NOVOGEN

ASX: **NRT**
NASDAQ: **NVGN**

Investor Presentation

March
2014

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An uncomfortable truth

1 in 2 men

1 in 3 women

will develop a life-threatening cancer in their lifetime

and

40% will die within 5 years

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Recalcitrant Cancer Research Act Jan 2012

Passed by Congress for action on cancers where 5-year survival rate below 50% and unchanged over past 30 years

- Pancreatic cancer
- Lung cancer
- Ovarian cancer
- Glioblastoma
- Liver cancer
- Esophageal cancer
- Stomach cancer
- Melanoma
- Prostate cancer
- Multiple myeloma
- Prostate cancer (metastatic)
- Childhood cancers

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Why so little progress?

Dozens of oncogenes

- Tumor-promoting genes
- Tumor-suppressing genes

Mutations vary

- Between individuals
- Within tumors within the one individual
- Within the one tumor

Tumors have a hierarchy

- Cancer stem cells
- Cancer somatic cells

Damage repair mechanisms

- DNA repair
- Drug efflux

Different diseases

- Primary disease
- Recurrent disease

Extraordinary plasticity

- Survive
- Adapt

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Why are we conditioned to only incremental progress?

Cytotoxics/anti-metabolites

- Prevent DNA/RNA synthesis
- Damage DNA/RNA
- Prevent cell division

Poor therapeutic index limits dosage
= most cancers inherently insensitive

Effect limited to somatic cancer cells

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Cytotoxics/anti-metabolites

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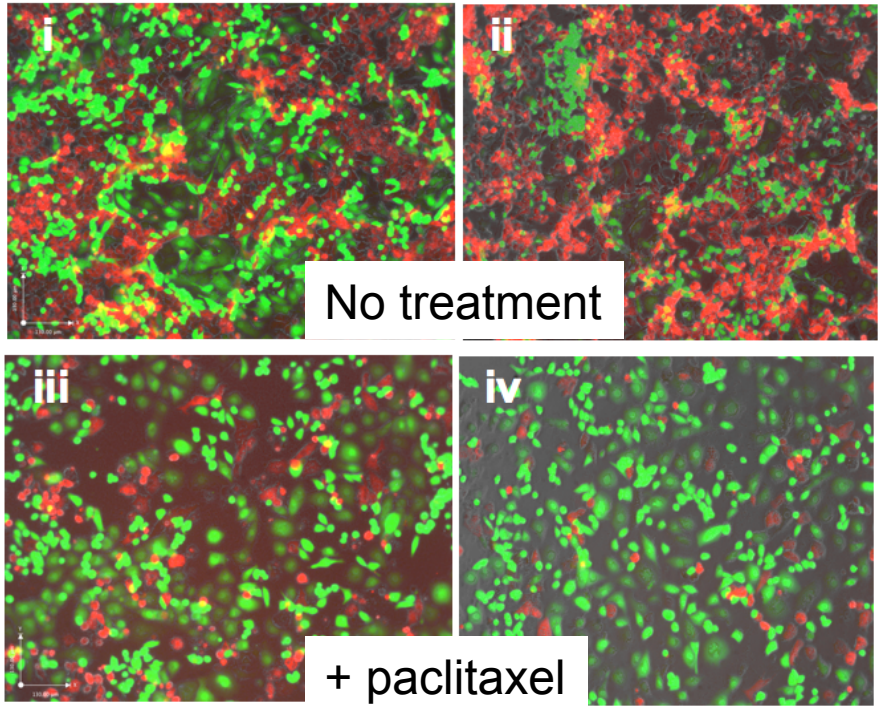

Green = ovarian cancer stem cells

Red = ovarian cancer somatic cells

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Why are we conditioned to only incremental progress?

Cytotoxics/anti-metabolites

- **Prevent DNA/RNA synthesis**
- **Damage DNA/RNA**
- **Prevent cell division**

Poor therapeutic index limits dosage = most cancers inherently insensitive

Effect limited to somatic cancer cells

Recurrent disease resistant

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Why are we conditioned to only incremental progress?

Targeted therapies

- **Oncogenes**
- **Signaling proteins**
- **Surface receptors/markers**

Wide range of oncogenes

Hundreds of signaling pathways:
- no one pathway yet proven to be lethal
- cells recruit alternative pathways

Receptors/markers have multiple isoforms:
eg. CD44 (cancer stem cell marker) occurs in 10 isoforms

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Why are we conditioned to only incremental progress?

Immunotherapy

- Cancer vaccines
- Antibody-drug conjugates
- Viral lytic agents

Not clear which tumor types will respond

Limited clinical outcomes to date:

- Provenge (4.1 m improved survival in late-stage prostate cancer)
- Yervoy (10 vs 6 m survival in melanoma)

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Novogen strategy

innovate….not imitate

Objective

1. Destroy the cancer cell's signal transduction capacity

2. Destroy the full hierarchy of cells within a tumor

Targets

1. Cytoskeleton (micro-filaments)

2. Trans-membrane proton pump mechanisms

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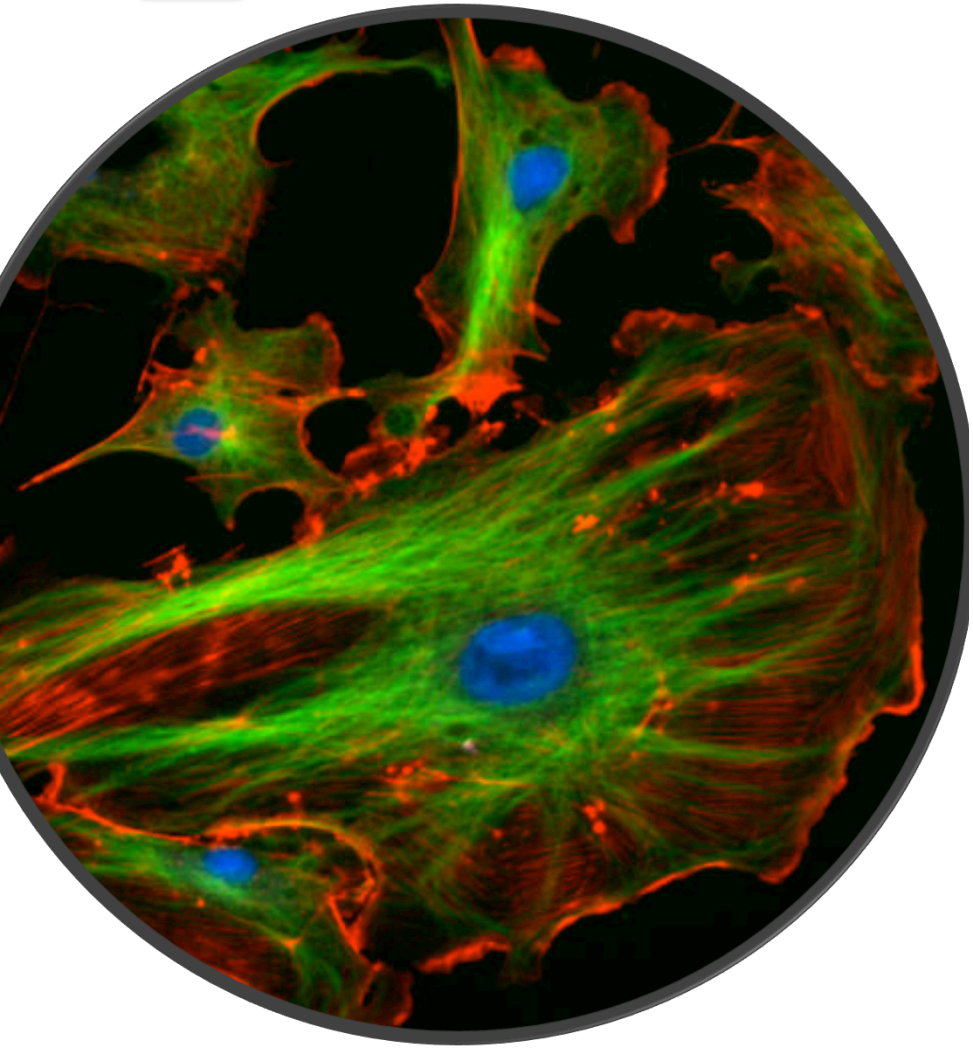
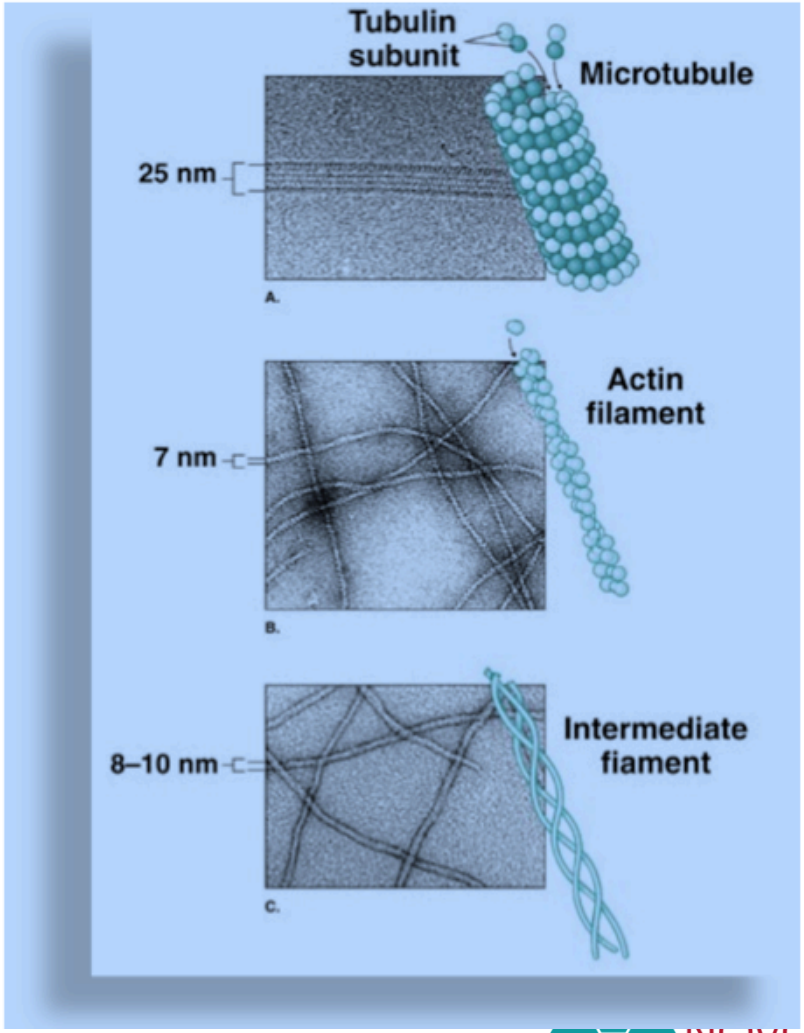
Target 1: Actin filaments





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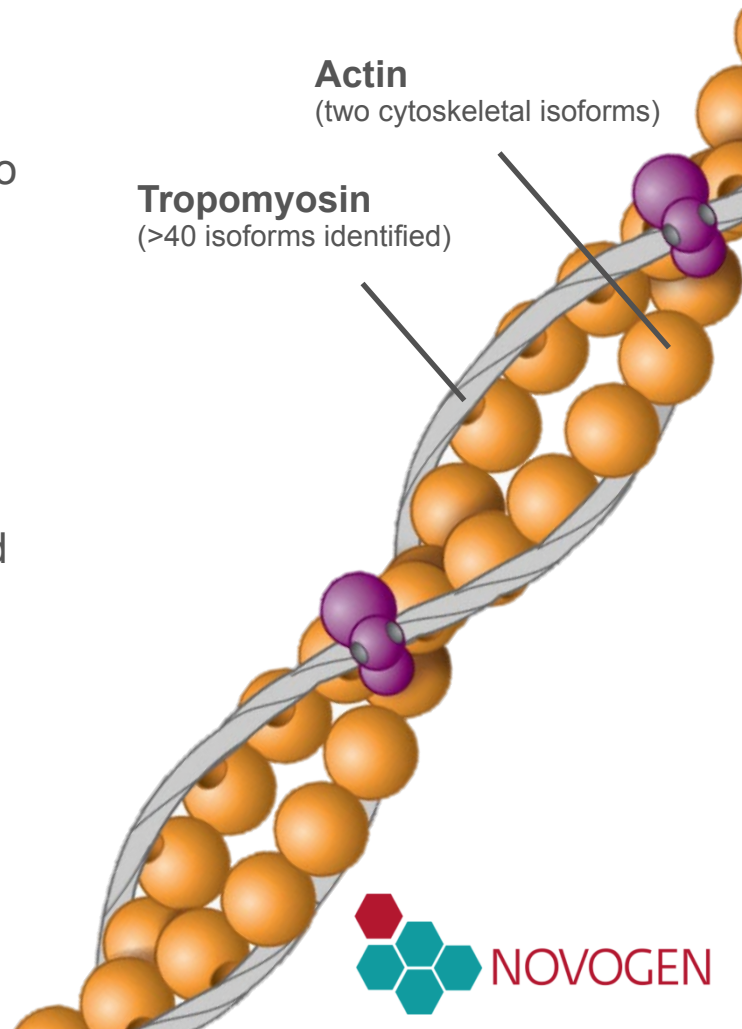
Anti-Tropomyosin Drug

- Actin microfilaments (intertwined actin and tropomyosin protein strands) allow signaling proteins to move within a cell and are essential to cell survival and division
- Actin and tropomyosin too ubiquitous in the body to be practical target of anti-cancer drugs, with cardiotoxicity major problem
- 40 isoforms of tropomyosin now identified, with one, **Tm5NM1**, confirmed as essential to the survival of cancer cells
- Early anti-Tm5NM1 molecules highly effective in vitro and in vivo against wide range of cancers and with no toxicity against cardiomyocytes
- Lead optimization current.
- **Novogen has filed patents on drugs targeting Tm5NM1 to provide an exclusive IP position**



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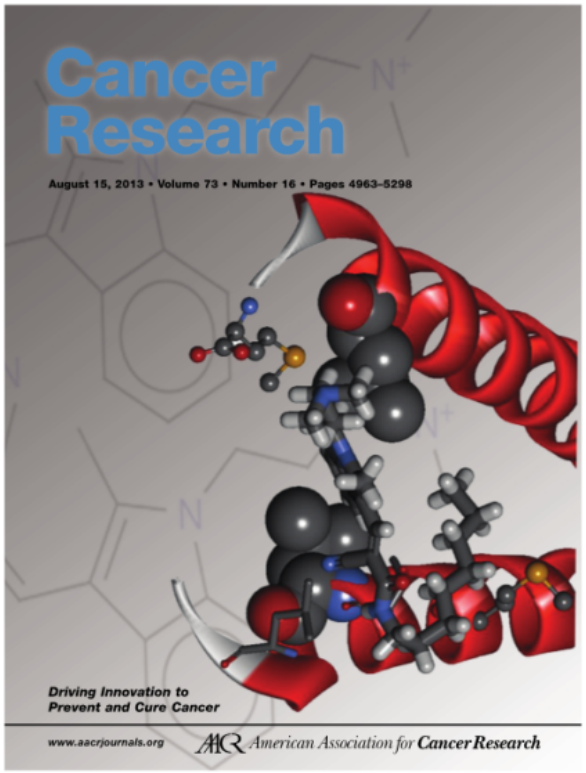
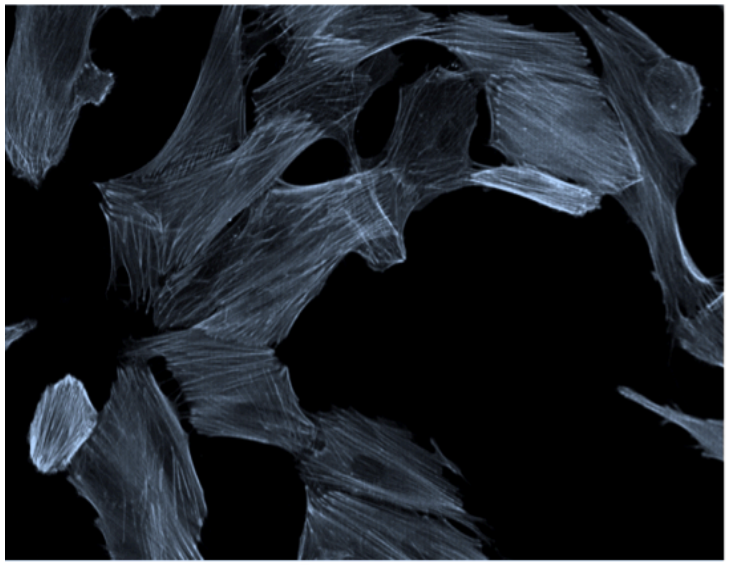
Anti-Tropomyosin Drug

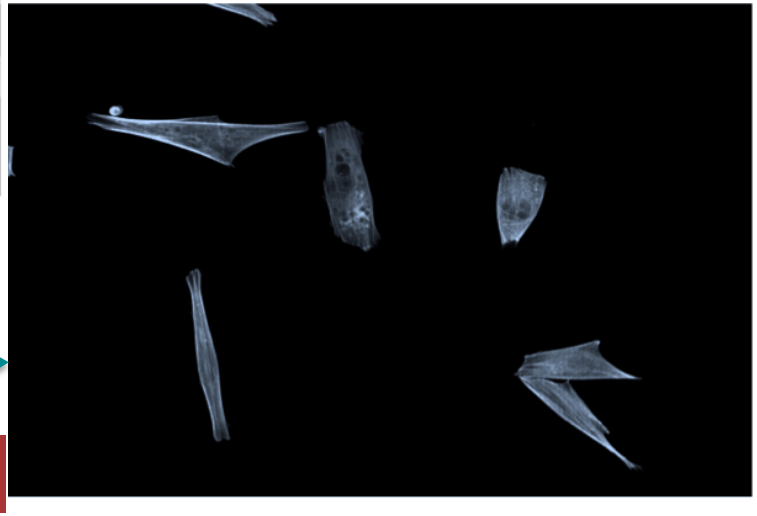




before

Cancer cell cytoskeleton

after



Rx with anti-Tm5NM1

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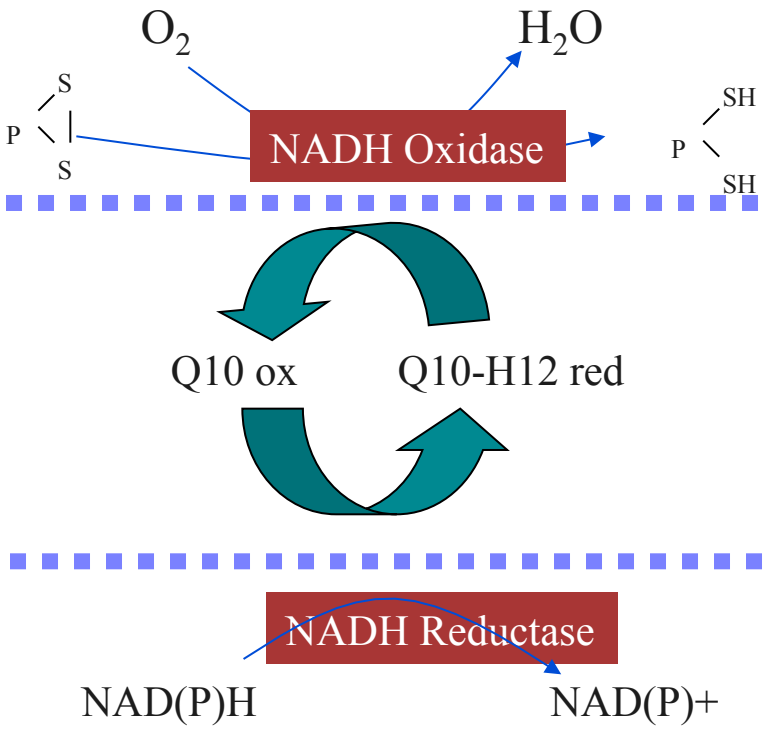
Target 2: Proton pump



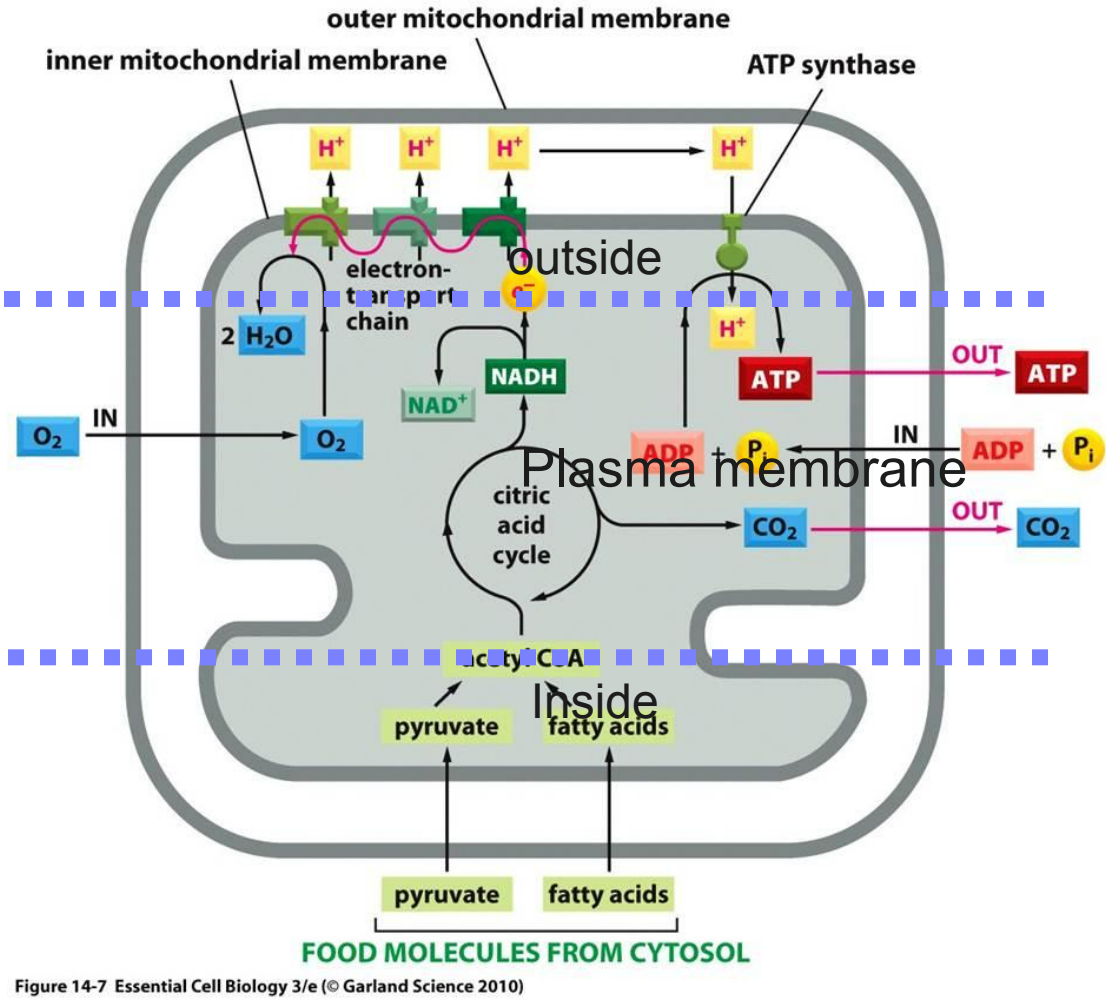


Figure 14-7 Essential Cell Biology 3/e (© Garland Science 2010)

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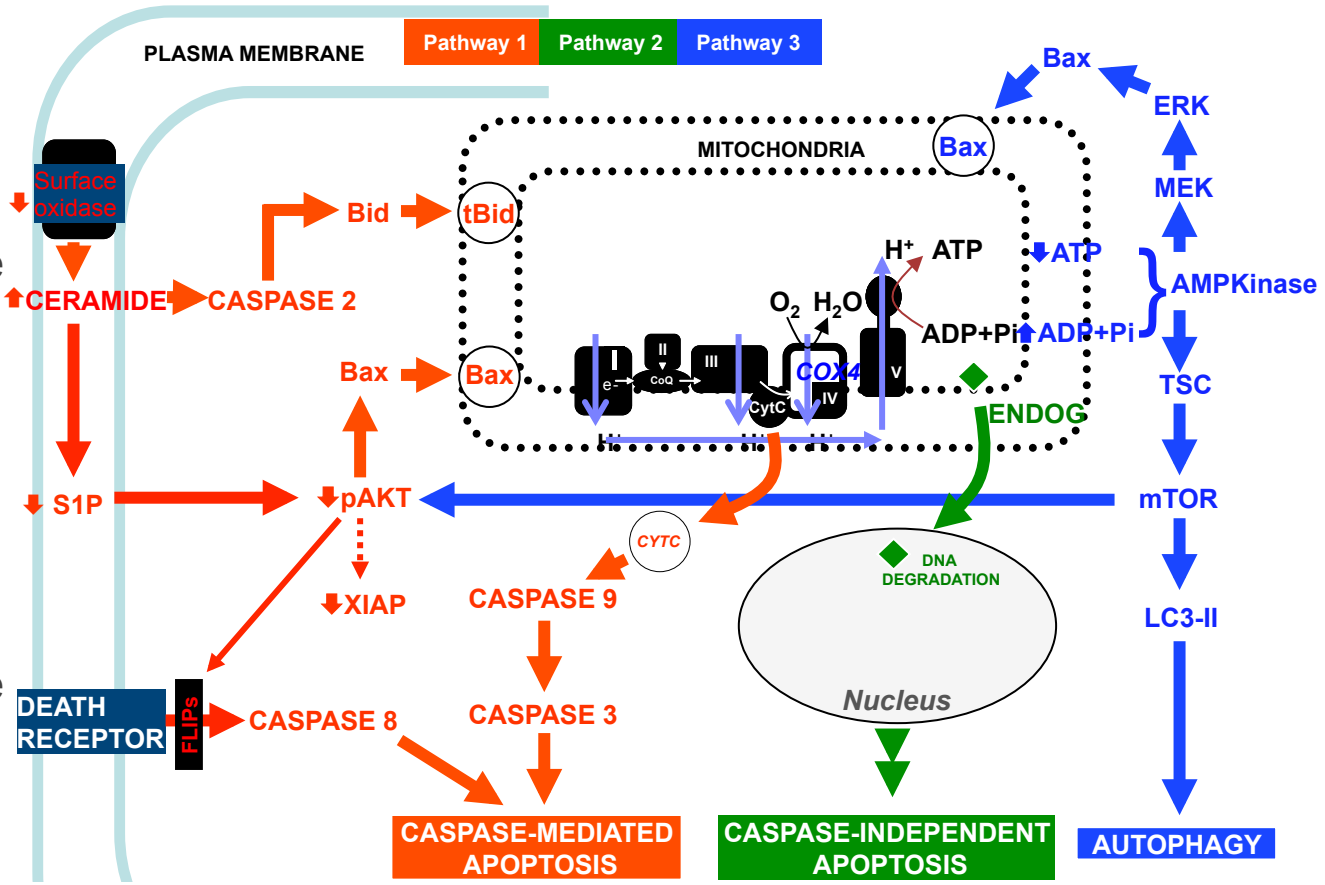
Super-Benzopyran Drug Technology

Cytotoxic to both cancer stem cells and somatic cancer cells

- SBP drugs target the proton-pump mechanisms within the cancer cell
- Varying the SBP structure changes the site of proton (H+) movement inhibition and thus type of cell death
- Molecular target confirmed as oncogene with hypothesised multiple gene product isoforms



Mitochondrial de-polarizisation common to all pathways

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Super-Benzopyran Drug Features

CANCER STEM CELLS: Highly cytotoxic against cancer stem cells (confirmed ovarian and GBM).

ACTIVE AGAINST FULL TUMOR HIERARCHY: Equipotent against both cancer stem cells and somatic cancer cells.

RECOGNIZE INDIVIDUAL GENOTYPE: Modifications to structure yield change in target in individual tumors.

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Strategy

To bring two separate but **complementary** drug technologies to bear together to have significant impact on cancer survival rates

Anti-tropomyosin drugs
effective chemical debulking across most forms of cancer with minimal toxicity

Super-benzopyran drugs
follow-up therapy targeting cancer stem cells and residual somatic cancer cells

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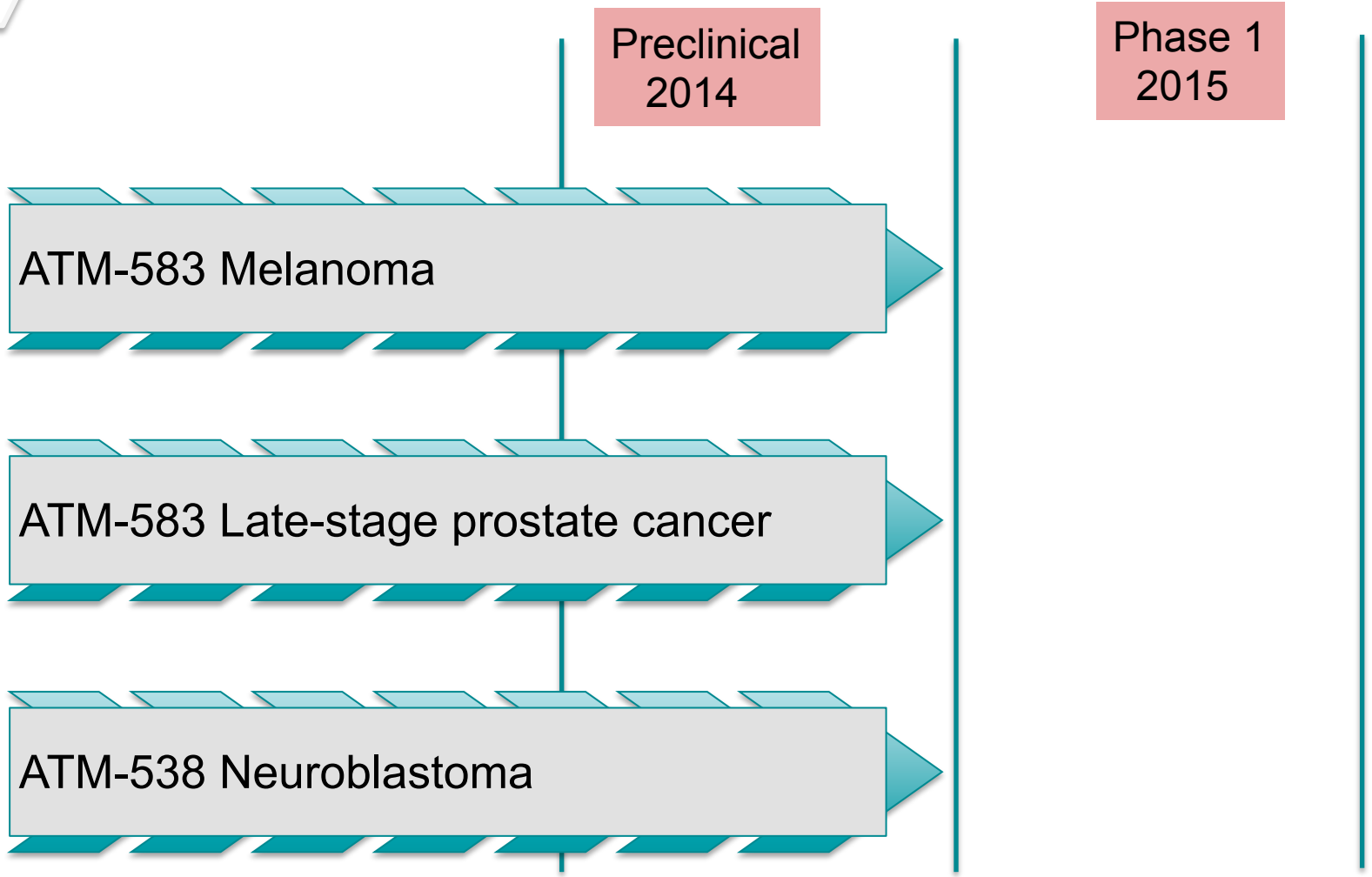
ATM Program



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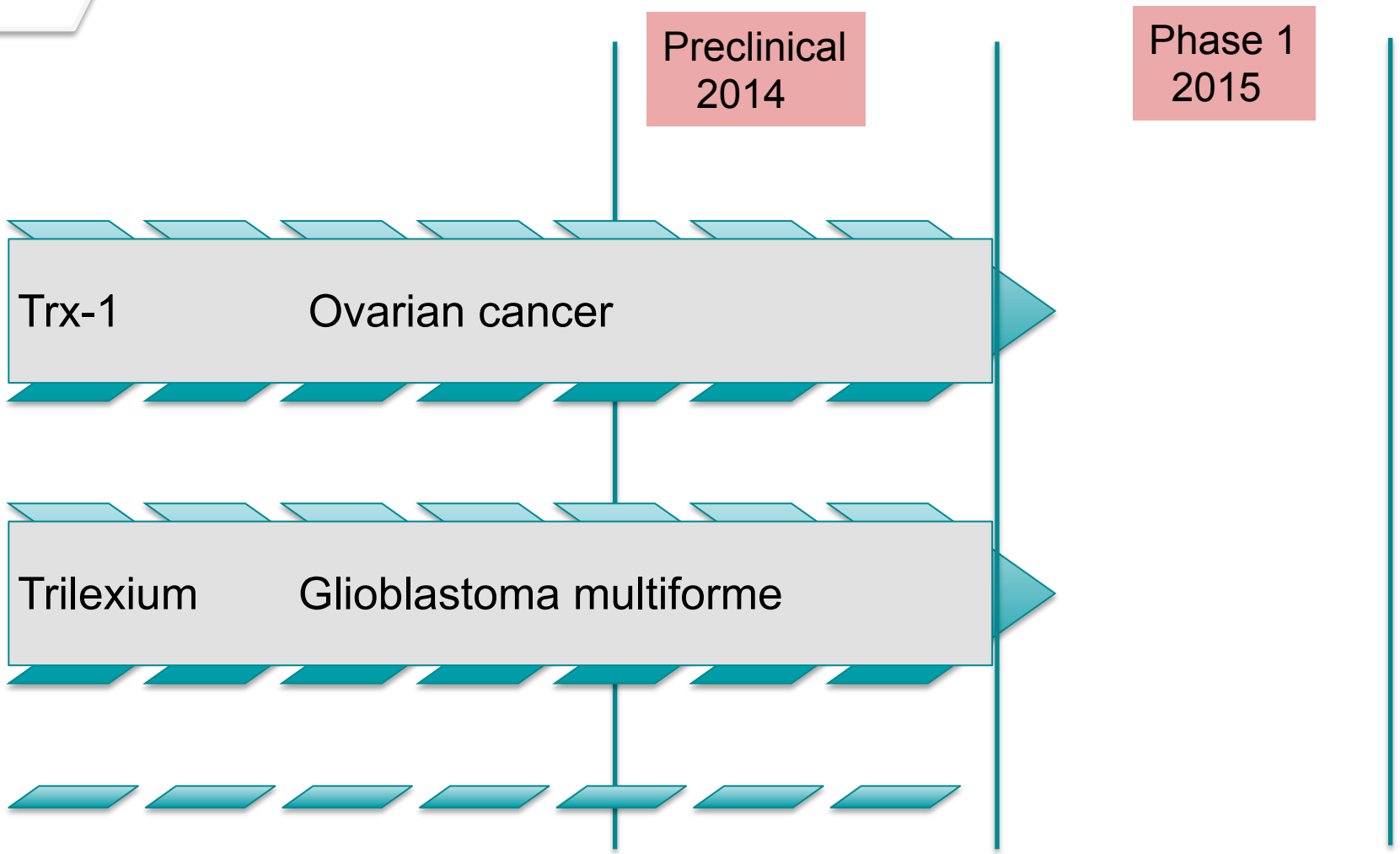
SBP Program



The future of chemotherapy

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CanTx Inc - Focus on Ovarian Cancer

Joint venture with Yale University.

Dedicated to abdominal cancers

Objective: to achieve first modern approval for drug to treat ovarian cancer

	NOVOGEN	Yale University
Equity Split	85%	15%
Contributions	SBP drug technology License drug candidates Management structure $2M funding over 3 years	Cell culture technology Animal screening models Nanoparticle delivery mechanisms Cancer cell genotyping/ biomarkers

Investment Highlights

Market Metrics	
Tickers	NRT (ASX) and NVGN (NASDAQ)
Securities on issue	161 million
Unlisted options	2 million
Share price[1]	A$0.20 (ADR = US$4.33)
6 months high	US$6.90
Market cap	US$30 million
Cash	$5.4 million
Number of Security holders	ASX: 3,900 NASDAQ: 2,500
Major Security holders	• Oppenheimer Funds (Global Funds) – 8% • El Coronado Holdings – 6%

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