



PlantForm Corporation

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PlantForm Opportunity



Proprietary, plant-based manufacturing of monoclonal antibody drugs with:

- Significantly lower cost
- Reduced development timelines
- Lower risk profiles

PlantForm Opportunity



Technology platform will disrupt current mammalian cell-based manufacturing

- Tobacco plant production platform
- High-quality antibodies at low-cost
- Reduced cost for production facility

Virtually untapped market for biosimilar drugs

- \$80B of biologic drugs go off-patent in the next 5 years
- First target-biosimilar trastuzumab (Herceptin®) \$6 billion breast cancer drug

Breast Cancer and Herceptin

- One in nine (11%) Canadian women develop breast cancer
- 23,200 women in Canada will be diagnosed annually with breast cancer (445 every week)
- In 2010 approximately 5,300 women and 50 men died from breast cancer in Canada



- Herceptin works for the 25-30% of breast cancer patients who are HER2 positive
- Herceptin is not chemotherapy or a hormone therapy. It is called a monoclonal antibody
 - Herceptin utilises the natural immune system to kill tumour cells
 - Herceptin disrupts the growth of the cancer
- Herceptin gives a 50% lower risk of breast cancer returning



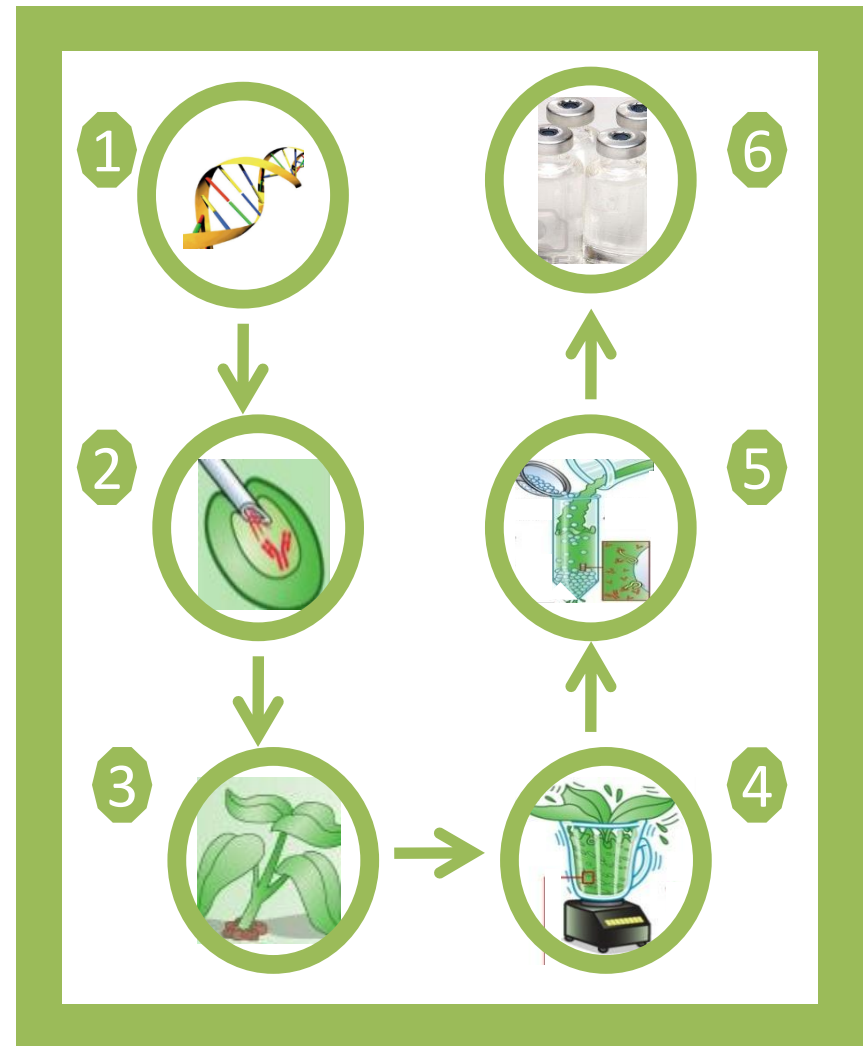
Production Platform

1. Cloning platform (IP position)
2. Host tobacco plant expression*
3. Production
4. Extraction and Recovery
5. Purification (IP position)
6. Formulation & Fill-finish

Overall process (IP position)

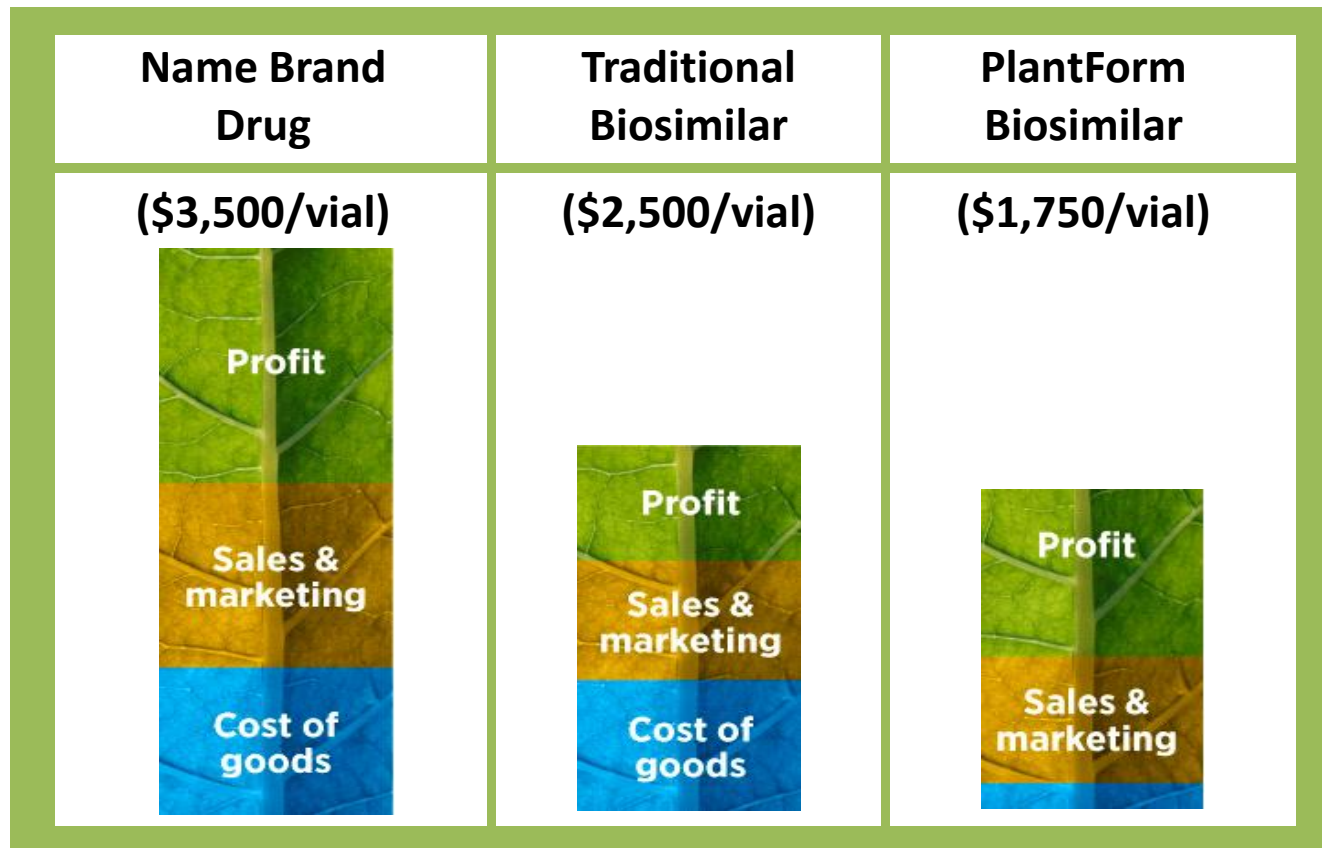
*Modified glycosylation host

- Gene inactivation of Fucose and Xylose pathways
- Mitigates risk of product immunogenicity



PlantForm Biosimilar Strategy

- Greater profit margin enables flexible market entry strategy
- Ability to compete on price due to low cost of goods



PlantForm Summary

- Canadian private corporation established 2008
- Tobacco plant expression technology licensed from the University of Guelph
- \$1.5 million in funding from Founders, Angels & Government
- \$850,000 available in grant to match new funding
- First product advanced towards CTA submission
- 3 families of patents filed



**Canada's Top10™ Winner
Life Sciences 2008-09, 2010**



**Innovator of the Year
Guelph, Canada 2010**



Trastuzumab Technical Objectives

2010: Scale manufacturing

2011: Animal efficacy study

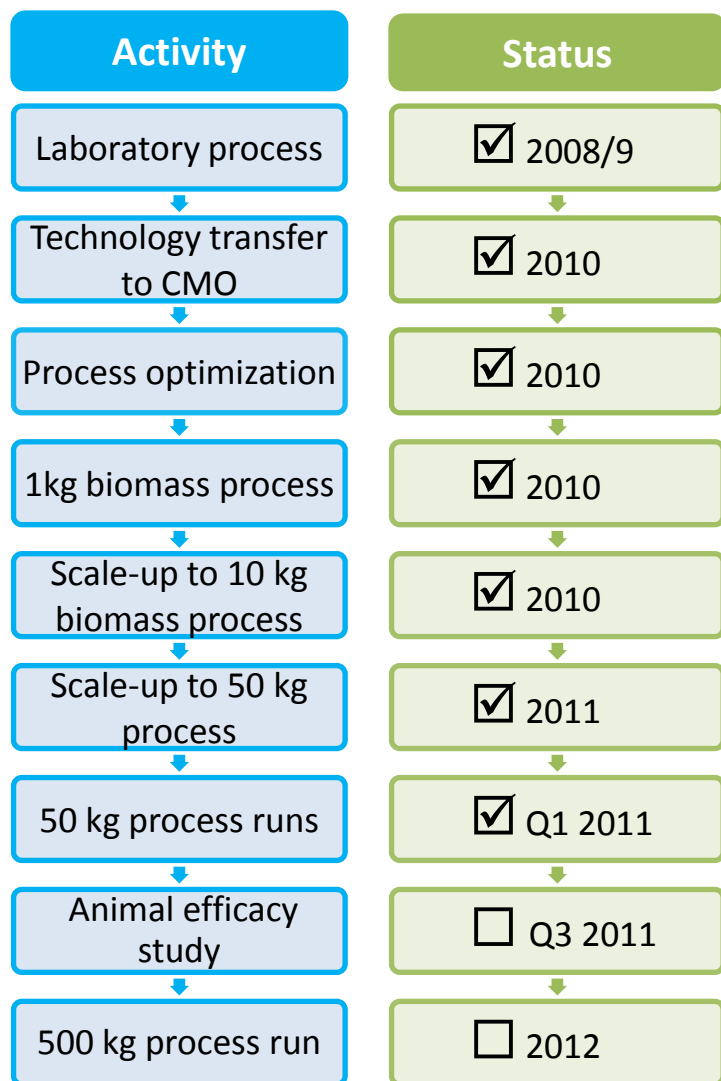
2012: Safety & Toxicology study

2013: Phase I clinical trial

2014-15: Phase III clinical trial

2016: License submission

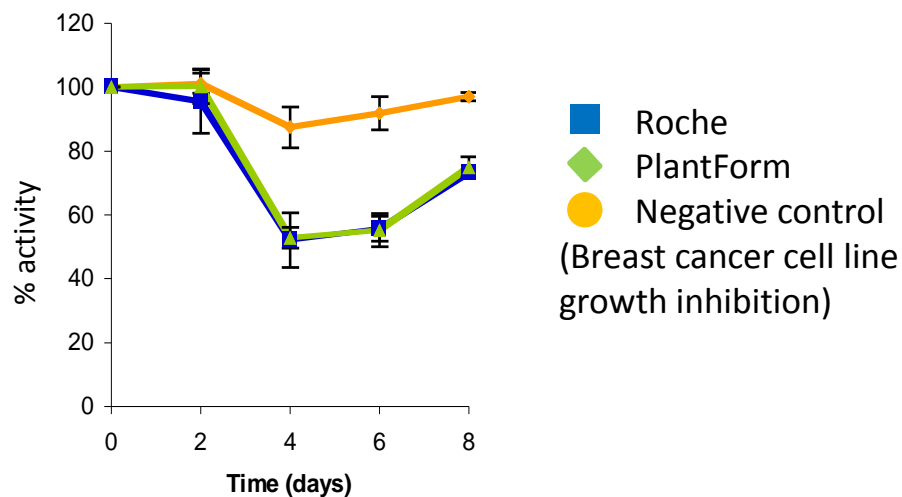
Development Approach and Results



Initial product characterization:

- *In vitro* demonstration of activity
- Process generates pharmaceutical grade purity (99% pure)
- Product forms comparable to Herceptin®
- Amino terminal amino acid sequences correct
- Modified glycosylation demonstrated

Trastuzumab activity



Grohs BM *et al* (2010), *J. Agric. Food Chem.*, 58, 10056

Current Status: Technical Objectives

2010 AGM GOALS

■ Primary

- Manufacturing of 1g of biosimilar trastuzumab
- Conduct of an animal efficacy study in mice (comparison of PlantForm biosimilar to Roche product)

■ Secondary

- Develop transgenic plants
- Develop modified glycosylation host plants

2011 AGM STATUS

■ Primary

- ✓
- **Study 1:** ✓
- **Study 2:** ✓
- **Study 3:** ongoing

■ Secondary

- ✓
- ✓

Recent Technical Advances

- **Manufacturing at Kentucky Bioprocessing, USA**
 - 1 x 50kg biomass batch in wild type host plants
 - 2 x 50kg biomass batch in modified glycosylation host type plants

- **Modified glycosylation plants**
 - Modified transient host plants licensed from University of Vienna
 - Modified transgenic plants developed at University of Guelph

Manufacturing Process

1



2



3



4



5

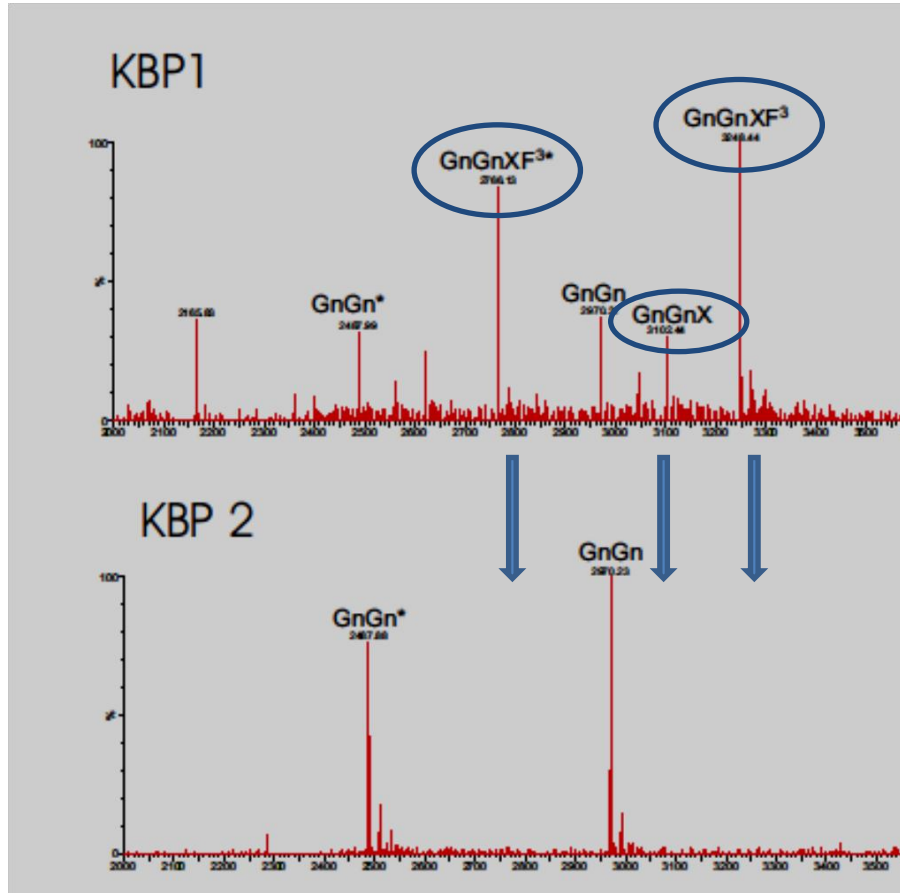


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Results: Modified Glycosylation

Glycosylation profiles (N-glycan)



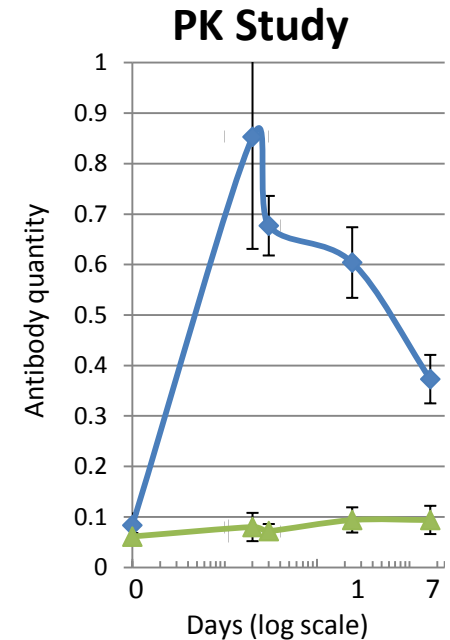
Trastuzumab production host plant

Wild type

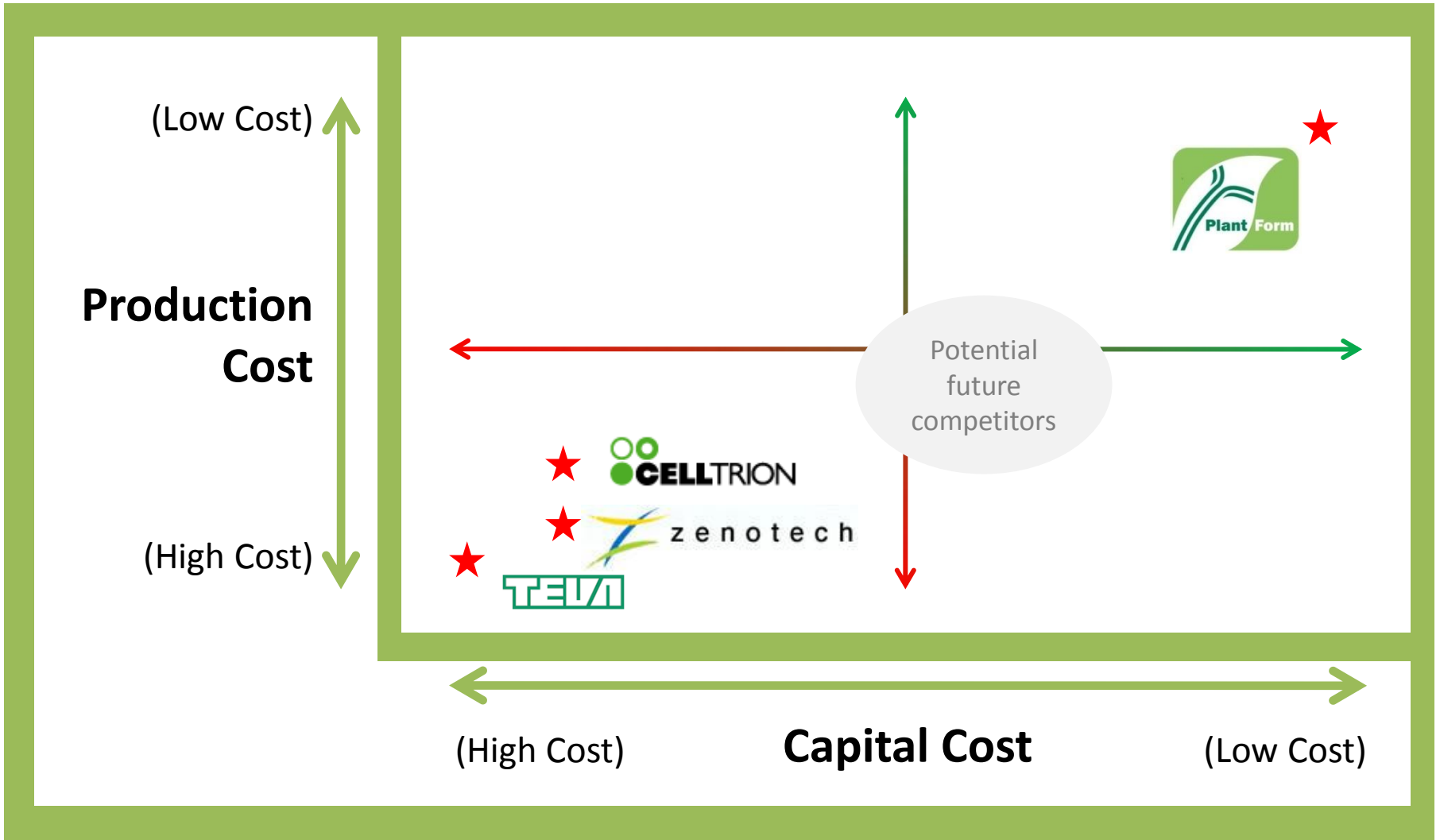
Modified glycosylation

Results: Animal Efficacy Study

- MTD (Completed)
 - Mice
 - 10, 30, 100mg/kg (therapeutic dose 2, 4mg/kg)
 - **No adverse clinical signs**
- PK (Completed)
 - Mice
 - 1 injection
 - Normal drug distribution
 - **Drug present at 21 days**
- Tumour study (Completion Q4, 2011)
 - 50 SCID mice, SKBR3 Her2 positive tumours
 - Comparison of efficacy of PF-trastuzumab and Herceptin™
 - **Ongoing**



Biosimilar Trastuzumab Competitors



Recent Patent Advances

■ Core platform technology

- “Methods of Improving the Therapeutic Efficacy and Utility of Antibody Fragments”
- US Provisional > PCT > National Phase (2011)
 - Australia, Canada, Europe, India, USA

■ Innovative drug candidate

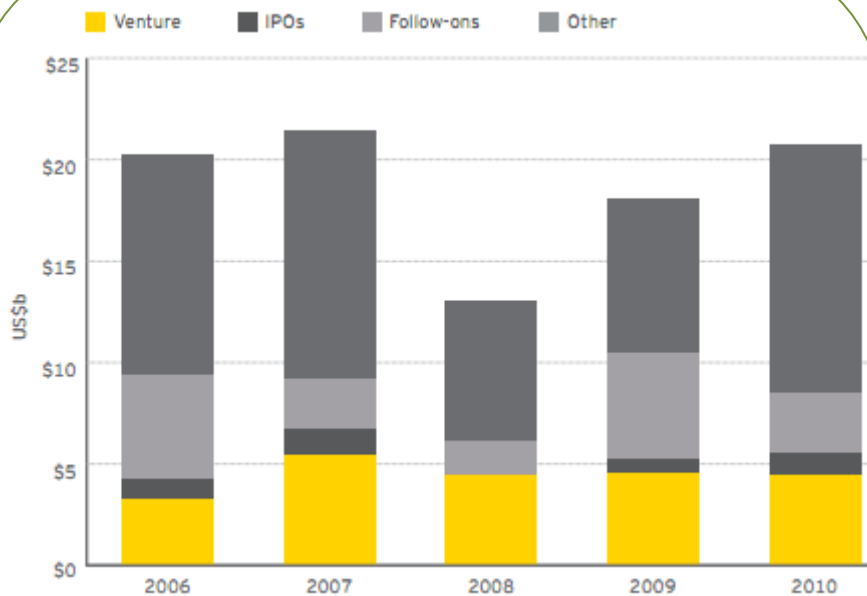
- “Anti-Cobra Toxin Antibody Fragments”
- US Provisional > PCT > National Phase (2011)
 - Canada and USA

■ Biosimilar Herceptin manufacturing process

- “Production of HER Receptor Antibodies in Plant”
- US Provisional > National Phase (2011)
 - USA

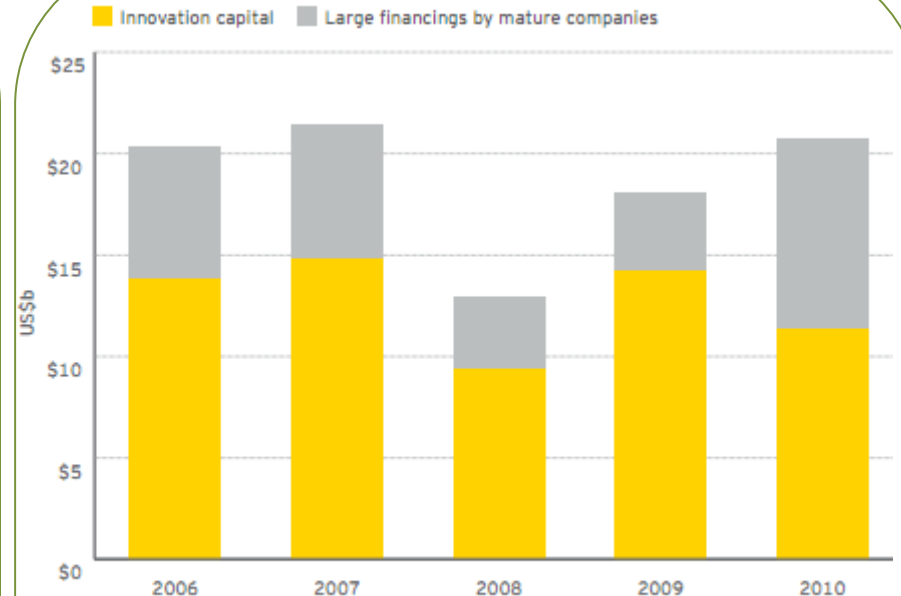
Venture Capital Investment Focus

E&Y: Beyond borders global biotechnology report, 2011



Source: Ernst & Young, BioCentury and VentureSource

“Total US funding has rebounded after the downturn....”



Source: Ernst & Young, BioCentury and VentureSource

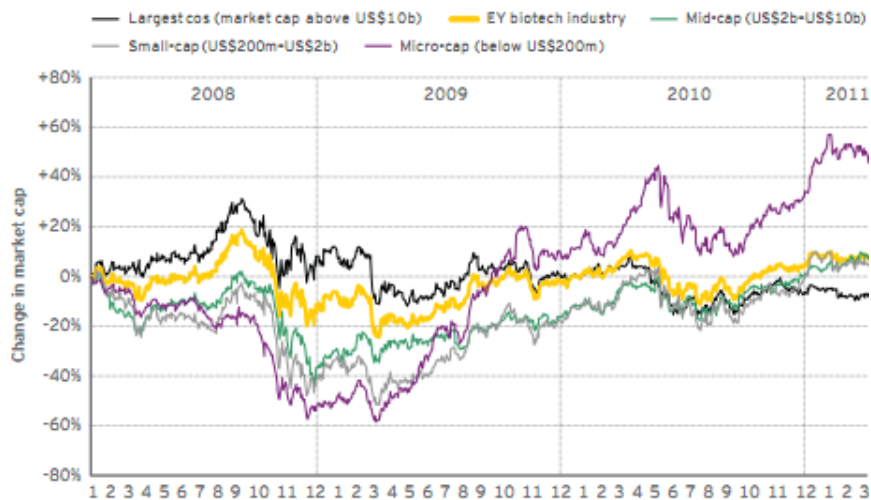
“...but a growing share has gone to mature, profitable companies”

Micro-cap Biotech's lead recovery of value

E&Y: Beyond borders global biotechnology report, 2011

USA

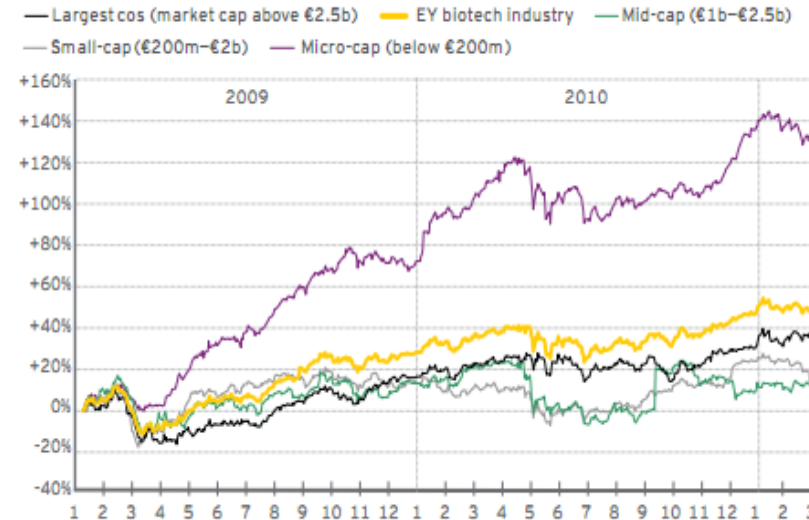
After declining in 2008, smaller companies more than recovered ground



Source: Ernst & Young, finance.yahoo.com
EY biotech industry represents the aggregate market cap of all US public biotech companies as defined by Ernst & Young.

Europe

European micro-cap stocks outperformed the other biotech companies



Source: Ernst & Young, finance.yahoo.com
EY biotech industry represents the aggregate market cap of all European public biotech companies as defined by Ernst & Young.

Micro cap stocks gained ground ahead of the market and larger biotech companies

Financing Strategy and Objectives

Objectives

■ Series A

- Landmark Capital, USA and additional territory specific agents
- \$10-20 million
- Close around end Q1, 2012
- Replaced Medwell Capital

■ FedDev matching funds

- 50% matching funds for \$1.7 million
- Maximum \$840,000
- Long term loan repayable starting 2015

■ New Angels and Rights Offering

- New Angels and Rights Offering
- General Capital to fund:
 - Completion of animal efficacy study
 - Initiation of second product



Partnering status

- **Discussion and negotiation from 2010 still ongoing with a mid-sized European pharmaceutical company**
 - Reduced interest in trastuzumab
 - Focus changed to new candidate evaluation
- **Expression of interest in trastuzumab from one of the top 10 pharmaceutical companies in the world**
 - Waiting to evaluate animal efficacy data
- **Expression of interest in trastuzumab from one of the top 10 generic companies**
 - Waiting to evaluate characterization data

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Advancing the Company

- **Expanded management capability**

- David Cayea joined the PlantForm team as Director International Relations and Business Development
- Stacey Curry Gunn will join the PlantForm team as Director Communications

- **Funding awarded**

- \$840, 000 Investing in Business Innovation award from FedDev, Canada
- SR&ED tax credits of \$100,000
- NRC-IRAP award for a \$50,000 project for product candidate evaluation
- Going Global Commerce Support Program award of \$45,000
- Federal and Ontario awards to support for travel for business development meetings and conferences (BIO 2011, BioPartnering 2011, BioPartnering 2012)

- **Facilities**

- Office opened in the University of Western Ontario Research and Development Park (Sarnia-Lambton Campus) to support business development



Corporate Objectives Fiscal 2012

■ Technical

- Completed trastuzumab animal efficacy study
- Scale trastuzumab manufacturing process to clinical/early commercial scale
- Initiate development of second product
- Advance transgenic production platform

■ Financing

- Complete Rights/Angel offering
- Match FedDev funding
- Advance Series A financing

■ Grants

- Match PlantForm's funding for University of Guelph

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*Our tobacco plants don't cause cancer – they'll help cure it,
at a price more people can afford.*

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