

ASX:NRT
NASDAQ:NVGN

Novogen Ltd
(Company)

ABN 37 063 259 754

Capital Structure

Ordinary Shares on
issue:

483 M

Board of Directors

Mr John O'Connor
Chairman
Non-Executive Director

Mr Bryce Carmine
Deputy Chairman
Non-Executive Director

Dr James Garner
Chief Executive Officer
Managing Director

Mr Ian Phillips MNZM
Non-Executive Director

Mr Iain Ross
Non-Executive Director

Mr Steven Coffey
Non-Executive Director

MARKET RELEASE

15 March 2017

NOVOGEN PRESENTS AT ROTH CONFERENCE

Sydney, 15th March 2017 – Novogen Ltd (ASX: NRT; NASDAQ: NVGN), an Australian oncology-focused biotechnology company, is pleased to release the presentation that CEO, Dr James Garner will be presenting at the 29th Annual ROTH Conference being held in Laguna Niguel, California.

Dr James Garner will be presenting at the The Ritz Carlton Hotel, Dana Point on Tuesday 14th March at 4 pm local time.

[ENDS]

Media and Investor Relations	Investor Relations (US)
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About Novogen Limited

Novogen Limited (ASX: NRT; NASDAQ: NVGN) is an emerging oncology-focused biotechnology company, based in Sydney, Australia. Novogen has a portfolio of four development candidates, diversified across three distinct technologies, with the potential to yield first-in-class and best-in-class agents across a range of oncology indications.

The lead program is GDC-0084, a small molecule inhibitor of the PI3K / AKT / mTOR pathway, which is being developed to treat glioblastoma multiforme. Licensed from Genentech in late 2016, GDC-0084 is anticipated to enter phase II clinical trials in 2017. Three further molecules have been developed in-house from two proprietary drug discovery platforms (superbenzopyrans and anti-tropomyosins) to treat ovarian cancer and a range of solid tumours. Cantrixil, the most advanced of these, commenced a first-in-human clinical study in patients with ovarian cancer in late 2016, while Anisina and Trilexium are in preclinical development.

For more information, please visit: www.novogen.com



Novogen Limited

Presentation to 29th Annual ROTH Conference

Dr James Garner

Chief Executive Officer

james.garner@novogen.com

Dana Point, CA

14 March 2017

Forward-Looking Statements

This presentation contains “forward-looking statements” within the meaning of the “safe-harbor” provisions of the Private Securities Litigation Reform Act of 1995. Such statements involve known and unknown risks, uncertainties and other factors that could cause the actual results of the Company to differ materially from the results expressed or implied by such statements, including changes from anticipated levels of customer acceptance of existing and new products and services and other factors. Accordingly, although the Company believes that the expectations reflected in such forward-looking statements are reasonable, there can be no assurance that such expectations will prove to be correct. The Company has no obligation to sales, future international, national or regional economic and competitive conditions, changes in relationships with customers, access to capital, difficulties in developing and marketing new products and services, marketing existing products and services update the forward-looking information contained in this presentation.

Novogen is a biotech company dedicated to driving sustainable, long-term growth in shareholder value

Focus on unmet medical need

Robust pipeline of novel therapies, targeting oncology patients poorly served by existing treatment options

Financially sound

Listed on ASX and NASDAQ, with cash runway for continuing operations

Clinical stage

Two clinical stage programs: GDC-0084 and Cantrixil, with rich flow of milestones over next 12-18 months

Strong management and Board

Lean team of internationally-experienced pharma executives, overseen by seasoned Board

2016 has been a transformative year for Novogen



Novogen is listed on ASX and NASDAQ, and is well-funded



Cash at Bank*
~US\$ 17 million

Debt
Nil

Market Capitalisation

US\$ 27 million

Listing

ASX: NRT
NASDAQ: NVGN (1:25 ratio)

Average Daily Volume

ASX: 0.1% /day
NASDAQ: 0.2% /day

Shares on Issue

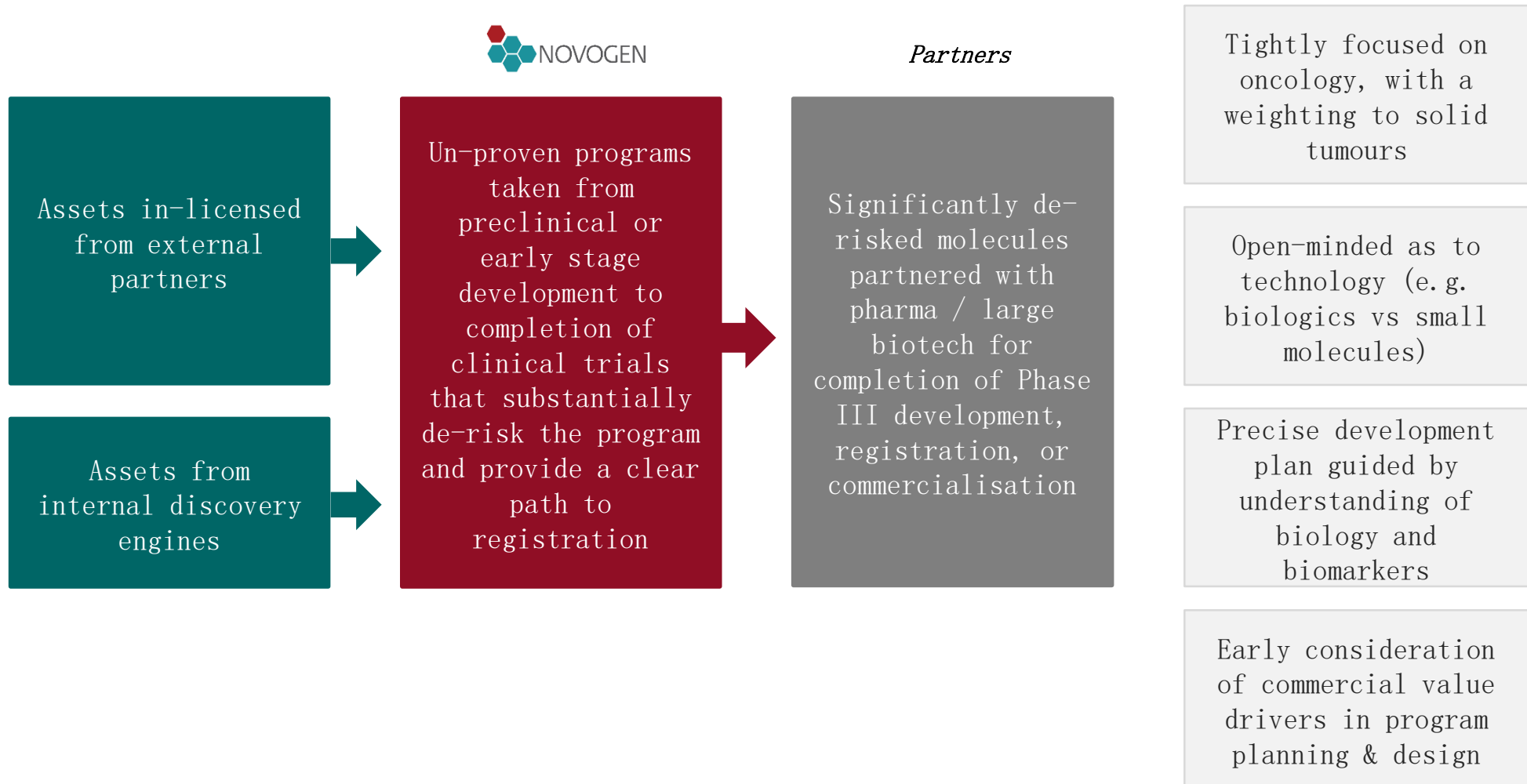
483 million
(35% US, 65% Australia)

**Outstanding
Options / Warrants**

~60 million

* Last reported as at 31 December 2016. Includes value of Australian R&D Tax Rebate.

Novogen has focused on oncology, with a clear strategy for building and managing a high-value portfolio



Novogen has built a strong management team with international experience in big pharma



Dr James Garner

Chief Executive Officer & Managing Director

Physician / MBA; Extensive pharma drug development experience



Dr Gordon Hirsch

Chief Medical Officer

Physician / MBA; Twenty years of pharmaceutical industry experience



Dr Peng Leong

Chief Business Officer

Eighteen years of business development and investment banking experience



PiperJaffray



Kate Hill

Company Secretary

Chartered accountant, and former audit partner at Deloitte

Deloitte.

Our newly-appointed Scientific Advisory Board brings global expertise and experience to Novogen

Professor Sir
Murray Brennan



Dr Karen
Ferrante



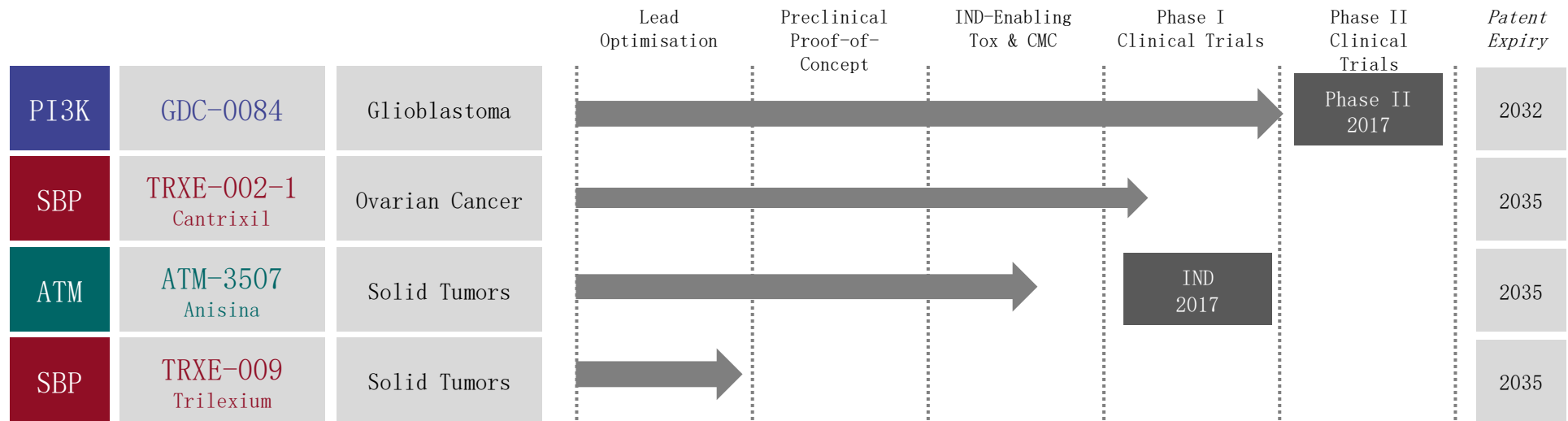
Professor
Peter Gunning



Professor
Alex Matter



Novogen now has a well-diversified portfolio of assets, stretching from preclinical to mid-stage clinical

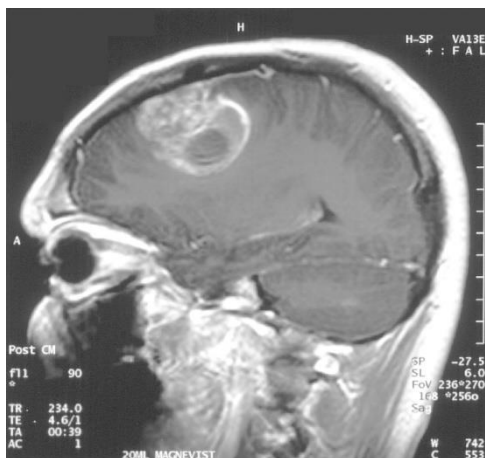


PI3K Technology	Brain-penetrant PI3K inhibitor with some mTOR activity, targeting PI3K / Akt / mTOR pathway, which is shown to be upregulated in majority of GBM cases and many other tumor types
ATM Technology	First-in-class program targeting cancer-specific tropomyosin isoform in cytoskeletal microfilaments of cancer cells, leading to apoptosis
SBP Technology	First-in-class program based on earlier clinically-validated isoflavone chemotype (e.g. phenoxidiol, MEI Pharma), but with distinct IP space and greater preclinical activity

Glioblastoma Multiforme (GBM) is the most common form of primary brain cancer

Presentation

- Usually presents with non-specific symptoms (e.g. headaches, nausea)
- Rapid clinical progression to permanent neurological defect and coma



Epidemiology

- Approximately 12,500 incident cases per annum in United States
- Limited understanding of causes and risk factors
- Generally more common in people >50 years of age, and slightly more common in males

Prognosis

- Median survival following diagnosis = 12-15 months with best available treatment (~3 months without treatment)
- 5-year survival rate = 3-5%
- Limited improvement in prognosis over last 15-20 years

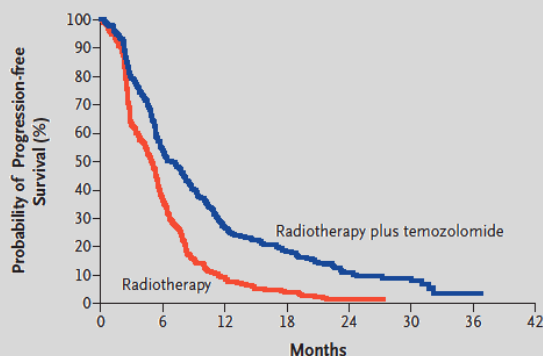
Source: GLOBOCAN 2012

Current GBM standard of care is ineffective in ~65% of patients

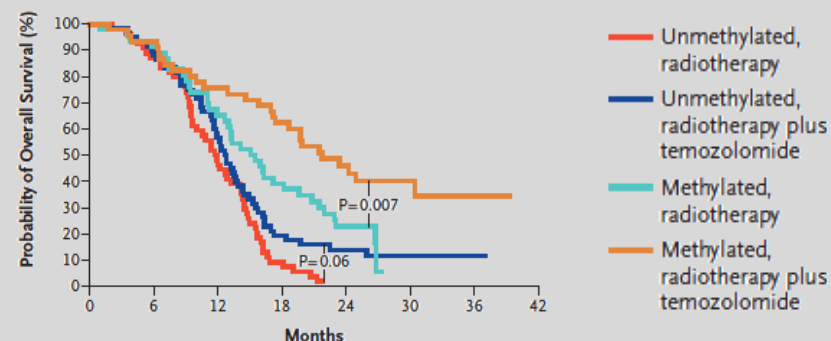
*Standard of Care
('Stupp Regimen')*



Temozolomide is clearly efficacious...



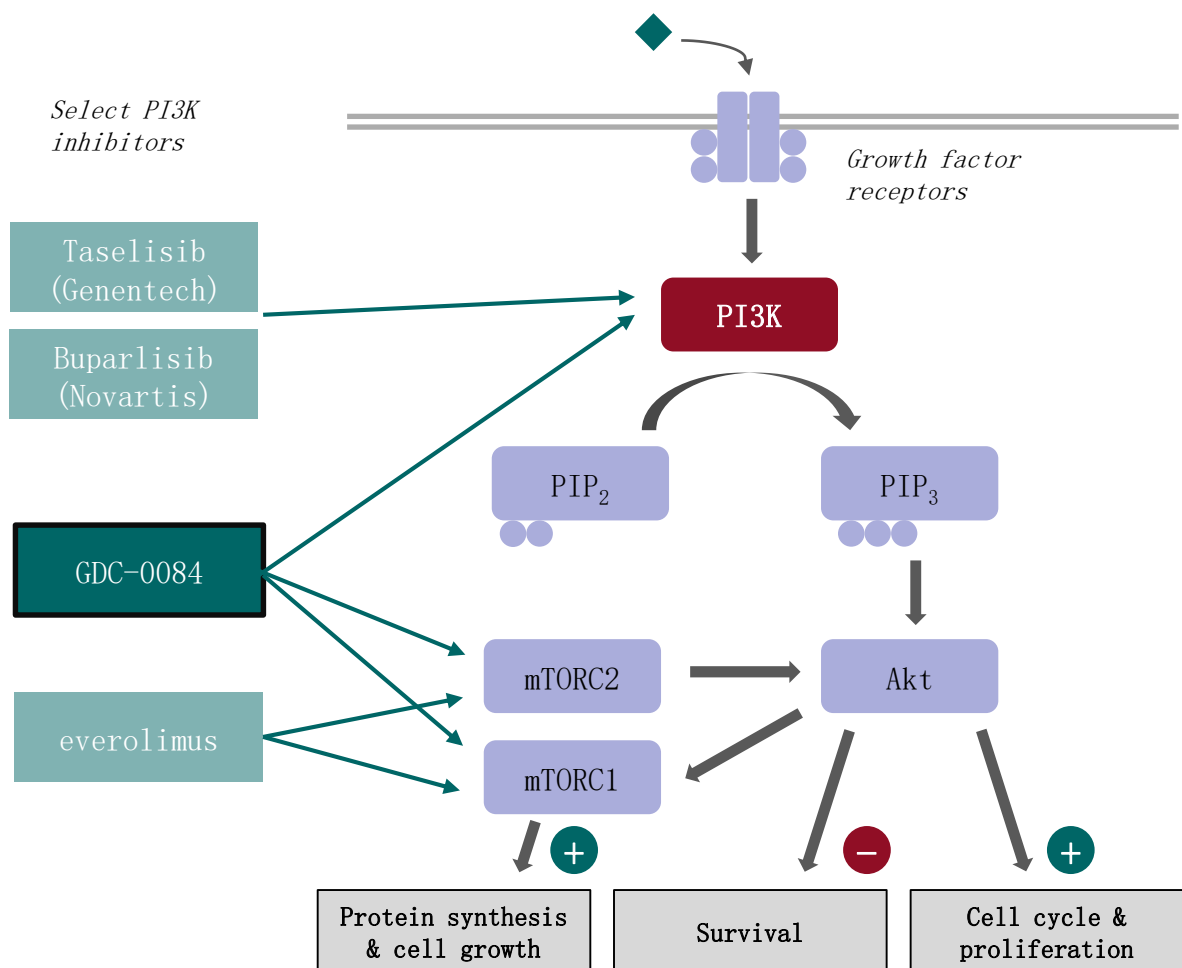
...but only in ~35% of patients who are sensitive



Source: ME Hegi, A-C Diserens, T Gorlia, et al. (2005). *N Engl J Med* 352:997-1003

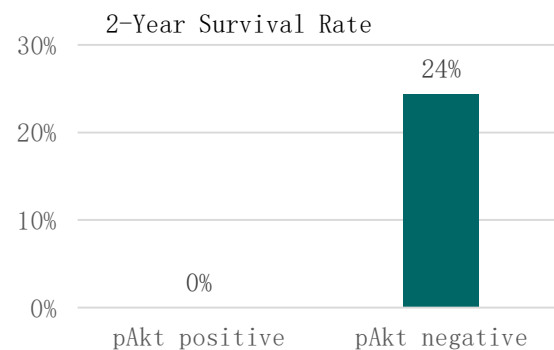
GDC-0084

The PI3K / Akt / mTOR pathway is upregulated in the vast majority of GBM cases



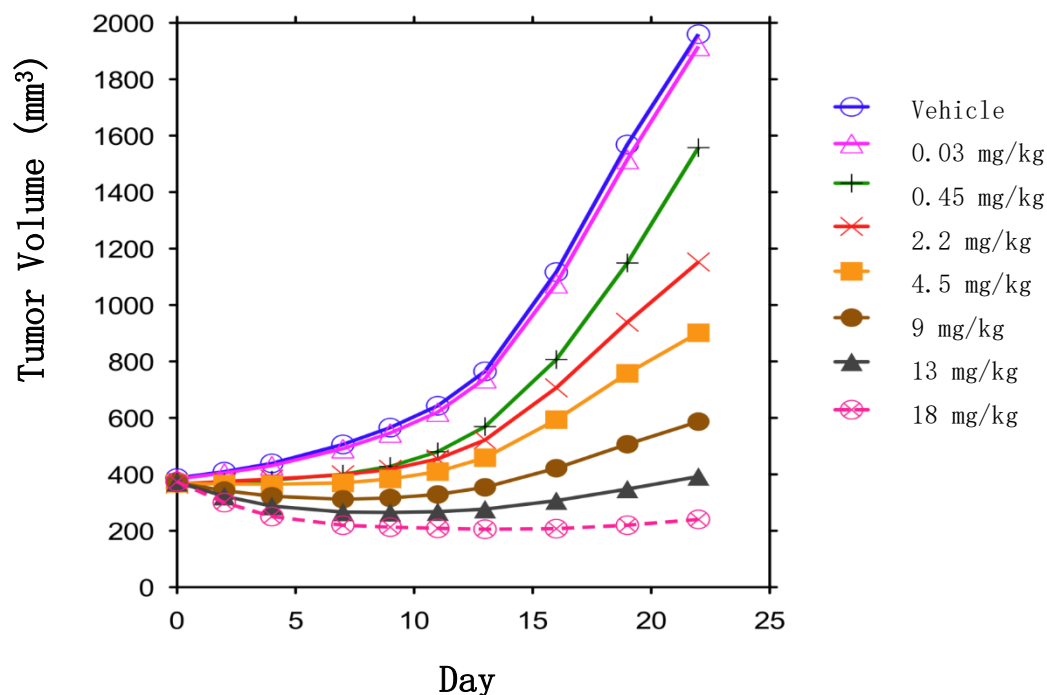
PI3K upregulated, or PTEN knocked out, in ~85% of GBM cases

PI3K dysregulation associated with worse prognosis



GDC-0084 shows single-agent activity in preclinical models of glioblastoma

Illustrative Dose-Dependent Activity in U87 Model



General Findings

Widespread activity in a range of PDX models; appears unaffected by MGMT promotor status

Clear dose - PI3K inhibition - response relationship seen in most experiments

GDC-0084 even moderately active in GS2 intracranial model (intact BBB, no PI3K dysregulation) which is resistant to other test articles

PI3K inhibitors are well-validated, with one marketed product and extensive clinical data

Zydelig (idelalisib) on market



Idelalisib (and programs such as Infinity Therapeutics and TG Therapeutics) specifically target the δ isoform of PI3K, which is associated with hematological malignancies

Other PI3K inhibitors in clinical trials

Review

Nature Reviews Clinical Oncology **10**, 143-153 (March 2013) | doi:10.1038/

Development of PI3K inhibitors: lessons learned from early clinical trials

Jordi Tabernero

The PI3K/AKT/mTOR pathway in non small cell lung cancer

Abstract
While PI3K/AKT/mTOR pathway is a significant role in endocrine resistance in breast cancer. Multiple compounds targeting this pathway are being evaluated in clinical trials. These agents are generally well tolerated and can be used in combination with targeted therapies, endocrine therapy or cytotoxic agents. The identification of subtypes of tumors more likely to respond to these therapeutics cannot be overemphasized, since breast cancer is a very heterogeneous malignancy. Activation of pathways such as KRAS and MEK can act as escape mechanisms that lead to

Commentary

Targeting PI3K/AKT/mTOR pathway in non small cell lung cancer

Claudia Fu

Show more

Abstract

While PI3K/AKT/mTOR pathway is a significant role in endocrine resistance in breast cancer. Multiple compounds targeting this pathway are being evaluated in clinical trials. These agents are generally well tolerated and can be used in combination with targeted therapies, endocrine therapy or cytotoxic agents. The identification of subtypes of tumors more likely to respond to these therapeutics cannot be overemphasized, since breast cancer is a very heterogeneous malignancy. Activation of pathways such as KRAS and MEK can act as escape mechanisms that lead to

The PI3K/AKT/mTOR pathway in breast cancer: targets, trials and biomarkers

Elisavet Paplomata

Winship Cancer Institute of Emory University, Atlanta, GA, USA

Ruth O'Regan roregan@emory.edu

Winship Cancer Institute of Emory University, Atlanta, GA, USA

Abstract

The phosphoinositide 3 kinase (PI3K)/Akt/mammalian (or mechanistic) target of rapamycin (mTOR) pathway is a complicated intracellular pathway, which leads to cell growth and tumor proliferation and plays a significant role in endocrine resistance in breast cancer. Multiple compounds targeting this pathway are being evaluated in clinical trials. These agents are generally well tolerated and can be used in combination with targeted therapies, endocrine therapy or cytotoxic agents. The identification of subtypes of tumors more likely to respond to these therapeutics cannot be overemphasized, since breast cancer is a very heterogeneous malignancy. Activation of pathways such as KRAS and MEK can act as escape mechanisms that lead to

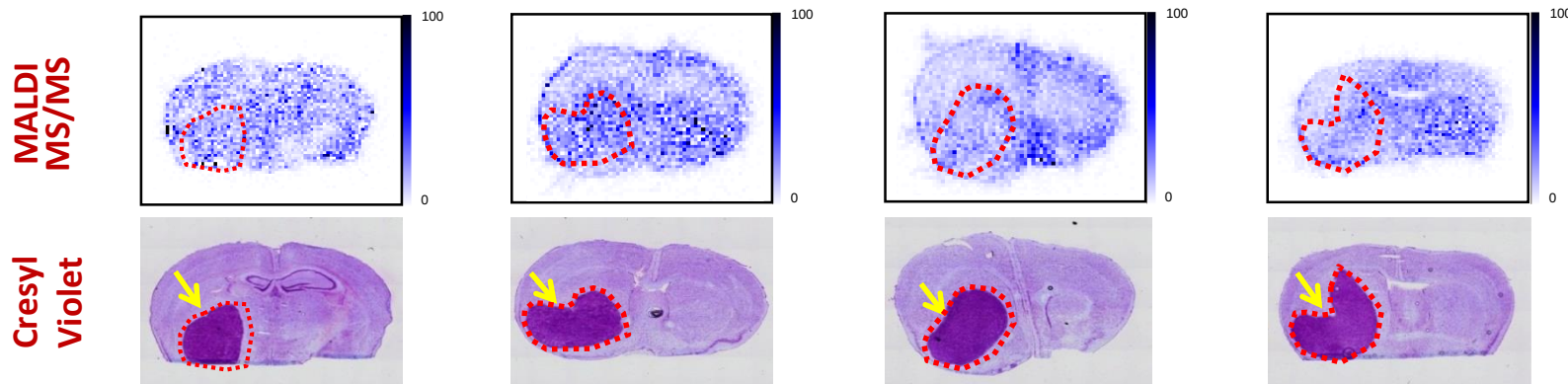
Few PI3K inhibitors are able to cross the blood-brain barrier

GDC-0084

GDC-0084 shows consistent penetration of blood-brain barrier in multiple species

GDC-0084
(15 mg/kg)

U87 orthotopic
GBM model



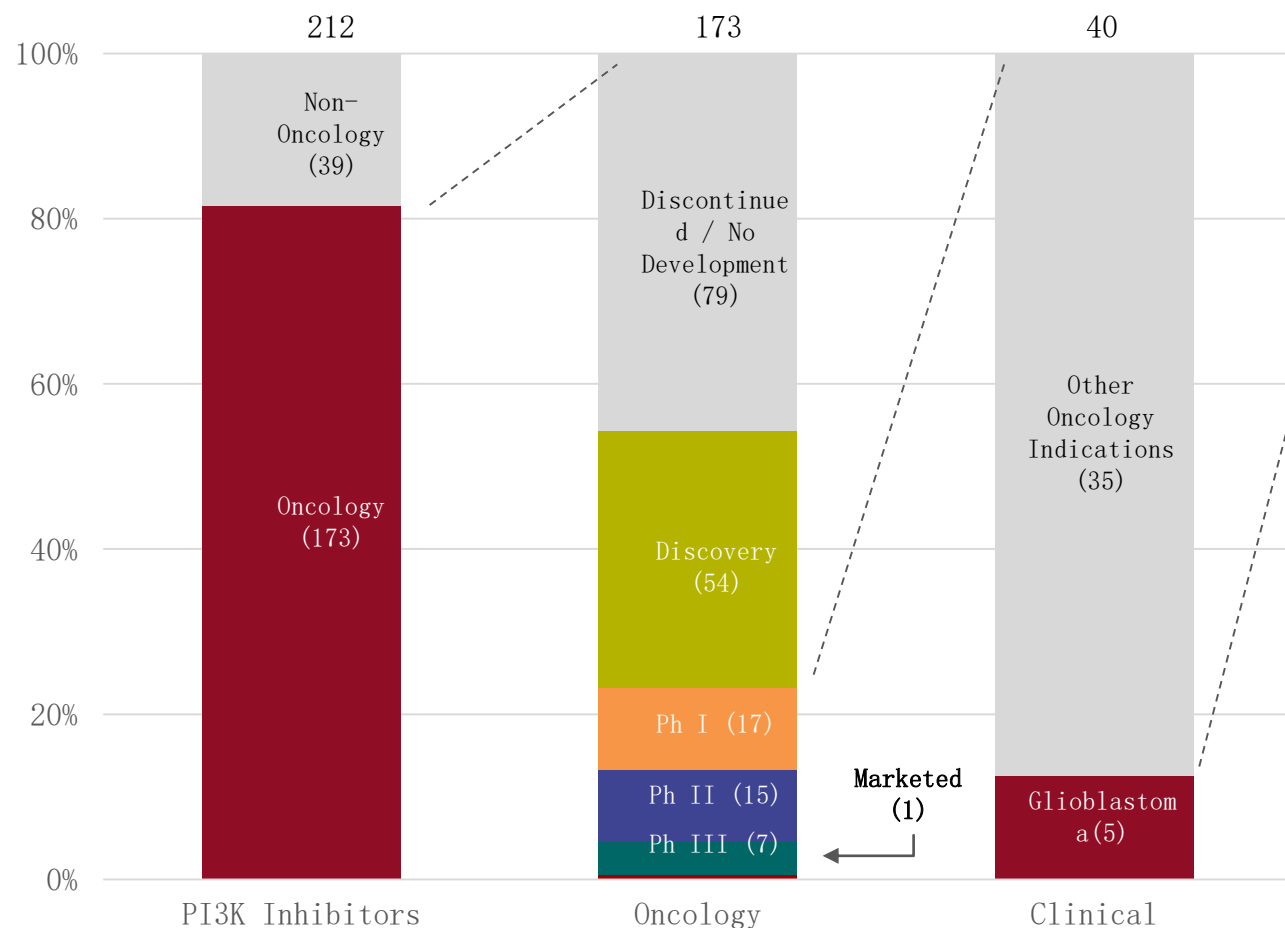
Species	Brain-to-Plasma Ratio	Free Brain-to-Free Plasma Ratio	CSF-to-Free Plasma Ratio
Mouse	1.3	0.40	-
Rat	2.4	0.68	1.5
Dog	2.2	0.45	1.03
Human	> 1.54	> 0.51	

Postmortem samples from 1 trial patient (45mg dose) confirmed animal data

Source: Genentech data on file

GDC-0084

GDC-0084 is among the most advanced PI3K inhibitors in active development for GBM



Genentech

GDC-0084

Completed P1 in GBM (n=47)

NOVARTIS

buparlisib

P1/2a in GBM due to complete in Oct 2016

PIQUR

PQR-309

Single-site P2 in GBM underway; read-out in Jan '18

CASCADIAN THERAPEUTICS

sonolisib

Discontinued

EXELIXIS

voxtalisib

Discontinued

Source: Thomson Reuters Cortellis Competitor Intelligence

Genentech's phase I study established a dose of 45mg and demonstrated acceptable safety

Phase I Study

Population in phase I study (recurrent patients) had significantly more advanced disease than that proposed for phase II study (first-line patients)

- 47 patients enrolled at 4 centers (MD Anderson, UCLA, Dana-Farber, and Vall d' Hebron)
- Patients were grade 3 or 4 gliomas with at least one (and in most cases, several) lines of prior therapy
- Planned MTD expansion cohort to explore efficacy signals in pure GBM population was not performed due to budgetary restrictions

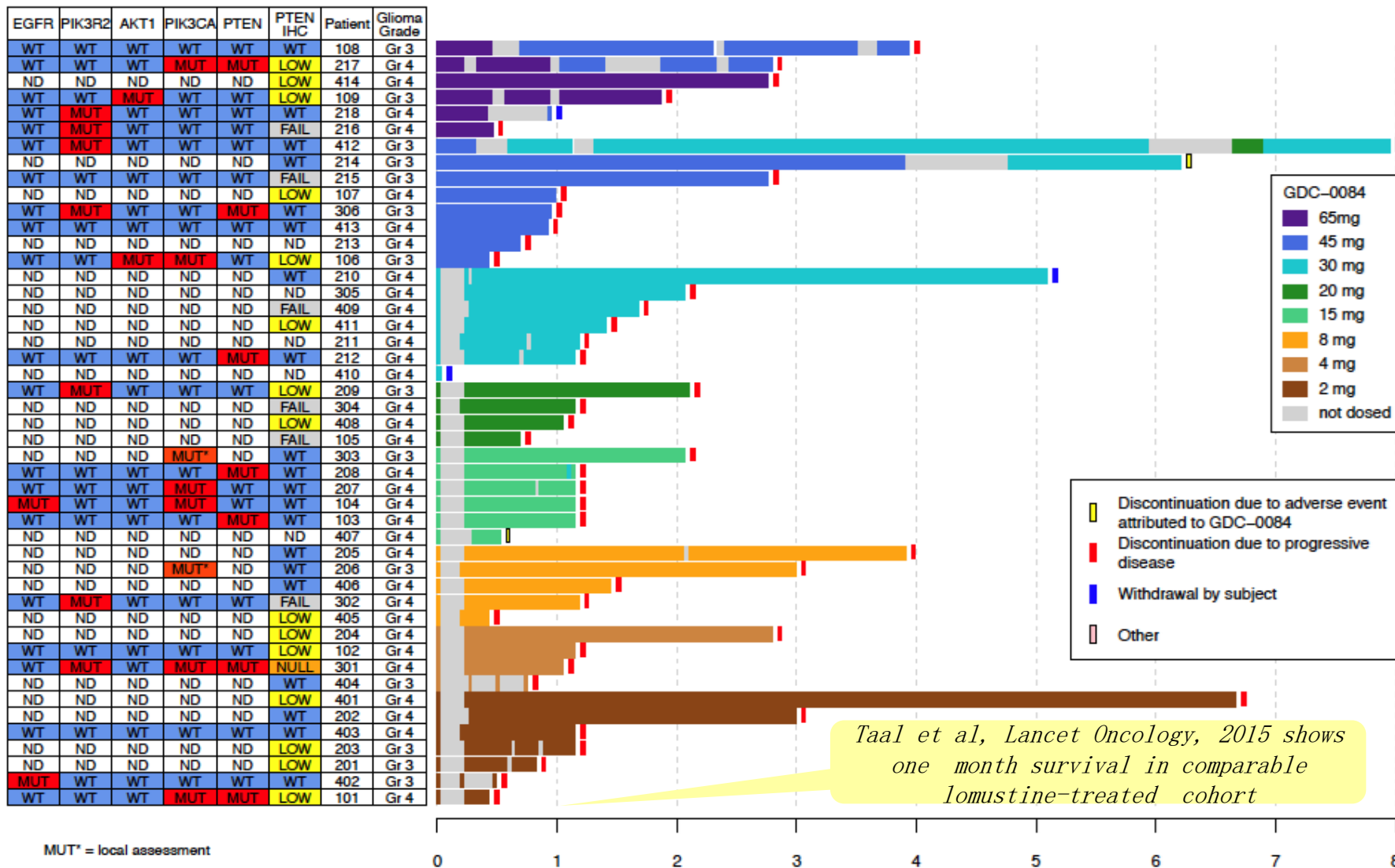
- 45mg established as Maximally Tolerated Dose (MTD) for phase II study
- Pharmacokinetic profile consistent with daily dosing
- Safety profile consistent with other PI3K inhibitors, with hyperglycemia and mucositis / stomatitis the most common adverse events
- Promising signals of pharmacodynamic response on FDG-PET, an exploratory radiological marker

Rationale for Externalization

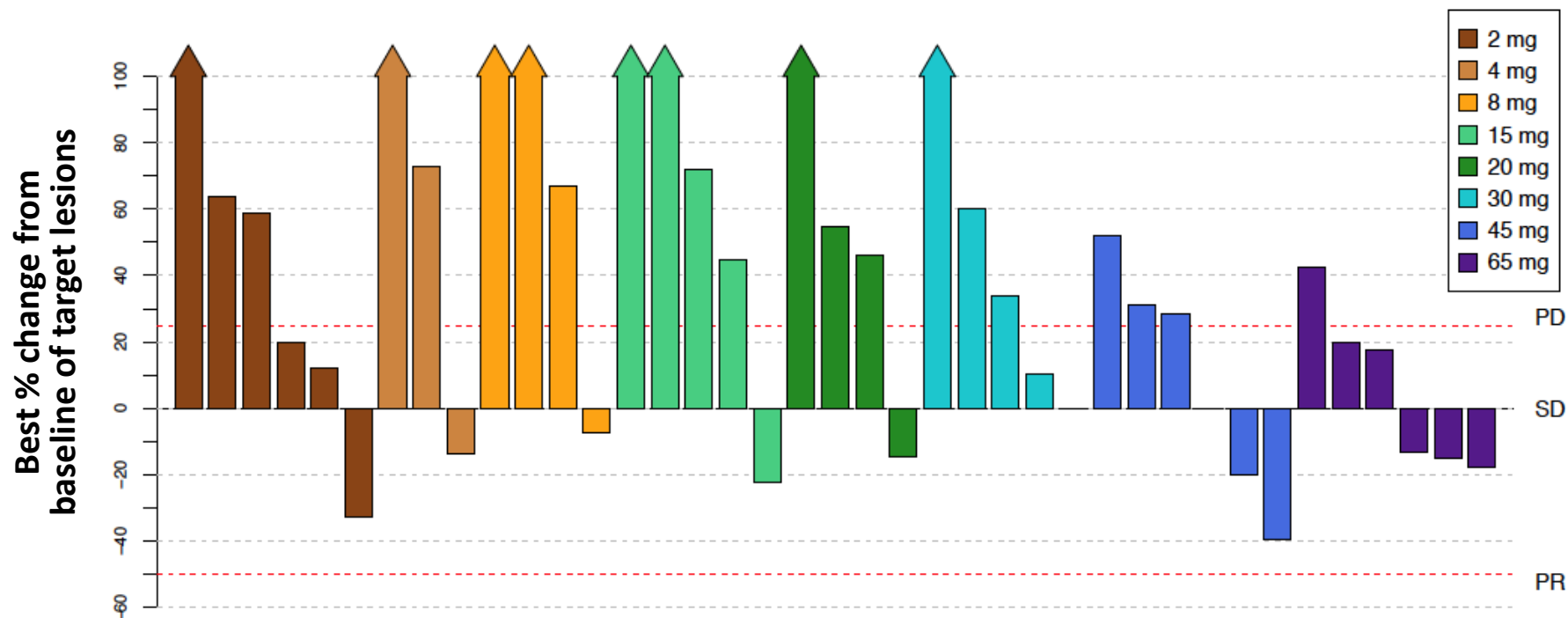
1. GBM currently not considered a strategic priority for Genentech, following mixed success with Avastin in recurrent disease
2. GBM market is relatively small (~12,500 cases per annum in US), and larger opportunities exist in Genentech / Roche portfolio
3. Rich late-stage portfolio in Genentech creates higher funding hurdles for early-stage projects such as GDC-0084
4. Large pharma overheads make economics of GDC-0084 less promising; lean biotech model offers opportunity to externalise and re-acquire after clinical proof-of-concept

GDC-0084

Time on study exceeded historical controls (~1 month) for the majority of patients

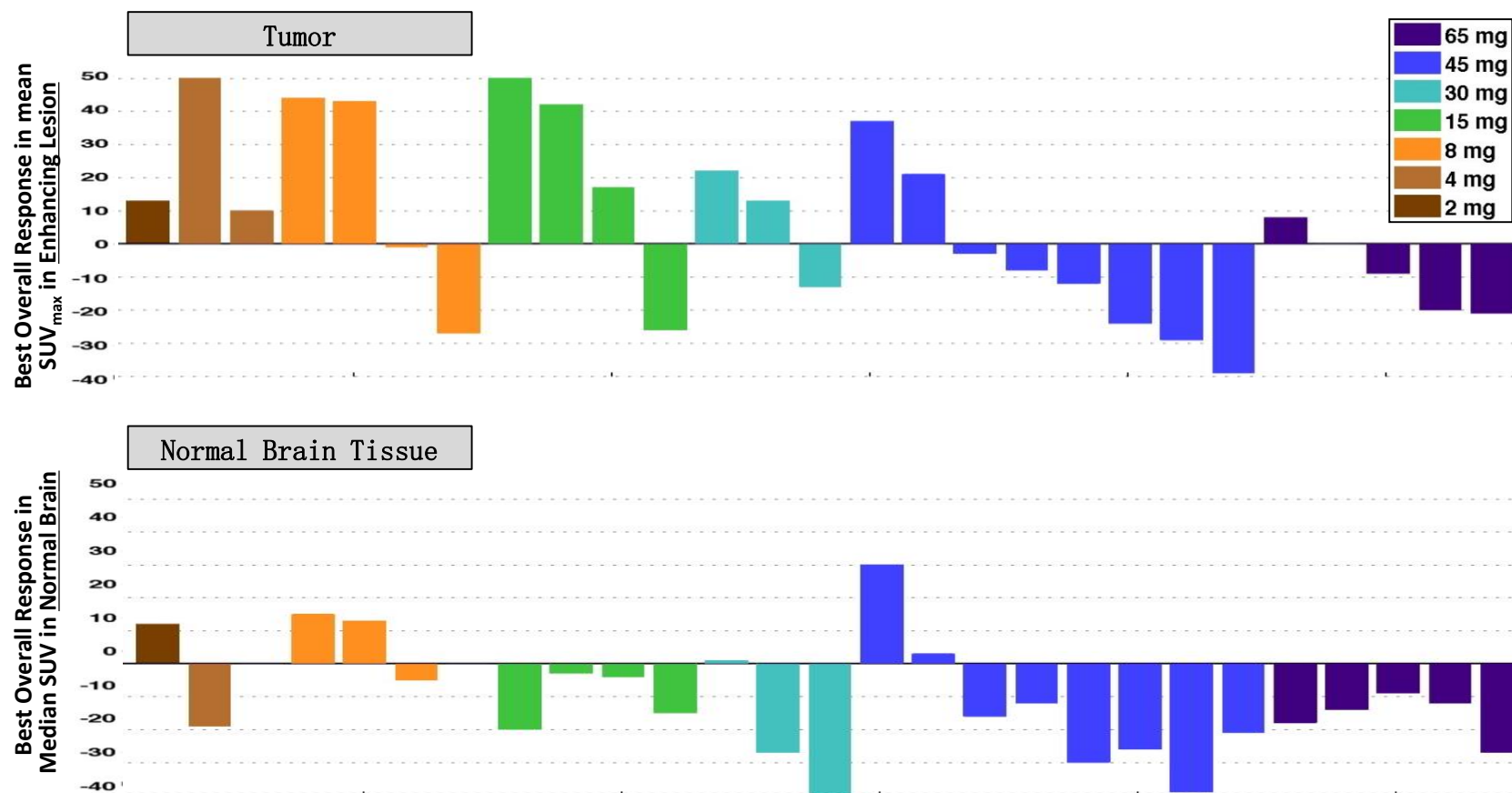


Response rate was consistent with a primarily cytostatic mode of action



CR / PR: 0
SD: 15 (35%)
PD: 27 (63%)

On FDG-PET, 7/27 patients (26%) had a metabolic partial response



Brain metastases from non-CNS tumors represent long-term upside potential

Overview

- Estimated 100,000 – 200,000 cases/year in US
- ~10–25% adult cancer patients develop symptomatic brain mets
- Lung, breast and melanoma represent the majority of brain mets
- Frequency of brain mets increasing with better systemic control and longer survival
- Few (if any) drugs available to treat brain metastasis

Example: Breast Cancer

- ~30–44% of metastatic HER2-positive metastatic breast cancer patients have brain metastases
- Brain metastases represent the cause of death in ~50% of HER2-positive breast cancer patients
- ~40–50% of breast cancer brain metastases have disordered PI3K pathway
- Therapies that are effective for the primary tumor (e.g. Herceptin) are often ineffective for brain metastases

Next Steps

- Use GBM as a ‘gateway indication’, with the potential to explore registration post-phase II via accelerated approval / breakthrough designation, subject to clinical results
- Meanwhile, conduct preclinical exploration of brain metastases in partnership with identified researchers to demonstrate preclinical proof-of-concept and augment economic value of the asset

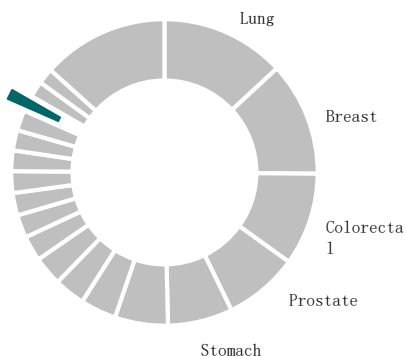
Source: E Lim & N Lim (2012). *Oncology*. 26(7):652–9; PK Brastianos, SL Carter, S Santagata, et al. (2015). *Discovery* 5:1164

Ovarian cancer remains a disease of high unmet medical need

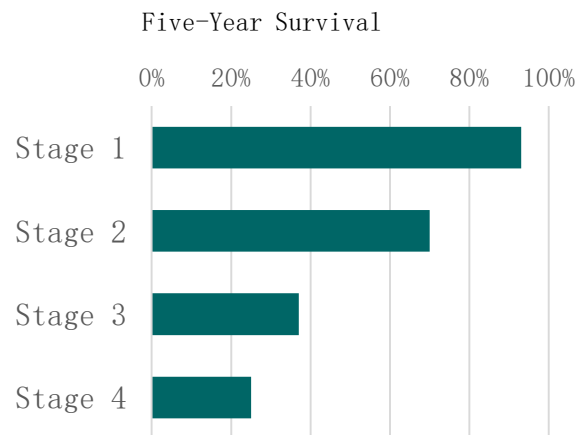
High Incidence

Ovarian Cancer

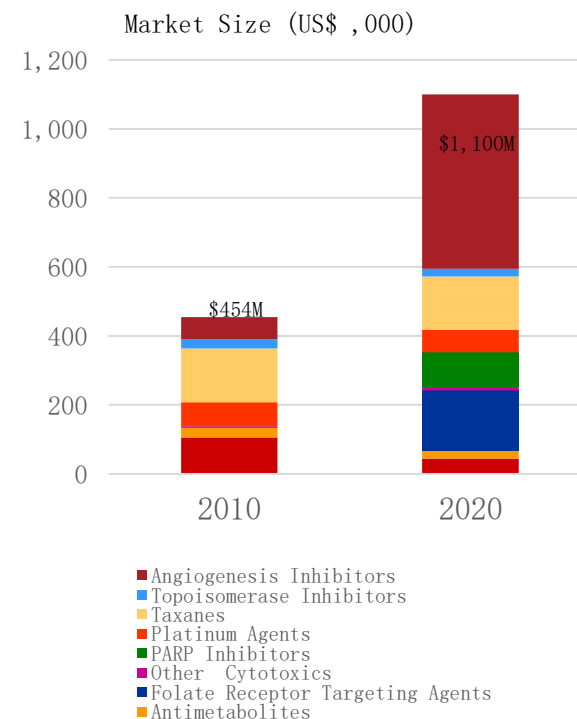
- 17th most common tumour worldwide
- 7th most common tumour in women
- ~240,000 new cases per annum
- 1.7% of all new cancer cases
- Overall lifetime risk is 1.6% for women
- Genetic cause (BRCA1 or BRCA2) in ~10% of cases
- More common in women who have not borne children
- 80% of cases occurring in women >50 years of age



Poor Prognosis with Existing Therapies

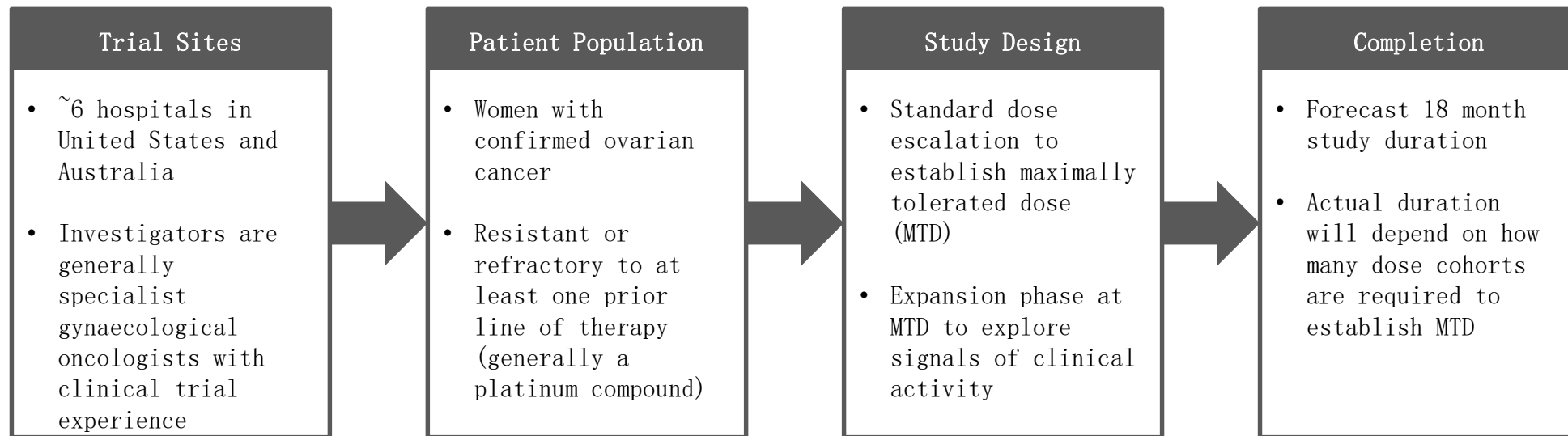


Growing and Evolving Market



Source: GLOBOCAN; Holschneider & Berek (2000), *Sem Surg Onc* 19(1):3-10; Decision Resources

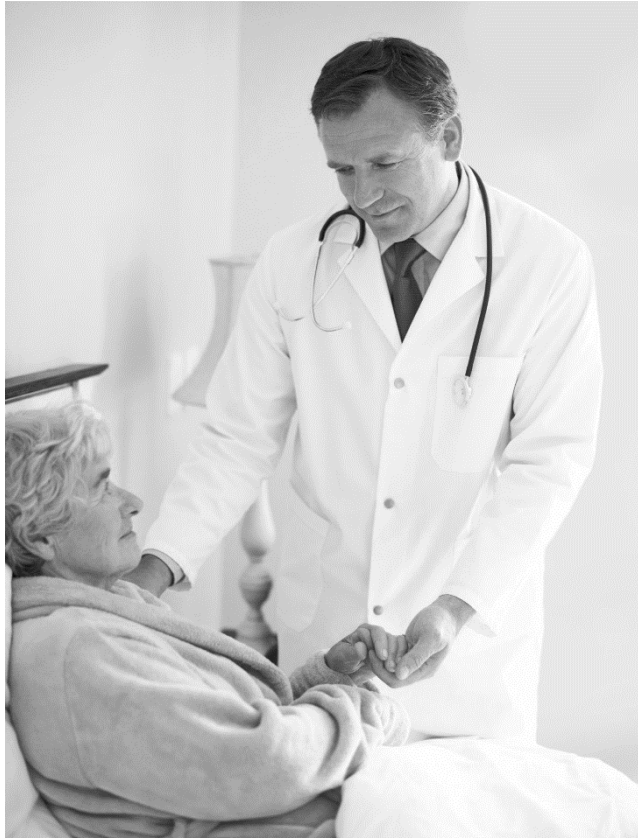
Phase I study is designed to establish safety and tolerability, and explore potential efficacy



Study performed under Investigational New Drug (IND) application with United States Food & Drug Administration (FDA) – provides careful validation and supports eventual product approval in United States

In addition to standard efficacy measures (via CT scan), study will measure exploratory biomarkers to seek signals of clinical activity

2017 will be an important year for Novogen, with a rich series of value-driving events



Key Milestones for 2017

Initiation of GDC-0084 phase II study

Full recruitment of Cantrixil phase I study

Stage-up of Anisina for IND submission and phase I study

Further progression of early-stage pipeline as appropriate

Commencement of work on 'next generation ATM' program, following receipt of \$3M grant from Australian Government

Novogen now has a diversified portfolio and is positioned for growth



- **Focus on unmet need:** pipeline of novel therapies, targeting oncology patients, poorly served by existing treatment options
- **Building a sustainable model:** leveraging oncology expertise, developing commercially attractive, in-house and external assets
- **Diversified portfolio:**
 - Multiple assets in various stages of development - from pre-clinical through to phase II-ready
 - Across technologies / development platforms
- **Strong management and board:** lean team of internationally-experienced pharma executives
- **Financially sound:** listed on ASX and NASDAQ, with cash runway
- **News flow:** rich series of value-driving milestones over 12-18 months

