



Phylogica Investor Briefing

August 2017

Stephanie Unwin, Chief Executive Officer



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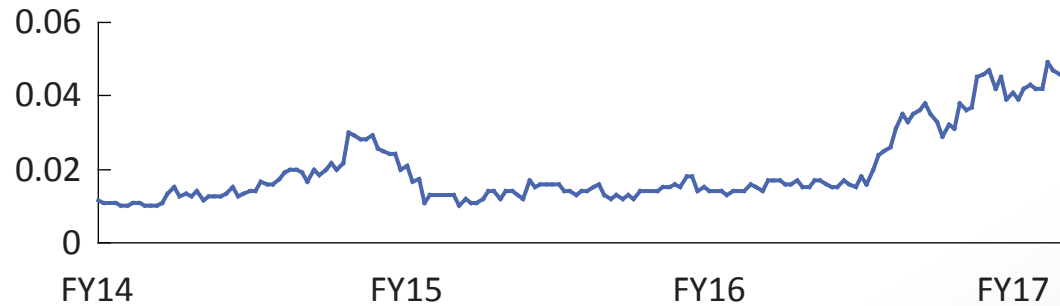
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Corporate profile

Phylogica stock price, AUD



Directors

Stephanie Unwin	Chief Executive Officer
Dr Robert Hayes, PhD	Executive Director
Dr Bernard Hockings	Non-Executive Director
Dr Rick Kendall	Non-Executive Director
Dr Paul Watt	Non-Executive Director
Dr Rohan Hockings	Alternate Non-Executive Director

Research Coverage

Bioshares
Euroz
NDF research
ShareAnalysis
Wright Investors

Major shareholders, %

Bernard Edward Hockings	27.50
Sietsma Holdings Pty Ltd	6.93
Australian Land Pty Ltd	7.55
Tony Barton and Assoc	4.50
Masali Pty Ltd	3.67

Capital structure

Issued ordinary shares (bn)	2.12B
Unlisted options (mn)	47.7m
Current ¹ market capitalisation (mn)	95.44AUD
Current ¹ share price	4.4c AUD
Past 12 months ¹ average daily trading	1.5-5.3c AUD

¹ Current as of 01/08/2017 and past 12 months covering 01/08/2016 to 01/08/17

SOURCE: ASX

Highly valuable intracellular target space remains untapped

80% of drug targets are inside cells but only 10% of such targets are druggable

Distribution of drug targets

Outside cells	20%
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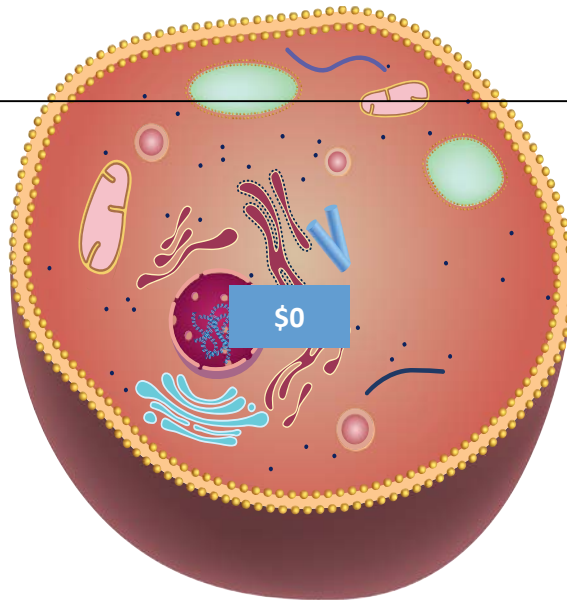
Cell membrane Small molecules	10%
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Biologics	70%
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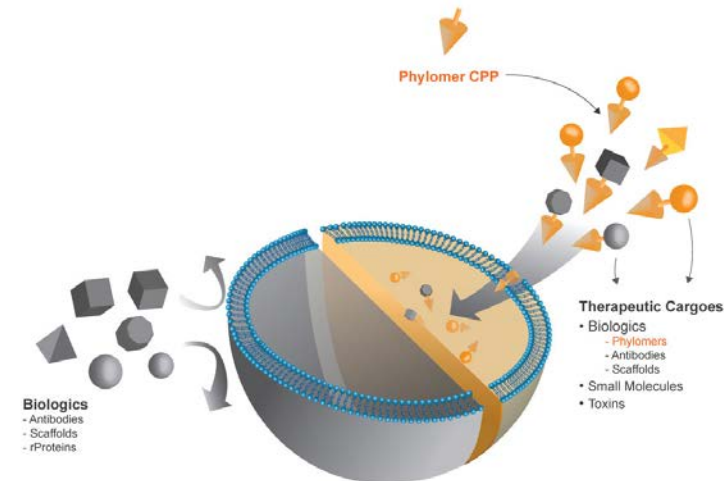
Market for biologics drugs

\$220B

\$0



Phylogica's FPP platform finds peptides which can break through the cell membrane (Endosomal escape)



Phylogica's ambition: expand the druggable intracellular landscape by >10-fold with Functional Penetrating Phylomers (FPPs) – Phylogica's proprietary cell penetrating peptides

Phylomer FPPs are able to deliver a diverse range and size of cargos

Example cargos and targeted diseases that can be delivered with FPPs

- Conceptual stage
- Validated efficacious delivery

Cargo class	Example cargo	Example disease	Progress ¹	Cargo size
RNA	PMO	Duchenne muscular dystrophy		
Anti-microbial	Antibiotics	Multi-drug resistant Gram-negative bacteria		
Scaffold	Omomyc	Breast cancer		
Peptide	Anti-amyloid fibril	Alzheimer's disease		
	DC vaccine	Mesothelioma Melanoma		
Toxin	Ribotoxin	Acute myeloid leukaemia		
Enzyme	Glucocerebrosidase	Gaucher disease		
Bi-specifics	Bcl-2 + Omomyc	Resistant cancers		

¹ Progress measured in terms of ability to deliver efficacious cargo class into cell using FPP

Phylogica has had early success in developing FPPs and Myc

- Phylomer screens against validated and clinically relevant oncology targets
 - c-Myc, N-Myc, Stat5 and YB1
- Validated hits already exceed potency of gold standard inhibitors
- Stat5 and YB 1 collaborations with Dana Farber Institute, Harvard Medical School

Lead program

Program	Potential targeted indications ¹	Hit ID	Hit to lead validation <i>in vitro</i>	Hit to lead validation <i>in vivo</i>	Lead selection/ optimization	Pre-clinical/ IND enabling ³	Phase I-III
Myc	AML, Breast Cancer (TNBC), Neuro-blastoma				<i>progressing</i>		
STAT5	AML, CML			<i>progressing</i>			
YB1	AML, Breast Cancer (TNBC)			<i>progressing</i>			
FPP ²	Intracellular payloads				<i>progressing</i>		

¹ Current shortlisted indications only

² Multiple diverse FPP-payload constructs at various stages (includes external collaborations)

³ Includes non GLP and GLP toxicology

three focus areas - increase potency of FPP-iMyc drug conjugate

1 Improve FPP's endosomal escape activity

- New FPPs to be identified by assays
- Protein engineering work
 - Fine tuning existing FPPs active window and strategic aa substitution
- 13 new FPP families announced last quarter with good activity

2 Increase the cargo's binding affinity (binding to the target)

- Ensuring the cargo is optimised to bind to the target: iMyc to Myc
- Work in progress to increase binding

3 Increase half life - drug conjugate where we want it for longer (biodistribution and pharmacokinetics)

- Increasing drug half-life – time it takes for half the drug to leave the body
- Application of half life extension techniques in progress

Outcome: improved drug conjugate tested against disease in live animals, showing how much is needed for 50% inhibition of the disease (IC50s)

Dr Robert Hayes

Chief Scientific Officer

- Ph.D. in Protein Biochemistry from Imperial College, London
- Royal Society University Fellow, Royal College of Science Scholar
- Postdoc work at UC Berkeley in protein engineering
- In 1998, joined a start-up in Berkeley called Xencor as fourth employee, stayed for six years – company went public 2015
- Joined J&J as Head of Antibody Engineering. After three years, founded Centyrex, a J&J wholly owned biotech company
 - Six year business plan
 - 37 FTEs
- As Centyrex's CEO oversaw development of the Centyrin platform
- In 2014, joined Amgen as Head of Biologics, managing a team of 165 scientists and professionals at four north American site and one overseas site.



Current activities – FPP Platform Validation

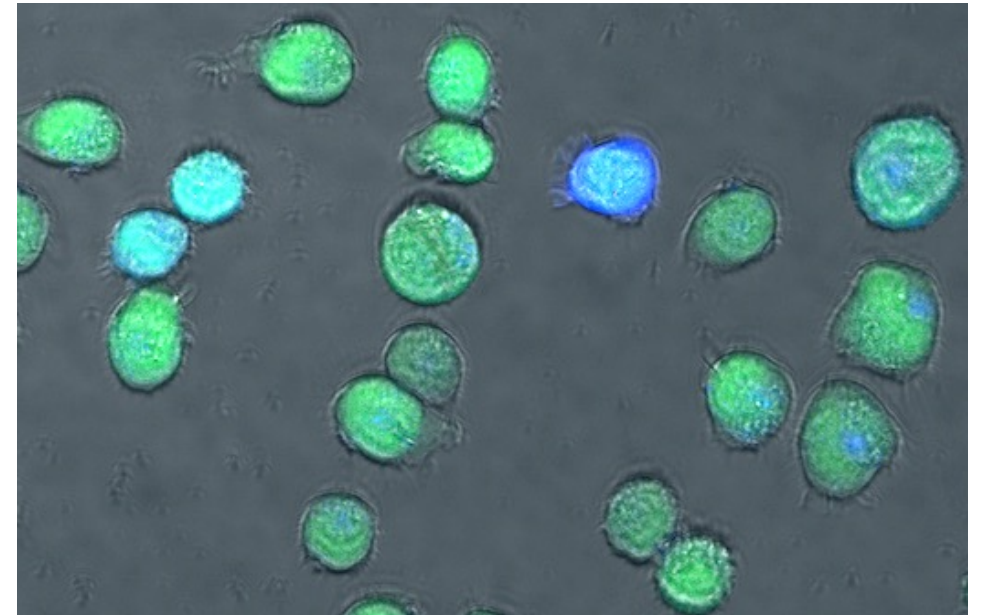
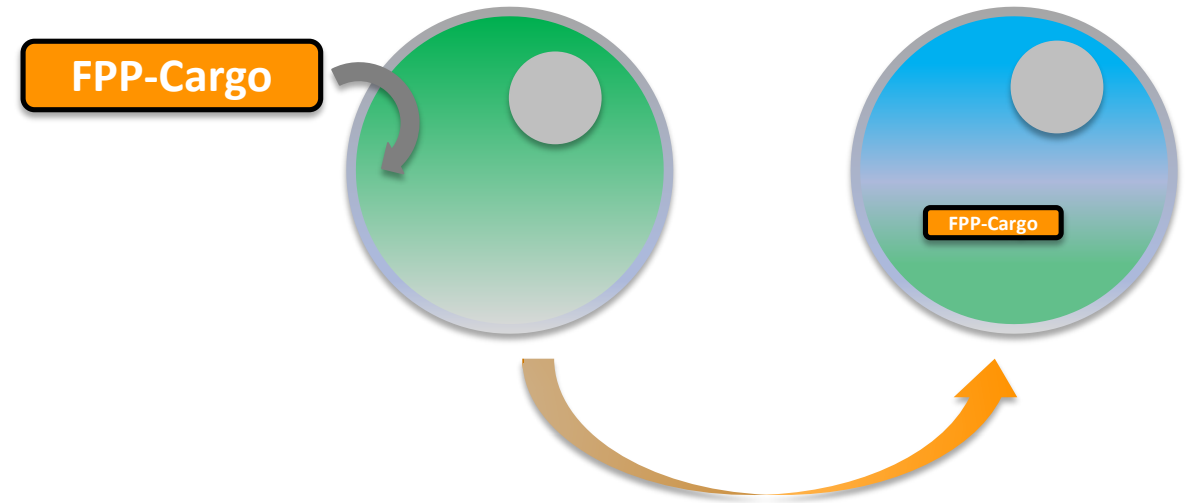
Goals

- *Provide optimised FPPs for the oncology program*
- *Develop better understanding of FPP delivery*
- *Further validation of the FPP platform*

The FPP program

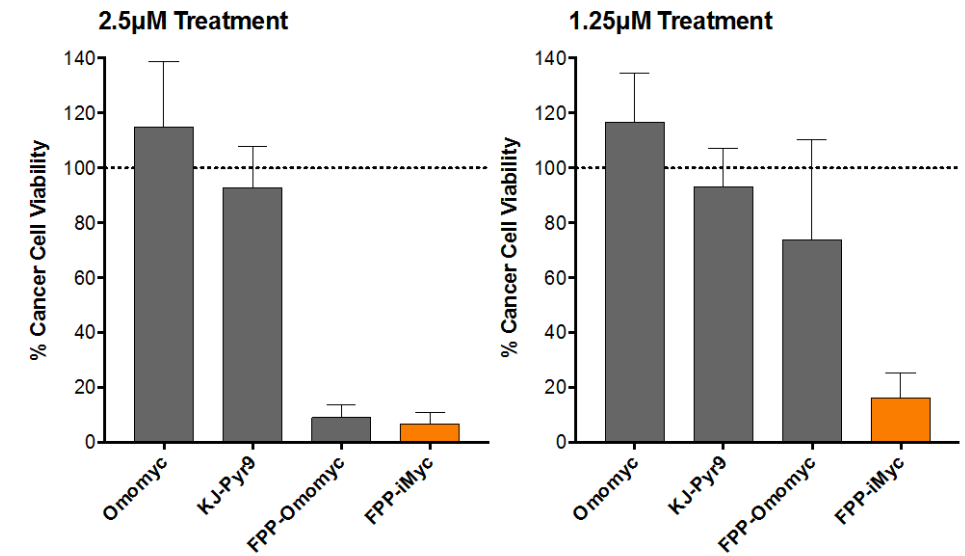
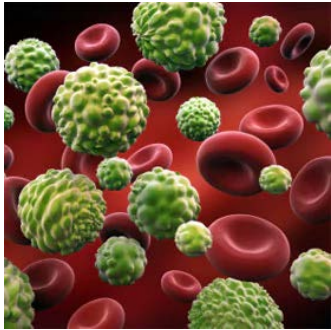
- **FPP discovery**
 - *Screening Phylomer libraries against mammalian cells to isolate more types of FPPs*
- **FPP validation**
 - *Delivery of different cargoes*
 - *Delivery into different cell types*
- **FPP maturation**
 - *Improving FPPs via focused libraries/ directed evolution*

Example: β -lactamase FPP assay



Current activities: Oncology MYC program, validation of iMYcs

- Oncology program aims to prove that Phylomers can be targeted to proteins inside cells that are important in cancer development and progression (oncoproteins such as MYC)
- Testing of MYC inhibitors: can our Phylomer iMYCs kill cancer cells better than the current best protein and small molecule inhibitors?



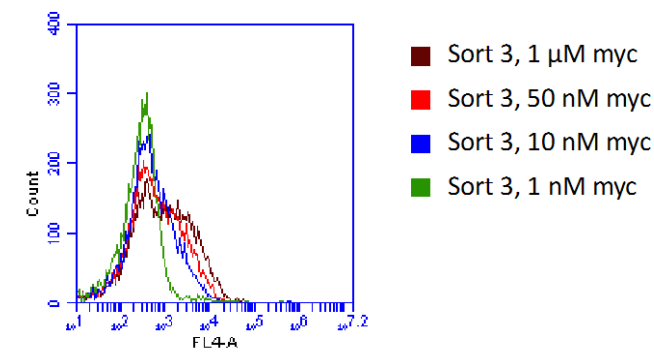
Techniques used/being optimised during Oncology program	Flow on benefit for other projects
iMyc killing of cancer cells	➤ Functional validation of FPP activity with diverse cargoes in multiple cell types
iMyc mode of action studies	➤ Establish SOPs for mode of action studies for other oncology targets ➤ Acquisition of new machinery and that will be used across all programs
<i>In vivo</i> tumour models	➤ Assessment of <i>in vivo</i> FPP delivery of cargoes in disease models

Current activities: Oncology MYC program, affinity maturation, MOA and PD markers

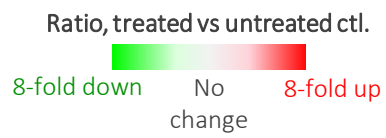
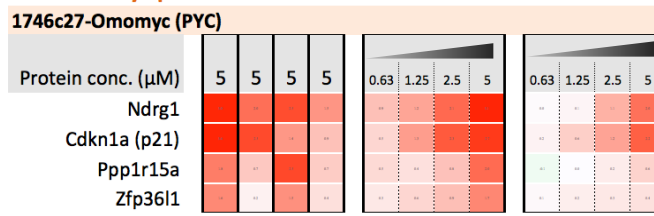
- Oncology program aims to prove that Phylomers can be targeted to proteins inside cells that are important in cancer development and progression (oncoproteins such as MYC)
 - Affinity maturation of MYC inhibitors: Can we improve our iMYCs (binding, potency)?
 - Pharmacokinetic markers: Can we establish indicators of our iMYC working?
 - Characterisation of MYC inhibitors: How do our iMYCs work?

Techniques used/being optimised during Oncology program	Flow on benefit for other projects
Can we improve our iMYCs? <i>(iMyc affinity maturation)</i>	➤ Develop affinity maturation programs ➤ Relationship of improved binding and potency
Indicators of our iMYC working? <i>(pharmacodynamic biomarkers)</i>	➤ Establish indicators (biomarkers) of iMYC effect on the target in cells
How do our iMYCs work? <i>(mechanism of action)</i>	➤ Development of assays to assess how our iMYCs work ➤ Establish SOPs for these studies for other oncology targets

Dose titration: cMB_0153 sort population vs decreasing cMYC

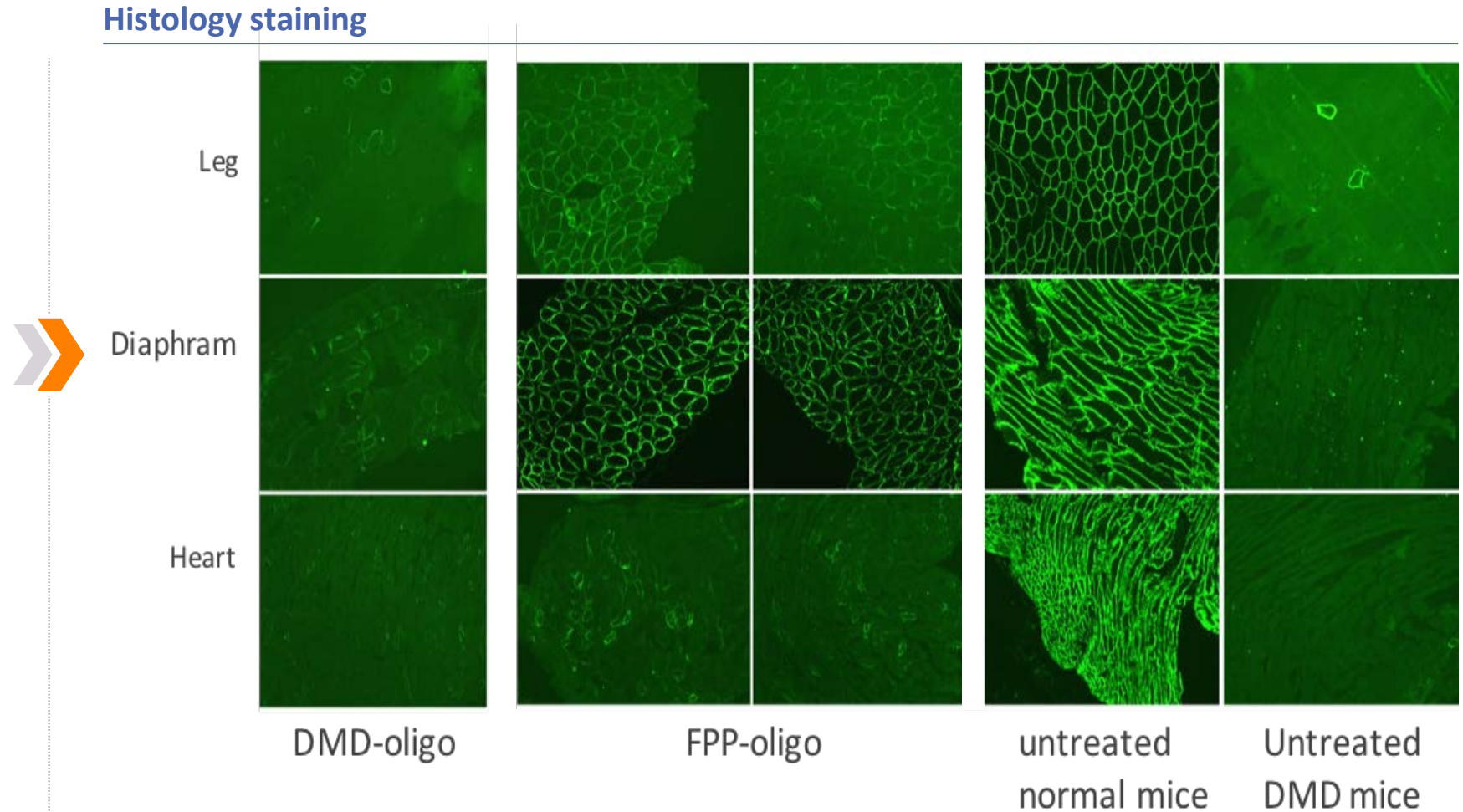


CPP-Omomyc positive control



FPP delivery of an oligonucleotide *in vivo* in a model of Duchenne muscular dystrophy (DMD)

- **DMD**, a X-linked recessive neuromuscular disorder, **leads to severe muscle wasting** – by the age of 12 most boys are unable to walk
- **DMD is caused by a mutation of the dystrophin gene** – the oligonucleotide targets and skips the mutated exon 23 of dystrophin, leading to a shorter yet functional dystrophin variant
 - Histology staining shows **FPP-DMD oligonucleotide treatment leads to functional improvement**, inducing mouse muscle tissue to return to a more-normal phenotype with improved muscle architecture and increased dystrophin expression

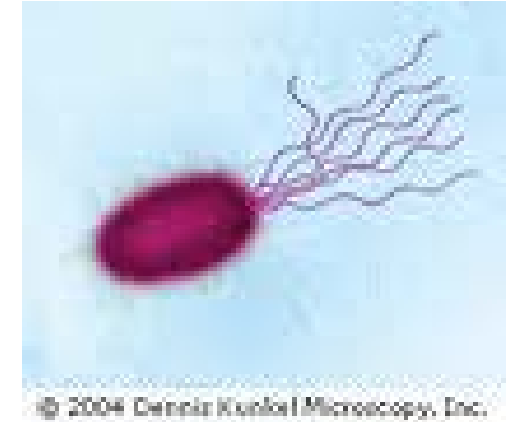


Current activities: Genentech Collaboration

- Project with Genentech (Roche) – leading biotechnology company in the US
- Our collaboration aims at the isolation of Phylomers that can help killing multi-drug resistant “super bugs”
 - *Phylomers are expected to increase the potential to kill bacteria which can cause pneumonia, urinary tract infections, meningitis and sepsis in people with a weakened immune system*
- The principle:



Phylomer-Antibiotic ✓



GNE #1	2014 – 6 month pilot study	US \$ 150,000
GNE #2	2015 - Resulted in the isolation of one Phylomer, which fulfilled all the criteria & dozens of additional potential hits, which have not been tested yet	US \$ 750,000
GNE #3	2017 - Screening against additional super bugs	US \$ 2,000,000

Benefits for Phylogica?

- Revenue; Platform development; Proof of continued interest of big pharma in PYC's platform