



# MedImmune

Delivering the next wave of scientific innovation

**Bahija Jallal, Executive Vice President, MedImmune**

# Building on the fundamentals

Next wave of science



# MedImmune has a 25+ year history in biologics; pioneering scientists are still driving discoveries today

**RespiGam**

1996



**Gail Wasserman, PhD**  
Biopharmaceutical Dev.  
*Pennsylvania State Uni.*  
*Montclair State Uni.*



1998



1998



2006



**JoAnn Suzich, PhD**  
Infectious Disease /  
Vaccines  
*Purdue University*



2009



**Mike McCarthy, MD, MPH, MS**  
Infectious Diseases / Vaccines  
*U. Maryland University College*  
*Georgetown U. School of Med.*



**Mark Schenerman, PhD**  
Biopharmaceutical Dev.  
*Cornell University*  
*University of Florida*



2002



**Tris Vaughan, PhD**  
Antibody Discovery &  
Protein Engineering  
*University of Toronto*  
*University of Leeds*



2011



2003



**Hong Jin, PhD**  
Infectious Diseases /  
Vaccines  
*Northwestern Uni.*  
*Glasgow Uni.*



2012



# MedImmune continues to attract world class scientists with strong expertise in areas of interest



**Yong-Jun Liu, MD, PhD**  
Head of Research  
*Baylor Research Institute Chief Scientific Officer and Director of Immunology Research*



**Jack Ratchford, MD**  
Neuro-Immunology  
*Johns Hopkins U. School of Medicine  
Columbia U. College of Physicians and Surgeons*



**David Howe, MD**  
Autoimmunity  
*Cornell University  
University of Toronto  
Edinburgh U. Medical School*



**Jacob Wesley, PharmD, MS**  
Oncology  
*Johns Hopkins University  
University of Maryland*



**Brett Hall, PhD**  
Translational Science - Oncology  
*West Virginia University  
Ohio State University*



**Eliezer Katz, MD**  
Neuro-Inflammation  
*U. of Massachusetts Medical Center  
Hebrew U. - Hadassah Medical School*



**Jiping Zha, MD, PhD**  
Translational Medicine - Oncology  
*U. Texas Southwestern Med Ctr Dallas  
Harvard Medical School  
University of Tennessee  
Shanghai Medical University*



**John Kurland, PhD**  
Translational Medicine – Oncology  
*Cold Spring Harbor Laboratory  
U. Texas M. D. Anderson Cancer Center*



# MedImmune has a collaborative work environment where staff are encouraged to publish & innovate



# Our sustainable pipeline is built on excellence in science

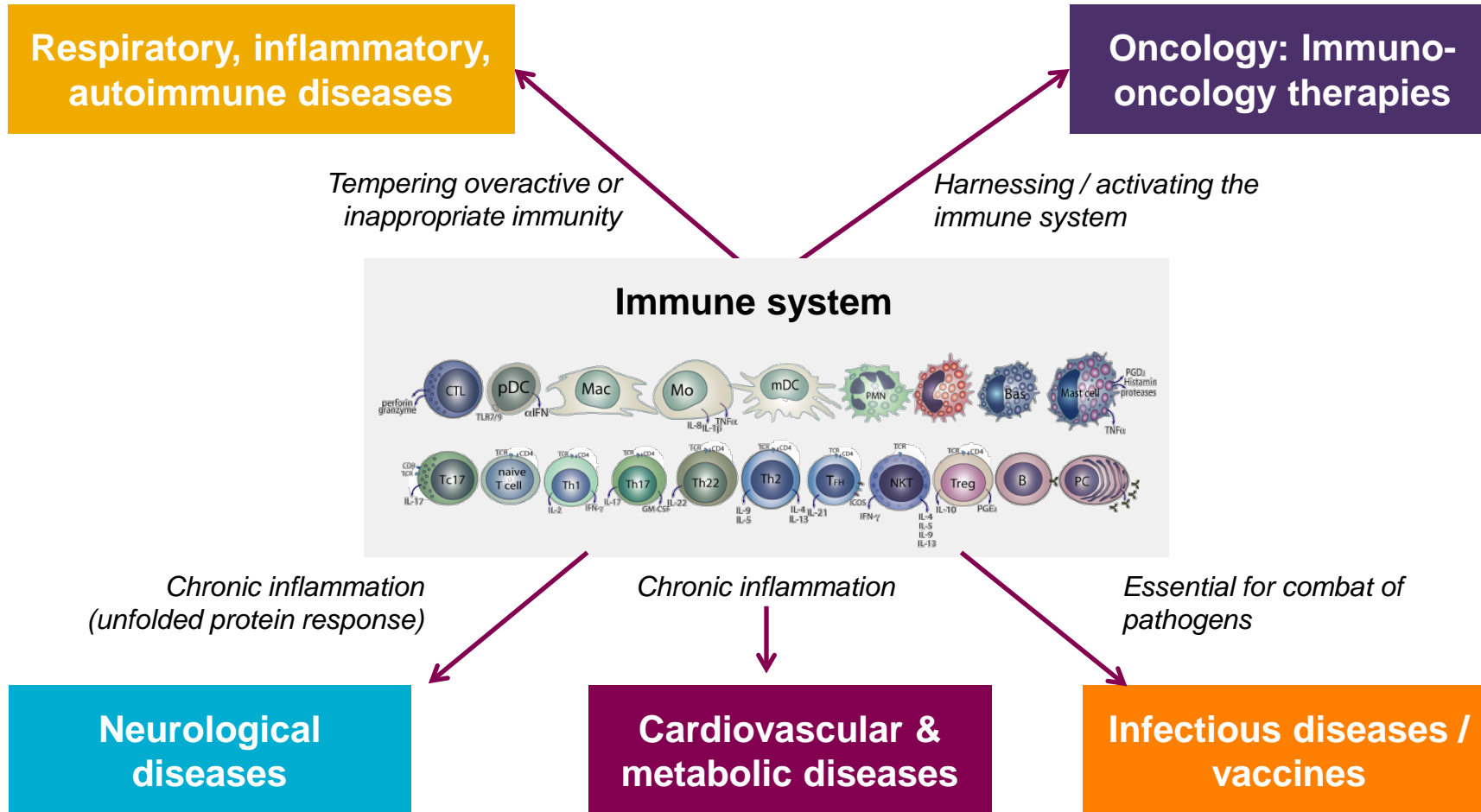
**Strength  
in  
immunology**

**Expertise in  
technology &  
protein  
engineering**

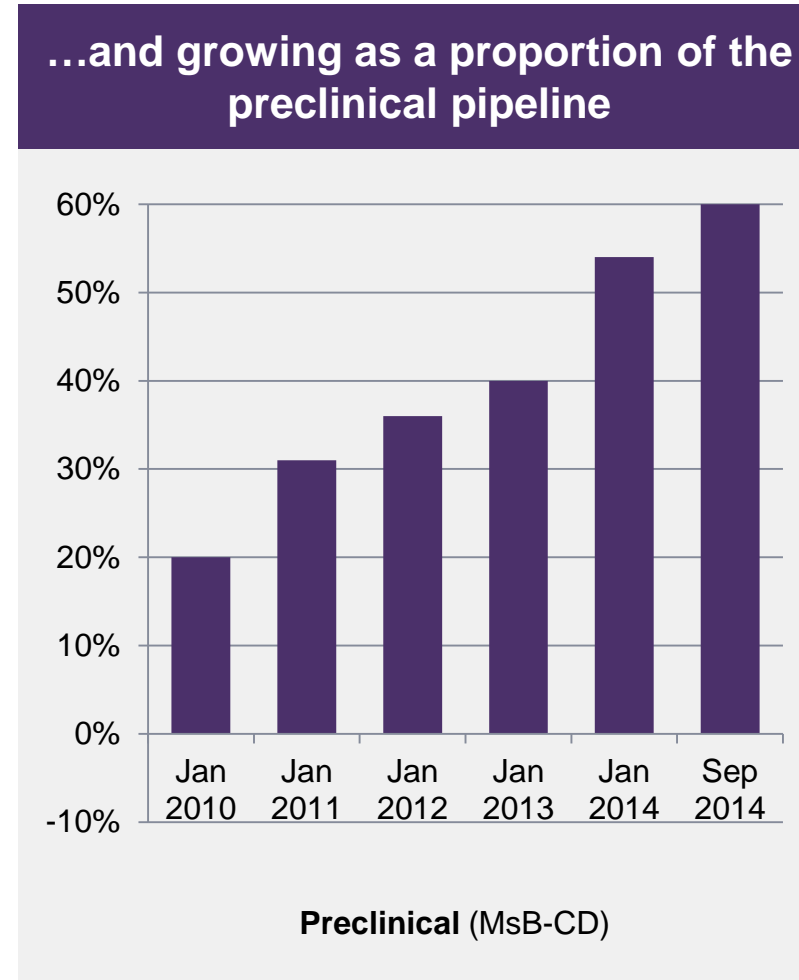
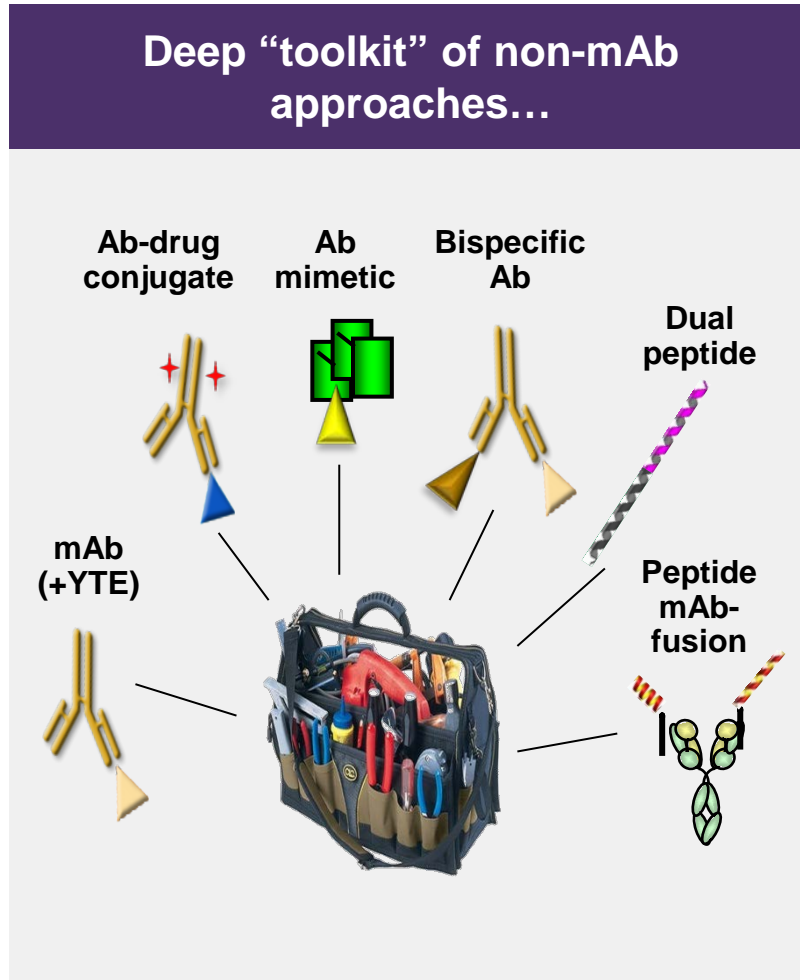
**Excellence in  
translational  
research**



# MedImmune's strong heritage in immunology is leveraged across therapeutic areas



# Disease biology drives our tech focus: Novel (non mAb) drug formats represent >50% of our research portfolio

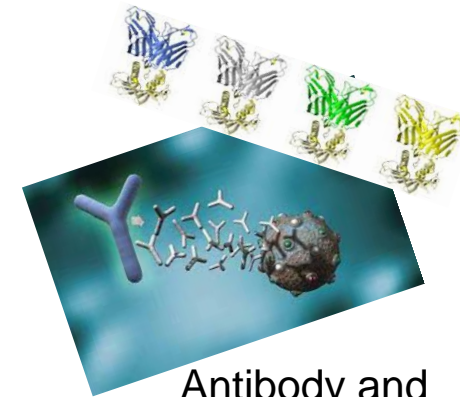




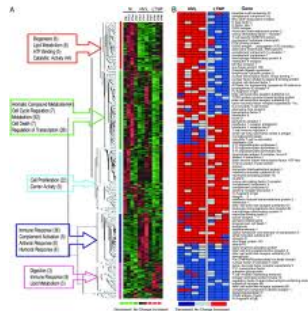
# Personalised healthcare is a core principle: More than 80% of our biologics portfolio employs a PHC approach

## Example: PD-L1

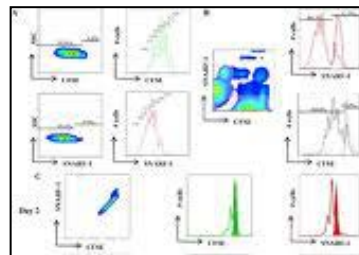
PD-L1 protein expression may not be an absolute determinant of response...we leverage multiple tools to identify responders



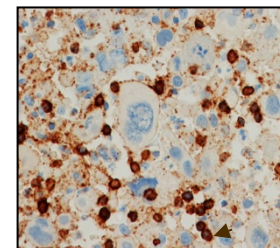
Antibody and TCR diversity



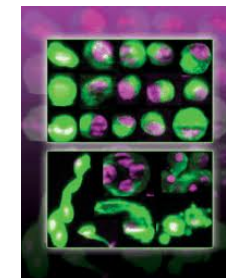
Genomics and proteomics



Flow cytometry



Tumour cell Target expression



Circulating Tumour cells



Building on the fundamentals

**Next wave of science**



# MedImmune's Research & Early Development portfolio is robust with emphasis on core TAs

Lead Optimisation		Pre-clinical	Phase I		Phase IIa	Phase IIb
Onc	RIA	Onc	MEDI3617 Ang2; GBM	MEDI-551 CD19; MS	MEDI2070/AMG-139 IL-23p19; Crohn's	anifrolumab IFN $\alpha$ ; SLE
Onc	RIA	Onc	MEDI-565 CEA BiTE; GI tumors	MEDI5872/AMG-557 B7RP1; SLE	tralokinumab IL-13; IPF	sifalimumab IFN $\alpha$ ; SLE
Onc	RIA	Onc	MEDI6469 mOx40; Solid tumors	MEDI4920 CD40L; Sjögren's	MEDI-551 CD19; CLL, DLBCL	mavrilimumab GM-CSFR; RA
Onc	RIA	Onc	MEDI6383 OX40 FP; Solid Tumors	MEDI6012 LCAT; ACS	MEDI-573 IGF; MBC	MEDI7183/AMG-181 A4b7; UC, Crohn's
Onc	RIA	Onc	MEDI4736+BRAF/MEK PD-L1; melanoma	MEDI8111 Fil; trauma bleeding	MEDI4736 PD-L1 solid tumours	brodalumab IL-17R; severe asthma
Onc	RIA	Onc	MEDI4736 + Treme PDL1/CTLA4 solid tumor	MEDI4893 staph alpha toxin	MEDI4736+Iressa PD-L1/EGFR; NSCLC	MEDI9929/AMG-157 TSLP; asthma
Onc	RIA	Onc	MEDI0680 PD-1; solid tumors	MEDI-550 pandemic flu library		moxetumomab CD22; pALL
Onc	RIA	Onc	MEDI-551+CD20 DLBCL	MEDI8897 RSV anti-F NG		
Onc	RIA	Neuro	MEDI4736/0680 PD-L1/PD-1; NSCLC	MEDI7510 older adult RSV vaccine		
Onc	CVMD	RIA	MEDI6469/4736 solid tumors	MEDI3902 PcrV/PsI bispecific		
Onc	CVMD	RIA	MEDI4736+AZD9291 PD-L1/EGFR; NSCLC	PRVV RSV prevention		
Onc	CVMD	RIA	MEDI0639 DLL-4; SCLC			
Onc	CVMD	RIA	MEDI1814 A-Beta NG; AD			
Onc	CVMD	RIA				
Onc	CVMD	RIA				
Onc	CVMD	RIA				
Onc	CVMD	RIA				
Onc	CVMD	RIA				
Neuro	CVMD	CVMD				
Neuro	CVMD	ID/Vax				
Neuro	CVMD	ID/Vax				
Neuro	ID/Vax	ID/Vax				
	ID/Vax					
	ID/Vax					

Oncology

RIA

CVMD

ID / Vaccine

Neuroscience



# MedImmune's programme for Sjögren's employs the novel Tn3 scaffold to avoid mAb-related complications

## Target

- Blocks co-stimulatory path for CD40L on T cells to bind to CD40 on B cells

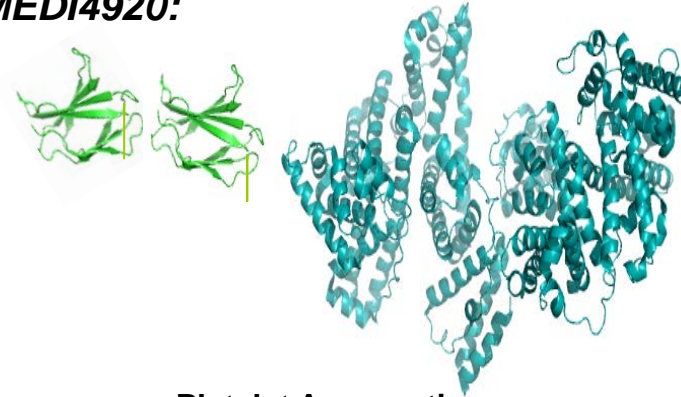
## Rationale

- mAbs efficacious in animal models
- mAbs tested in the clinic with some positive data, but terminated due to blood clots

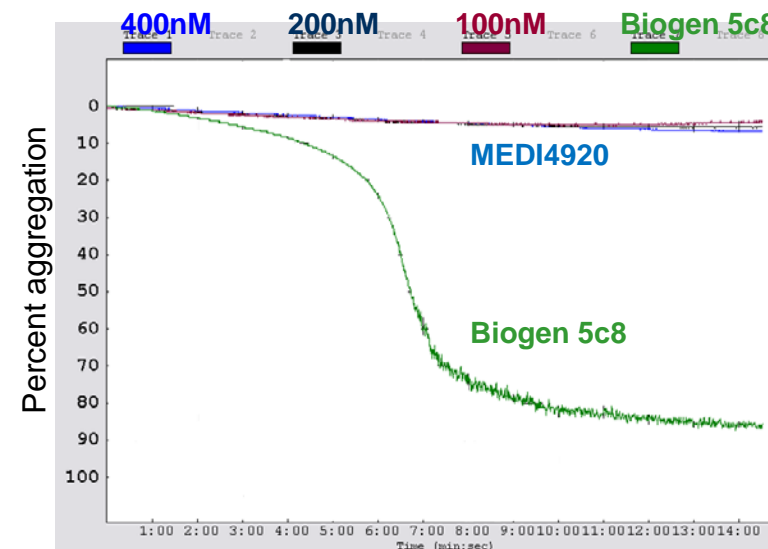
## Differentiation

- Tn3 scaffold is a novel non-mAb technology; avoids blood clotting characteristic of anti-CD40L mAbs
- First small protein technology at MEDI to enter clinic

**MEDI4920:**



**Platelet Aggregation**



# MedImmune's novel ADC candidate employs the PBD payload and demonstrates early efficacy against cancer

## Target

- Cancer stem cell target
- Limited expression in normal tissues

## Indication

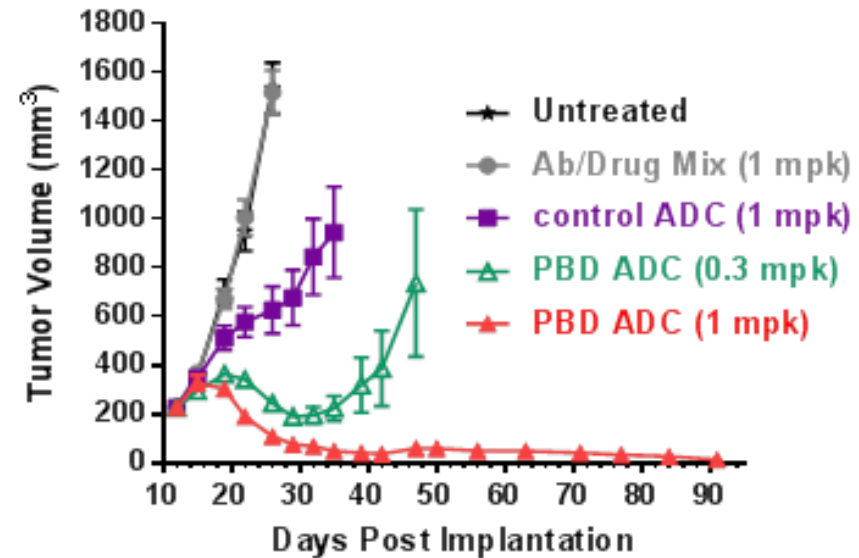
- Overexpressed in several tumor types
  - Lung
  - Breast

## Candidate

- Novel ADC conjugated with PBD payload
- Tumor regression after single dose

## ADC:

H1975 NSCLC xenograft:  
Tumor regression with single dose ADC

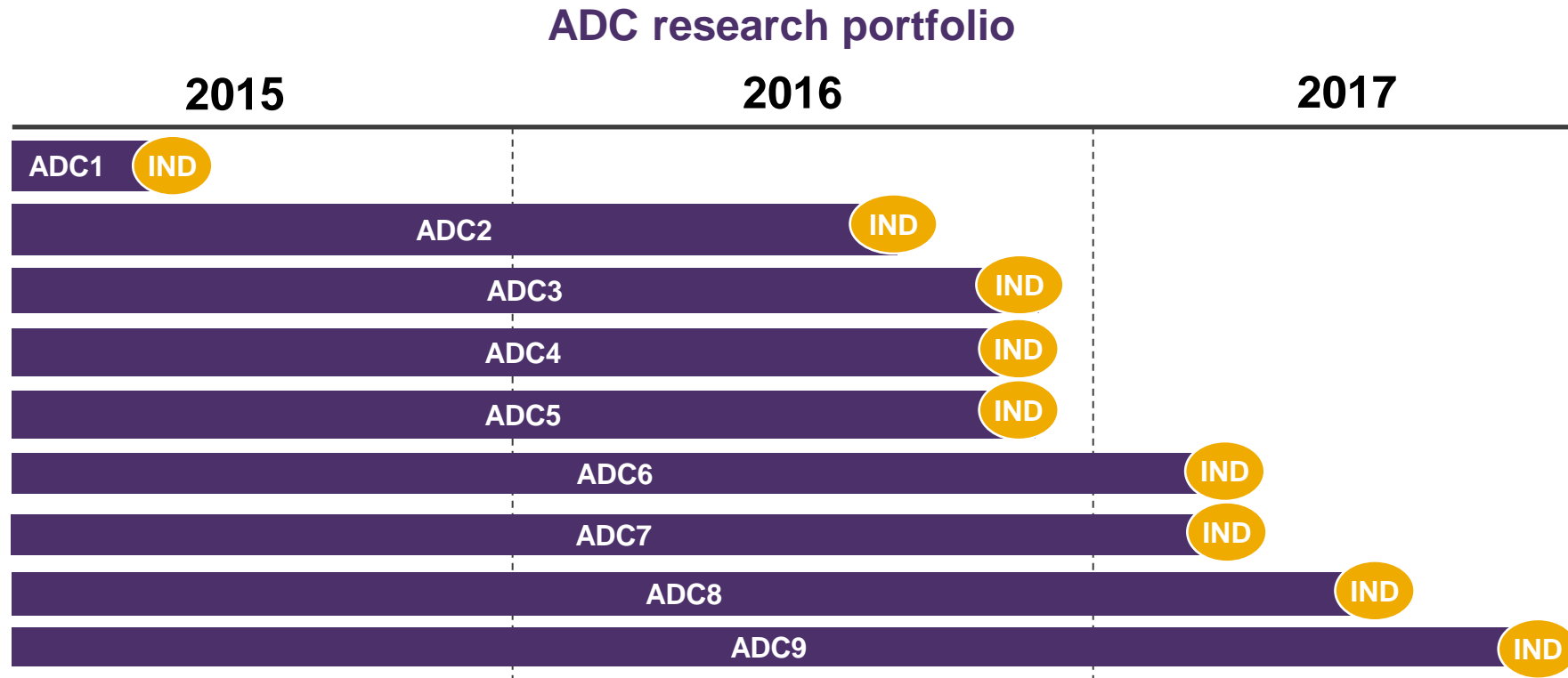


*World ADC Awards*  
Sunday October 26th 2014

**Best Scientific Innovation:**



# We are building our early ADC pipeline; vigorously pursuing a broad range of oncology targets



- Forecast is subject to project attrition
- Target discovery activities have launched additional projects for IND delivery beyond 2017



# MedImmune is progressing a next generation, extended half-life mAb for RSV

## Target

- Novel, neutralizing epitope on the RSV F protein, located on the surface of the virion

## Indication

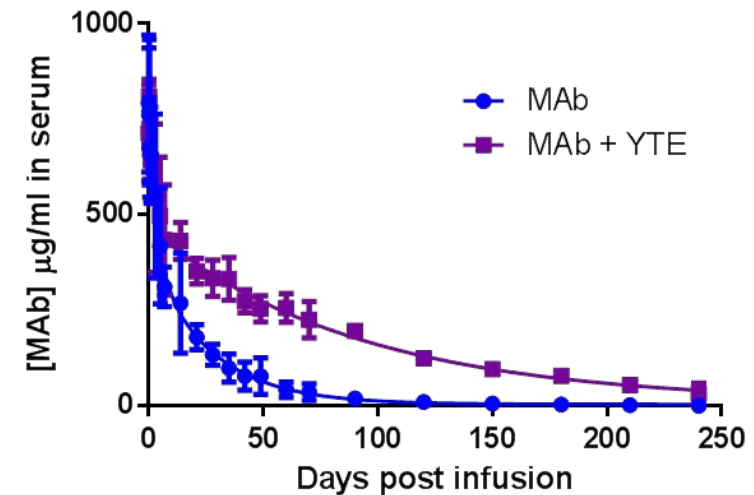
- Passive immunization of all infants entering their 1<sup>st</sup> RSV season
- Children with chronic lung or chronic heart disease entering their 1<sup>st</sup> and 2<sup>nd</sup> RSV seasons for the prevention of lower respiratory tract illnesses

## Candidate

- Binds to novel epitope, neutralizing RSV
- Extended half-life based on proprietary, clinically validated YTE technology

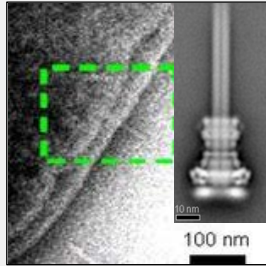
## *MEDI8897* :

Serum PK in NHP Model



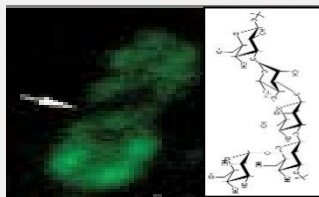
# MedImmune is pursuing an innovative multi-functional, bi-specific approach for the treatment of *P. aeruginosa*

## Target #1: PcrV – Virulence



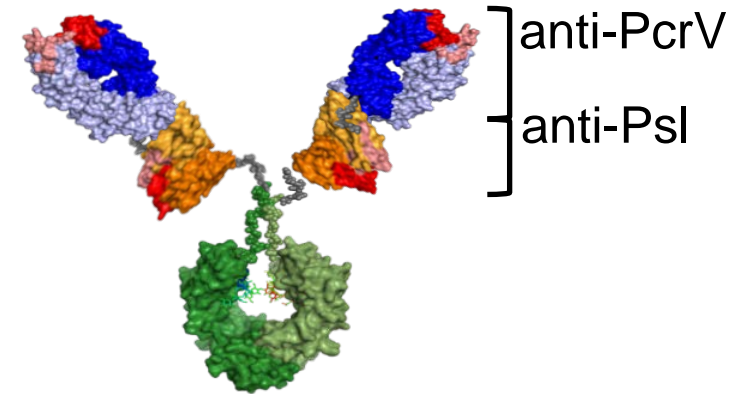
- Prevents toxin injection into host cells
- High affinity mAb to low density target

## Target #2: Psl – Colonisation Persistence



- Dual mechanism of action: Clearance and blocks cell adherence
- Lower affinity mAb to high density target

## MEDI3902 :



MarketWatch

PRESS RELEASE

MedImmune Receives Fast Track Designation from FDA for Development of MEDI3902 for Prevention of Nosocomial Pneumonia

Published: Sept 23, 2014 8:00 a.m. ET





# Protein X presents an opportunity to deliver a step change in diabetes therapy

## Target

- Novel protein with novel mechanism of action

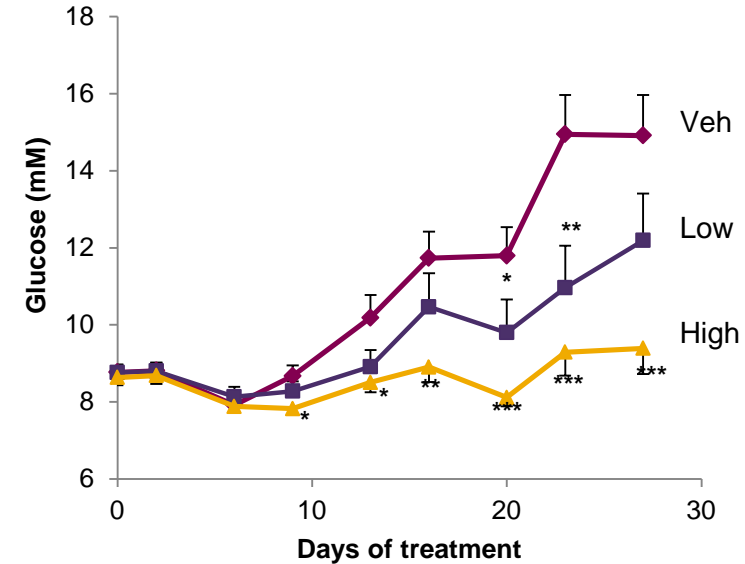
## Indication

- Type 2 Diabetes
- Goal
  - Dose-dependent reductions in blood sugar
  - Significantly improved islet health
  - Improved insulin sensitivity

## Candidate

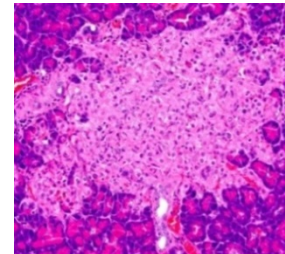
- May regulate pancreatic  $\beta$ -cell function

### Protein X:

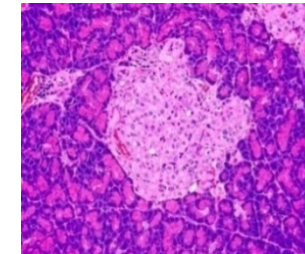


Data are presented as mean  $\pm$  SEM n=28 (veh), n=22 (Prot-X groups)

### Vehicle Control



### 3 mg/kg/d Prot-X



## Summary

**We have created a vibrant environment,  
promoting innovation and scientific excellence**

**We have a robust, balanced, sustainable  
portfolio**

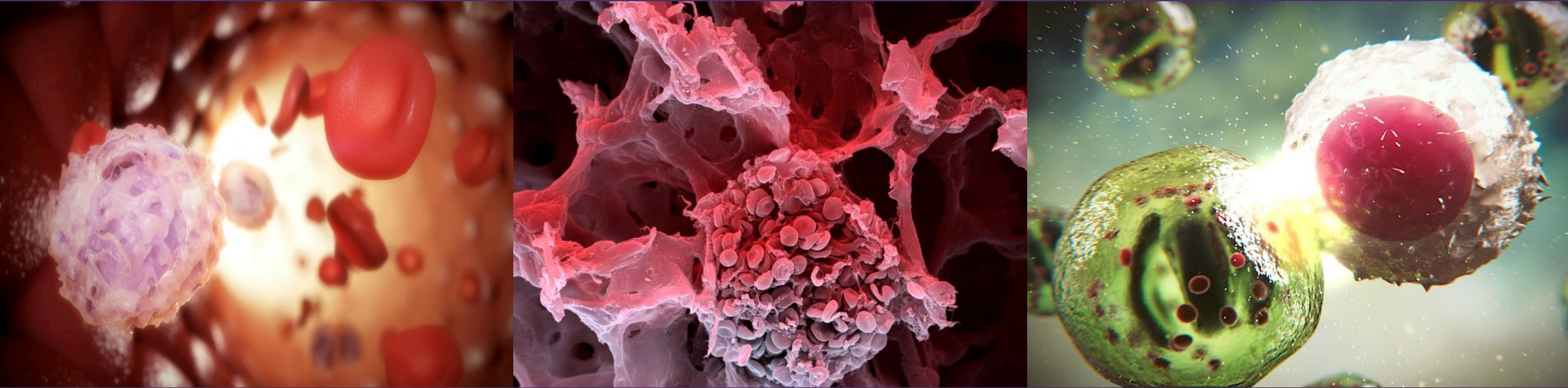
**We are moving beyond mAbs, pioneering the  
next wave of biologics innovation**



**We push the boundaries of science  
to deliver life-changing medicines**



# Q&A



**Briggs Morrison, *moderator***  
**Mene Pangalos**  
**Bahija Jallal**