

OUR JOURNEY IN DAIRY BIOACTIVES

ROD CLAYCOMB



.... A LONG JOURNEY



1940 1950 1960 1970 1980 1990 2000 2010

Alex Harvey Industries (AHI)

- Plastics Manufacturing
- World's First Herd Recording Milk Meter

Carter Holt Harvey (CHH)

- Plastic Products Division
- Relationship with Ruakura Research Centre
- Growing portfolio of milking machine products

CHH Plastic Products Growth

- Established Waikato Milking Systems Brand
- Developed Eazi-Breed CIDR device for controlling oestrus
- Expansion into US market through Dairy Express

DEC International Incorporated

- Established Waikato Milking Systems Division (milking machines)
- Established InterAg Division (CIDRs)

- Bill Thompson (ex-Shell Oil) – bringing oil separation technologies to milk
- University of Wisconsin – on-farm milk fractionation project leads to 1995 patent
- proof-of-principle separation of lactoferrin from cow's milk using membrane technology



NEW ZEALAND
PATENTS ACT, 1953

No: 280724/To be advised (AJP ref. P365188)

Date: 20 December 1995/23 December 1996

COMPLETE SPECIFICATION

"Milk Processing and Handling"



DEC International (NZ) Limited

- Established R&D division in milk technology; hired Dr Rod Claycomb
- Focal points were (1) milk sensing and (2) on-farm fractionation

Sensortec Limited

- World's first company in milk sensing
- Greenfield Project – world's first pastoral robotic milking project (partnership with NZ dairy industry)

Milk Fractionation Project

- World's first on-farm milk fractionation robot (University of Waikato project – Prof Conan Fee and Amita Chand)

Quantec Limited

- Established to commercialise on-farm fractionation technology

Mid-2006

- **Discovery of unique properties of milk fraction, called IDP (Immune Defense Proteins)**
- Started working on Animal Health pharmaceutical applications; non-antibiotic, nil milk-withhold mastitis treatment

2009

- Drs Bragger and Claycomb bought the business from DEC
- Explored expansion into Human Health

.... AN EXPENSIVE JOURNEY



Funding

- ▶ **Personal capital**
- ▶ **Family support**
- ▶ **Waikato Innovation Park**
- ▶ **Angel Investment (50% of company)**
 - ▶ **NZVIF**
 - ▶ **Central Capital (John Birch, Neil Richardson, Earl Rattray, Mark Hickmott, Perry Investments, Julie Caddigan)**
 - ▶ **Enterprise Angels (Tauranga)**
- ▶ **Government Funding**
 - ▶ **Callaghan Innovation**
 - ▶ **New Zealand Trade & Enterprise**
- ▶ **Government Support**
 - ▶ **New Zealand Trade & Enterprise**
- ▶ **External Capital Raises underway**



.... A REWARDING JOURNEY



Quantec Limited

Dr Rod Claycomb, Managing Director & Co-Founder
Dr Judy Bragger, Senior Scientist & Co-Founder
Dr Colin Ogle, Registration Manager

Quantec Ingredients

Dr Rod Claycomb, General Manager

-IDP® (oral, skin)

Quantec Animal Health

Dave Malcolm, Mastitis Consultant
Dr David Hawkins, Veterinarian

-NMR®/Prefix® (mastitis)

Epiology

Raulee Marcus, Personal Care Advisor

-Epiology® (skincare)

CORE TECHNOLOGY PLATFORM

Quantec Ingredients

&

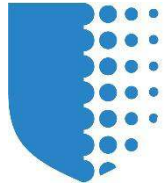
epi**o**logy™

ANTIMICROBIAL MILK PROTEINS

Quantec Ingredients

epi**o**logy™

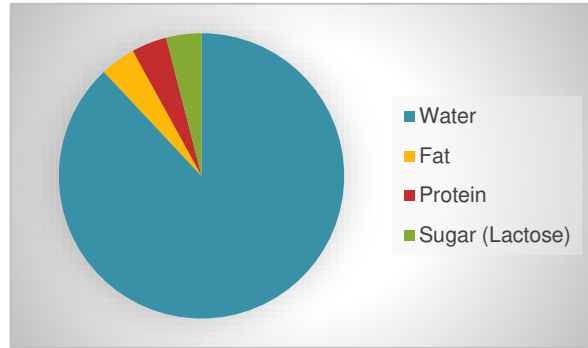
Quantec Animal Health



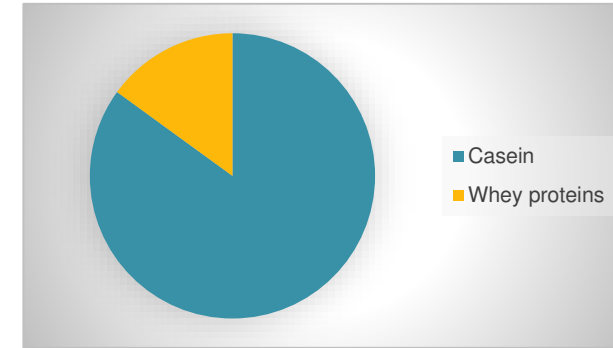
IDP[®]
Immune Defense Proteins

Milk Composition

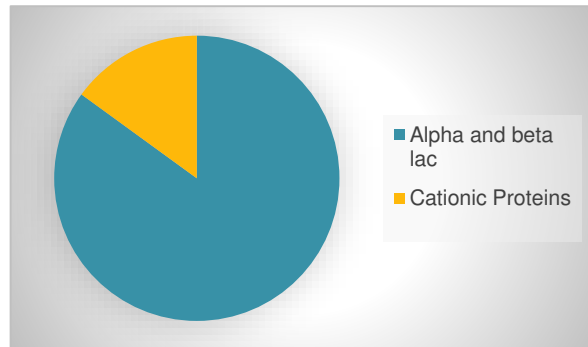
Milk (10L)



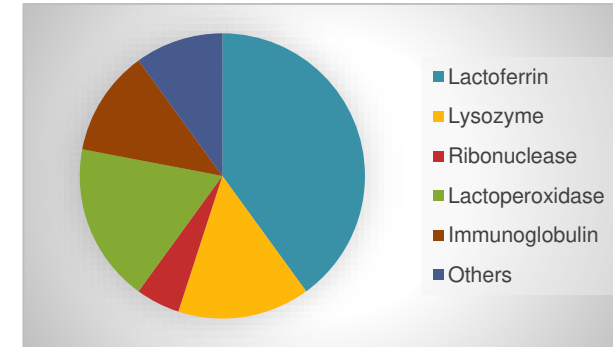
Proteins



Whey Proteins



Cationic Proteins (1g)





IDP[®]
Immune Defense Proteins

Defense 'Engine' of the Udder

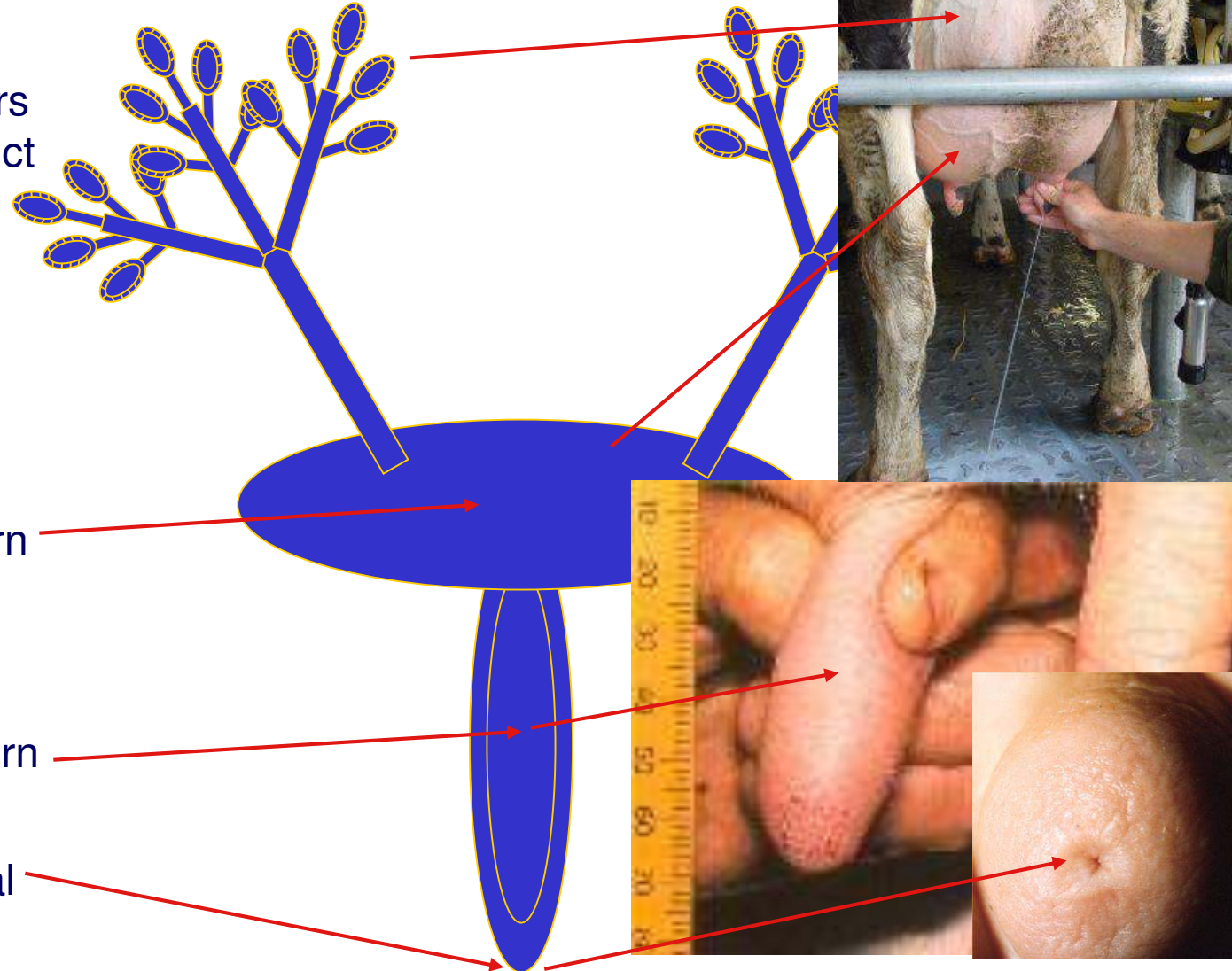
All internal surfaces lined with 'skin'

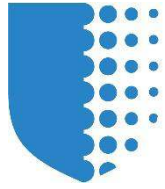
Alveolar Clusters
Feeding into Duct
System

Udder Cistern

Teat Cistern

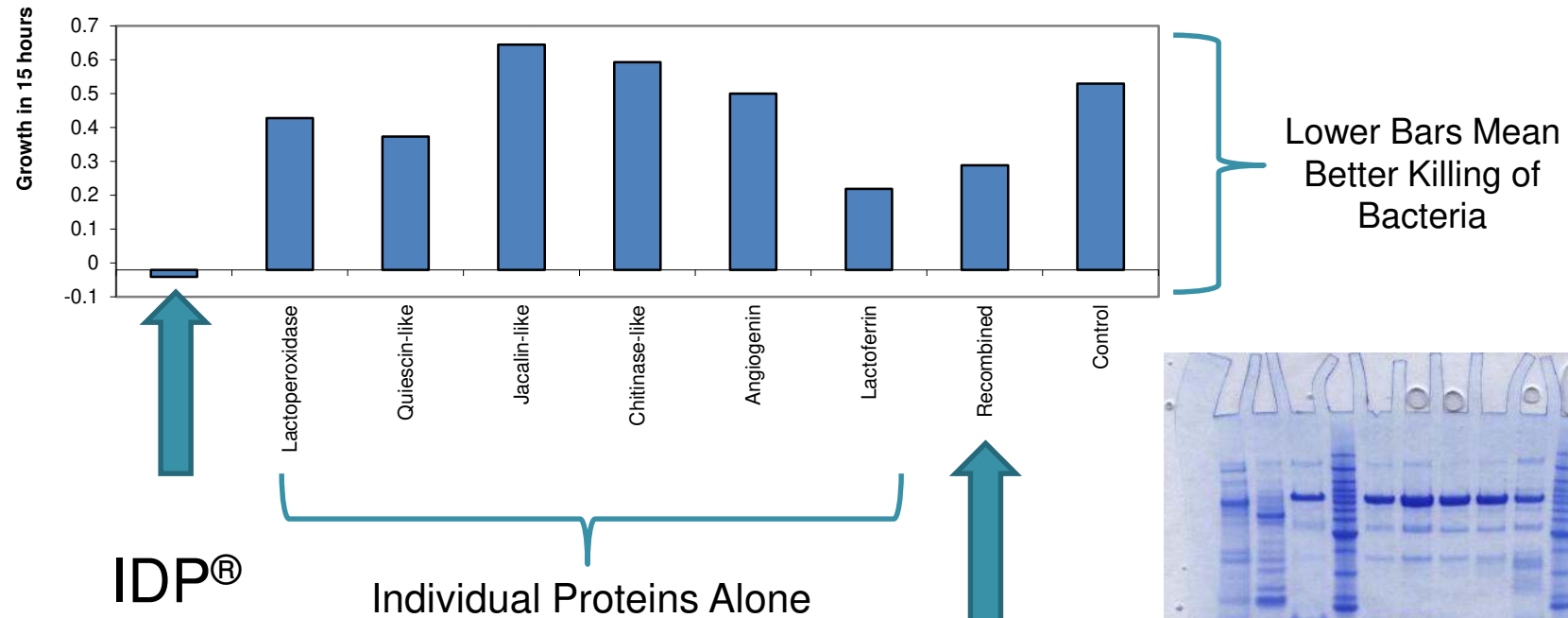
Teat Canal





IDP Antimicrobial

S aureus Inhibition



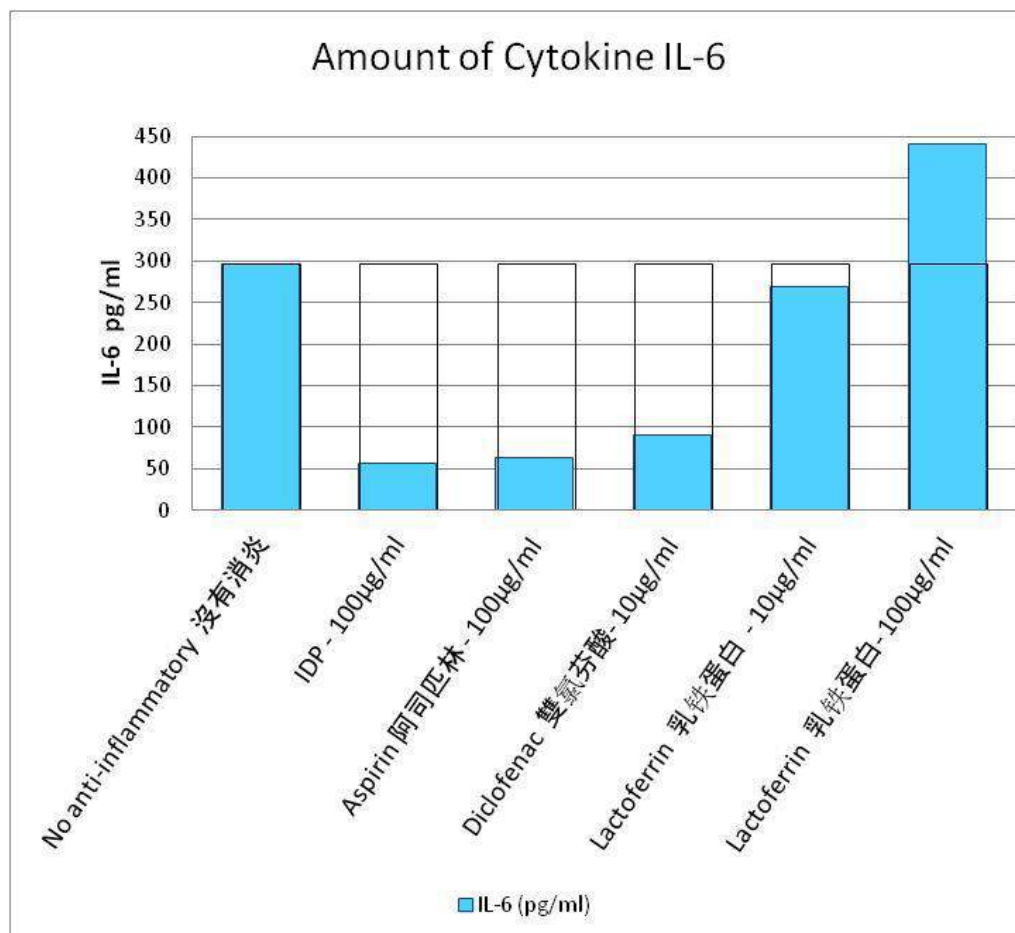
Note: Simply recombining two or more purified proteins does not regain the activity.





IDP[®]
Immune Defense Proteins

IDP Anti-inflammatory



- ▶ Lower bars mean better anti-inflammatory action.
- ▶ The IDP[®] is a potent inhibitor of IL-6.
- ▶ Again, IDP[®] is more effective than lactoferrin alone.
- ▶ At the same concentration (100 µg/ml), IDP[®] was as effective as aspirin.

(Independent testing conducted by Trinity Bioactives, Wellington, New Zealand)

IDP® Technology



IDP[®]
Immune Defense Proteins



Skin

epiology.
oraburst



Mouth



Throat

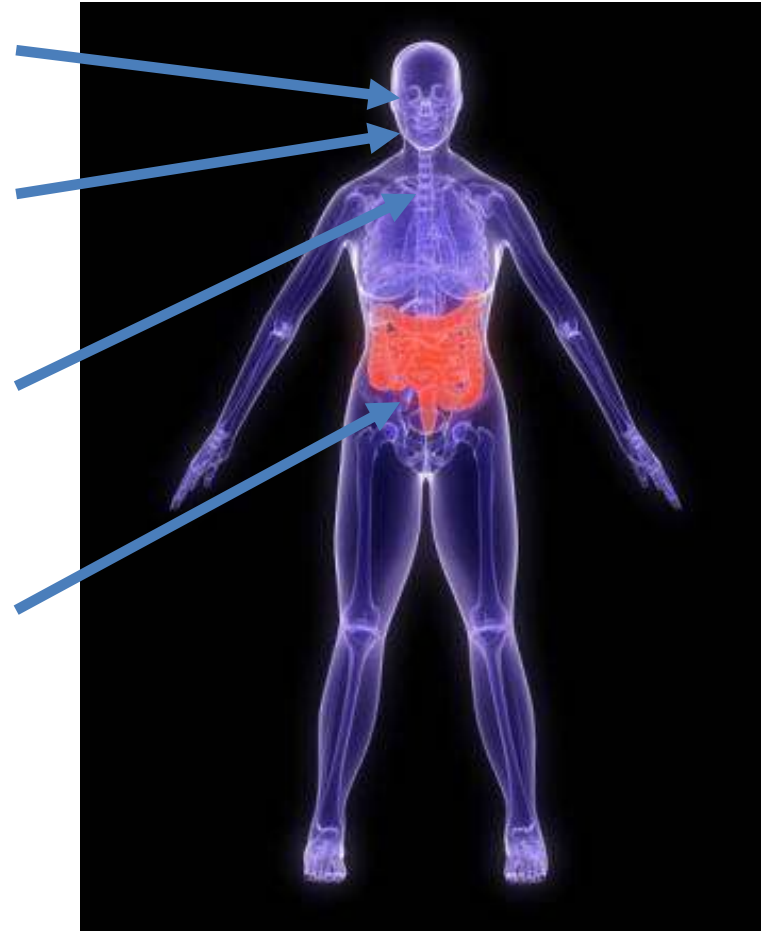
milkamune



Gut

Anzipro[™]
Immune Defense Proteins

Companion Animal



Quantec Ingredients

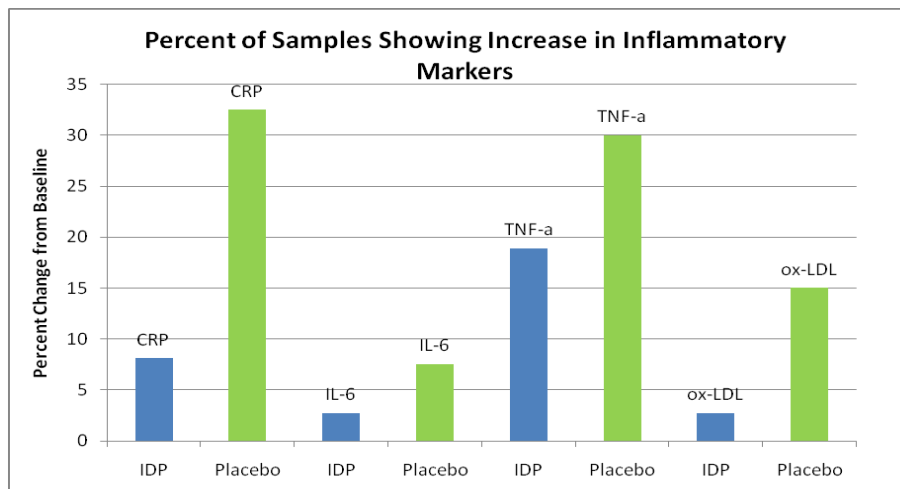
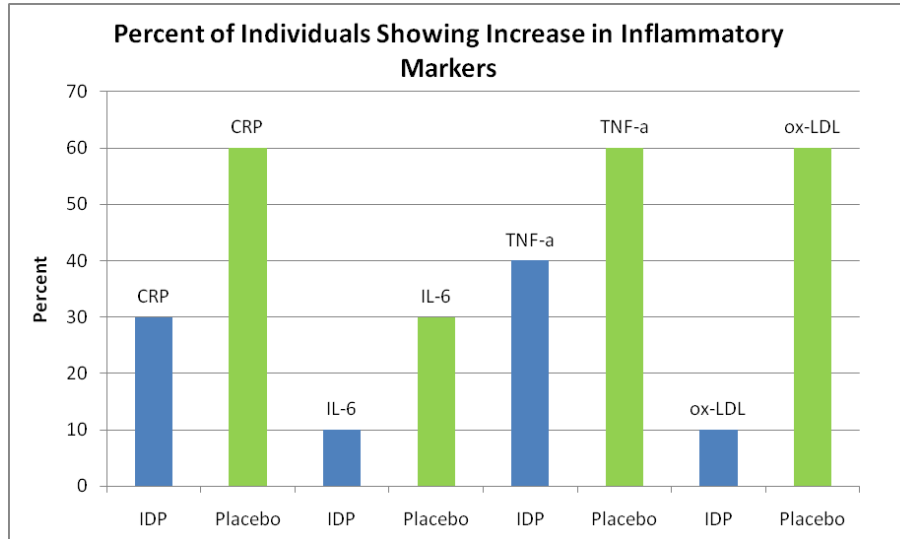
epiology[™]

Quantec Animal Health



IDP[®]
Immune Defense Proteins

IDP Systemic Immunity



- ▶ IDP[®] reduced the number of subjects showing an increase in key inflammatory markers
- ▶ IDP[®] reduced the percentage increase in key inflammatory markers over the placebo effect

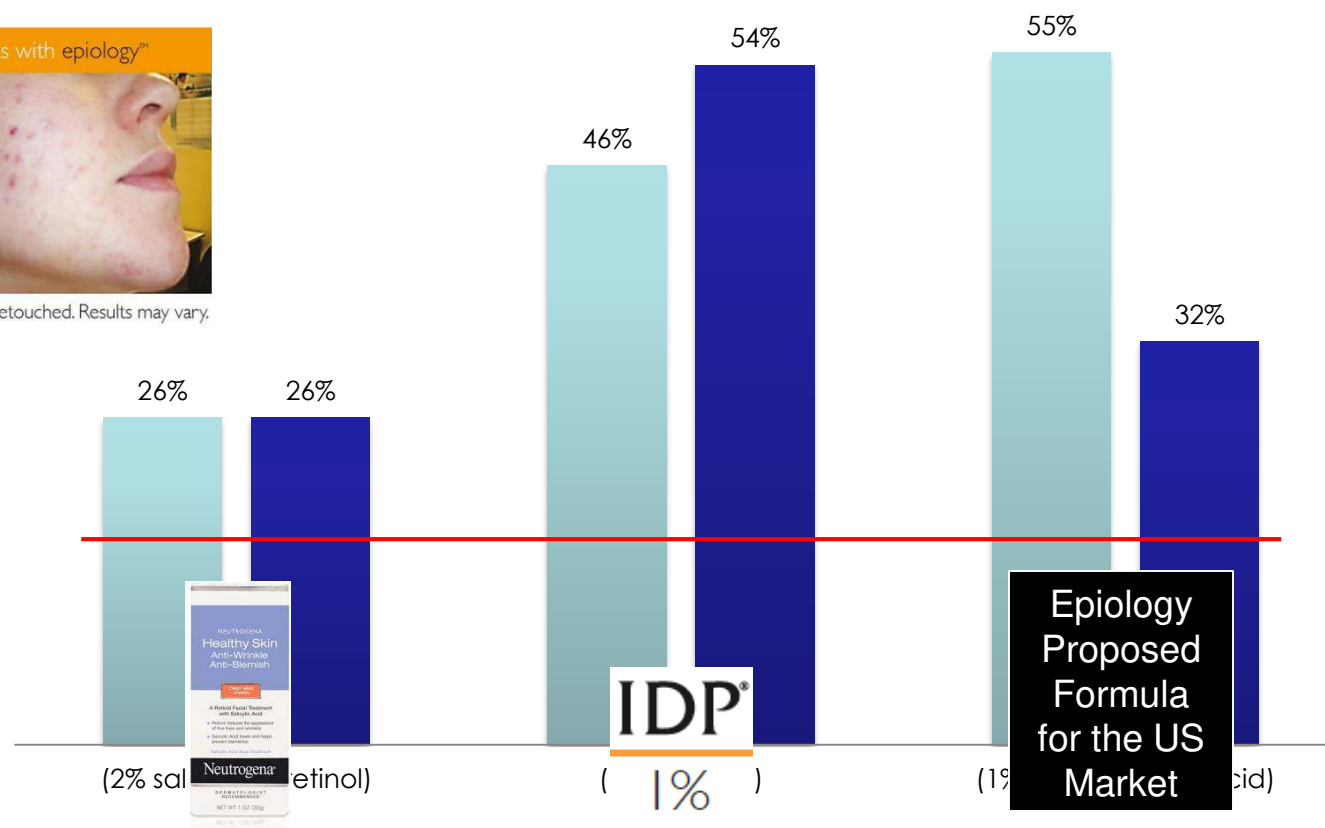


Number of improvers in redness and inflammation

■ Week 2 ■ Week 6



Photographs were provided by the subject and have not been retouched. Results may vary.



Proven Global Platform For Natural Skincare

epiology™



epiologyskincare.com

My name is Kaitlyn, I'm 15 and had bad acne on my forehead, around my nose and my chin. I tried Epiology and within 7 days the redness had gone and my skin was looking better. After 2 weeks most of my pimples had vanished, and a month later, my skin looks great, and clear of all signs of acne. I used both the wash and the cream together and would recommend Epiology for anyone who has an acne problem. It is gentle on the skin but really works.

epiology™

CORE TECHNOLOGY PLATFORM

Quantec Animal Health

NON-ANTIBIOTIC MASTITIS TREATMENT



Milestones and Remaining Objectives



Key milestones achieved

Efficacy on par with antibiotics (continually affirmed)

GMP manufacturing proven (3 commercial batches – passed 18 months actives stability)

Nil milk WHP granted by ACVM (NZ)

Global patents granted, with more to come

Two remaining key objectives

1. Finalisation of formulation

Completion of pilot formulation studies to confirm carrier, active levels and dosage regime

Final scale-up of GMP manufacturing for registration studies

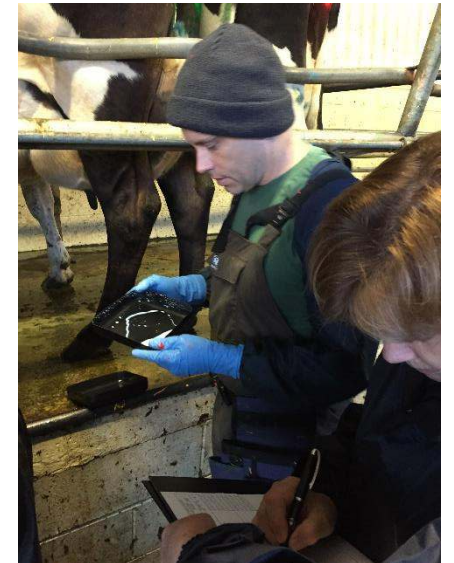
Finalisation of syringe delivery mechanism

2. ACVM Registration

Formal safety study

Formal efficacy study

Registration filing



The Bioactive Journey...

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.... AN EXPENSIVE JOURNEY

.... A REWARDING JOURNEY

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THANK YOU!