

IWC
PARIS
2008



5th International Whey Conference

WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION

Osteopontin A Multifunctional Whey Protein and Observations from Developing the Market for another (!) unique whey protein

Mr Anders Steen Jørgensen

Denmark



~ Osteopontin identified 1979 in extra cellular bone matrix

- ~ “Bone Bridge”
- ~ Found in human milk in 1989. In bovine milk at a level of 20mg/l in 1993.

~ Present in whey
Osteopontin 2007:

Lacprodan OPN-10

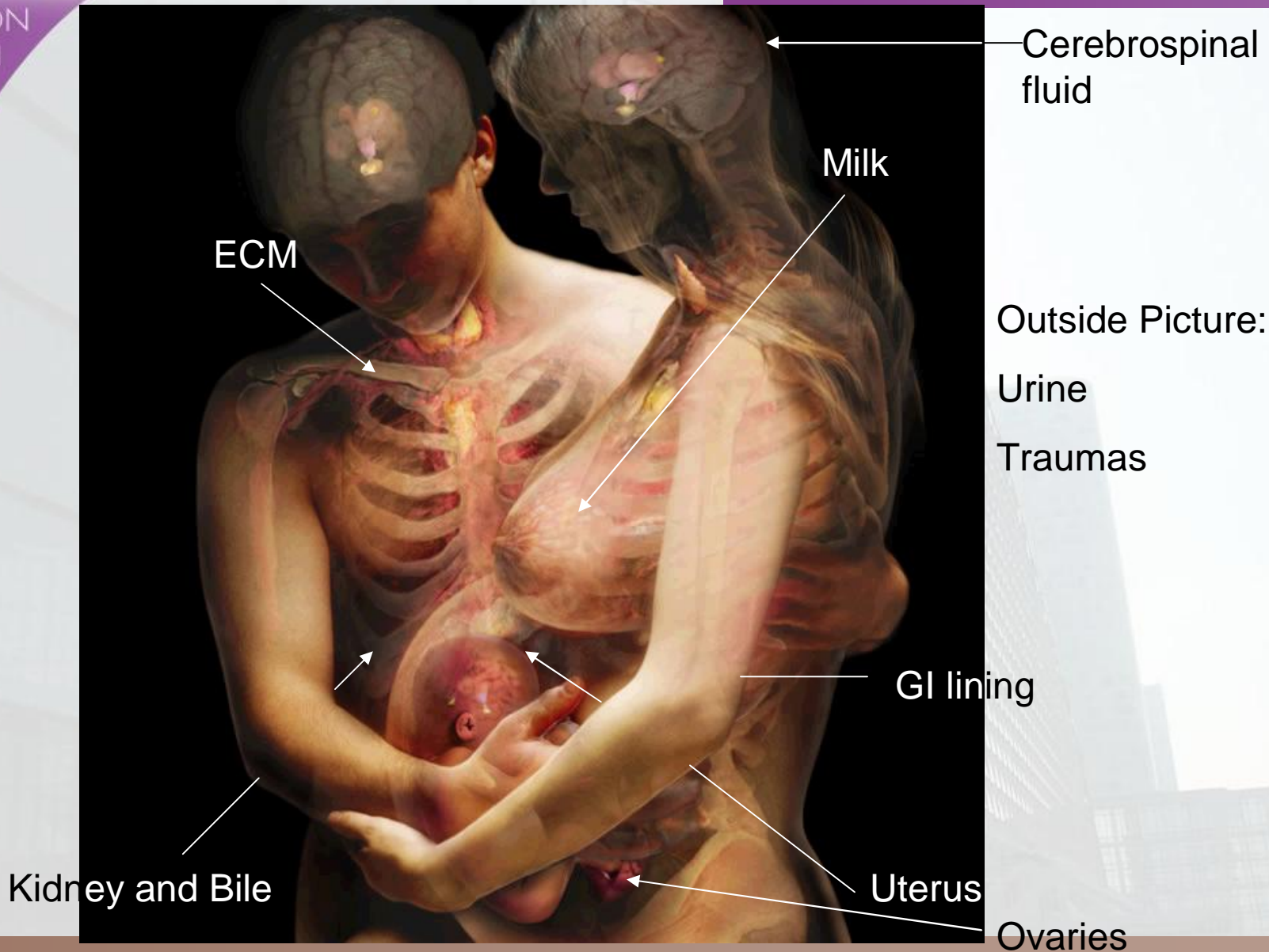
Osteopontin

Protein (N x 6.38)	78%
- Osteopontin of total protein (N)	95%
- Protein-bound carbohydrate (sialic acid)	8%
Lactose and fat	<1.0%
Ash	8.5%
Moisture	5%



WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION

OPN found “everywhere”





WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

Physiological Functions

- ~ Why present in milk?
- ~ Inhibitor of calcium precipitation
- ~ Part of the innate immune system
 - è Immune Stimulation and Regulation
 - è Bone Metabolism
 - è Wound Healing



WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION

Applications

~ Infant Formulas

	OPN	%/N
Human	130 mg/l	2.1
Bovine	15-20 mg/l	0.05



~ Wound Healing



~ Oral Hygiene



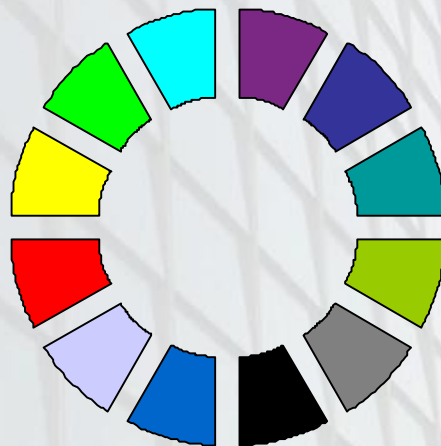
~ Other





WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION

The Concept Wheel

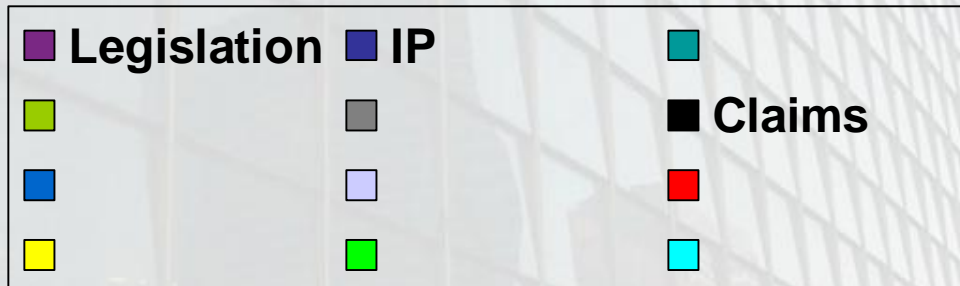
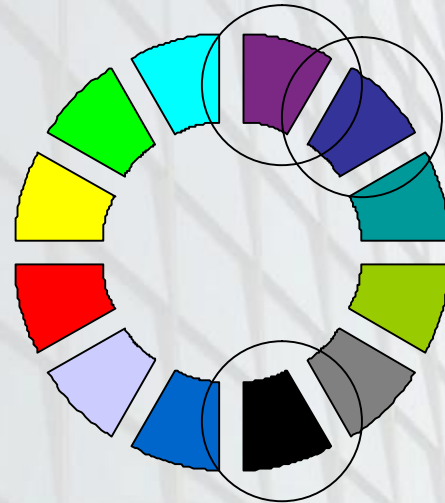


Legislation	IP	Safety
Effects	Vehicle	Claims
Costing	Label	Distribution
Packaging	Ingredient	X, Y & Z



WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION

Three Topics





WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION

- ~ Segment dependent “Demand”
 - è Infant Nutrition
 - è Clinical Nutrition
 - è Sports Nutrition
 - è Functional Foods
- ~ Claims not wanted
- ~ Exclusivity
- ~ Indications => Own recipe



WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

Legislation

- ~ Novel Foods and a generic name?
- ~ Between National and European Jurisdiction
- ~ Fractions and Peptides
- ~ How pure a fraction?
- ~ What about purification and dilution?
- ~ Ask the customer(s)



WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

Intellectual Property

- ~ Growing Patent Activity within the Whey Ingredient Industry.
- ~ Plenty of arguments:
 - è Customers' demand
 - è Competitors' Patenting Behaviour
 - è Sophistication and Learning from other Industries
 - è Increasing Development Costs
 - è Etc.
 - è = Perceived Profit



WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION

IP in Pharma

YEAR 1



Drug
Company
Volume

Assessed
Demand



Access to
raw material

Investment in
Production
Capacity

B-to-C

YEAR 15



Drug
Company
Volume

IWC
PARIS
2008



5th International Whey Conference

WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

WHEYVOLUTION

Important Differences

- ~ Business to Business
- ~ Component
- ~ “Given” raw material pool
- ~ Licensing is difficult
- ~ Applications under development



WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION

IP in Milk Ingredients

YEAR 1



YEAR 15



Assessed
Demand

Global
Theoretical
Supply

Theoretical
Demand



Slow Penetration Slow Capacity Growth

Parameter	Patent	Not Patent
Speed of dev.		+
Potential. Market vs. Ability to serve	Small	Big
	High	Low
Speed of ad.		+
Customers	?	?
Defence	+	
Obstruction	+	

IWC
PARIS
2008



5th International Whey Conference

WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION
WHEYVOLUTION

Conclusions

- ~ Osteopontin is good
- ~ Less is more - sometimes