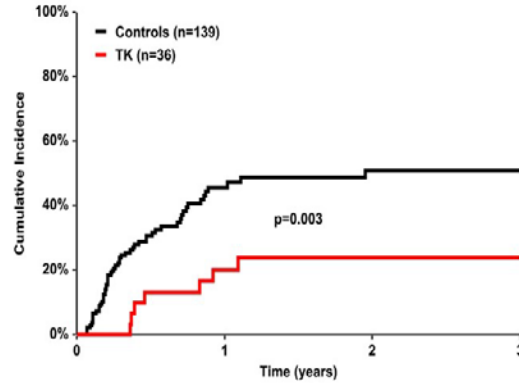
Note: Pulled data from TK007 and TK008 (experimental arm)

Source: ASH Meeting 2014, Abs. 2535

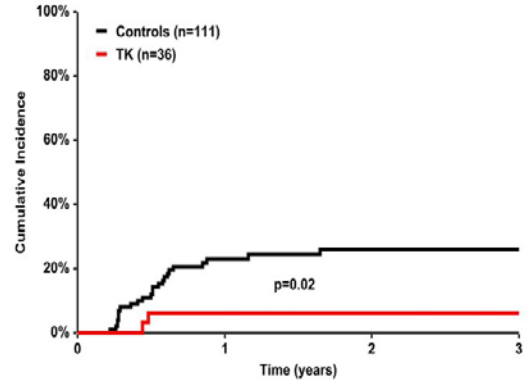
**EBMT new pair-matched analysis - Overall survival**  
Patients alive and relapse free at 21 days



**EBMT new pair-matched analysis - Non-relapse mortality**  
Patients alive and relapse free at 21 days



**EBMT new pair-matched analysis - Chronic GvHD**  
Patients alive and relapse free at 21 days



**New pair-matched analysis  
1-year outcomes  
Alive and relapse free at 21 days**

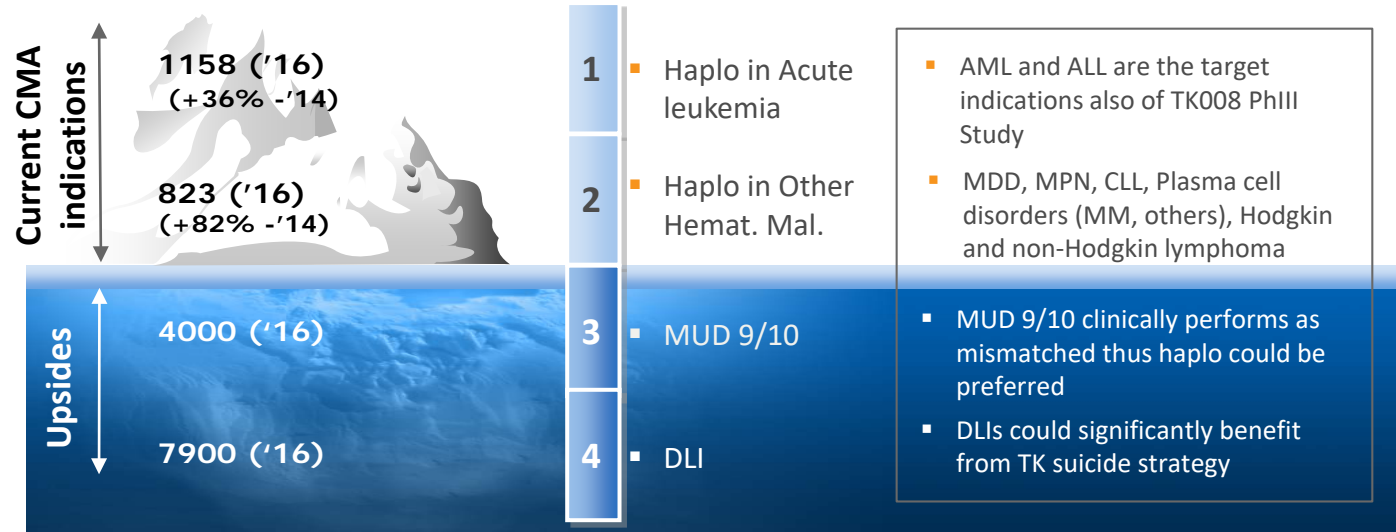
**Controls (n=139)**

**Zalmoxis (n=36)**

**p-value^**

	Non-relapse mortality (NRM)	Overall survival (OS)	Chronic GvHD
Controls (n=139)	46%	34%	23%
Zalmoxis (n=36)	<b>20%</b>	<b>51%</b>	<b>6%</b>
p-value^	<b>0.003</b>	<b>0.007</b>	<b>0.02</b>

## European target population: haploidentical transplants



and

Most autologous and allogeneic CAR-T therapies may benefit from TK suicide gene machinery

Source: Company and EBMT (Passweg J et al, Bone Marrow Transpl 2018)



**European Commission CMA**  
(Conditional Marketing Authorization)

- Robust Core Value Dossier
- Clear pricing policy and corridor



**MolMed - Dompé**

Strategic commercialization and Supply Agreements for Europe

**Upfront + Milestones: 43.5M€**  
Royalties included in transfer price



Exclusive commercial agreement

- TTY Biopharm (Asian countries)
- Upfront + Milestones: 13.5M€**
- TTY Biopharm (Israel)



**AIFA Reimbursement price**  
Eur 149,000 / infusion  
(Flat price per patient)



**P&R\* dossier Submission**  
Reimbursement price  
Eur 163,900 / infusion



Dompé exercises the option to undertake market access activities in **Switzerland, Turkey and Australia**

**Next Steps**

**UNDER CONSIDERATION**

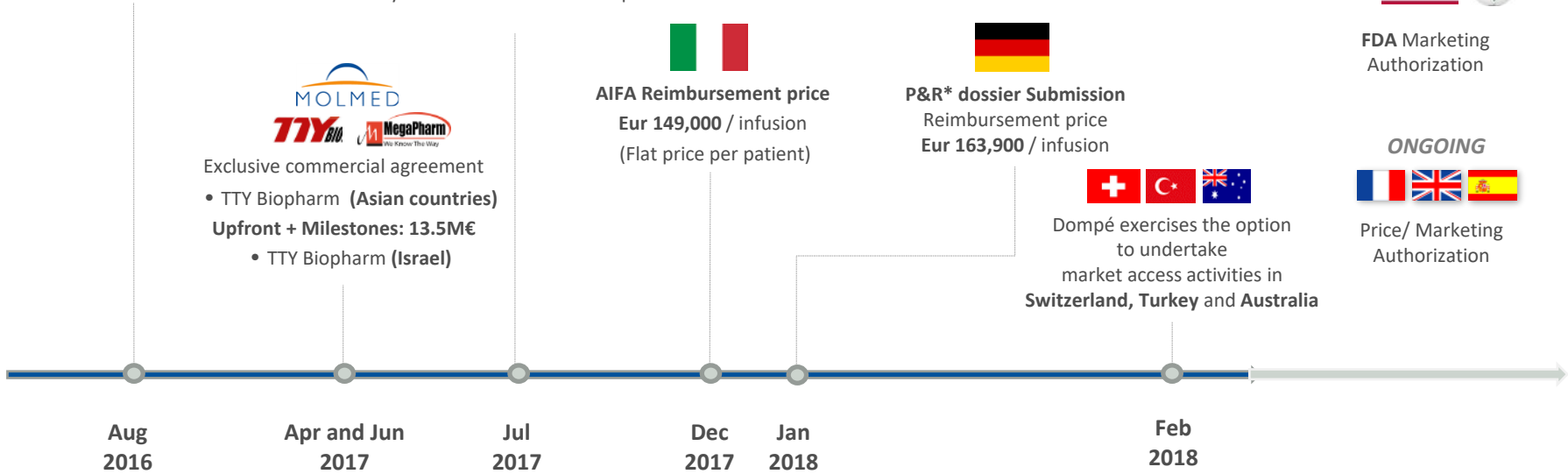


FDA Marketing Authorization

**ONGOING**



Price/ Marketing Authorization



\* P&R: Pricing & Reimbursement

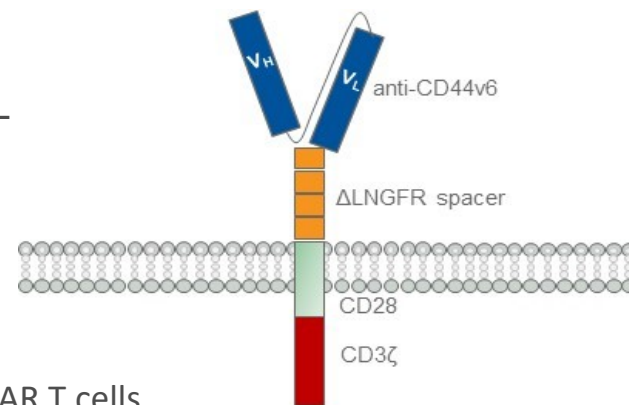


## CD44v6 CAR T cells: an original late preclinical stage therapy, targeting both hematological and solid tumors

**CAR-T family: lymphocytes armed with chimeric receptors** that have demonstrated high anti-tumor potential, also against tumors, above all hematological, particularly aggressive and resistant to traditional therapies

### CAR T CD44v6 features

- ❑ **Variant v6 of antigen CD44** is over-expressed in MM and AML
- ❑ **High safety profile** (low skin toxicity and suicide gene)
- ❑ **High therapeutic potential also in hematological and solid tumors:** it specifically recognizes variant 6 (v6) of the antigen CD44 (CD44v6)
- ❑ The **LNGFR spacer** allows **selection** and ***in vivo* tracking** of CD44v6 CAR T cells
- ❑ Generation of **CD44v6 antigen-loss variants** is circumvented by the reduced growth of CD44v6 negative tumor cells



# CD44v6 in vivo activity in hematological tumors: high tumor burden model of AML-M5 (THP-1)



Day 1  
AML

Day 15  
T cells

Day 16  
T cells

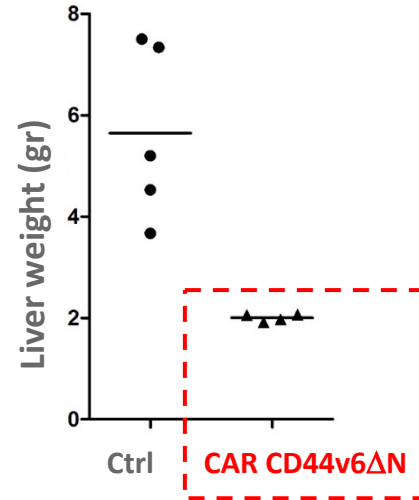
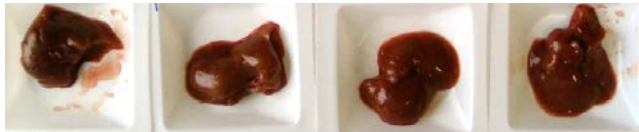
Day 40  
Sacrifice



CAR-CD44v6 cures aggressive leukemia in a mouse model: liver

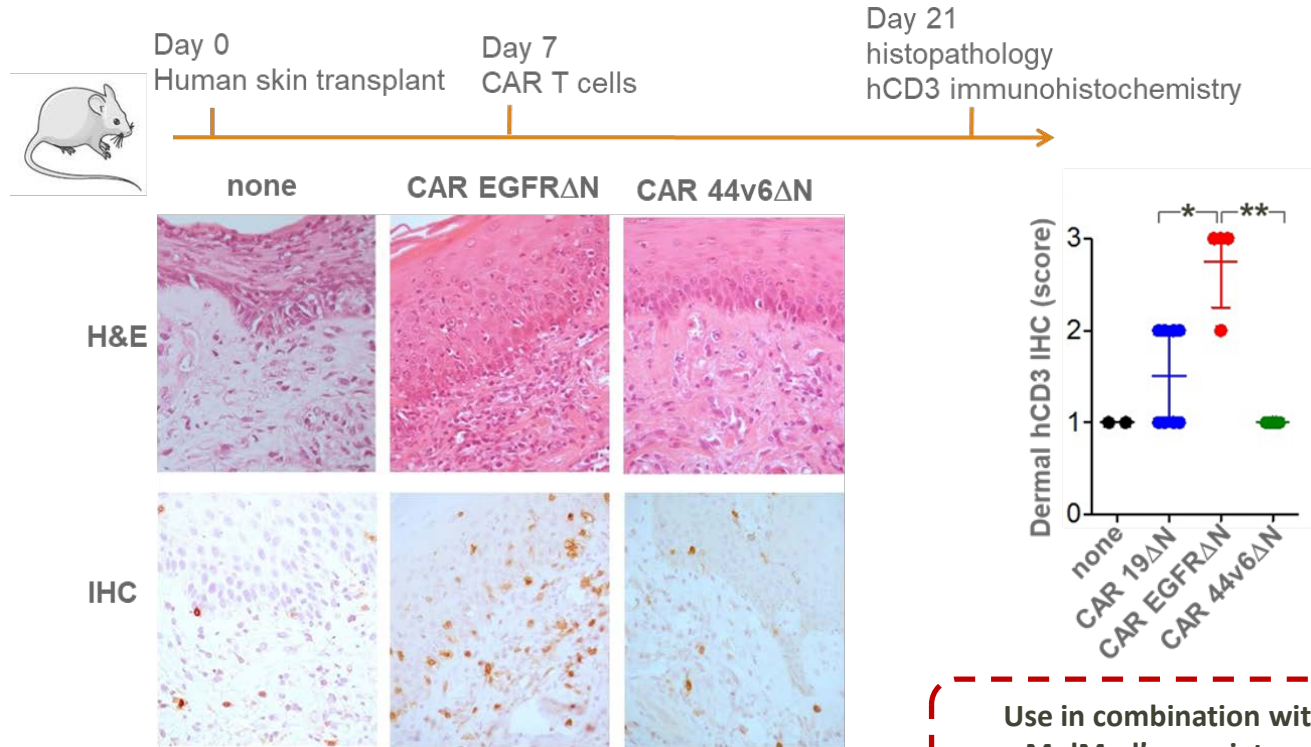


CD44v6



MolMed published results

# CD44v6 CAR-T cells do not significantly infiltrate the skin: low expected toxicity



Use in combination with MolMed' proprietary patent TK suicide gene

**Multi-centre, first-in-man Phase I/IIa clinical trial to demonstrate the safety and the efficacy of CAR-CD44v6 T-cell immunotherapy in:**

- Acute Myeloid Leukemia (AML)
- Multiple Myeloma (MM)

MolMed leads a Team of clinical experts in oncology and pioneers in the field of Cell & Gene therapy:



- ❑ IRCCS Ospedale San Raffaele (Italy)
- ❑ Universitätsklinikum Würzburg (Germany)
- ❑ Ospedale Pediatrico Bambino Gesù (Italy)
- ❑ L'Hospital de la Santa Creu i Sant Pau (Spain)
- ❑ University Hospital Ostrava (Czech Republic)
- ❑ Istituto Superiore della Sanità (Italy)
- ❑ Acromion GMBH (Germany)
- ❑ ARTTIC SAS (France)

**Phase I - Dose escalation**  
**Objectives: Maximum Tolerated Dose and Clinical Activity**

**18 Pts** (3 dose levels) **up to 30 Pts** (BOIN Adaptive design)

Q418 / Q119

**Phase II - Dose expansion**  
**Objectives: Confirmation of Clinical Activity and Safety Profile**

**14 Pts** (1 Dose level selected in Phase I) **per indication** (Simon design)

Q1-Q2 2020

## *CARTCD44v6 targeting severe unmet clinical needs in hematological tumours*

### **Acute Myeloid Leukemia (AML)**

- HSCT remains the most effective long-term treatment, yielding cure in 50–60% of patients (*Cormelissen et al., 2015; Passweg et al., 2016*)
- Transplant eligibility decrease with age and comorbidities
- Elderly pts are cured in only 10-20%
- Primary chemo resistant AML represent 20-30% of cases and dismal prognosis
- ***CAR T-cells may improve outcome in chemo resistant AML and in patients not eligible to transplantation (Medlinger et al., 2016)***

### **Multiple Myeloma (MM)**

- In the last few years, novel drugs have improved both progression free (up to ~30 months) and median overall survival (~4.7 years) (*Warren et al., 2013; San Miguel et al., 2008*).
- Despite these recent achievements with novel drugs in the treatment of MM, duration of response decreases with successive relapses until resistant relapse develop
- ***Clinical need of a potentially curative approach is high in MM***
- ***CAR-T are being under investigation as a strategy to treat relapsing/refractory disease after failure of at least three different regimen***

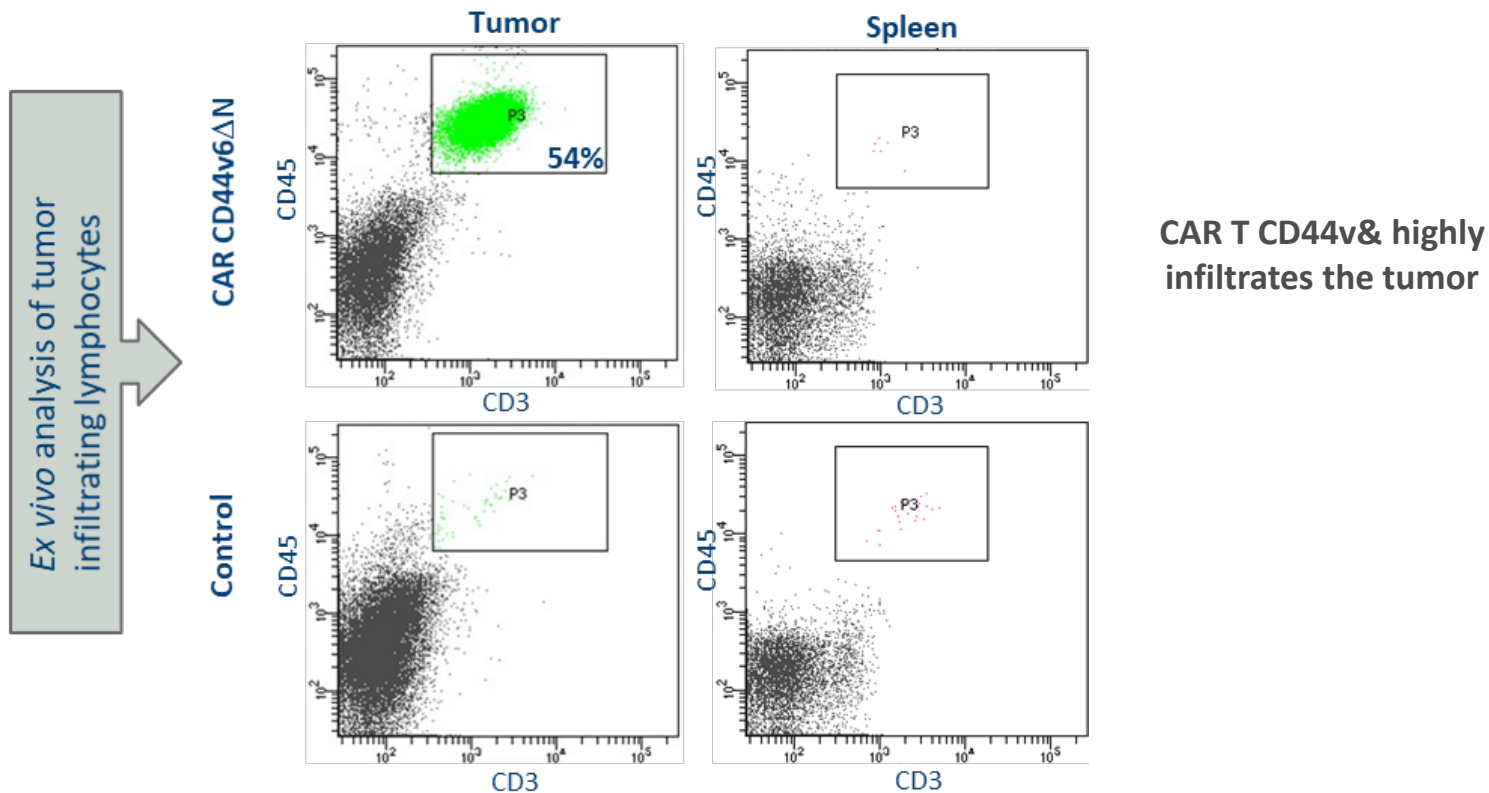
## *CD44v6: expressed by several solid cancers*

- ❑ Most of the clinical studies conducted to date have used CAR specific for CD19 antigen, **limiting its use in patients with hematologic B cell malignancies (hematological tumor)**
- ❑ **Variant v6 of antigen CD44** is over-expressed also in several solid **epithelial tumors**:
  - Squamous Cell Carcinomas mainly from **head & neck, esophagus, skin, and lung, ovary**
  - Adenocarcinomas mainly from **breast, lung, pancreas and colon**
  - **Sarcomas**
- ❑ Antitumor activity of CD44v6CAR T cells has successfully been demonstrated in **preclinical models of human lung and ovary carcinomas**



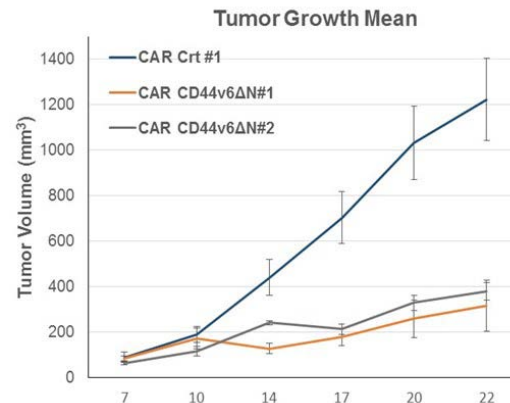
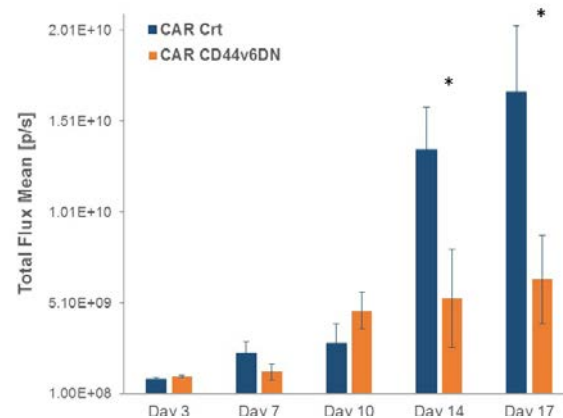
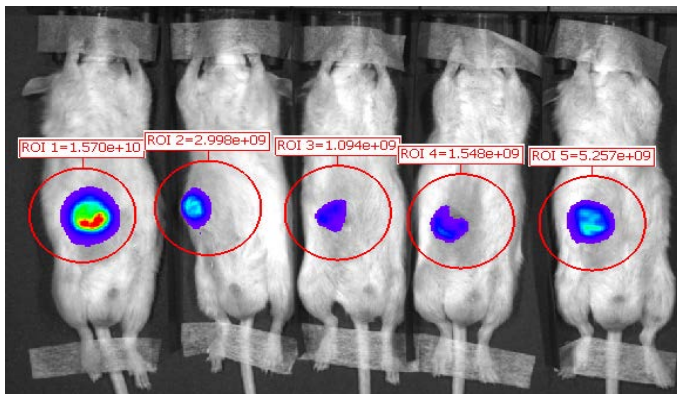
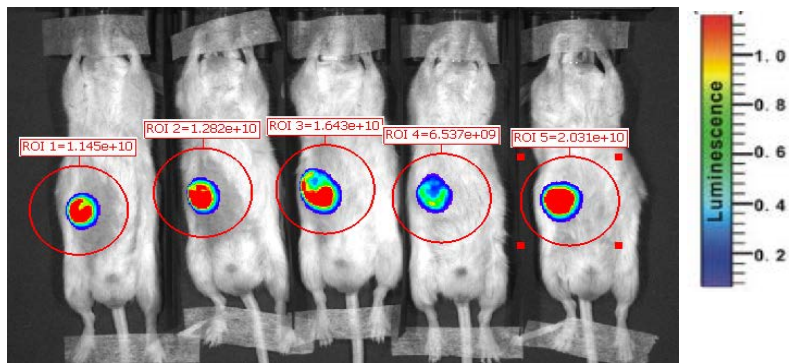
**STRONG RATIONALE TO DESIGN AND IMPLEMENT A BASKET TRIAL BY 3Q 2019**

# CD44v6 in vivo activity in solid tumors: a human lung adenocarcinoma model





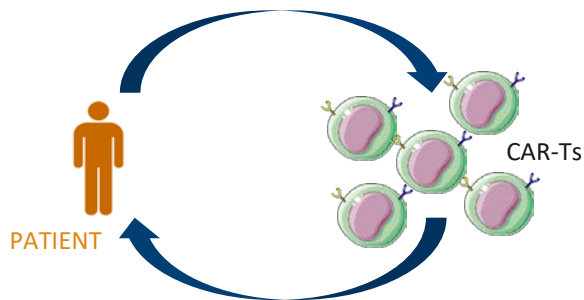
# CD44v6 in vivo activity in solid tumors: effect against human lung adenocarcinoma



# MolMed approach to develop new-generation CAR therapies proprietary pipeline

MolMed is one of the few biopharma worldwide having a diversified pipeline in both autologous and allogeneic

## Autologous CAR-T Platform

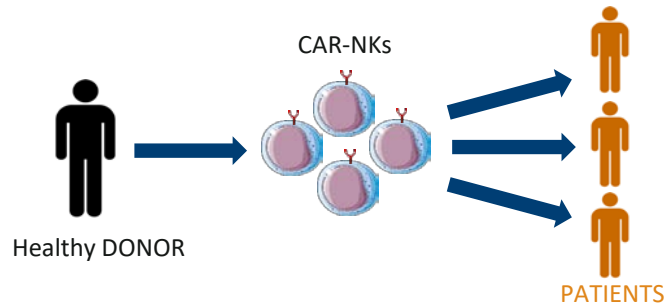


- No GvHD risk
- Proven clinical efficacy
- High production cost (1 batch = 1 patient)

June 28<sup>th</sup> 2018: **3ys Master Agreement with AbCheck** for the development of new CARs targeting **novel tumor antigens**

CARs

## Allogeneic CAR-NK Platform



- NK cells exclude GvHD
- Lower COGS/patient (significant benefits from both a technical and logistic point of view)
- Wider market potential (1 batch = multiple patients)

May 31<sup>st</sup> 2018: **binding term sheet with Glycostem** for the development and manufacturing of **allogeneic CAR-NK therapies**

## *MolMed criteria to select new targets for autologous CAR T therapies*

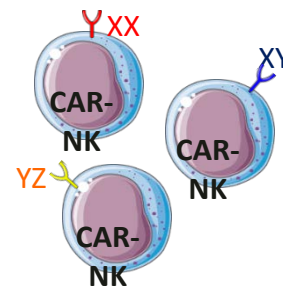
- ✓ Target **unmet clinical needs**
- ✓ Target both **hematological and solid tumors**
- ✓ Chose **targets with safe and/or moderate risk expression profile**
- ✓ **No follower approach** on CD19 or other targets in advanced clinical development by large companies
- ✓ Evaluate **IP freedom to operate**
- ✓ Target selection endorsed by **Scientific Advisory Board**

## MolMed approach to select a new allogeneic CAR platform

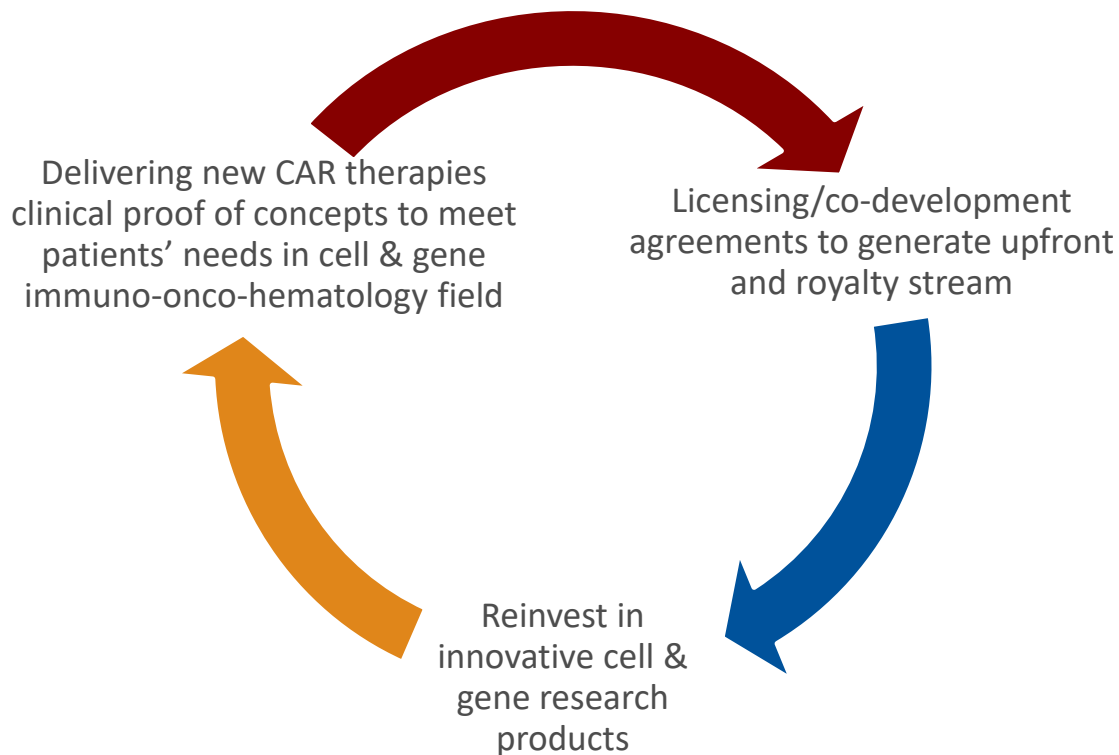
- ✓ CAR-NK cells are one of the **most innovative pre-clinical investigations** in cellular immunotherapy with much less competition compared to autologous CAR-T
- ✓ NK cells are cells of the innate immune system, capable to mediate anti-cancer **effects without the risk of inducing graft-versus-host disease (GvHD)**
- ✓ NK cells are **well suited as off-the-shelf therapy capable**, starting from a single batch produced by a healthy donor, to treat a large number of patients with cancer
- ✓ **MolMed has defined 3 specific targets products**, using 3 different tumor antigen receptors, in order to enlarge possible cancer indications, targeting both hematological and solid tumors and place itself in a leadership position inside the CAR-NK field

«**NK cells are going to be the next big thing in CAR therapy**»

Carl June, MD, PhD; ASCO 2018



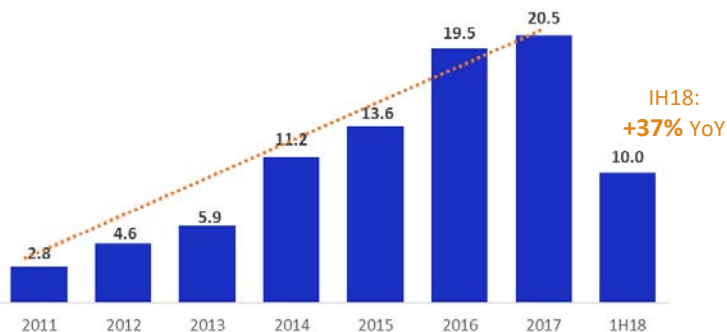
# MolMed' CARs platform strategic vision



# MolMed: an established dual business model leveraging common technological assets

## GMP Solutions (CDMO \*)

- A growing source of revenues to fund internal R&D, but also...
- ..a cutting edge technological asset to grant robust development and manufacturing of internal products



\* Contract Development and Manufacturing Organization

## Proprietary Pipeline

- Ability to manage from pure research to clinical, manufacturing, regulatory authorization, market access and pricing & reimbursement
- A growing and diversified clinical and pre-clinical stage onco-hematology cell & gene products pipeline

Product/Therapy	Indication	Disc/ Feas	Precl	PhI/II	PhIII	Market
Zalmoxis®	Haplo identical Transplant in Hematological Malignancies	→				
CAR-T CD44v6 Liquid tumor	Liquid tumors (leukemia, myeloma)	→				
CAR-T CD44v6 Solid tumor	Solid tumors (pancreas, breast, head and neck)	→				
CAR-T (2 undisclosed targets)	Undisclosed	→				
Allogeneic CAR-NK (3 undisclosed targets)	Undisclosed	→				

## MolMed: solid financial position with significant improvements vs IH17

- **Total IH18 Revenues** of 12.7€ M, with Revenues from sales equal to Euro 12.2€ M, increased by 36.9% compared to IH17
- **Operating and Net Results** considerably improved by 56.1% and 52.7% respectively, compared to IH17
- **MolMed evergreen losses carried forward** amounting to about 204 Euro/million

€/000	IH18	IH17	Δ		FY17
			IH18 vs IH17		
			€	%	
<b>Operating Revenues</b>	<b>12,712</b>	<b>9,819</b>	<b>2,893</b>	<b>29.5%</b>	<b>23,987</b>
<i>Revenues</i>	12,234	8,935	3,299	36.9%	23,000
<i>Other operating income</i>	478	884	(406)	(45.9%)	987
Operating costs	(15,563)	(16,320)	757	4.6%	32,135
<b>Operating Result</b>	<b>(2,851)</b>	<b>(6,501)</b>	<b>3,650</b>	<b>56.1%</b>	<b>(8,148)</b>
<b>Net Result</b>	<b>(3,085)</b>	<b>(6,522)</b>	<b>3,437</b>	<b>52.7%</b>	<b>(8,497)</b>
<b>Net Financial Position<sup>(*)</sup></b>	<b>18,098</b>				<b>18,111</b>

- **Financial Position** equal to 18.1€ M cash and cash equivalents and current financial receivables, with no financial debt



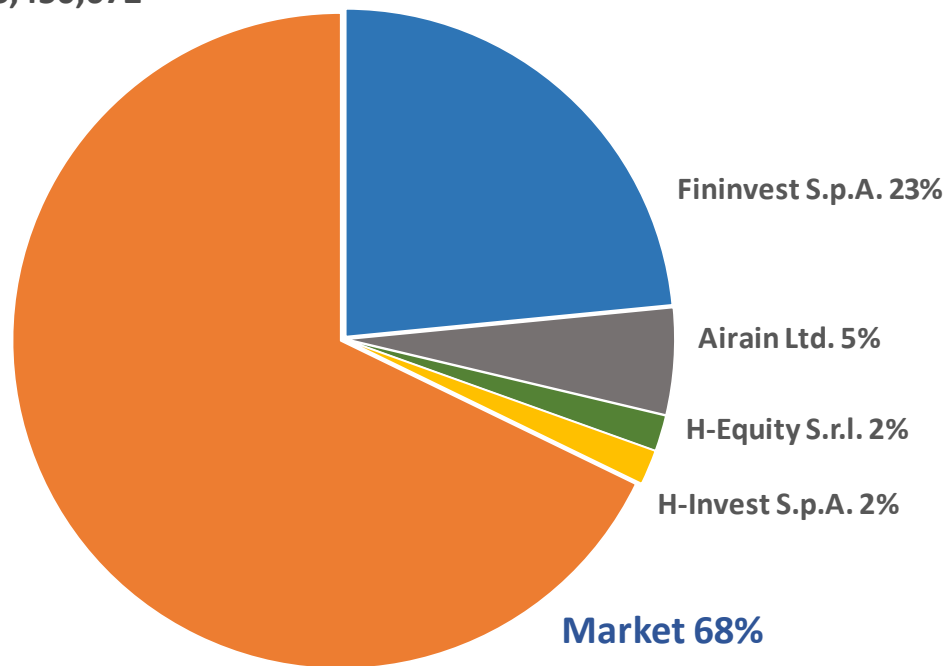
## MolMed: financial results improved significantly in the last three years

- **Total FY17 Revenues** of 24€ M, with Revenues from sales equal to Euro 23€ M, increased by 18.0% compared to 2016
- **Operating and Net Results** considerably improved by 40% and 38.8% respectively, compared to 2016
- **Human resources** increased year by year, from 152 employees at the end of 2016 to 186 as of December 31<sup>st</sup>, 2017

€/000	FY17	Δ		FY 2016	FY 2015	Δ	
		FY17 vs FY16				FY16 vs FY15	
		€	%			€	%
<b>Operating Revenues</b>	<b>23,987</b>	<b>1,162</b>	<b>5.1%</b>	<b>22,825</b>	<b>16,764</b>	<b>6,061</b>	<b>36.2%</b>
<i>Revenues</i>	23,000	3,516	18.0%	19,484	13,576	5,908	43.5%
<i>Other operating income</i>	987	(2,354)	(70.5%)	3,341	3,188	153	4.8%
Operating costs	32,135	(4,276)	(11.7%)	36,411	37,302	(891)	(2.4%)
<b>Operating Results</b>	<b>(8,148)</b>	<b>5,438</b>	<b>40.0%</b>	<b>(13,586)</b>	<b>(20,538)</b>	<b>6,952</b>	<b>33.8%</b>
<b>Net Result for the period</b>	<b>(8,497)</b>	<b>5,379</b>	<b>38.8%</b>	<b>(13,876)</b>	<b>(20,784)</b>	<b>6,908</b>	<b>33.2%</b>
<b>Net Financial Position</b>	<b>18,111</b>			<b>19,702</b>	<b>29,938</b>		
<b>Work Force (#)</b>	<b>186</b>	<b>5</b>		<b>181</b>	<b>152</b>	<b>29</b>	

## MolMed Shareholders' structure

- ❑ MolMed is listed on the main market (MTA) of the **Milan Stock Exchange** since 2008 (**MLMD.MI**)
- ❑ **Market cap ~ 189M €** (as of September 4th, 2018)
- ❑ **Outstanding shares: 463,450,672**



# MolMed strategic goals and upcoming milestones

## Proprietary Product Pipeline



## Contract Development and Manufacturing



- ❑ **Zalmoxis®**: place in therapy and geography development
- ❑ **CAR44v6 (hematological tumors)**
  - **4Q18 - IQ19**: 1<sup>st</sup> in man clinical trial
  - **Q1 - Q2 2020**: Confirmation of Clinical Activity and Safety Profile
- ❑ **CAR44v6 (solid tumors)**  
Following hematological trial IMPD:
  - **3Q19**: solid trial IMPD
  - **4Q19 – IQ20**: 1<sup>st</sup> in man clinical trial
- ❑ **New CAR pipeline**: **4Q19**: preclinical data

- ❑ **Bresso Facility Stream 2 authorization (2019/20)**
- ❑ **Further expansion of client base and revenue double digit growth**
- ❑ **Services range and technological platforms enlargement**

# Contacts

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