



Prairie Tide Chemicals Inc.

Martin Reaney, Ph.D.

President & CEO

<http://prairietide.com>

Ag-West Bio Annual Meeting, September 27, 2012

Prairie Tide Chemicals Inc.



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Latest News

September 27, 2012

Dr. Reaney will present at the Ag-West Bio Annual Meeting in Saskatoon. [Read More](#)

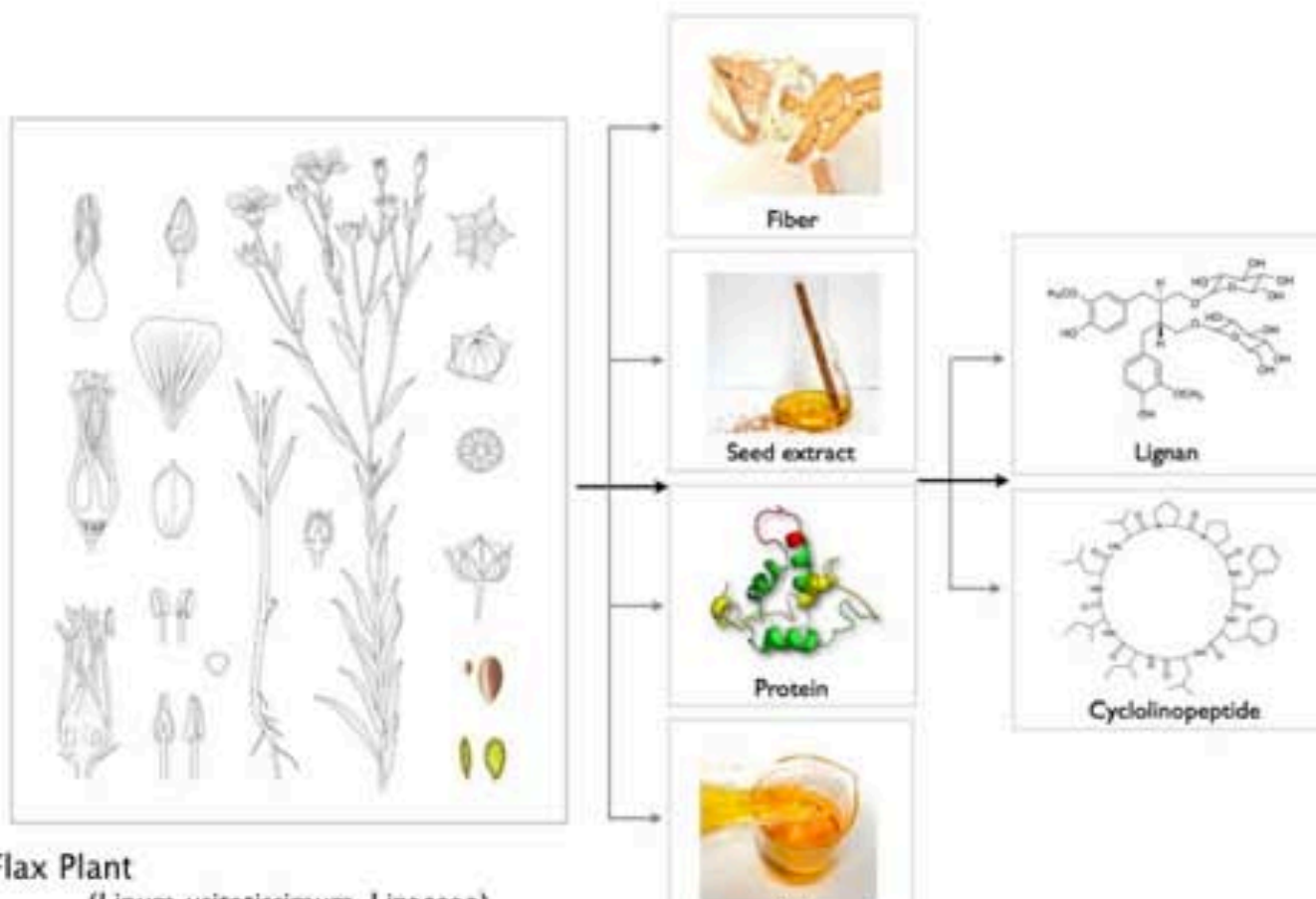
August 2012

Gui, B, YY Shim, MJT Reaney (2012) Distribution of Cyclolinopeptides in Flaxseed Fractions and Products. Journal of Agricultural and Food Chemistry. 60, 8580-8589. [Read More](#)

Gui, B, YY Shim, RSS Datla, PS Covello, SL Stone, MJT Reaney (2012) Identification and quantification of cyclolinopeptides in five flaxseed cultivars. Journal of Agricultural and Food Chemistry. 60, 8571-8579. [Read More](#)

Olivia, CM, P-G Burnett, DP Okinyo-Owiti, J Shen, MJT Reaney (2012) Rapid reversed-phase liquid chromatography separation of cyclolinopeptides with monolithic and microparticulate columns. Journal of Chromatography B. 904, 128-134. [Read More](#)

About PTC



The Saskatchewan Ministry of Agriculture Strategic Research Program



SMA Chair of Lipid Quality and Utilization



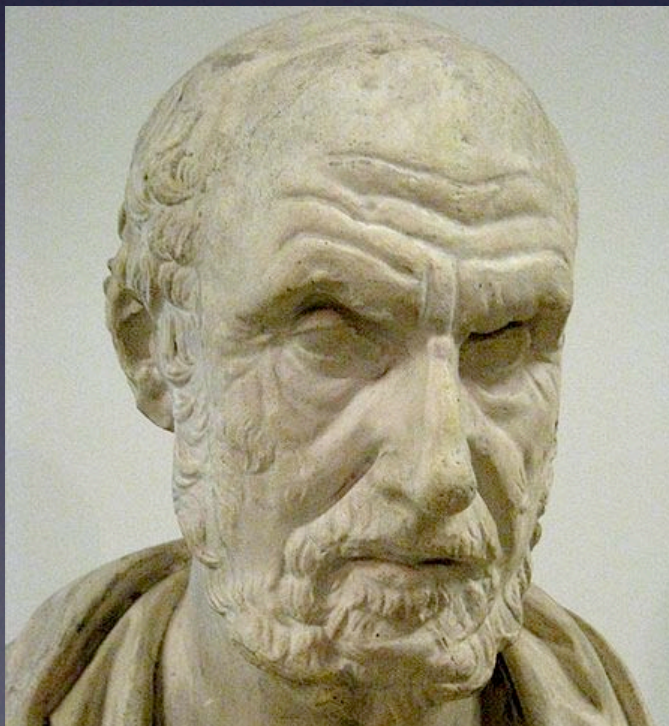
FLAK

Flax (*Linum usitatissimum*, Linaceae)





*“Let food be thy medicine and
medicine be thy food”*
Hippocrates



German Commission

“The uses of Flaxseed internally are for chronic constipation, for colon damaged by abuse of laxatives, irritable colon, diverticulitis, as mucilage for gastritis and enteritis. The actions are laxative due to increase volume and consequent initiation of peristalsis due to stretching reflexes. There is a protective effect on the mucosa because of a coating action.”



Flax an ancient and healthy grain

Canada leads in flax production

Rory MacLean, The StarPhoenix

Published: Tuesday, November 22, 2011

When you think of grain, usually the first thing that comes to mind is a golden field of wheat, but one of the healthiest grains of all actually grows on a plant that bears beautiful blue flowers.

Flax seed, which is used in everything from bread to linoleum, comes from a short, blue-flowered plant grown widely in the western prairies. It has been grown by people the world over for nearly as long as humans have been farming.

It's a grain as ancient as civilization itself, with records showing that it was grown in Babylon as far back as 3000 BC. Burial chambers from that time depict flax cultivation and have been found containing clothing from flax fibres.



[View Larger Image](#)

A field of hay bales bisects fields of canola, bottom, and flax, above, south of North Battleford.

Richard Marjan, The StarPhoenix

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Canadians have been harvesting the small brown seeds for centuries.

Today flax is not eaten nearly as much as wheat, but its use is widespread, appearing not just in food but also in industrial products, like linseed oil, which is used in many oil paints and stains for its protective properties on wood and concrete.

Canada has held the title of the world's largest producer and exporter of the grain since 1994. Most of that is grown in Saskatchewan, which produced over 700,000 tonnes of flax in 2010, most of which is shipped to Europe.

Flax is a great alternative to wheat and has been shown to lower your risk of diabetes, heart disease and some forms of cancer. It's full of healthy forms of fat and very high in fibre.

"It has something called lignans, which have been beneficial in helping people with Type 2 diabetes. They help control blood sugar," said Jennifer Billinski, a post-doctoral fellow in the College of Pharmacy and Nutrition at the

"Flax is a great alternative to wheat and has been shown to lower your risk of diabetes, heart disease and some forms of cancer. It's full of healthy forms of fat and very high in fibre."
by Rory MacLean

Flax production by province



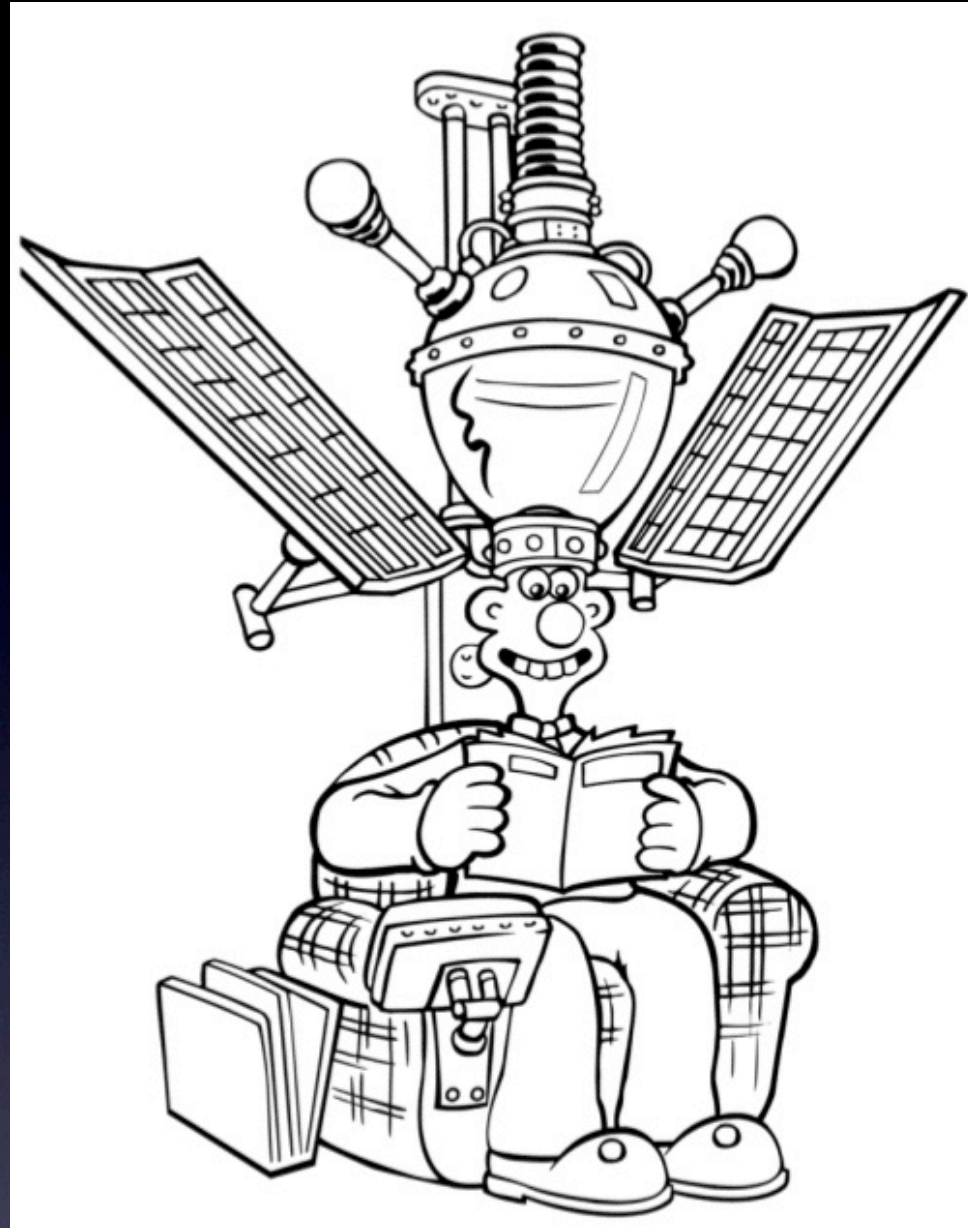
There are many components to all seed oils

- We have discovered something very interesting in flax oil.



What if??

What would you do if you discovered a material that could be used in many of the largest most rapidly growing markets?

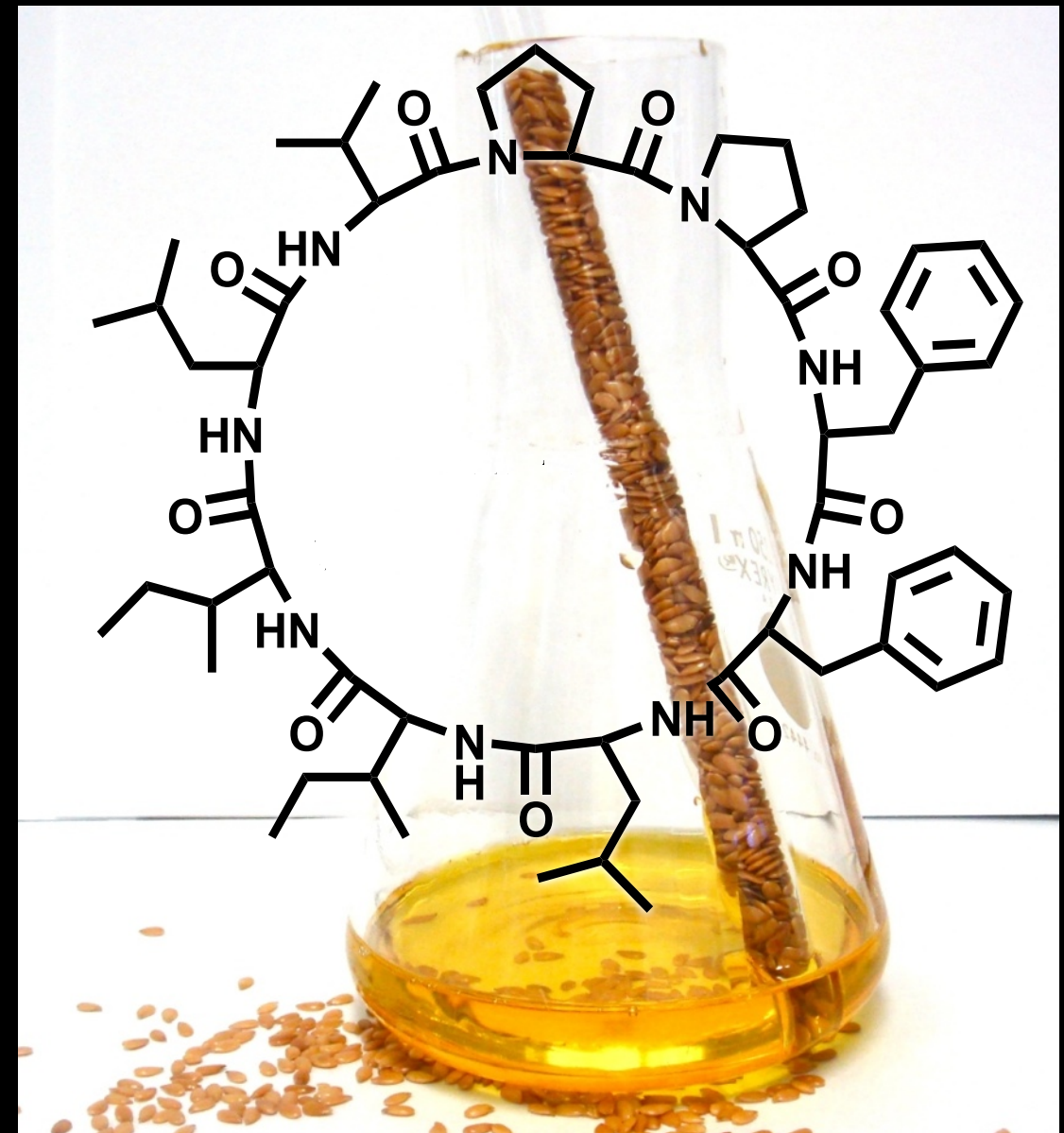


*You would protect it:
The product we have found in flax oil is very useful.*

Orbitides

Orbitides are Special Molecules

- Orbitides are circular molecules.
- Orbitides are chemically stable.
- Orbitides are a byproduct of flax oil production.



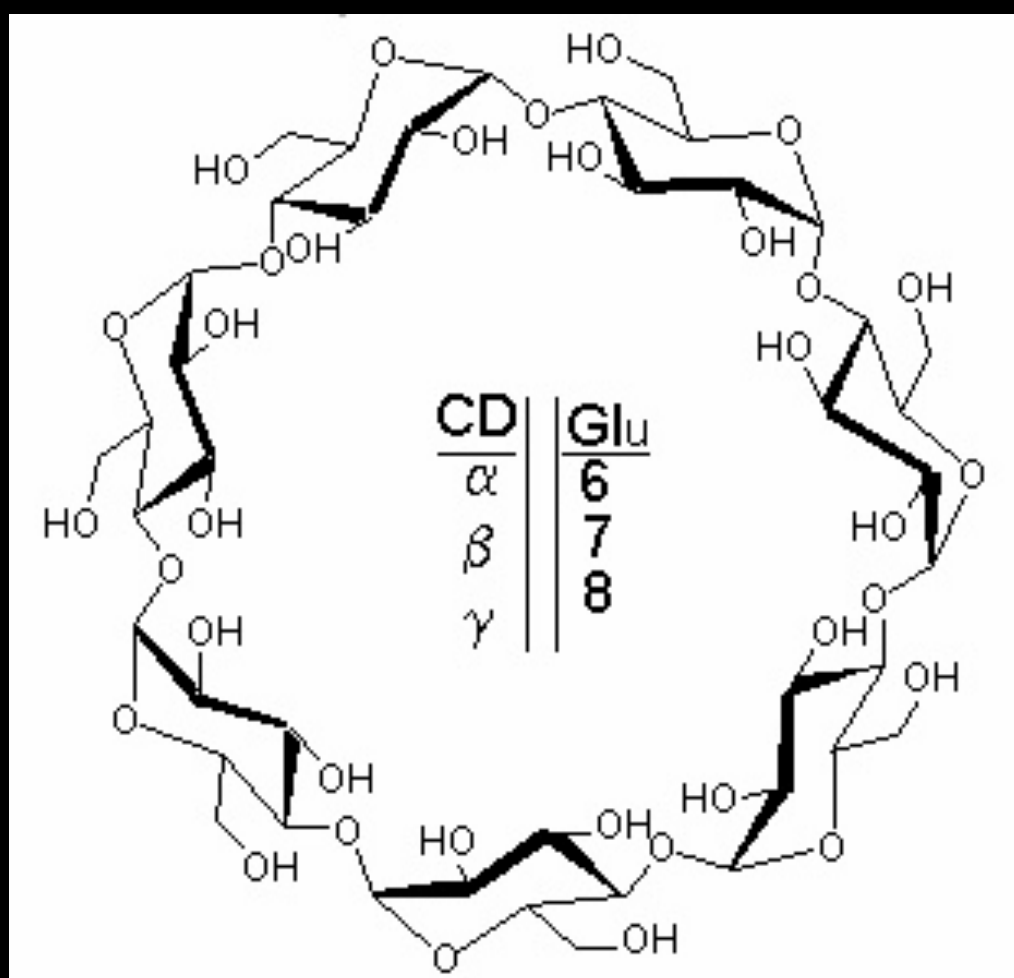
Flax Orbitides are Plentiful

- We have the technology to recover 1.6 kg of orbitide from 1 ton of flax oil.
- This is about 600,000 kg from the Canadian flax crop.

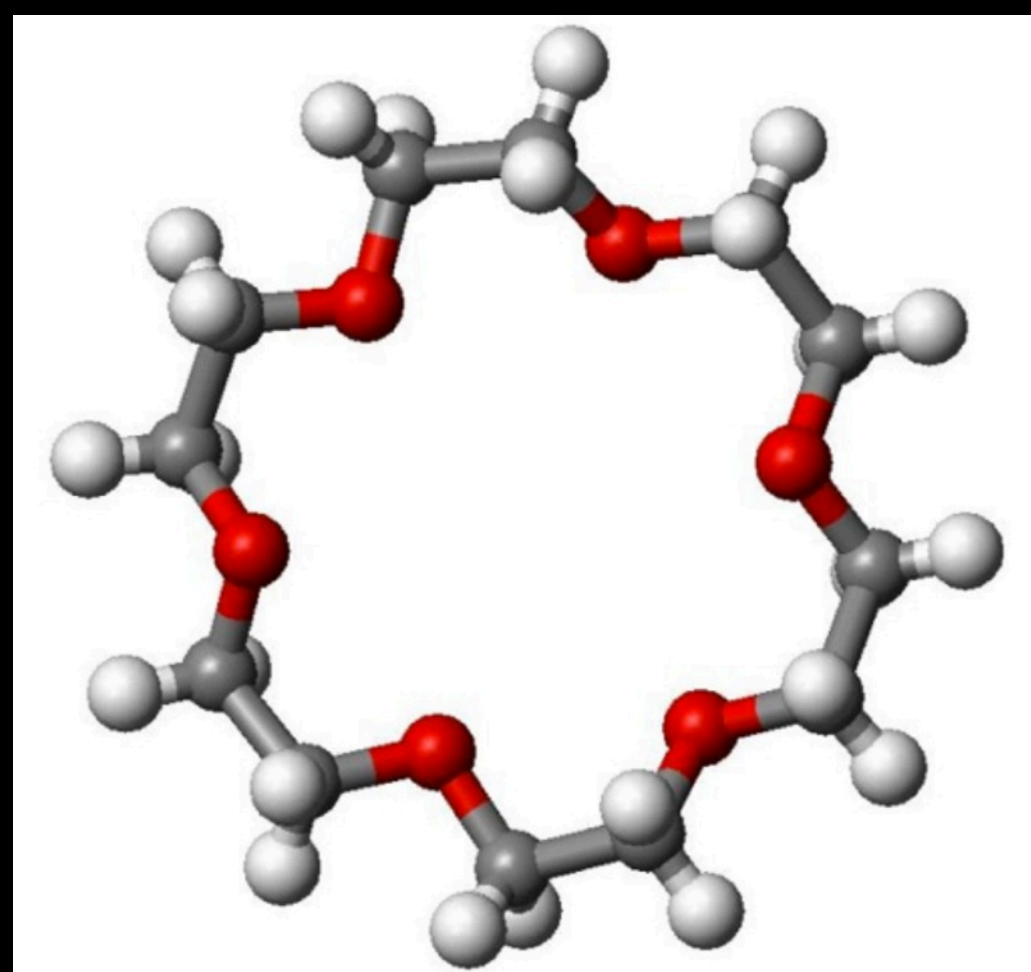


Other Related Molecules are Very Valuable (>\$10,000/kg)

Cyclodextrin

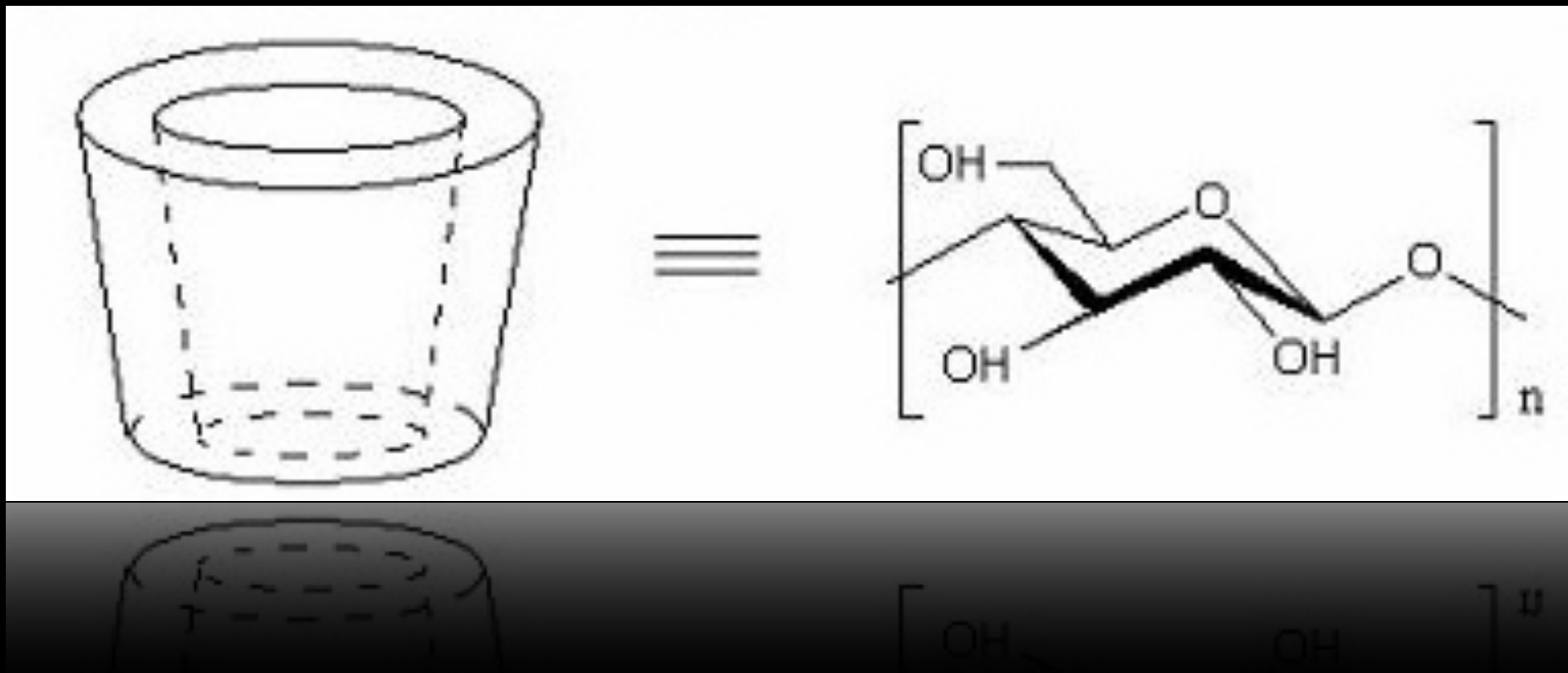


Crown ether



Related Molecules are Used as Cups

Structure of Cyclodextrins



Uses of Circular Molecules

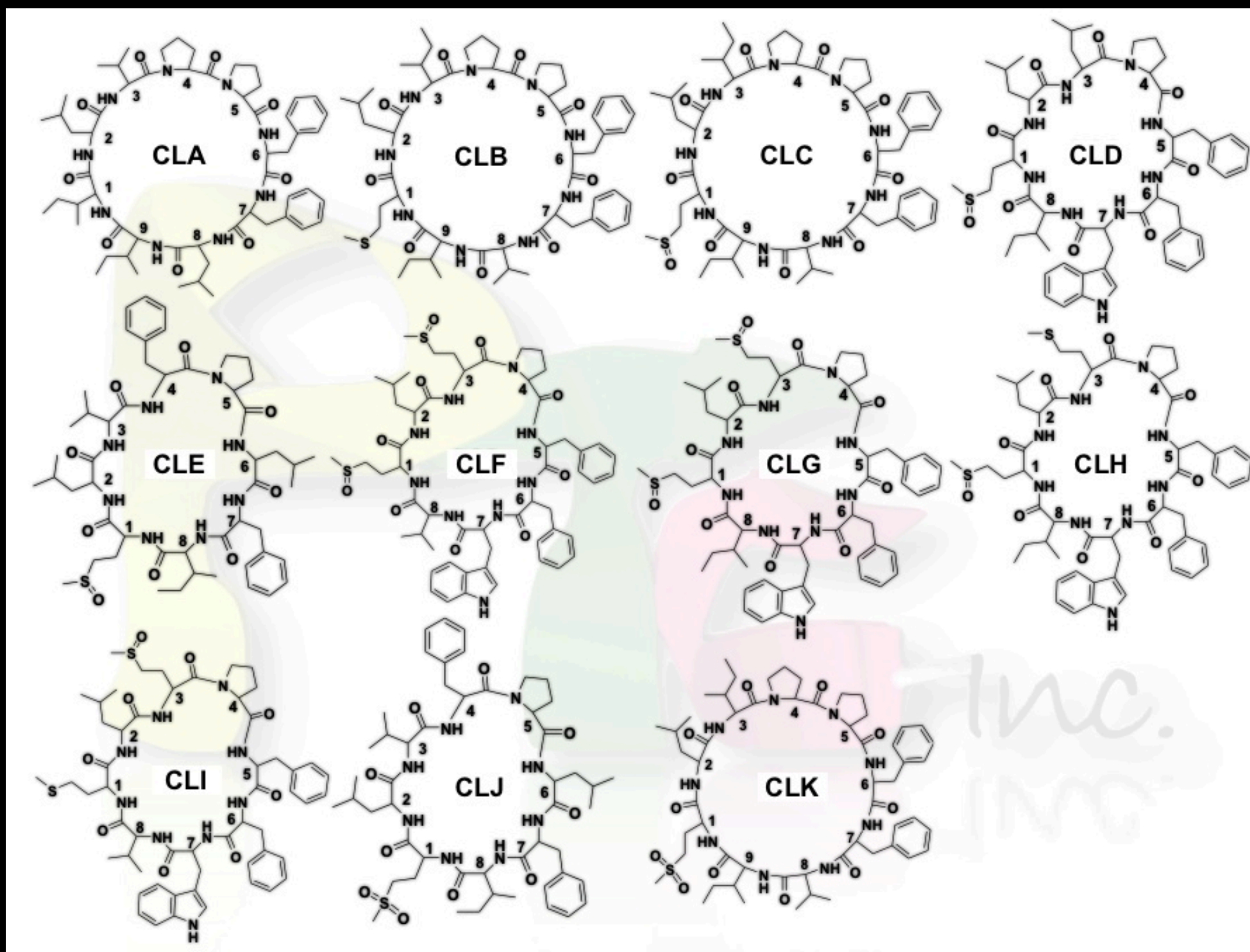
- Catalysts for production of drugs
- Light emitting dyes for flat panel displays
- Light accepting dyes for solar cells
- Drugs and medicines

Uses of Circular Molecules

- Catalysts for production of drugs
- Light emitting dyes for flat panel displays
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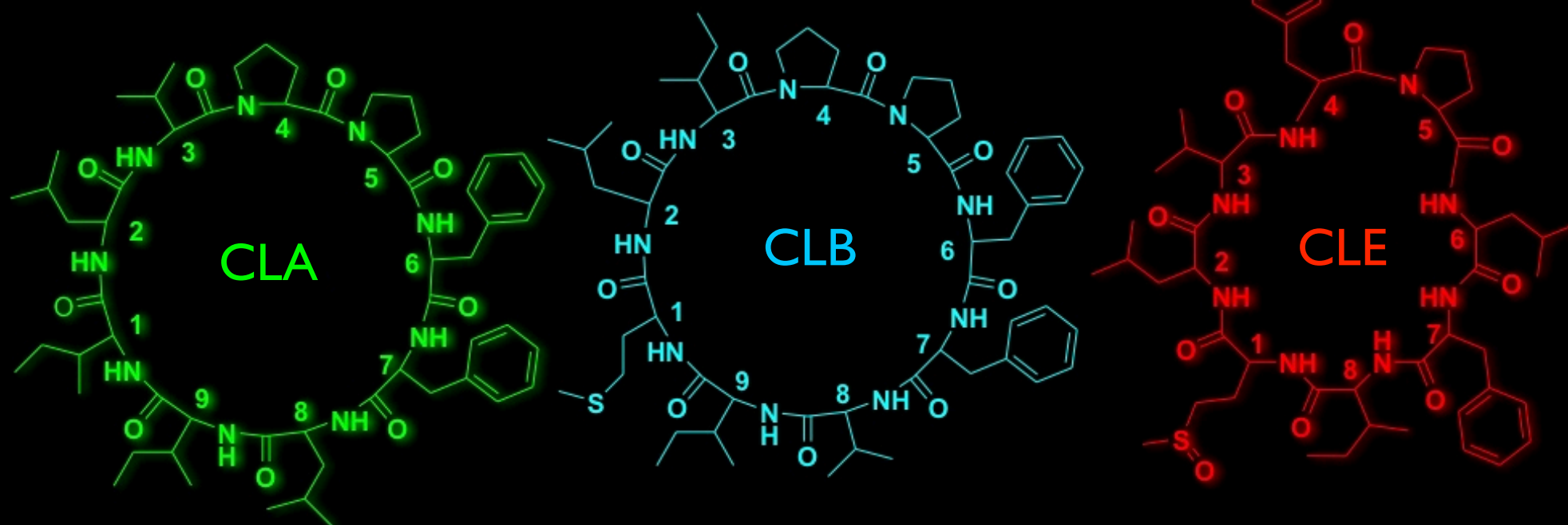
Orbitides



Gene Sequence Recovered from Linum.ca Showing the Embedded Sequences of CLs **E**, **B** and **A**

Gene AFSQ01016651.1

MAVVSSLA	LTTSLVAT	AAGRNNNA	FPPSSSRN	NKAPADLF	ITPKTTTT
VKAAAVSC	KRPYPKGA	VAAATSTL	SPISGKDG	GLRNQEES	DG MLVFPL
F I F GKEGS	QDKYNGAA	ALRDQEES	DG MLIPPF	FV I F GKEG	CQDIGHKY
NNAAAAGA	LRDQEESD	GILVPPFF	L I F GKEGS	QDKYNAAA	AGGLRGKE
QQGDKMAA	GAEN				



For Example?



Pharmaceutical Drugs
Flat Panel Displays
Solar Panels

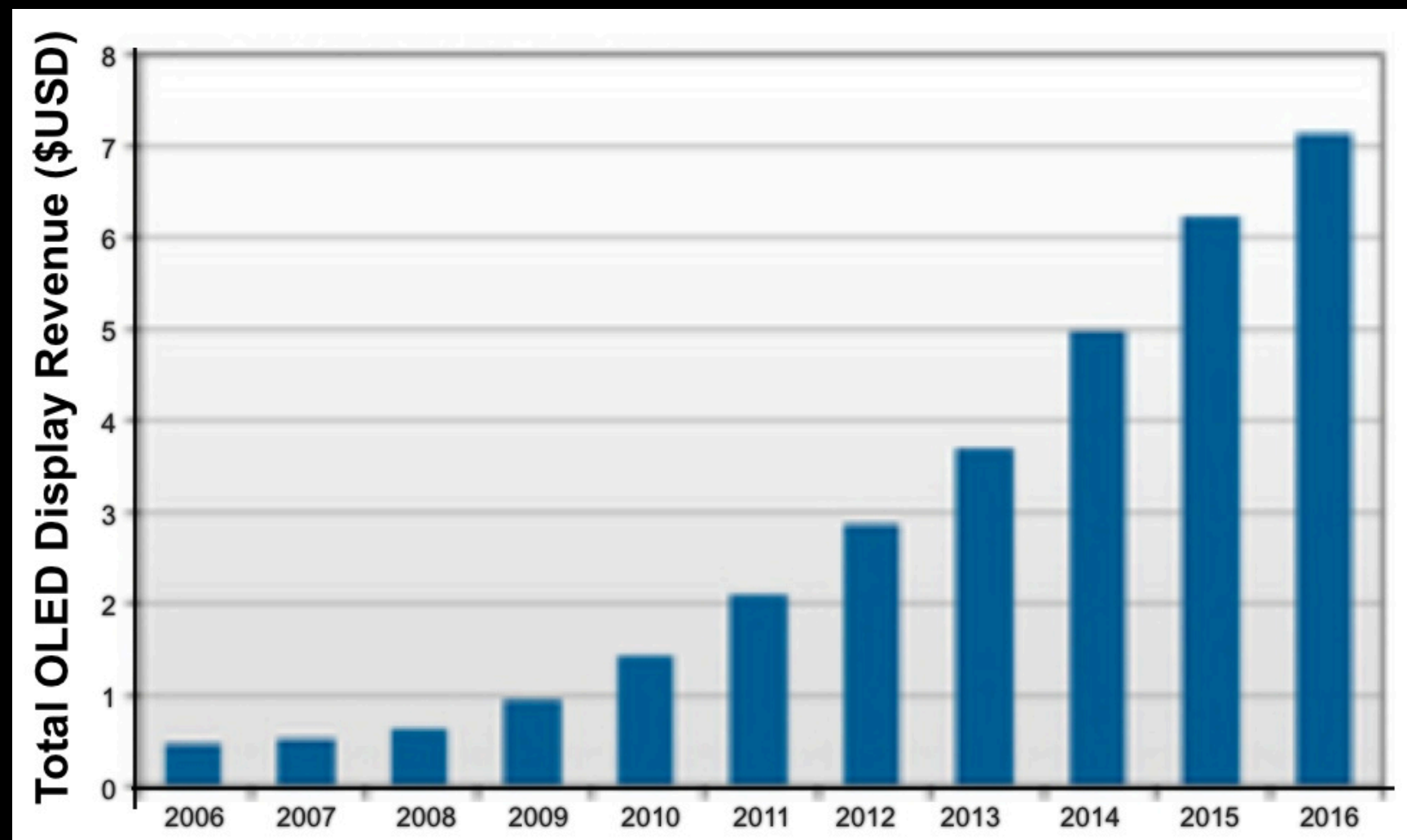
Pharmaceutical Drugs

- Drug sales are increasing rapidly revenue from global prescription drug sales should increase 5 percent to 7 percent next year, reaching at least \$880 billion, fueled by new drugs and rising sales in developing countries, according to drug data firm IMS Health.

Flat Panel Displays

- LED sales are growing rapidly
 - Global market for organic light-emitting diodes (OLEDs) projected to achieve more than 15% growth by 2014.

Flat Panel Displays Require the Use of Expensive (OLED) Compounds

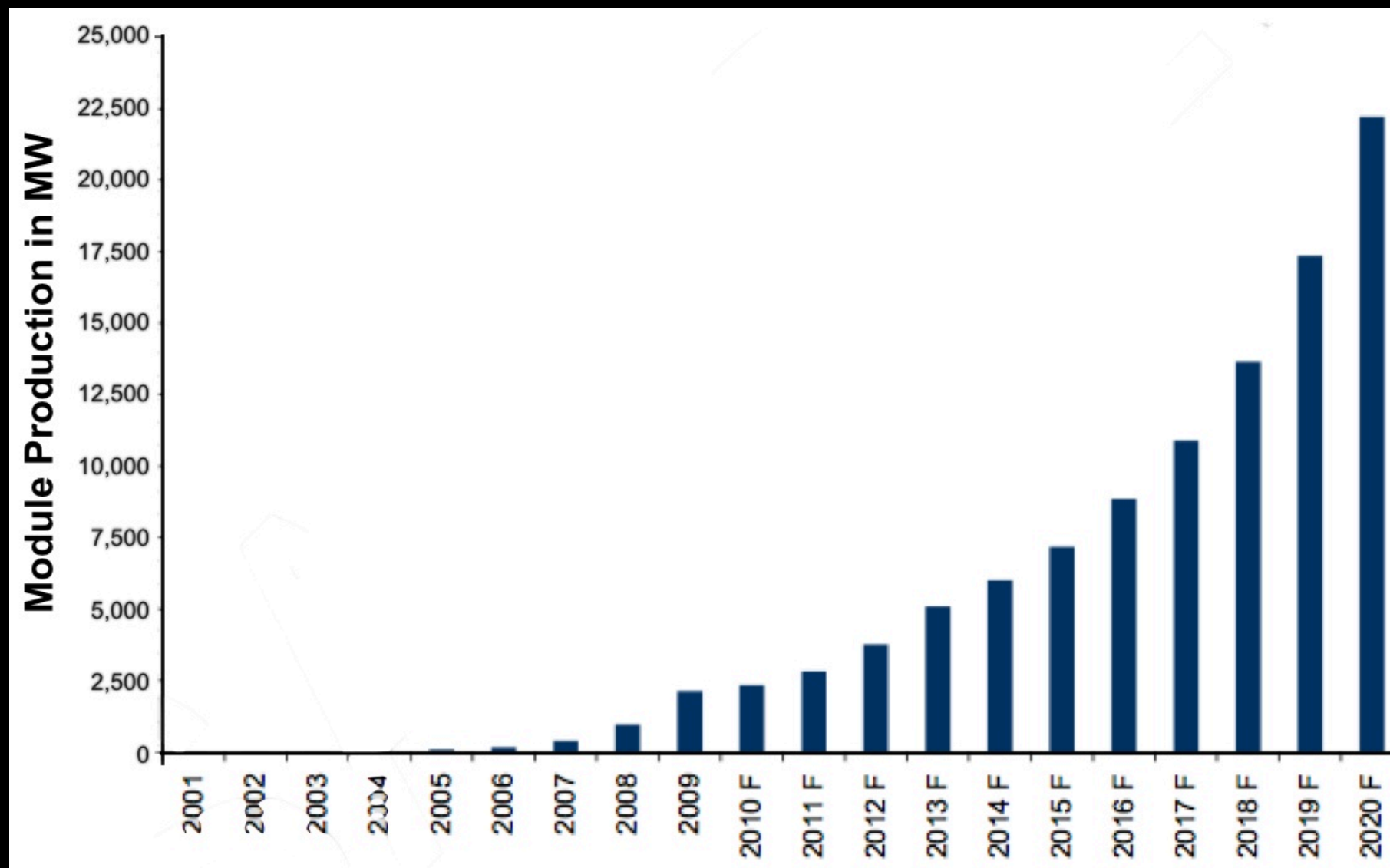


Source: Display Search Q2'09 Quarterly OLED Shipment and Forecast Report

Solar Panels

Global Thin Film Module Production in MW

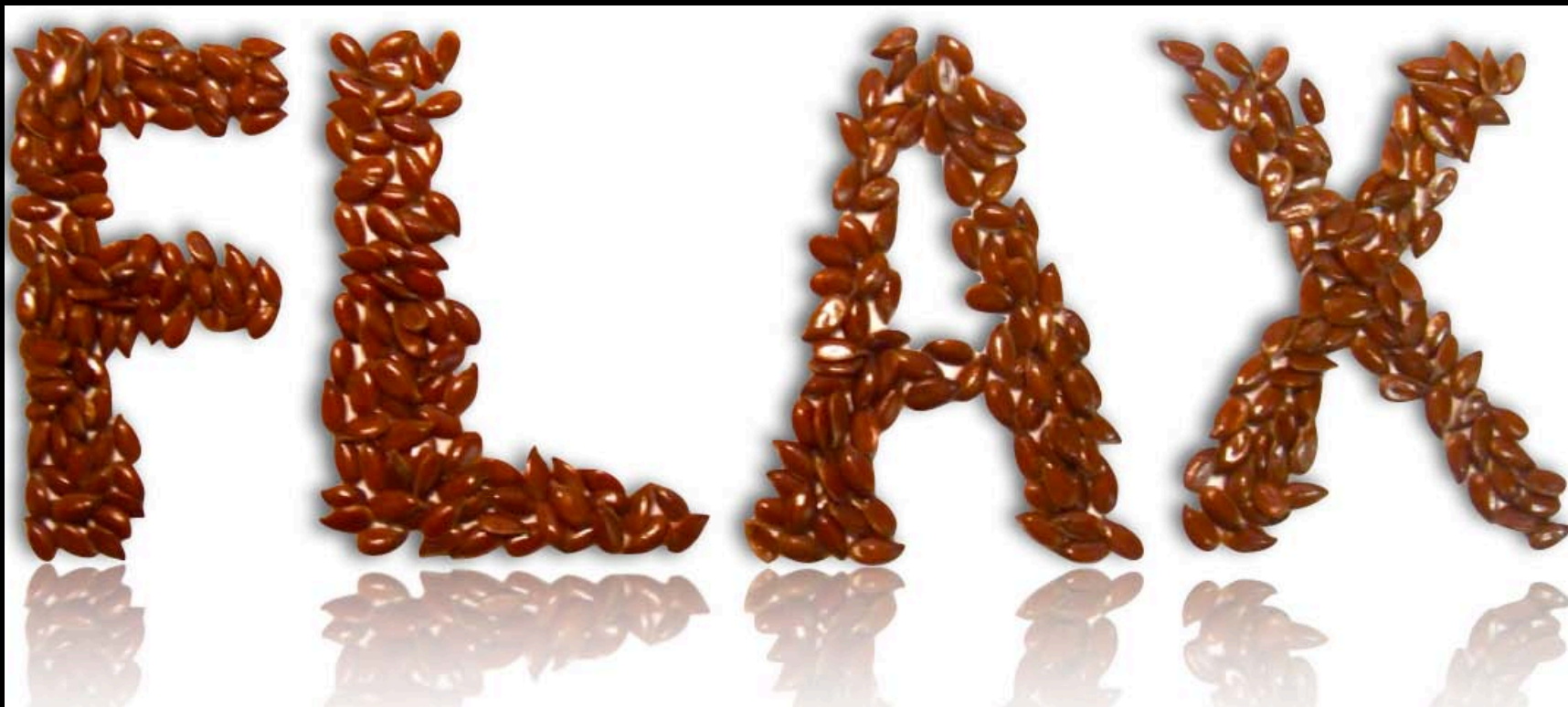
Thin Film Solar Cells



Source: GBI Research; F-Forecast

A Molecule in Flax May be Used in Health Products, Catalysts, Displays and Solar Cells

- Flax produces compounds that can be used in a variety of applications.



Business



Strategy

Business strategy

PTC will seek to develop an understanding of orbitide genomics.



Agriculture and
Agri-Food Canada

Agriculture et
Agroalimentaire Canada



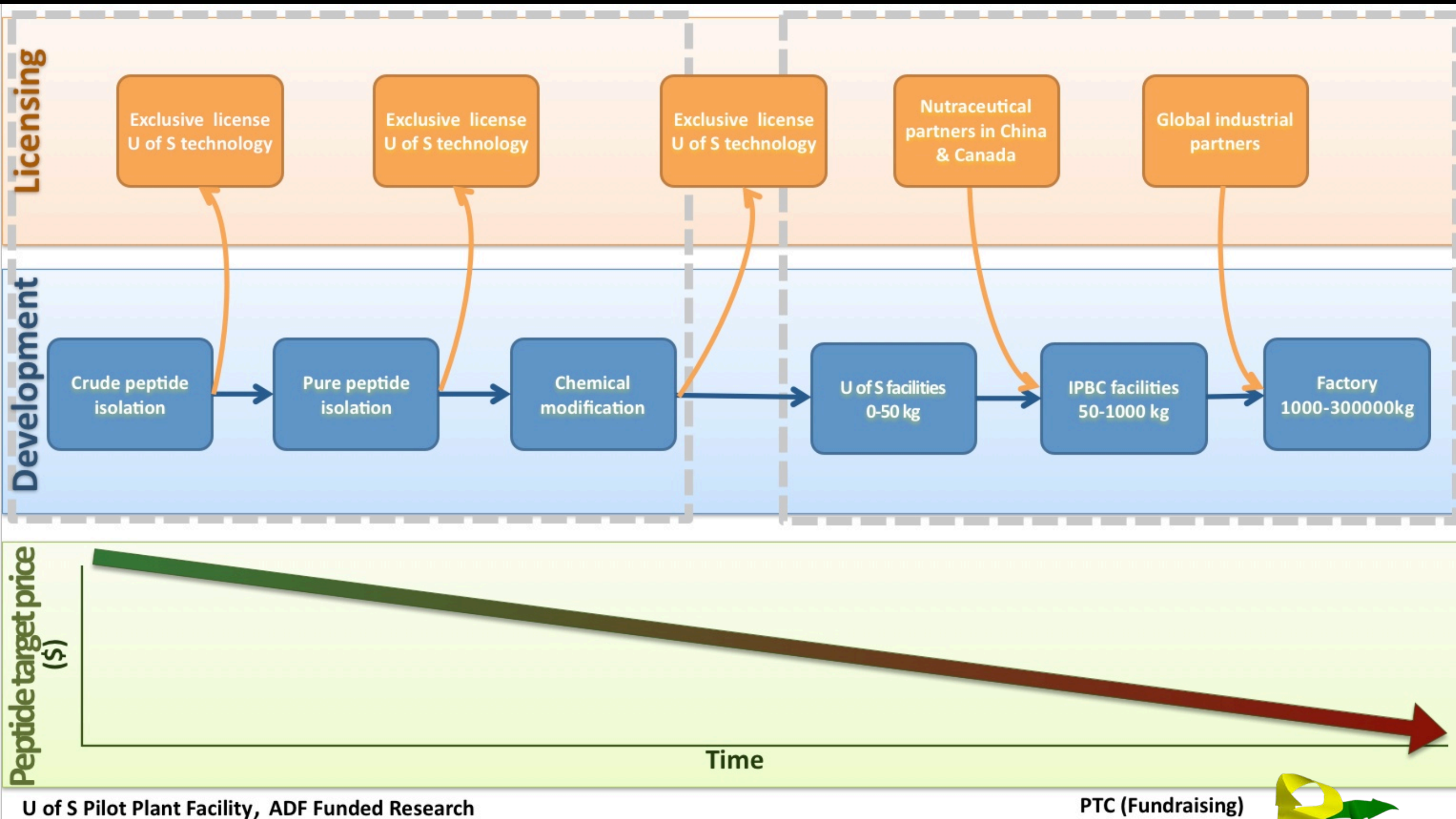
GenomeCanada

Our Technology

- Orbitide isolation from flax
- Orbitide modification
- Orbitide applications
- Orbitide composition of matter
- Orbitide producing flax varieties

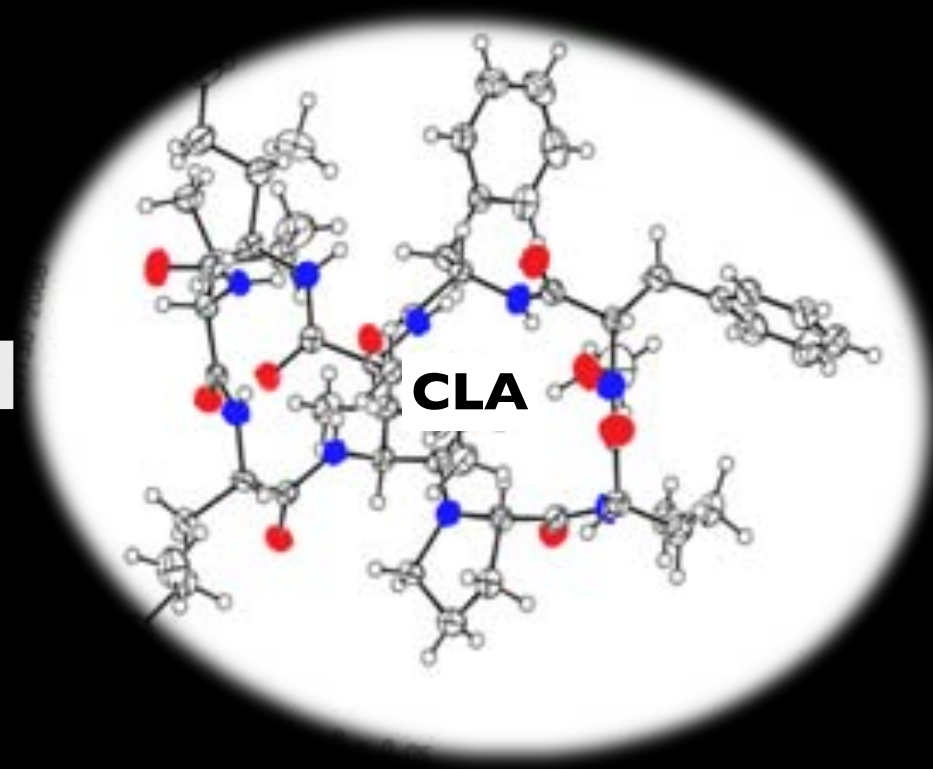
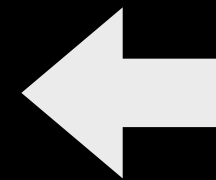
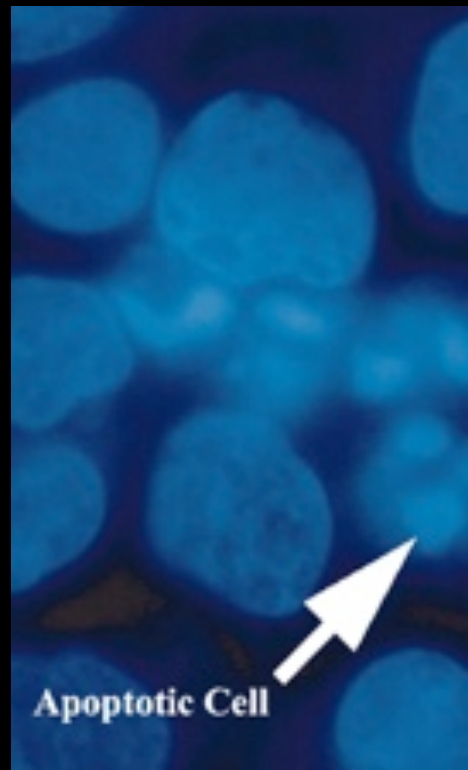


Production Barriers



Cyclolinopeptide A (CLA)

Suppress
immunity



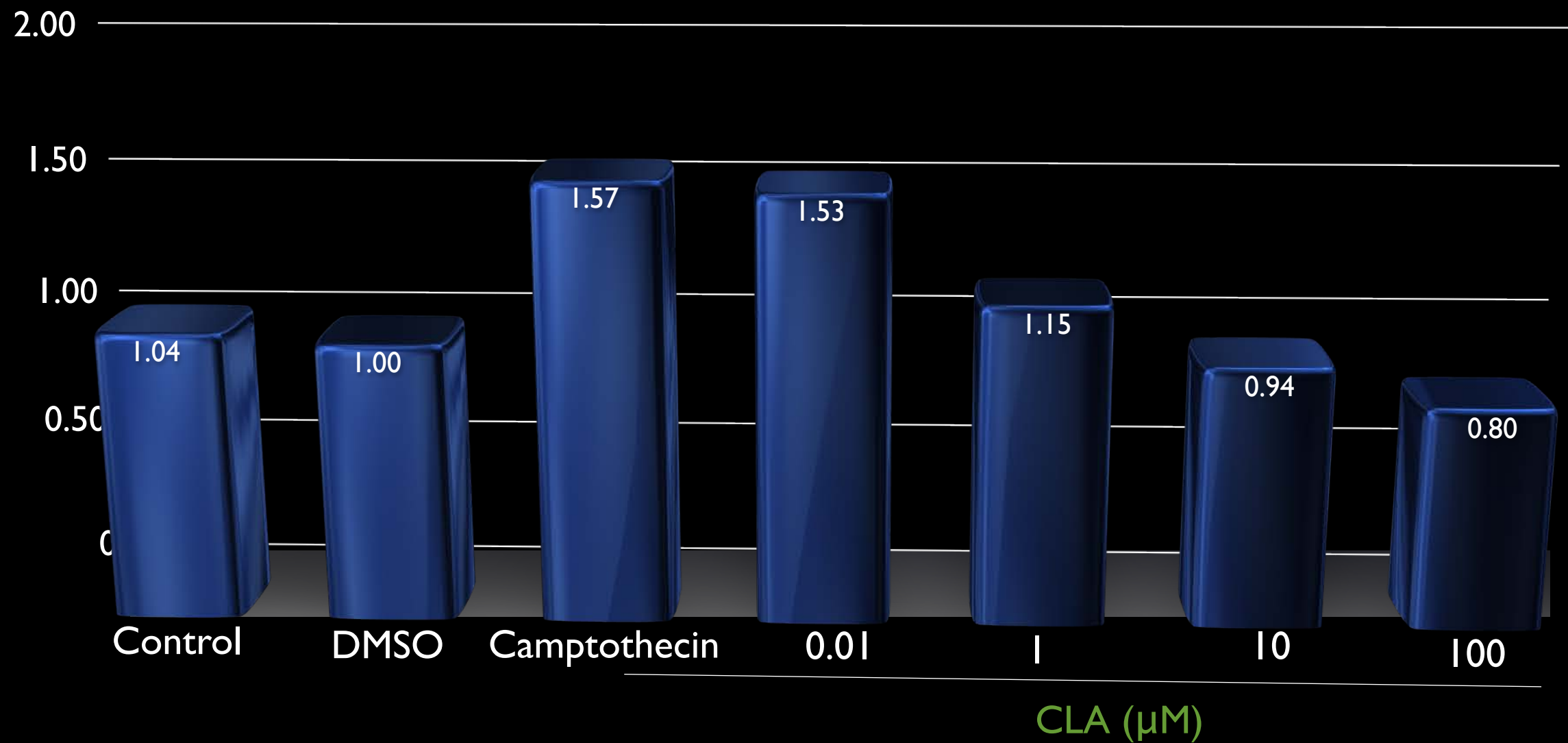
Kessler, H. et al., *Chem., Int. Ed. Engl.* 1986; 25: 997-999
Wieczorek, Z. et al., *Pept. Res.* 1991; 4: 275-283

Induction of apoptosis

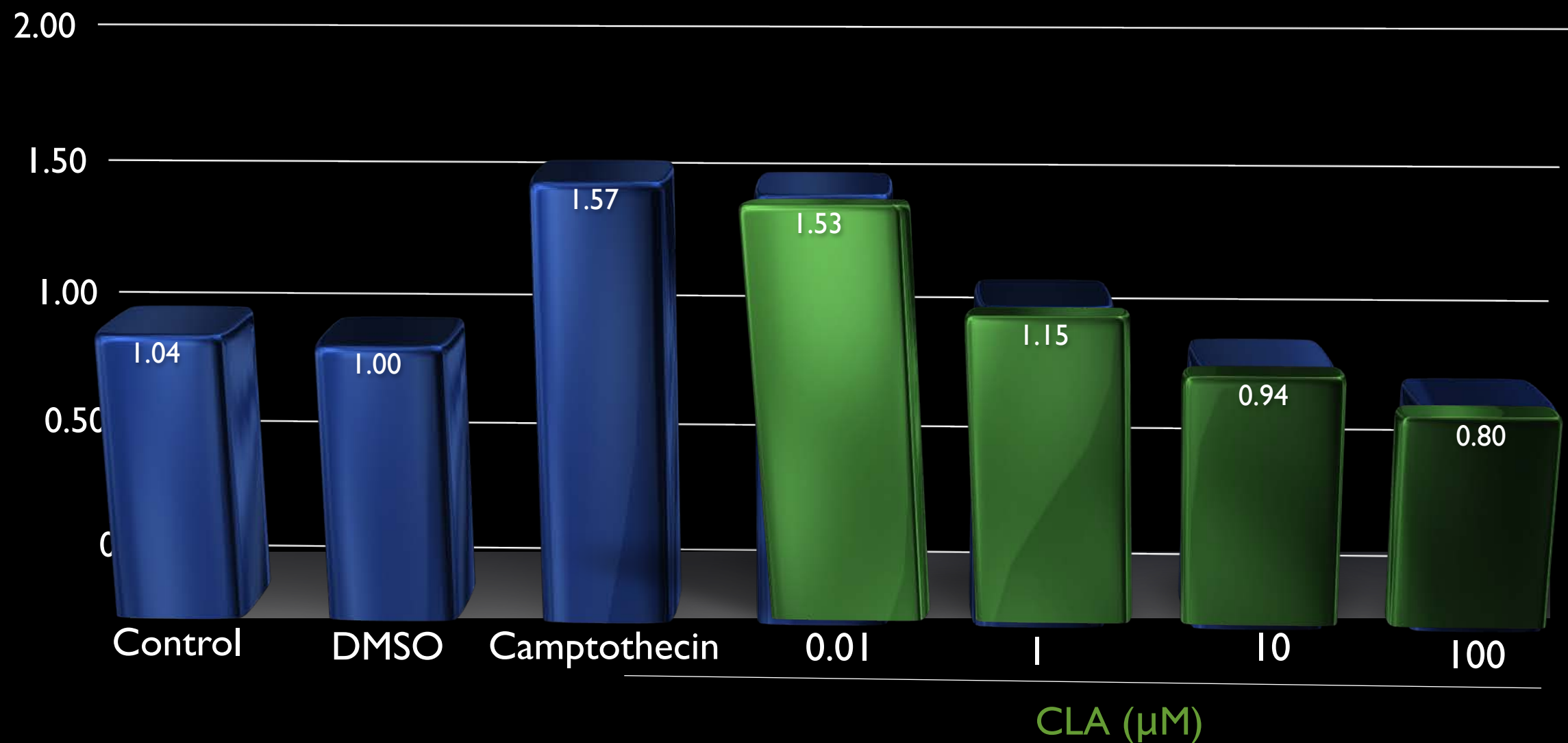


in human lung
epithelial cancer cell

qRT-PCR analysis of the expression of Bcl-2 after CLA treatment



qRT-PCR analysis of the expression of Bcl-2 after CLA treatment



Business strategy

- Establish a presence
- Secure IP – Option to existing technology
- Enhance IP – Develop unassailable IP strategy
- Secure Supply – Work with Flax Processors and Growers
- Secure Markets – Work with Scientists, market research
- Secure Funding – Scientific Funding

Business strategy

- Secure IP
 - Working with the University of Saskatchewan and other IP holders to improve PTC access to technology
 - Genetic knowledge
 - Plant varieties
 - Processing methods
 - Use applications
 - Composition of matter



Business strategy

- Enhance IP
 - Working to improve peptide technology
 - Genetic knowledge – TUFGEN
 - Processing methods – Saskatchewan ADF

Business strategy

- Enhance IP
 - PTC will focus on IP development that enhances the use of peptides as natural health promoting products.
 - The foci will include
 - Nutraceutical, cosmetic, veterinary and pharmaceutical applications.

Business strategy

- Secure Supply
 - PTC does not plan to enter the field of flax oil processing.
 - PTC will work with small, medium and large scale flax processors to assure short medium and long term supply.
 - PTC will seek to improve Flax as a platform for peptide production.

Business strategy

- Secure Markets
 - Determine the marketing channels for major product classes.
 - Veterinary application study with IRAP/Genome Prairie.
 - Will seek partnerships with those who have market access.

Business strategy

- Secure Funding for
 - Market research
 - Product development
 - IP costs
 - Scale up
 - Own place of business

University



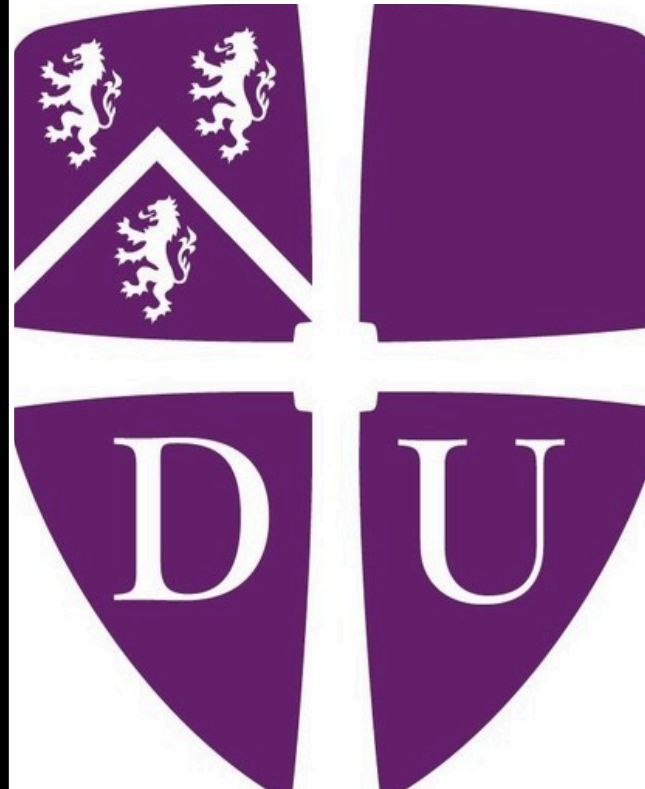
Collaborators



University of
Oxford



Universiteit
Gent



Durham
University



University of
Toronto



Jinan
University



University of
Saskatchewan



PTC will succeed



PTC will succeed





Thank you for your attention
<http://prairietide.com>

