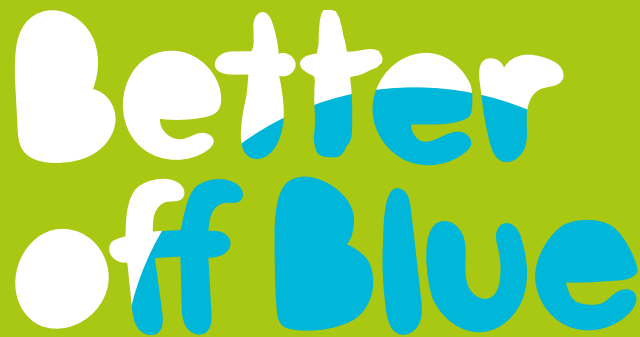


**2ND** SUBMARINER Conference



#BetterOffBlue17

Creating synergies for a biobased society

# Research and commercial activities on marine bio-based resources in Iceland

Dr. Hordur G. Kristinsson

Chief Science and Innovation Officer

09.10.2017



#BetterOffBlue17

# Matis

Independent R&D company with a leading role in food and biotechnology research in Iceland

- Enhance innovation in the food and biotechnology industry
- Increase value of consumer products
- Food safety and quality
- From basic research to commercial applications
- Contract research

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# Bio-based ingredients are in high demand

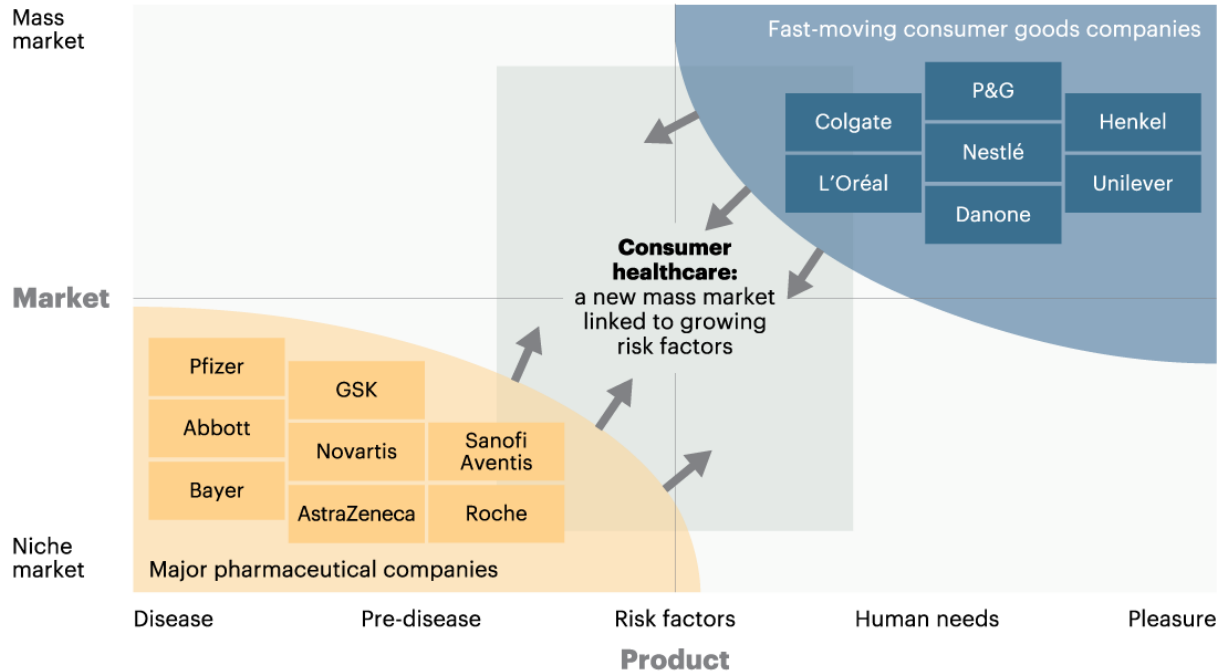


<b>Dietary supplements</b>  \$90 billion globally CAGR 6-7%	<b>Sports nutrition</b>  \$7 billion in USA (83%) CAGR 13%
<b>Functional foods</b>  \$37 billion in USA CAGR 3%	<b>Beauty/personal care</b>  \$433 billion CAGR 4-6%

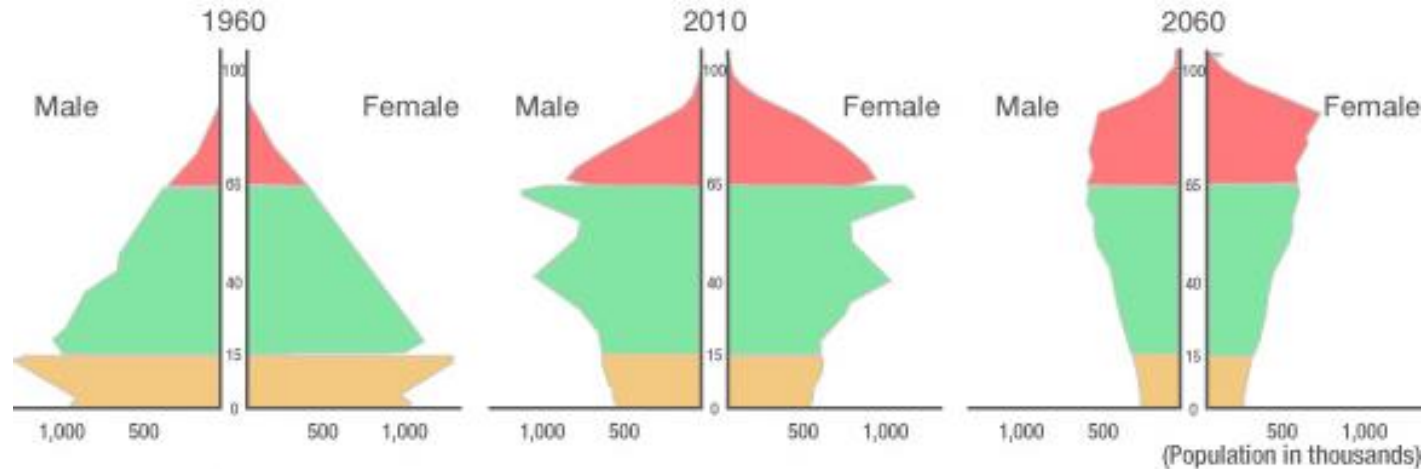
**„Natural“   „Sustainable“   „Environmentally friendly“**

**„Free-from“   „Unique“   „Pure“   „Renewable“**

# Developing and fast growing market

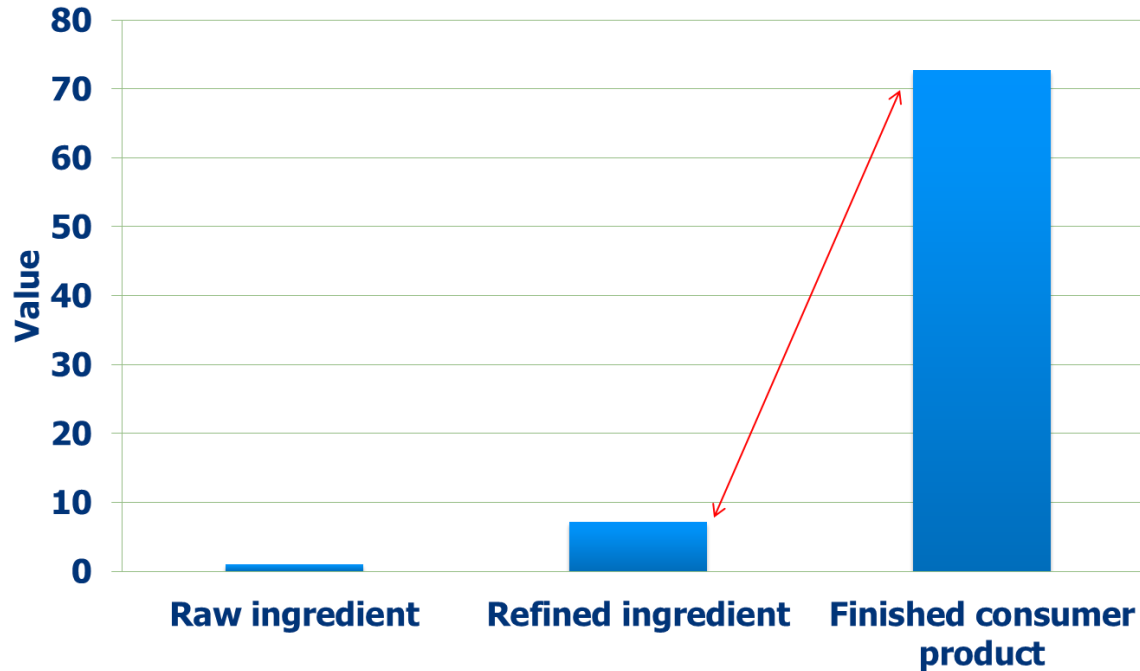


# Changing demographics



Japan

# Value addition at different stages



# Great value addition potential

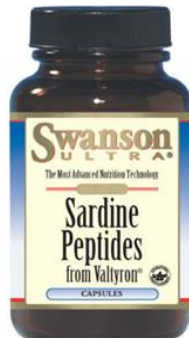
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Fishmeal



\$2.1/Kg protein

Valytron®



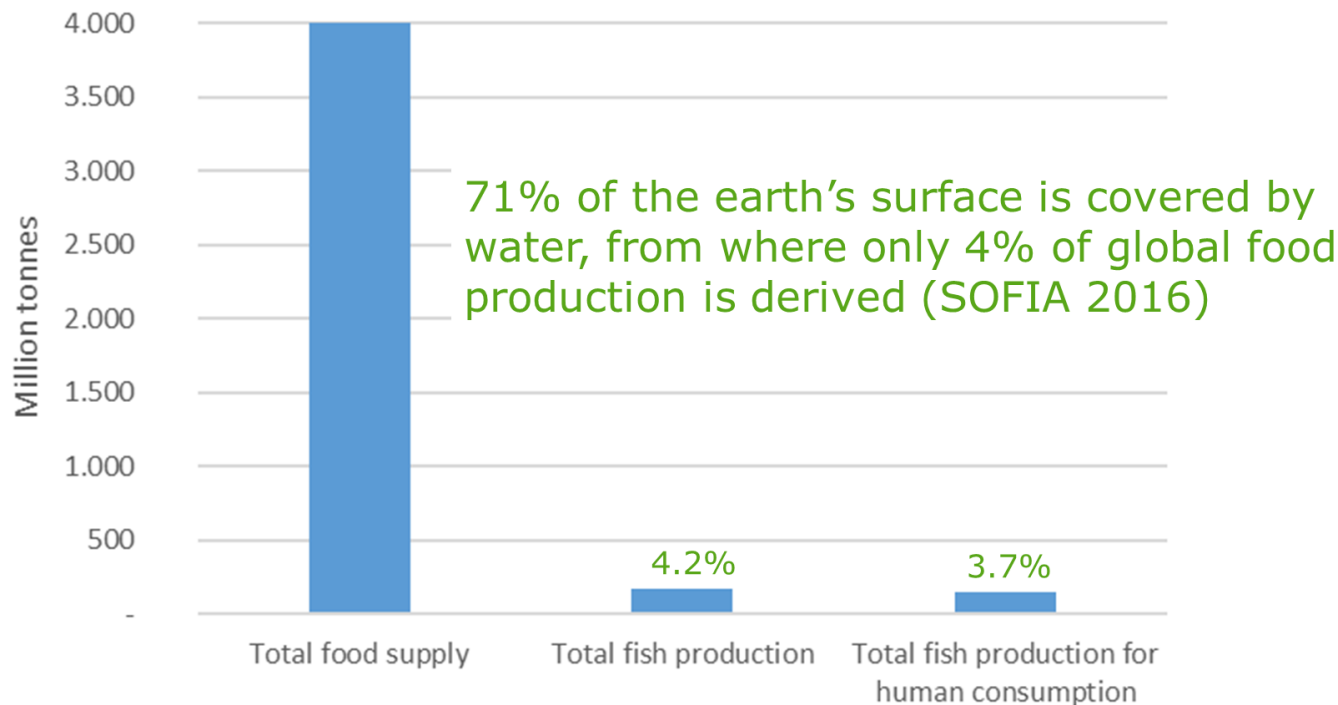
\$1372/Kg protein

Amino®



\$1185/Kg protein

# The facts....





# Highly inefficient value chain



- Biomass lost as discards at sea 8% on average
  - EU finfish discards 20-60%
- Utilization in processing of finfish 30-75%
  - Common to have 40% utilization for finfish
- Biomass wasted in retail, distribution and at consumer level 35%

***21% of what comes aboard the vessel is  
in the end consumed by humans***

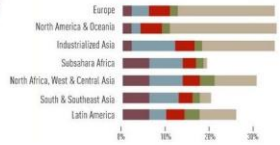


## 30% CEREALS FOOD LOSSES

In industrialized countries, consumers throw away 286 million tonnes of cereal products.

763 billion boxes of pasta

■ Agriculture ■ Distribution  
■ Postharvest ■ Consumption  
■ Processing

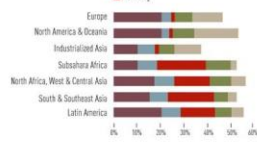


## 45% FRUIT & VEGETABLES FOOD LOSSES

Along with roots and tubers, fruit and vegetables have the highest wastage rates of any food products; almost half of all the fruit and vegetables produced are wasted.

3.7 trillion apples.

■ Agriculture ■ Distribution  
■ Postharvest ■ Consumption  
■ Processing

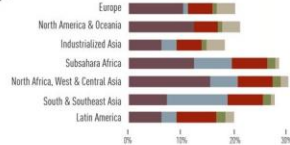


## 20% OILSEEDS & PULSES FOOD LOSSES

Every year, 22% of the global production of oilseeds and pulses is lost or wasted.

This is the same as the olives needed to produce enough olive oil to fill nearly 11,000 Olympic-sized swimming pools.

■ Agriculture ■ Distribution  
■ Postharvest ■ Consumption  
■ Processing



## 45% ROOTS & TUBERS FOOD LOSSES

In North America & Oceania alone, 5,814,000 tonnes of roots and tubers are wasted at the consumption stage alone.

This equates to just over 1 billion bags of potatoes.

■ Agriculture ■ Distribution  
■ Postharvest ■ Consumption  
■ Processing

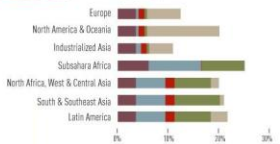


## 20% DAIRY FOOD LOSSES

In Europe alone, 29 million tonnes of dairy products are lost or wasted every year.

This is the same as 574 billion eggs.

■ Agriculture ■ Distribution  
■ Postharvest ■ Consumption  
■ Processing

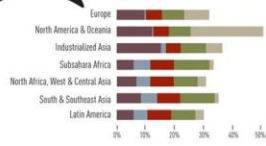


## 30% FISH & SEAFOOD FOOD LOSSES

8% of fish caught globally is thrown back into the sea. In most cases, they are dead, dying or badly damaged.

This is equal to almost 3 billion Atlantic salmon.

■ Fisheries ■ Distribution  
■ Post catch ■ Consumption  
■ Processing

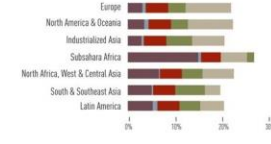


## 20% MEAT FOOD LOSSES

Of the 263 million tonnes of meat produced globally, over 20% is lost or wasted.

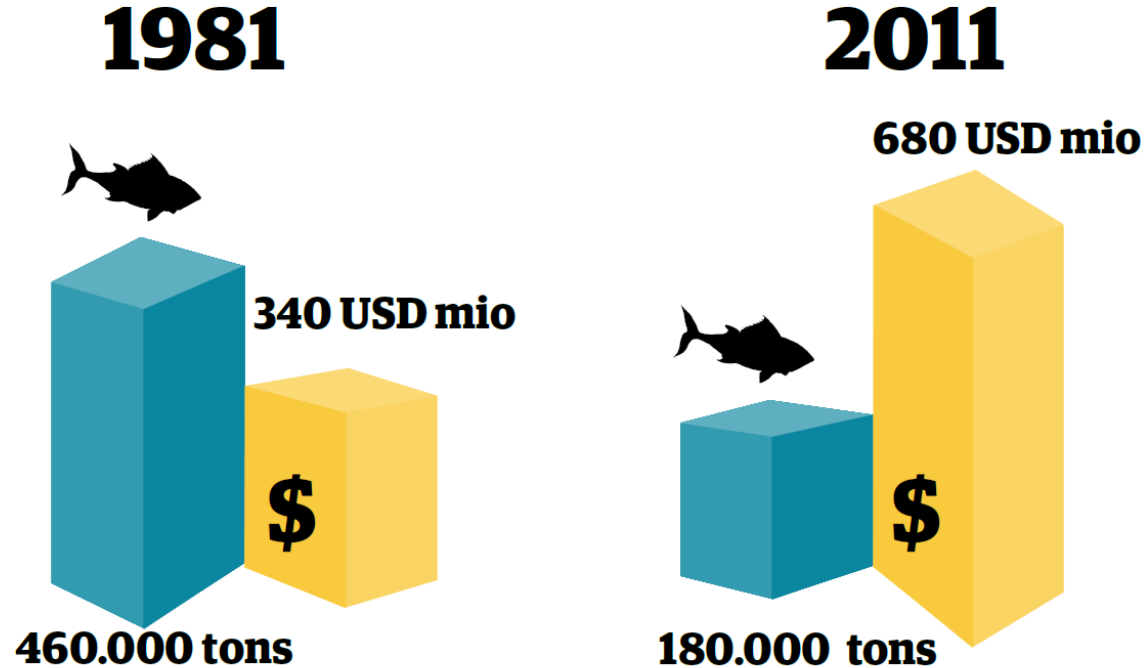
This is equivalent to 75 million cows.

■ Animal production ■ Distribution  
■ Slaughter ■ Consumption  
■ Processing



# Research and Innovation

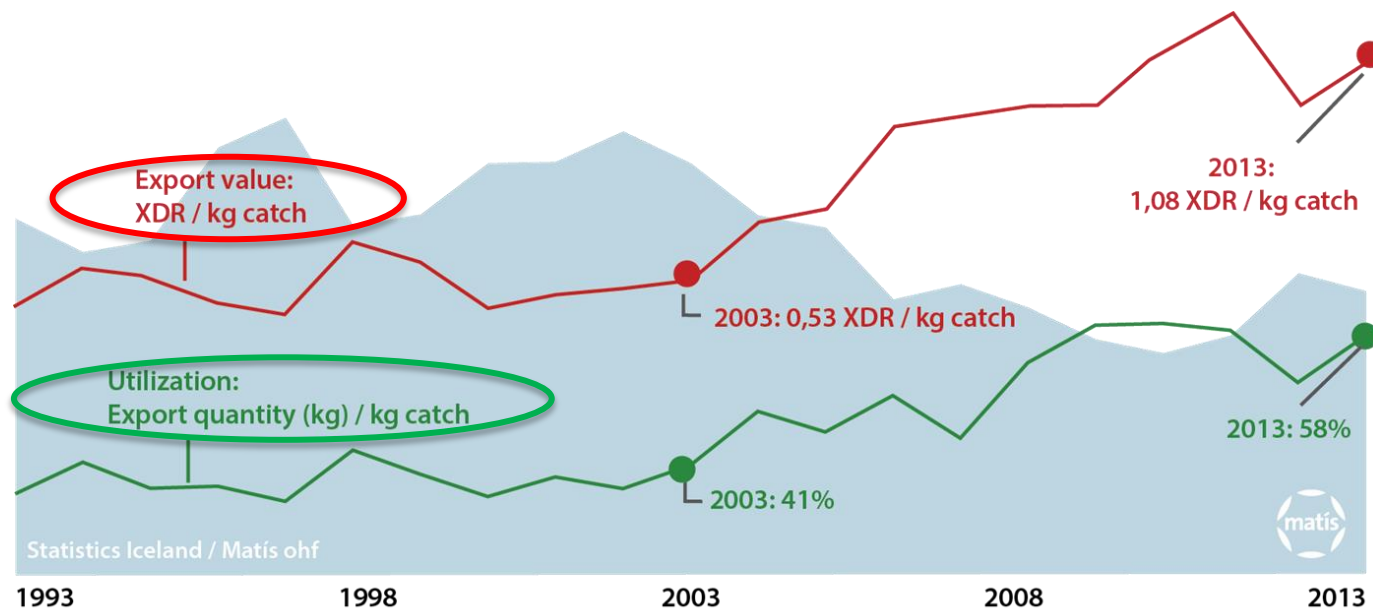
## - Return on investment



# Research and Innovation

## - Return on Investment

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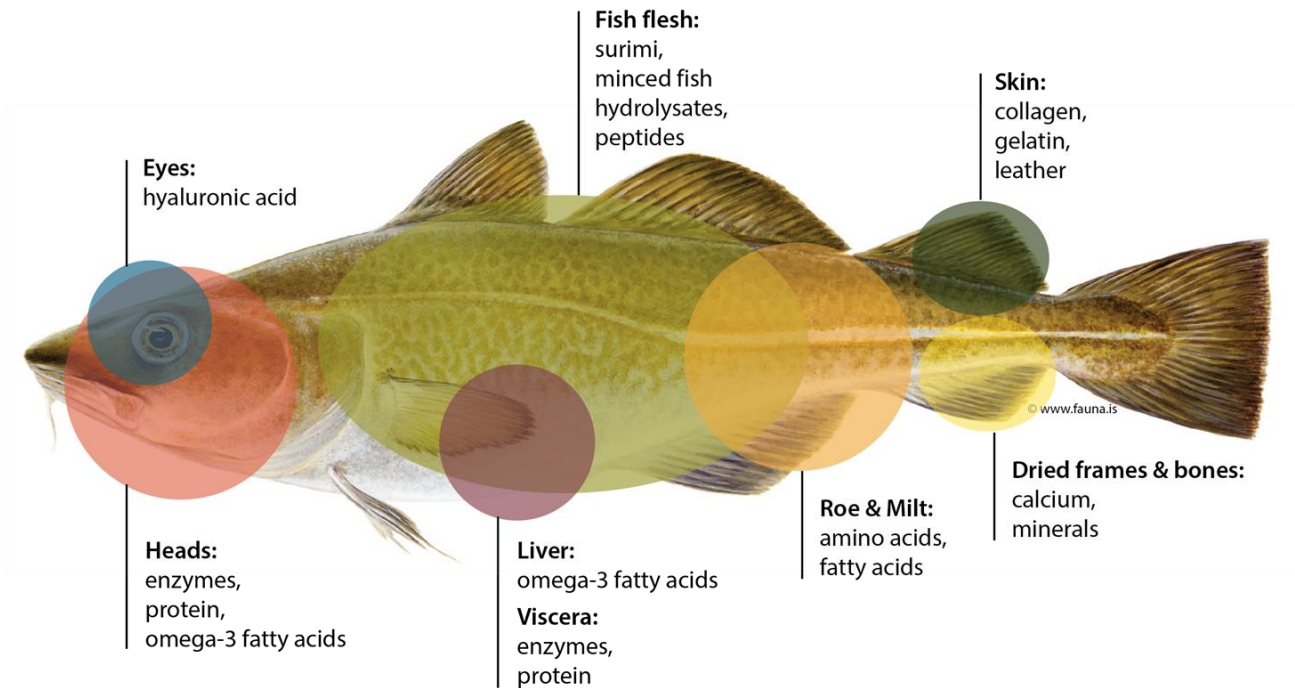


norden  
Nordic Innovation



HORIZON 2020

# In cod we trust...



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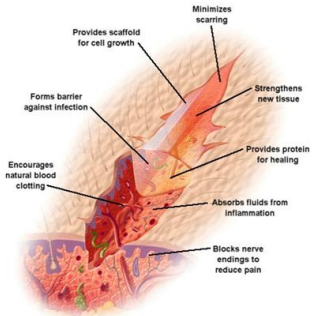


  
ZYMETECH

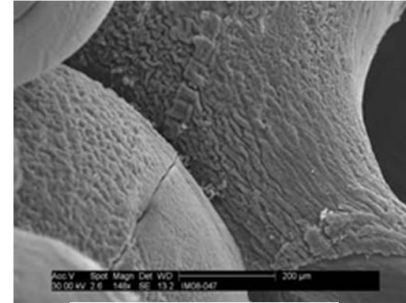




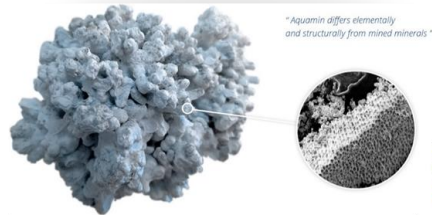
**primex**



**BONEREG-INJECT™**



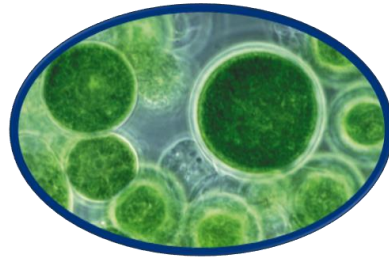
**GENIS**

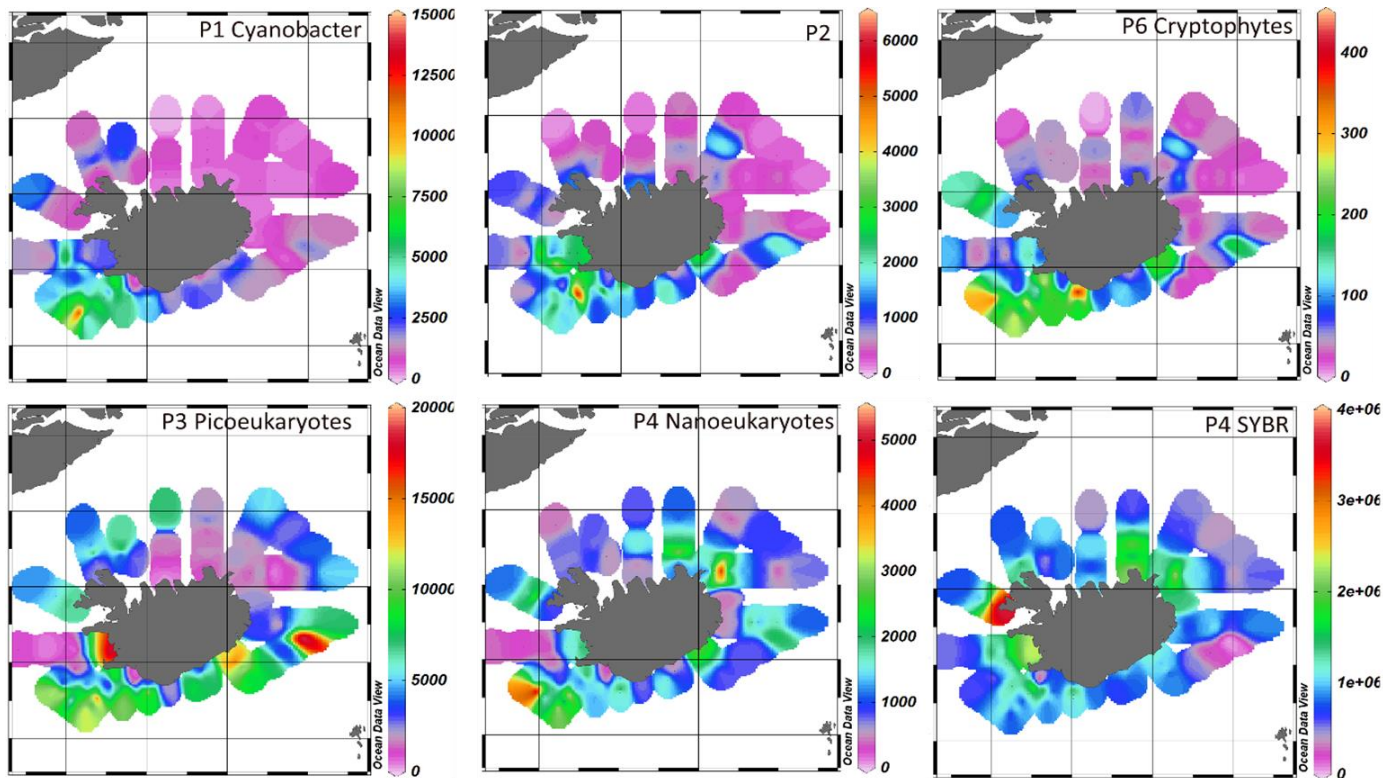


*"Aquamin differs elementally  
and structurally from mined minerals"*



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Thank you for your attention

