UNIVERSITY OF COPENHAGEN FACULTY OF LIFE SCIENCES

Department of Human Nutrition

THEME course in Human Nutrition 2008

## Evidence hierarchy

Introduction

**Nutrition:** Man´s most intimate contact with surrounding nature

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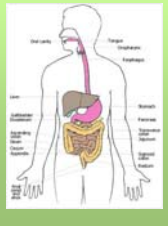

Place, date, unit, occasion etc.

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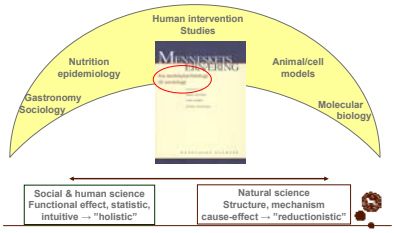
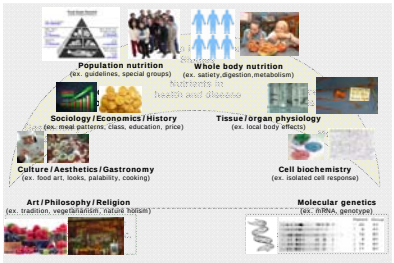
UNIVERSITY OF COPENHAGEN FACULTY OF LIFE SCIENCES

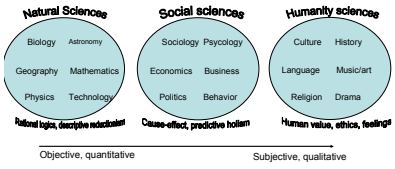
Human Food and Nutrition:
Natural, social and human science




Human Nutrition: Natural, social and human science




What are the main fields of academic study?

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## The sciences – main categories:

| | Topic | Study object | Field | Time Focus | Method |
|---|---|---|---|---|---|
| **Humanity sciences** | Humans as acting, thinking and feeling beings | Cultural products like art, literature, philosophies | History, culture, literature, art, aesthetics, consciousness, language, religion, feeling | Present | Descriptive, analytical, interpretation, value estimation, Meaning |
| **Social sciences** | Organization of human behaviour | Material or immaterial production | Social structure, material production and distribution, politics, human control, trade and exchange | Future | Descriptive and mechanistic, observational, interviews, data collection and analyses, statistics, |
| **Natural science** | Understanding and control of nature | Observation and calculation of nature phenomena | Physical matter, motion, energy, molecular structure and pathways, logical mathematical relations | Past | Experiments, verification, falcification, hypothesis testing, calculation, mechanistic |

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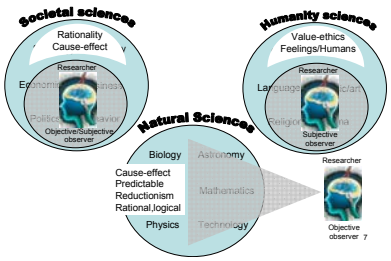
## The sciences – main categories:

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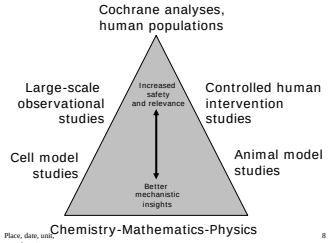
Human Nutrition evidence hierarchy




Place, date, unit, occasion etc.

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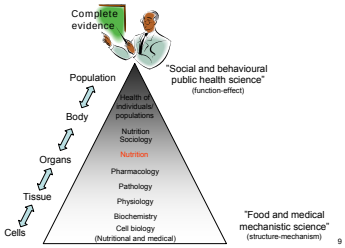
Nutritional/medicical evidence hierarchy

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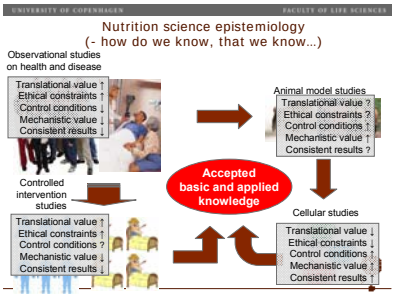



## What is (natural) nutrition science?

(adapted from Henning Sørensen, Frydenlund, 2006)

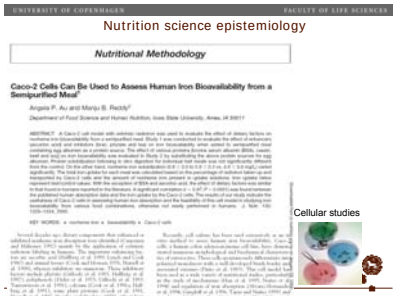
- Reliability + Validity = Objectivity
- Use of acknowledged analytical techniques
- Wide publication of results
- Open towards criticism of theory and techniques
- Self-critique

Critical elements:
How data is obtained? Attitude of researcher

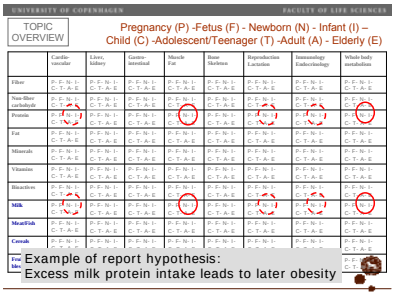
Not critical:
What is the result? Who is the researcher?

Do social and humanity "sciences" exist? [11]





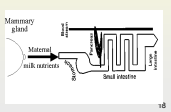





## Preterm gut (mal)adaptation

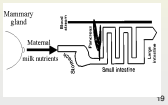

## CASE study: Human observational

- **Following birth, preterm babies have severe digestive problems. You have unlimited ressources to work with relevant nutrition observations. Suggest 3 experiments to understand and/or solve the problem? Indicate specific questions/methods**



## CASE study: Human intervention

- **Following birth, preterm babies have severe digestive problems. You have unlimited ressources to work with nutrition intervention. Suggest 3 experiments to understand and/or solve the problem? Indicate specific questions/methods**






## CASE study: Animal models

- **Following birth, preterm babies have severe digestive problems. You have unlimited ressources to work with pigs as a model animal. Suggest 3 experiments to understand and/or solve the problem? Indicate specific questions/methods**

Pla
occasion etc.



## CASE study: Cell models

- **Following birth, preterm babies have severe digestive problems. You have unlimited ressources to work with immature intestinal cells as a model. Suggest 3 experiments to understand and/or solve the problem? Indicate specific questions/methods**

Cellular studies

Pla
occasion etc.



## Nutrition of an immature gut?

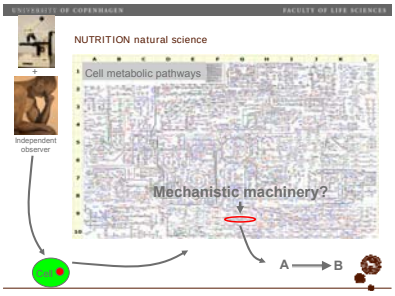
- **How to understand and/or solve the problem?**

Q: Mode of birth?
Exp: Caesarean section versus vaginal birth
Anal: Hormonal levels, gut microbiology?

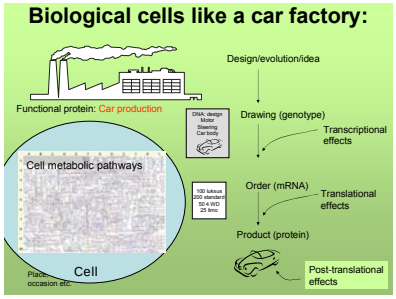
Observational studies
Intervention studies
Animal model studies
Tissue/cell model studies

Pla
occ

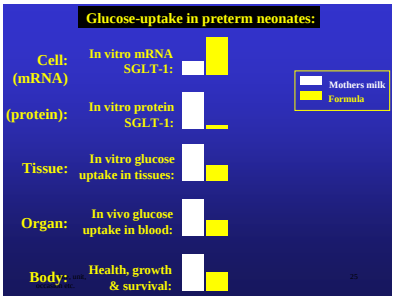


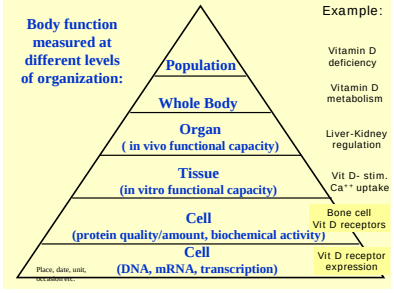


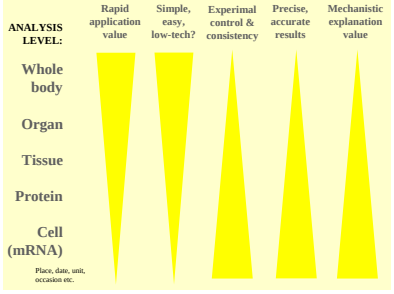

## Biological cells like a car factory:




## Glucose-uptake in preterm neonates:



**The pessimistic view:**
**In Nutrition Science we choose to measure based on:**

1) Own insight and science expertise
2) Tradition - what do we usually do
3) Access to competent collaboration
4) Available technical equipment
5) What is easiest to perform/interprete
6) What is most popular at this time
7) What gets into the "best" journals
8) Economical/social working structure
9) Solid science argument and rationale
10) Greatest possible basic/applied outcome

Plaw, diet and occasion etc.

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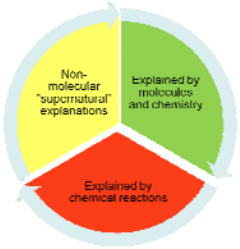
## The nature of biological systems

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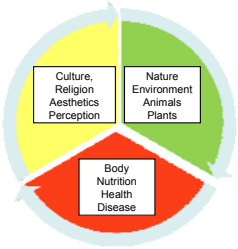
## Human relationship with nature

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## Human relationship with nature


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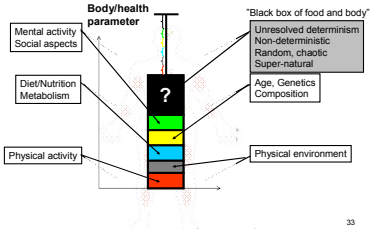
## Food = experience?

(- Not only fuel for chemical machine, advertisement in a Danish Newspaper Nov. 2007)


## Health determinants:

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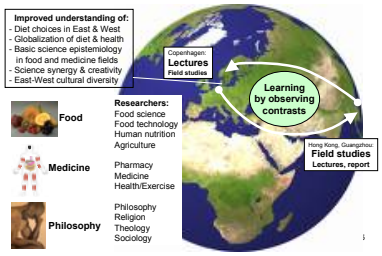
The same potentially applies for any given food


PhD course:
Food, medicine and philosophy

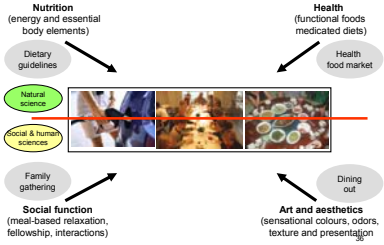
What determines what we choose to eat? Instinct, culture, religion, or science? How important is food for human health, and what is the role of culture and religion for health choices? Diets and food supplements previously restricted to geographical regions are now becoming available world wide. The dietary habits of individuals and populations are determined by more than food availability, technology and science. Culture, religion and philosophical views of nature and the human body also play important roles.

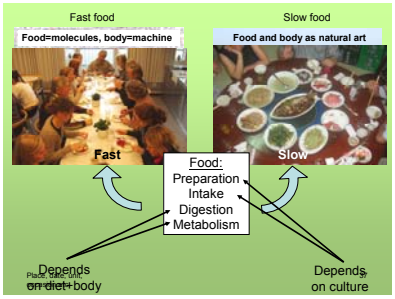
## "Food, Medicine and Philosophy in East and West"

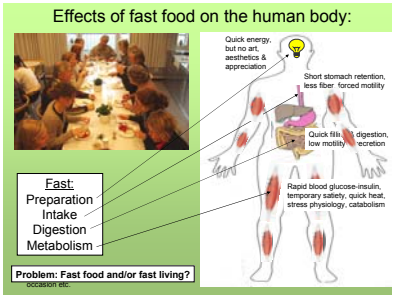
3-week international Scandinavian-Chinese PhD course:

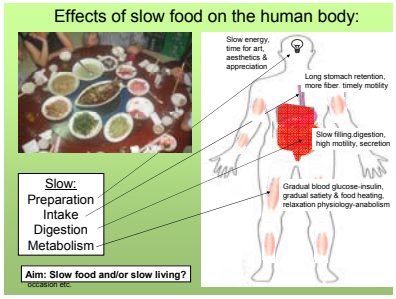



## The function of meals?




Fast food
Slow food
Food=molecules, body=machine
Food and body as natural art
Fast
Slow
Food:
Preparation
Intake
Digestion
Metabolism
Depends on diet+body
Depends on culture


Effects of fast food on the human body:
Quick energy, but no art, aesthetics & appreciation
Short stomach retention, less fiber forced motility
Quick filli digestion, low motility ecretion
Rapid blood glucose-insulin, temporary satiety, quick heat, stress physiology, catabolism
Fast:
Preparation
Intake
Digestion
Metabolism
Problem: Fast food and/or fast living?


Effects of slow food on the human body:
Slow energy, time for art, aesthetics & appreciation
Long stomach retention, more fiber timely motility
Slow filling,digestion, high motility, secretion
Gradual blood glucose-insulin, gradual satiety & food heating, relaxation physiology-anabolism
Slow:
Preparation
Intake
Digestion
Metabolism
Aim: Slow food and/or slow living?