



**PRIMA BIOMED**

**NASDAQ: PBMD, ASX: PRR**

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# Prima BioMed

- Prima BioMed is a biotechnology company striving to become a leader in immunotherapeutic products for the treatment of cancer.
- Prima's main pipeline of products is based on the LAG-3 immune control mechanism that play a vital role in the regulation of the T cell immune response.
- Prima BioMed is listed on the Australian Stock Exchange and on the NASDAQ Global Market in the US.

# Recent Developments

- Aug 2015: Novartis milestone payment announced for IMP701 Phase 1 initiation
- Jul 2015: EMA advice supports initiation of Phase 2b clinical trial in breast cancer with lead product IMP321
- May 2015: Financing with Ridgeback Capital (completed in August)
- May 2015: New IP for lead product IMP321 (covering different combinations; expires 2035)
- Jan 2015: GSK milestone payment received for IMP731 Phase 1 initiation
- Dec 2014: Acquisition of Immutep SA with Lymphocyte Activation Gene 3 (LAG-3) technology with lead product of IMP321

# Directors & Officers



**Lucy Turnbull, AO, Non-executive Chairman**

Businesswoman and philanthropist; Boards of the Cancer Institute of NSW and Australian Technology Park

**Albert Wong, Non-executive Deputy Chairman**

Australian investment banker; several directorships



**Marc Voigt, Executive Director & Chief Executive Officer**

15+ years in leading positions in finance, venture capital and biotech industry

**Prof. Frederic Triebel, PhD, CSO & CMO/Immutep SA**

Clinical haematologist, and PhD in immunology (Paris University) and successfully developed several research programs in immunogenetics and immunotherapy, leading to 144 publications and 16 patents



**Pete A Meyers, Non-executive Director**

CFO at TLOG; Previous Co-Head of Global Health Care Banking at Deutsche Bank

**Russell J. Howard, PhD, Non-executive Director**











Scientist entrepreneur; CEO of Maxygen & Oakbio, positions at NIH, DNAX, Affymax



**Deanne Miller, General Counsel & Company Secretary**

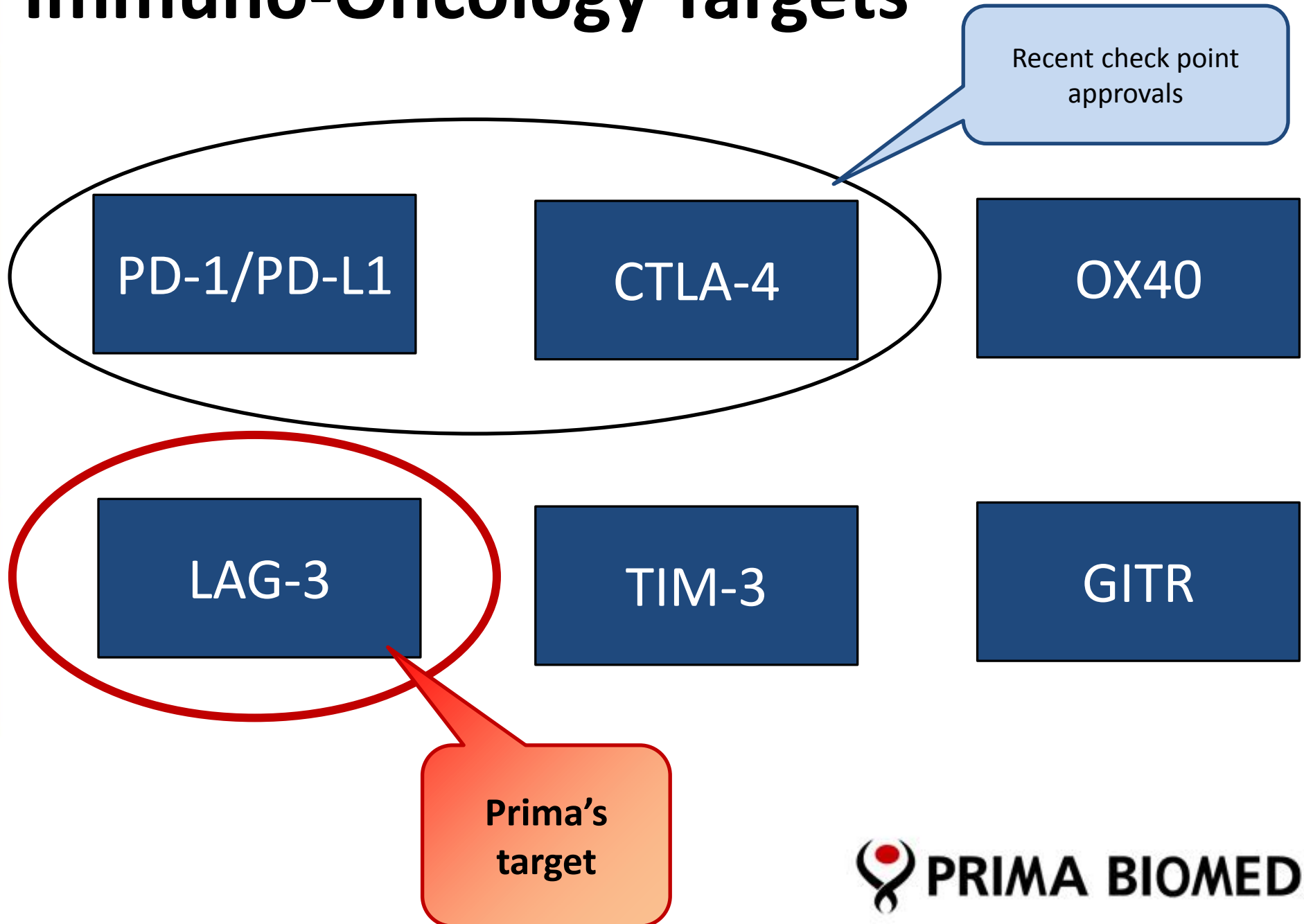
Lawyer; positions at RBC Investor Services, Westpac, Macquarie and ASIC

# Pipeline

Partner	Preclinical	Phase I	Phase IIa	Phase IIb	Indication
100% Prima ex China 	IMP321			Planned 	Metastatic Breast Cancer + Chemotherapy
100% Prima ex China 	IMP321				Melanoma & Others
100% Prima ex China 	IMP321	Planned 			IO Combination Therapy in Melanoma
 (WW)	IMP731 				Autoimmune disease
 (WW)	IMP701 				Cancer and chronic infectious disease
100% Prima ex Israel 	CVac				Ovarian & Pancreatic Cancer

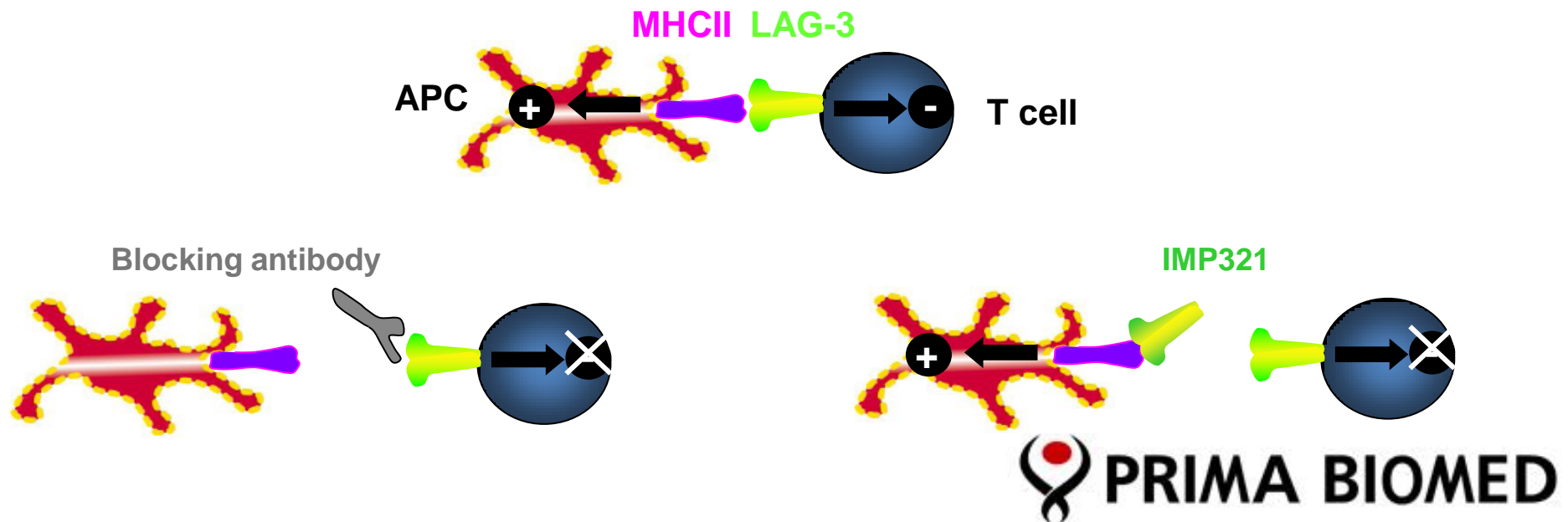
LAG-3 technology      Cancer vaccine

# LAG-3 is One of the 'Big Six' Immuno-Oncology Targets



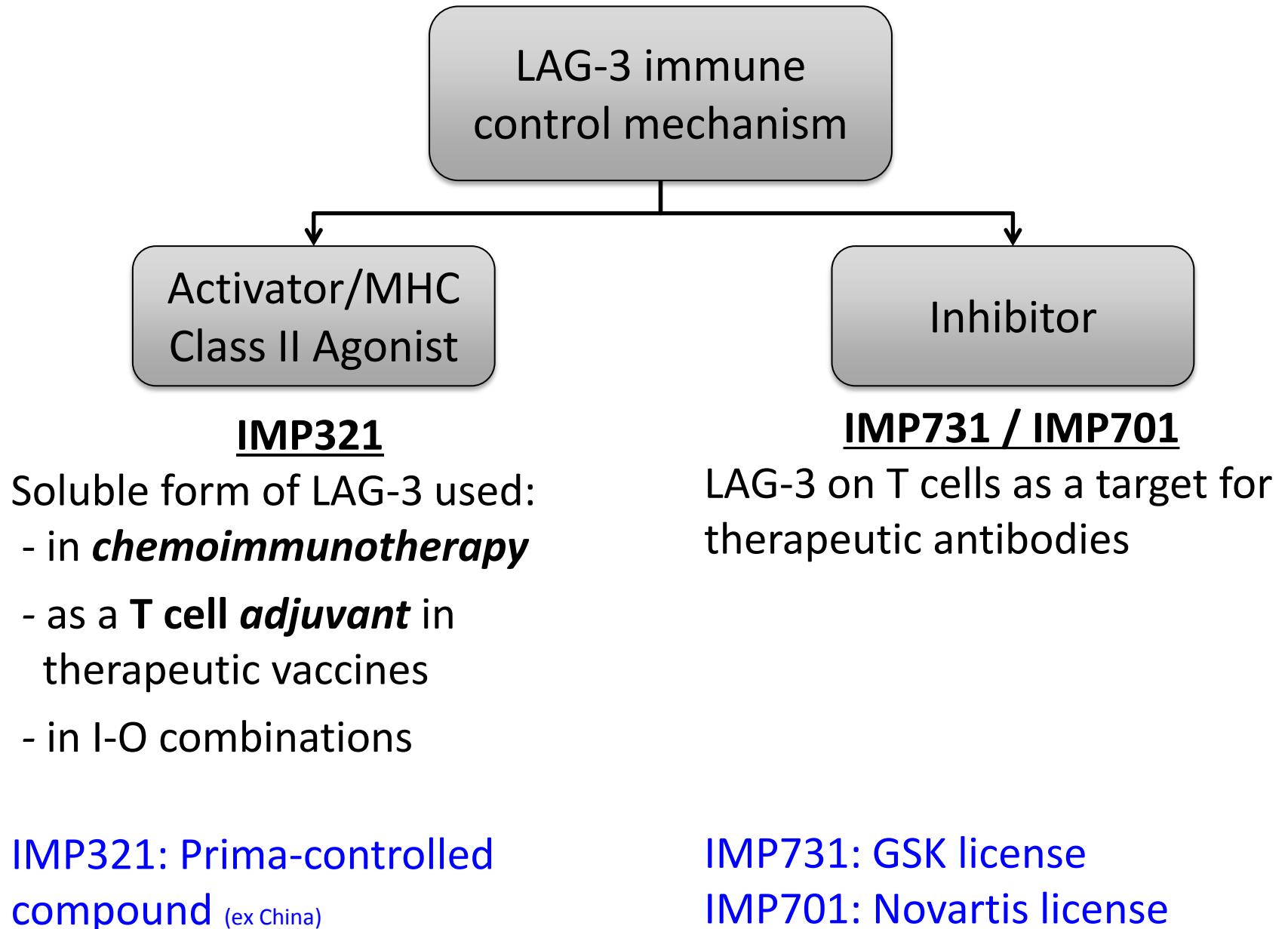
# Technology: LAG-3 Background

- LAG-3 is “Lymphocyte Activation Gene-3,” involved in the regulation of T cells in immune responses.
- LAG-3 is a checkpoint expressed on activated T-cells (like PD-1). Tumors use mechanisms to bind LAG-3 and inhibit T-cell proliferation, activation and tumor cell killing.
- On APC (antigen presenting cells), LAG-3 is an activator. When used as a soluble protein (IMP321), it activates APCs and this leads to T cell proliferation and activation.



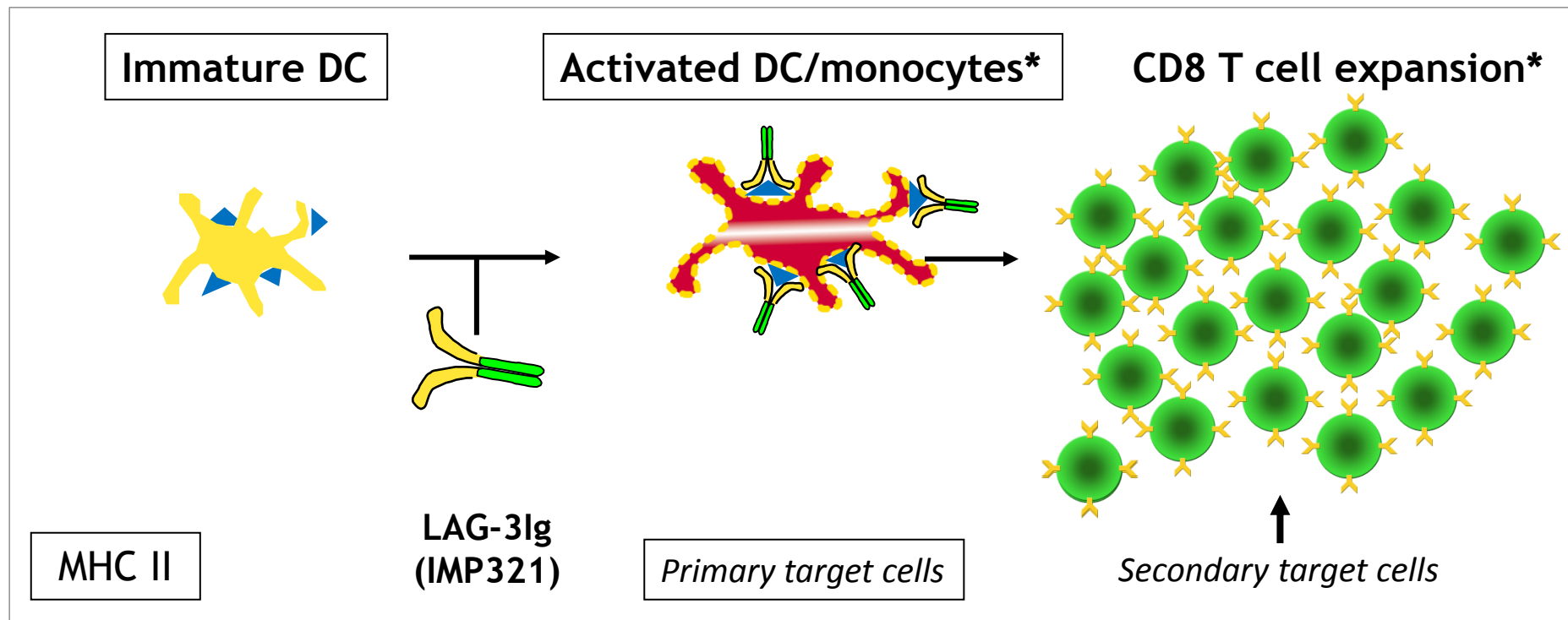


# Dual Technology Platform



# IMP321

- Soluble dimeric recombinant form of LAG-3 (fusion protein)
- Antigen presenting cell (APC) activator
- DC/monocyte activation induced, thereafter T cell expansion
- IMP321 may have the same effect as a checkpoint inhibitor by blocking the LAG-3 related inhibition of activated CD8 T cells.



- Highly efficacious in multiple animal models of cancer and infectious disease
- Shown to be safe, non-immunogenic and efficacious in humans
- At low doses can be used as a T cell adjuvant for cancer vaccines

(Clin Cancer Res. 2008 Jun 1;14(11):3545-54)

\* (J Immunol. 2008 Mar 15;180(6):3782-8)

# Competitive Landscape: APC Activators

- CD40 / APC – In development with anti-PDL 1 antibody by F. Hoffmann-La Roche Ltd
- Toll-Like Receptors
  - Dynavax (DVAX) – TLR9 agonist (to be trialed with Keytruda)
  - Immune Design (IMDZ) – TLR4 agonist
  - Celgene (CELG) partnered with VentiRx (private) for TLR8 agonist

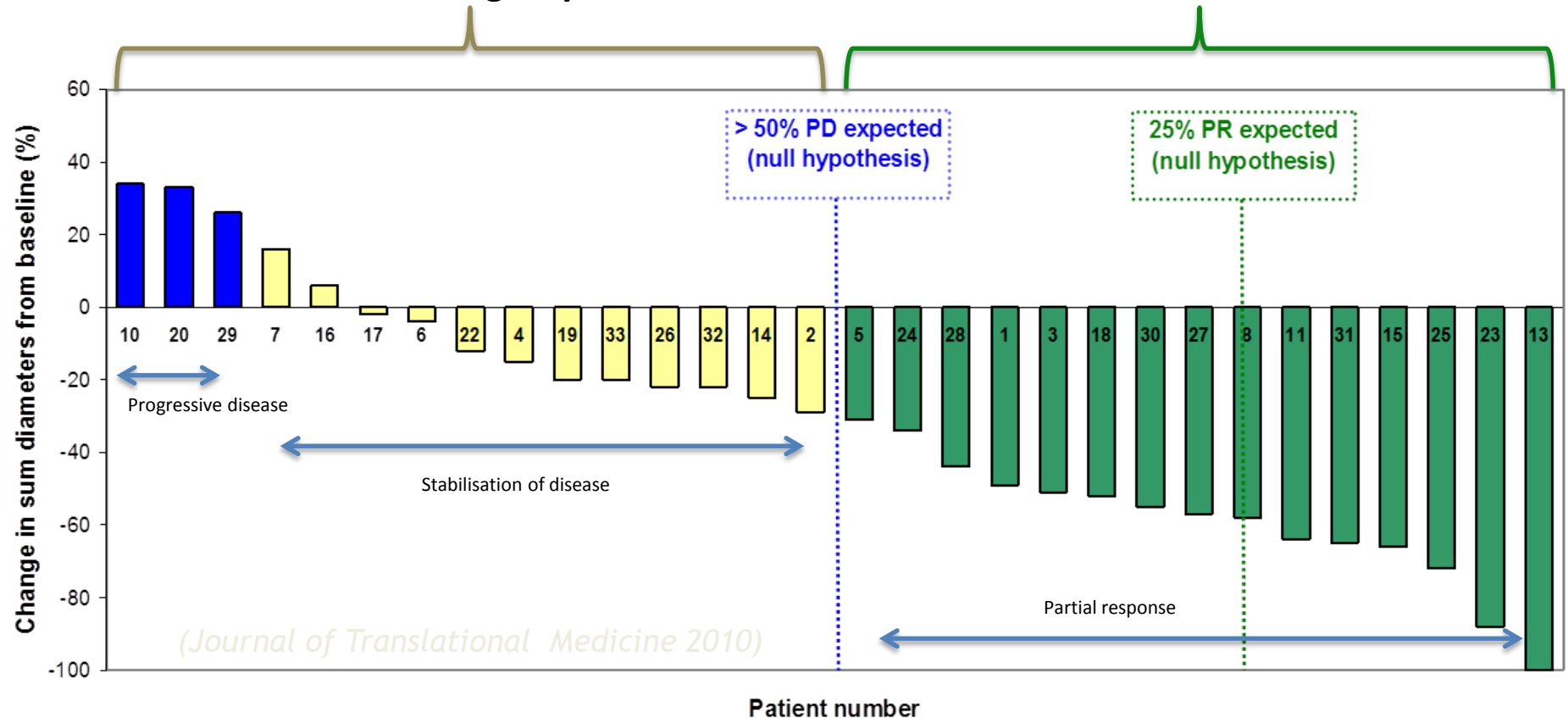
# IMP321 Phase 2a Data in Metastatic Breast Cancer (MBC)

Compared to the historical control group

(254 patients with measurable disease at baseline on weekly, 3 weeks out of 4, paclitaxel (ECOG 2100 study)\*

**Clinical benefit: Only 10 % of IMP321 patients progressed in contrast to more than 50% of patients in the historical control group**

**A 50% response rate was observed in IMP321 patients versus 25% in the historical control group receiving chemotherapy alone**



# IMP321

## Planned Phase 2b Chemoimmunotherapy in MBC: AIPAC trial

- Multicenter, randomized, double blind, placebo-controlled
- Approx. 200 patients: IMP321 + paclitaxel vs. paclitaxel + placebo
- Primary objective: efficacy (as Progression-Free Survival)
- Scientific advice from EMA received
- Trial initiation expected in Q4 2015

# IMP321

## Planned Phase 1 in Immuno-Oncology Combination

- Multicenter, open label, dose escalation
- Up to 30 patients with unresectable or metastatic melanoma
- Anti-PD-1 + IMP321 combination study
- Primary objective: safety, tolerability
- Trial initiation expected in early 2016



# IMP731

## for Autoimmune Diseases

- GlaxoSmithKline holds exclusive worldwide rights to develop LAG-3 depleting antibodies for autoimmune diseases
- GSK's investigational product, GSK2831781, aims to kill the few activated LAG-3+ T cells that are auto-reactive in autoimmune disease leading to long term disease control without generalized immune suppression
- GSK2831781 is currently in Phase 1 clinical trials
- Up to £64m in total upfront and milestones + royalties
  - Jan 2015: Prima announced a single-digit million US dollar milestone for the commencement of GSK's Phase 1 study

# IMP701: Antagonist mAb

- IMP701 is an anti-LAG-3 antibody that blocks LAG-3-mediated immune down-regulation
- Prime target for immune checkpoint blockade as LAG-3 is readily expressed at a high level in many human tumors.
- Aug 2015: Start of Phase 1 study by Novartis
  - Novartis milestone payment to be received for IMP701 Phase 1 initiation
- Novartis holds exclusive rights to develop IMP701

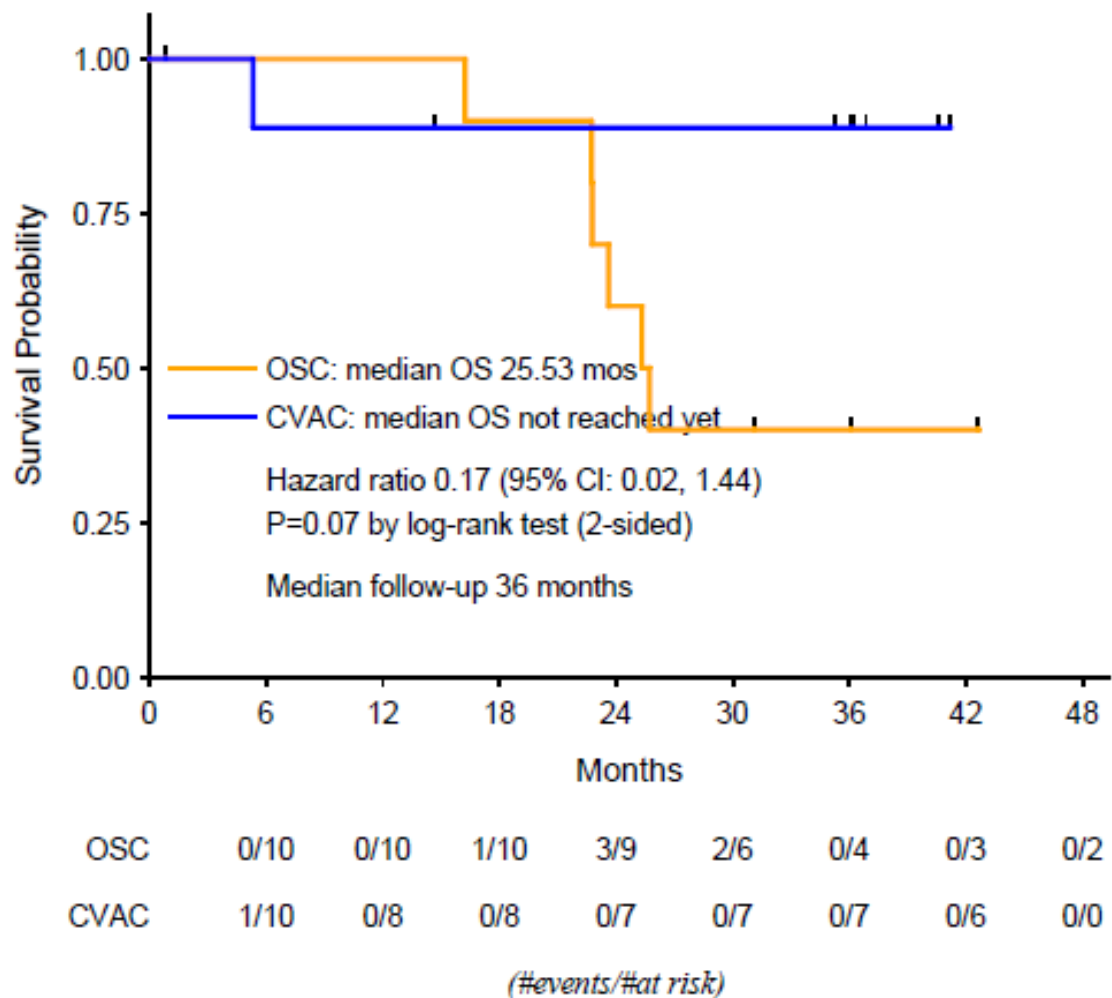


# CVac: Vaccine for Epithelial Cancers

- CVac is *ex vivo* dendritic cell priming with a mannan + MUC-1 fusion protein
- MUC-1 is cell surface protein overexpressed in epithelial tumors, most notably ovarian and pancreatic (>80%)
- Oxidised mannan as adjuvant is designed to be taken up by dendritic cells
- Very good safety profile
- Phase 2b CAN-003 complete, studied CVac in ovarian cancer
- Seeking partnership for future development

# Ovarian Cancer

## Second Remission Overall Survival Results



# Clinical Development Goals

- Q42015: Initiation of Phase 2b clinical study with IMP321 (metastatic breast cancer)
- Q12016: Initiation of Anti-PD-1 combination Phase 1 study (melanoma)
- Continued development of Phase 1 study with IMP731 (GSK)
- Continued development of Phase 1 study IMP701 (Novartis)

# Corporate Snapshot

Ticker symbol	PBMD (NASDAQ - ADRs) PRR (Australian Securities Exchange)
Securities on issue*	1.97 billion ordinary shares 77 million listed options @ A\$0.20 17.7M issued ADRs (approx. June 2015)
Cash & Term Deposits	~A\$26 million
Market Cap*	A\$116.5 million (US\$81.6 million)
Avg. Vol. (3 mo)*	8,730,000 ordinary shares on ASX 2,292,145 ADRs on NASDAQ
Grant Support:	Australian tax credit (43.5% of eligible R&D spent) French tax credit (30% of eligible R&D spent)

*\*Market references approximate as of 4<sup>th</sup> Sep 2015*



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*Thank you!*