

Goodness of Grain for Health of our Society

International Whole Grain
Food Symposium
April 20 – 21, 2011
Beijing, China

Walter von Reding



AGENDA

- Buhler Group
- Global Trends
- Key Challenges
- Grain Processing for healthier Grain fractions
- Partnership Buhler & Cargill

Buhler at a glance

- Annual sales: ~ CHF 2 bn.
- Employees worldwide: 8000
- 100%-owned by Urs Bühler (Chairman of the Board).
- Powerful self-financing with high equity ratio.
- Sustainable annual sales growth of minimum 6% as target.
- Average EBIT margin of 8% as target.
- Market leadership in relevant markets achieved or aimed at.



Urs Bühler, Chairman of the Board
Calvin Grieder, CEO

Buhler Group

GRAIN PROCESSING

Grain Milling
Feed & Biomass
Sortex & Rice
Grain Handling
Malting

FOOD PROCESSING

Pasta & Extruded Products
Chocolate & Cocoa
Buhler Aeroglide
Nutrition Solutions

ADVANCED MATERIALS

Die Casting
Grinding & Dispersion
Thermal Processes
Nanotechnology

SALES & SERVICES

MANUFACTURING & LOGISTICS

FINANCE & ADMINISTRATION

CORPORATE TECHNOLOGY

Buhler Group

Buhler is the global specialist and technology partner for plant design & construction and services for transforming renewable raw materials into foods and synthetic materials into high-grade functional products and valuable substances.

The Group's core technologies are in the field of mechanical, thermal, and biological process engineering.

Buhler has been a competent partner for 150 years in the areas of consulting, technology, development, project management, and service.



Buhler Global Market share

WHEAT

Global production, 330m t/a

66%

CHOCOLATE

Global production, 4.m t/a

65%

PET

Global production, 8.9m t/a

60%

PASTA

Global production, 5.5m t/a

50%

SOY/GRAIN HANDLING

Global production, 425m t/a

25%

BIOMASS

Global production, 330m t/a

20%

DIE CASTING

Global production, 4.8m t/a

20%

RICE

Global production, 1138m t/a

15%

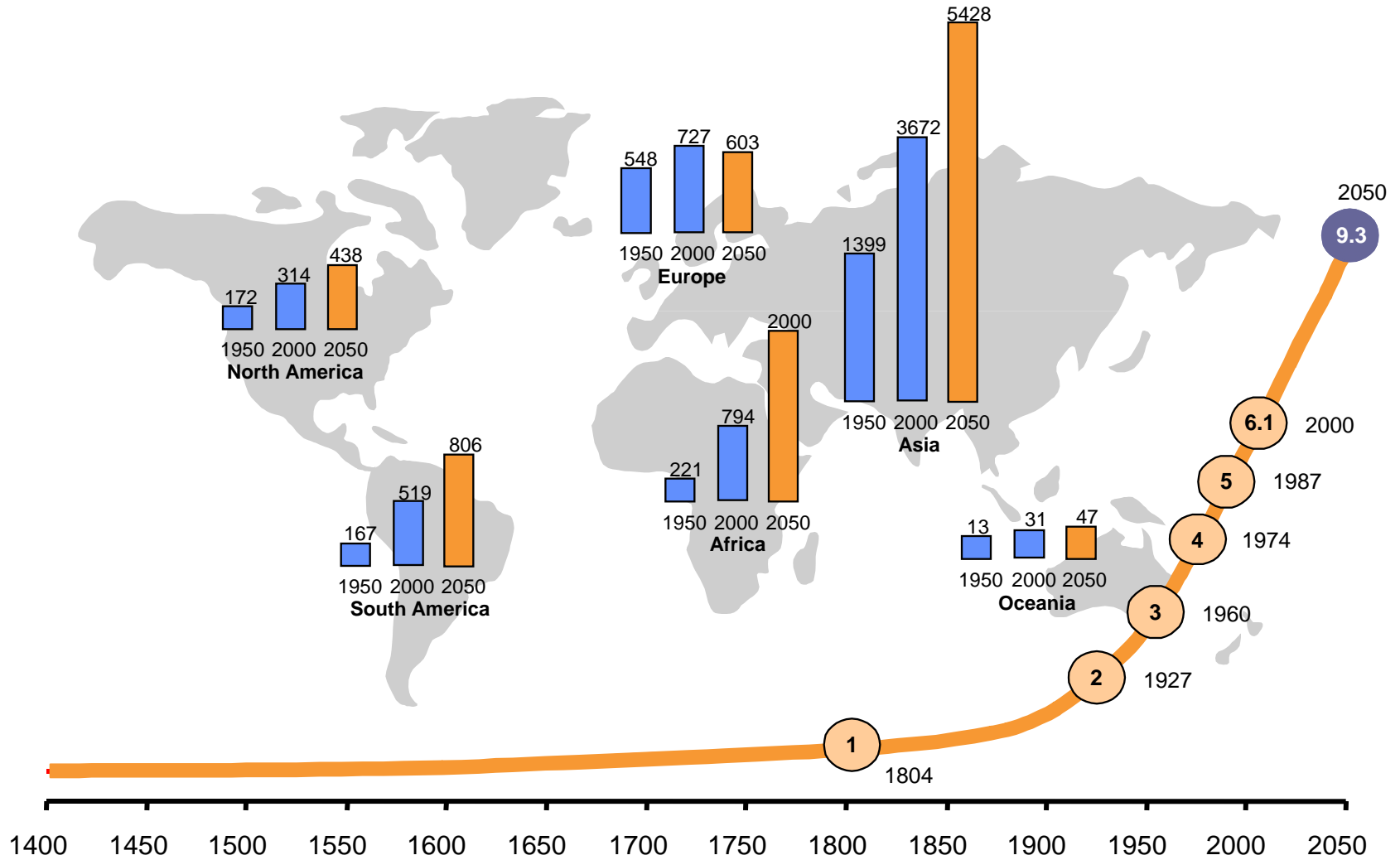
FEED

Global production, 8.9m t/a

15%

Global Trends

Development of the global population



Global Trends

Staple food requirements

- Wheat is the most important food for over three billion people
- 2 billion people live on rice
- 1 billion people consume mainly corn



Food Security

- Overall increases in food production have not always translated into more food for the poor
- FAO has identified 88 "food deficit" countries which can neither feed themselves nor afford the imports they need
- Distribution heavily dependent on global imbalances, politics, conflicts and wars

Food Security

- Hunger still an important issue
- 800 Million people suffer from hunger
- Every minute about 11 children younger than 5 years dying of hunger-related causes



Lena Escudé e-stpans

Trends in Nutrition

Efficient Nutrition

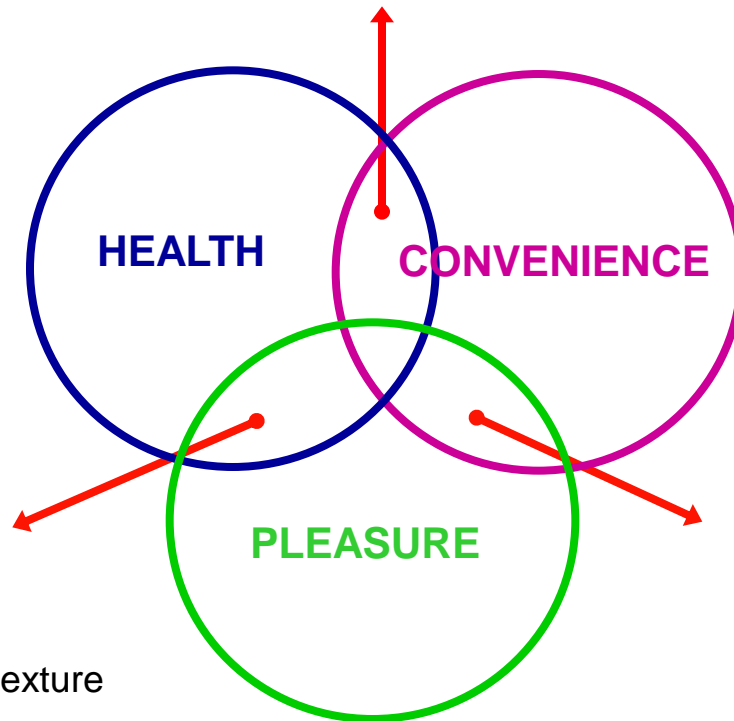
Fast but nutritious and healthy

The hypochondriac factor

- More information
- More evidence for claims
- More control through ,food plus', ,food minus' and ,natural' alternatives

Guilt free indulgence

Low & light – without compromises on taste and texture



The time factor

- More individual (portion) control
- More control over time and quality of preparation

Convenience plus

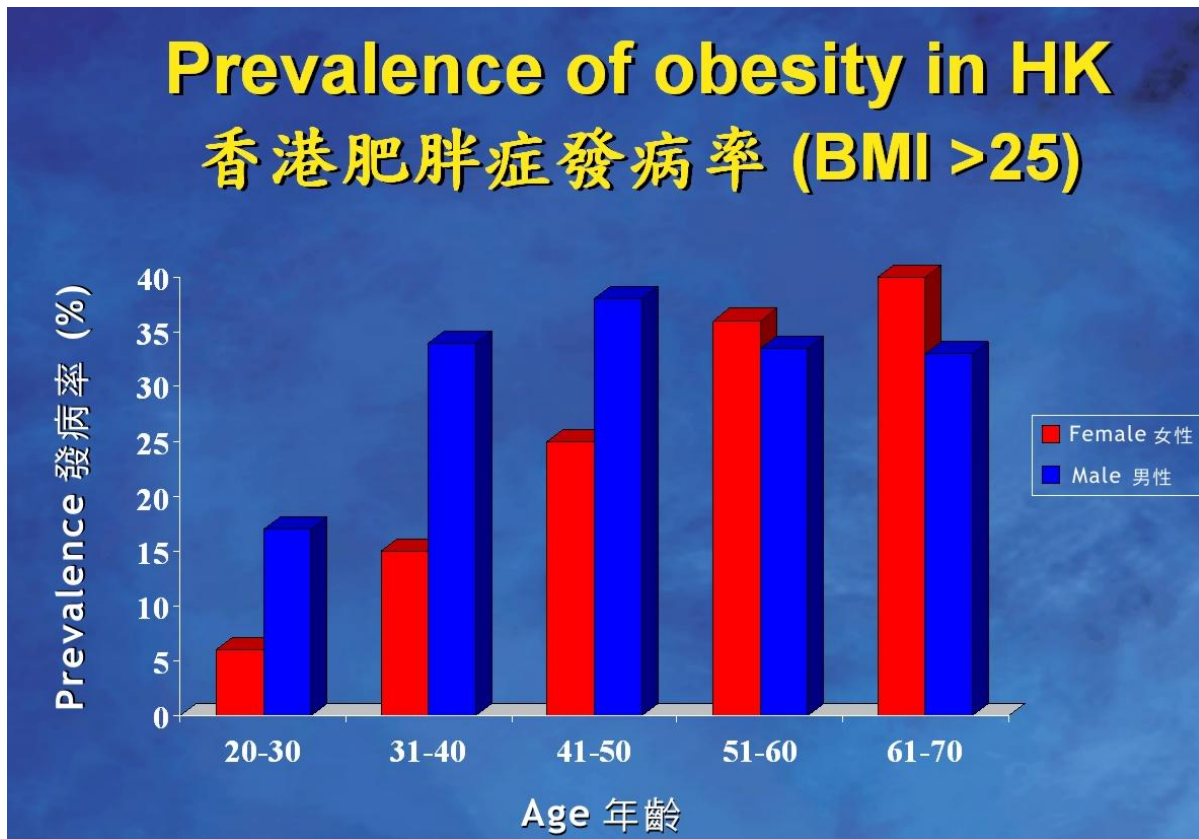
Convenience with restaurant quality and entertainment value

The sensory experience

- More fun and entertaining
- More ethnic and exotic tastes
- More premium and indulgent

Health Issues 21st Century

Obesity is increasing world-wide ...

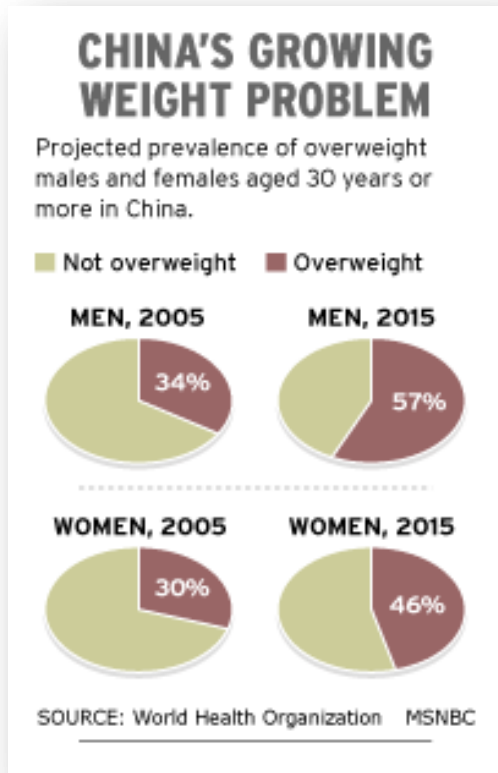


Asia Pac. J. Clinical Nutrition 2008



China facts

Obesity is increasing



About 15% of Chinese adults - or 200 million people are classified as overweight. Of these, 90 million - about 7 percent are obese.

National Geographic News "Obesity Explosion May Weigh on China's Future"

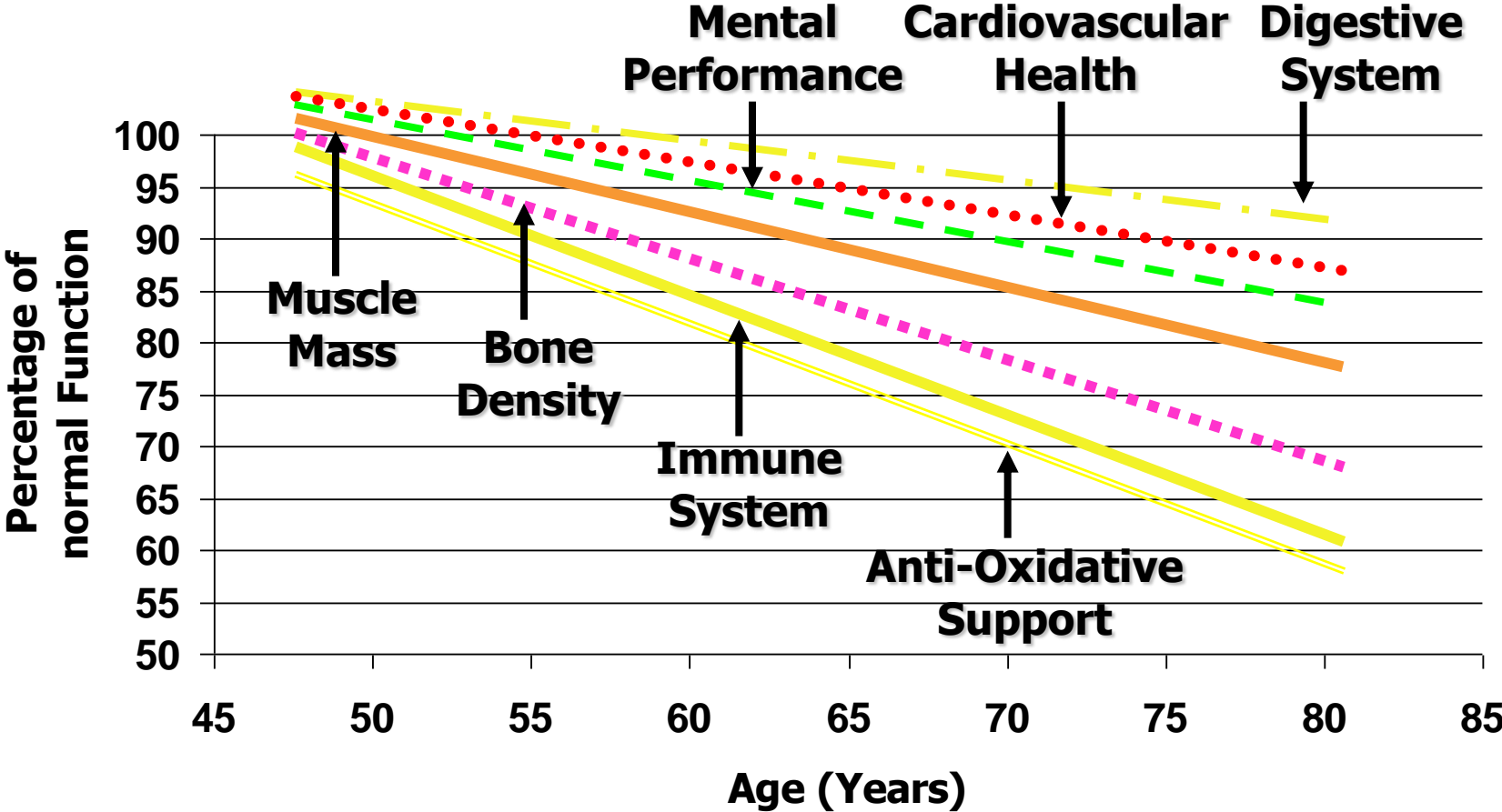
Health Issues 21st Century China

China "has entered the era of obesity," says Ji Chengye, a leading child-health researcher. "The speed of growth is shocking."

- BEIJING — China is super-sizing its children as fast as its economy, prompting fears of an American-style obesity crisis here.
- New figures from the Health Ministry show that urban Chinese boys age 6 are 2.5 inches taller and 6.6 pounds heavier on average than Chinese city boys 30 years ago.
- A generation of economic expansion has produced higher living standards and allowed Chinese families to put more food on the table; once-scarce meat, dairy products and vegetables now are widely available.
- Growing prosperity also has led to more sedentary lifestyles: less physical labor, fewer trips on foot and by bicycle, more travel by car, more Internet usage.

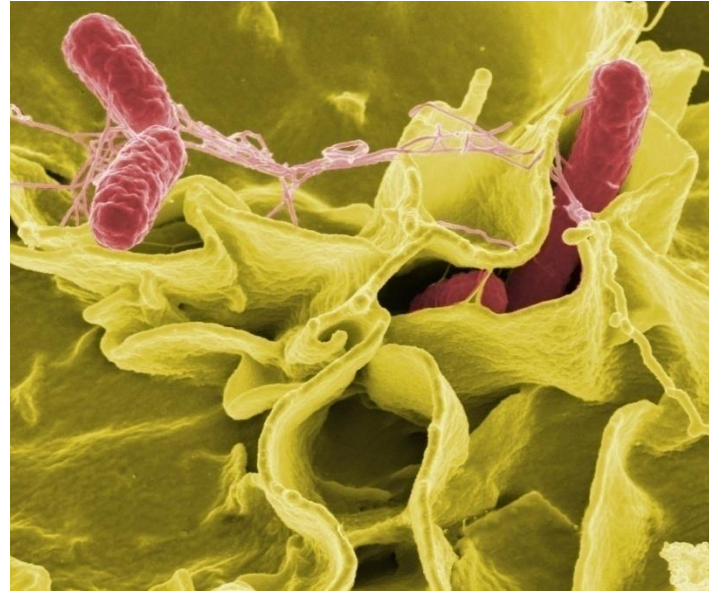


Ageing influence on personal Health and well-being



Food Safety

- Pesticide
- Fungicide
- Microorganism
 - Salmonella
 - Clostridium perfringens
- Aflatoxine / Mycotoxine

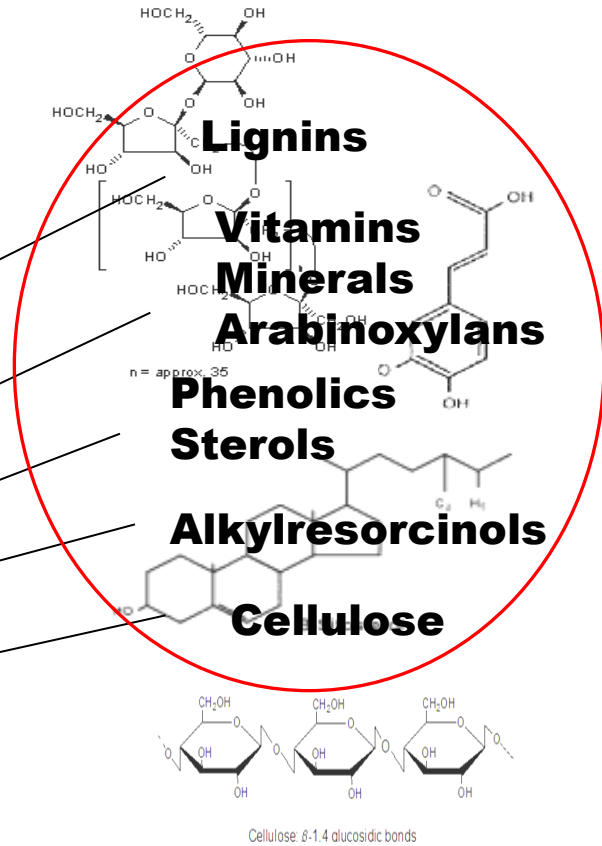
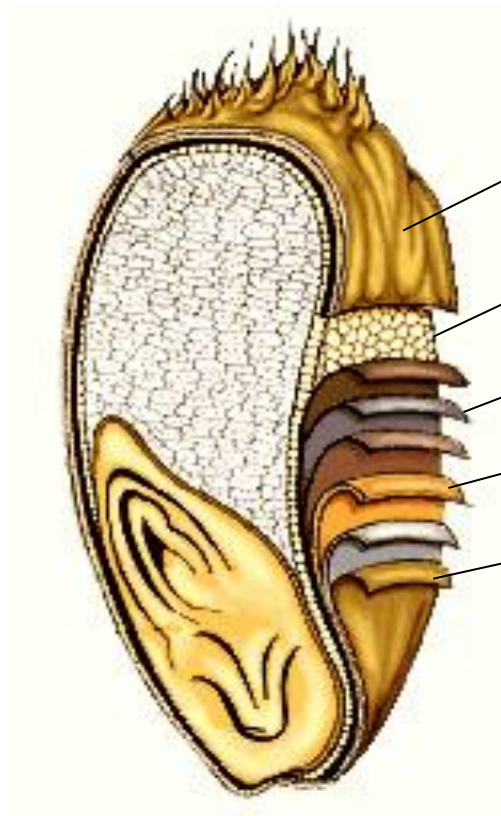


Global Trends

Key Challenges

- **Food and water supply** world-wide
- **Malnutrition nutrients deficiency**
- **Problems with energy balance** (eating disorders, ***obesity*** - **type two diabetes, heart disease, cardiovascular disease**)
- **Increased concerns about food safety**
- **Social trends** (anti-globalization, demand for traceability of food and ingredients, different lifestyle patterns and family structures)
- **Increased demands for transparency in risk management practice and public involvement** in policy development

Localisation of the potential health benefits within the wheat kernels



Potential health benefits

- Heart health
 - Risk reduction CVD
 - Risk reduction Type 2 diabetes
- Gut Health
- Weight Management

Kernel



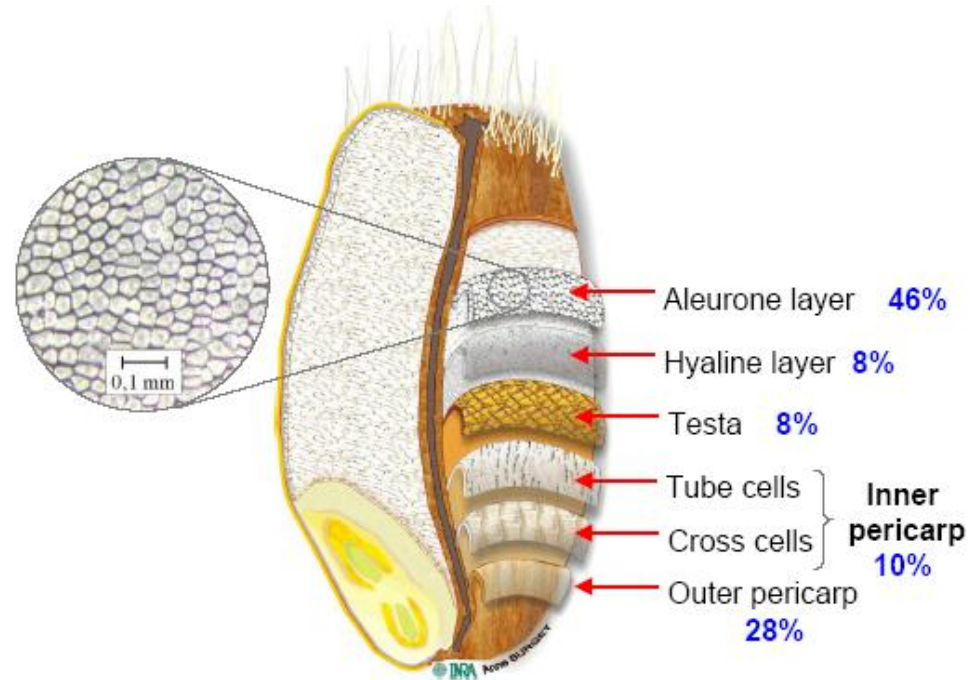
Components



Health benefits

Localisation of the potential health benefits within the wheat kernels

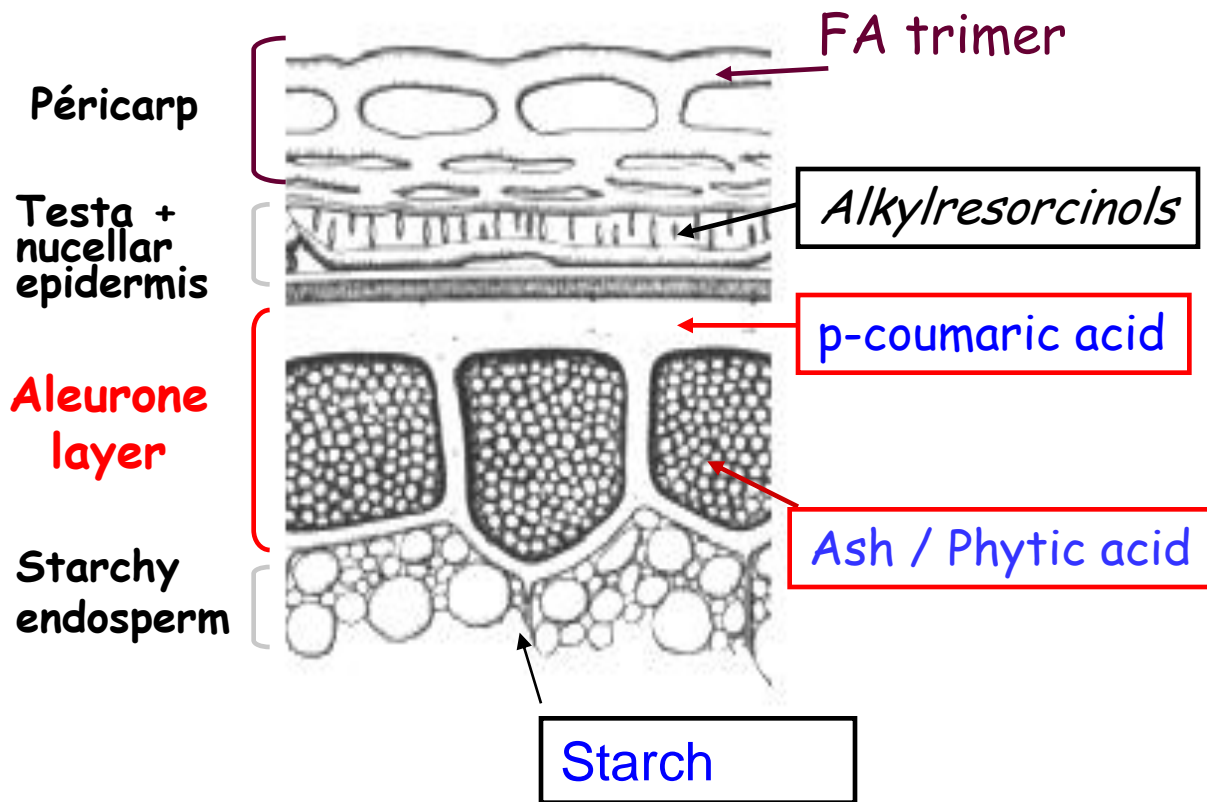
- Wheat kernel and bran fractionation (traditional milling, novel technologies and processes)
- Characterisation of the samples from fractionation:
 - **Chemical composition**
 - **Microstructure**
 - **Functional properties**



X. Rouau, 2006, INRA

Localisation of the potential health benefits within the wheat kernels

Markers for the grain layers



Outer pericarp:

FA – trimers

Intermediate layer:

Alkylresorcinols

Aleurone cell walls:

P-coumaric acid

Aleurone cell content:

Phytic acid

Starchy endosperm:

Starch

Y. Hemery, INRA

Bühler samples – Wheat Aleurone technology/process

Sample name	Description
Wheat aleurone 1	Bran fraction highly enriched in aleurone cells
Wheat aleurone 2	Further separation of wheat aleurone resulting in high purity aleurone cells

Wheat Aleurone Solution Value Propositions

- Grain based Natural Ingredient
- Nutritional Labeling
- Health Attributes (Digestive Health, Immune System, Heart Health)
- Technological functionalities (pentosan)
- IP protected Ingredient

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