CHEESE RALLY IN RALEIGH

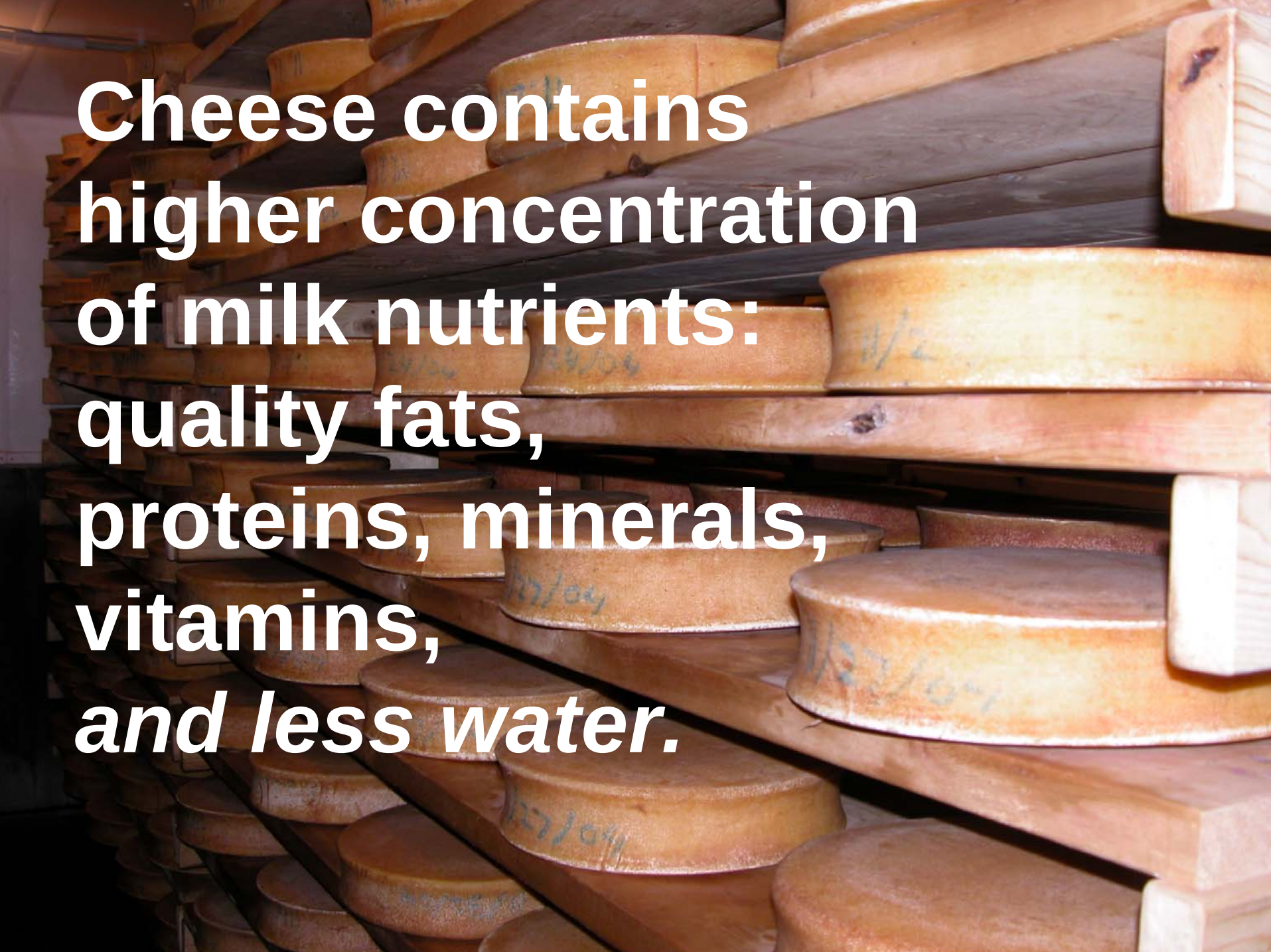
OWNING OUR FUTURE

American Cheese Society

Near-Perfect

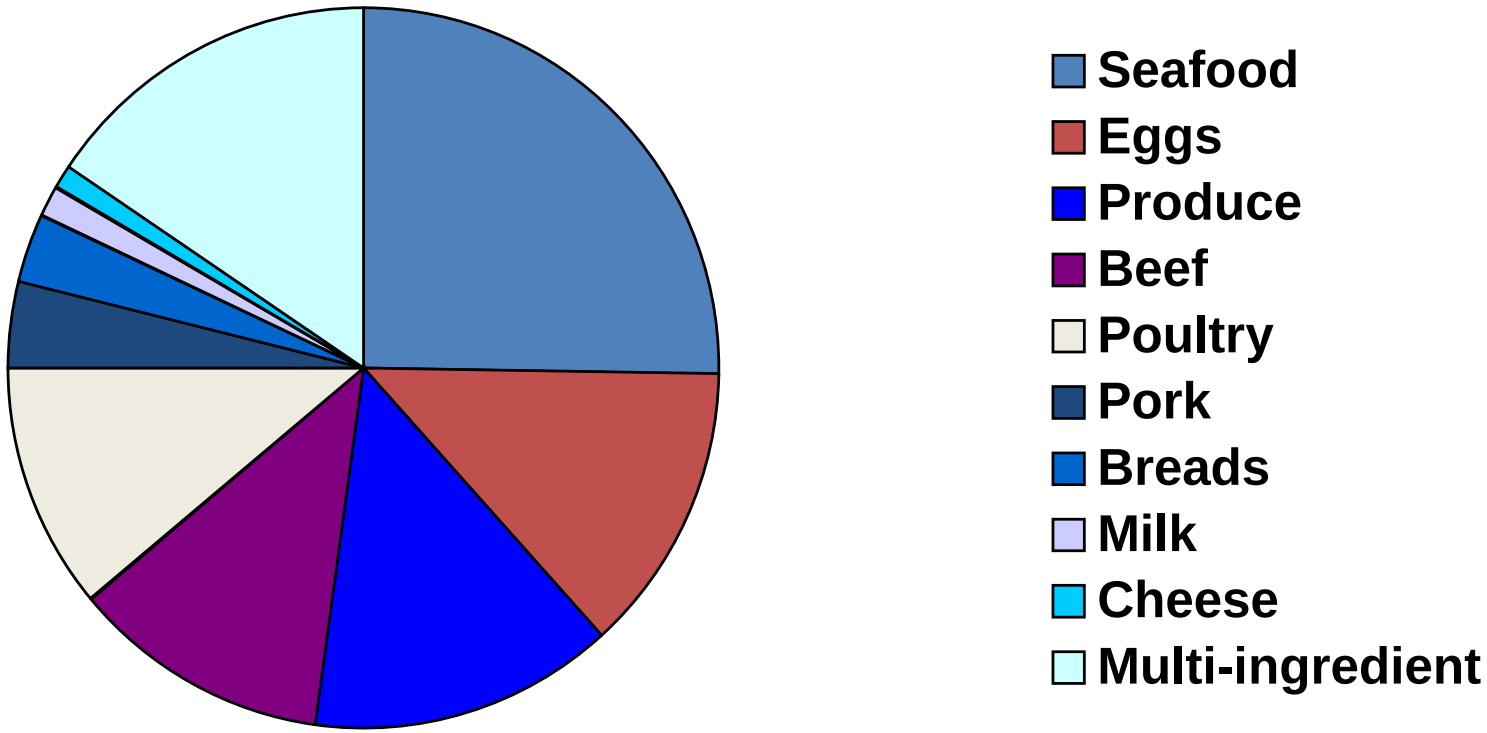
#CheeseSociety12

Milk – our first food


Cheese contains
higher concentration
of milk nutrients:
quality fats,
proteins, minerals,
vitamins,
and less water.

With fruit and vegetables,
cheese offers a near-complete diet.

Foodborne Illness Outbreaks



In the first step of cheese making lactose is converted into lactic acid.

Most of the remaining lactose is drained away with the whey.

The trace amount remaining is gradually acidified.

The relative amounts of nutrients vary among different milks.

Pasteurization reduces some nutrients significantly.

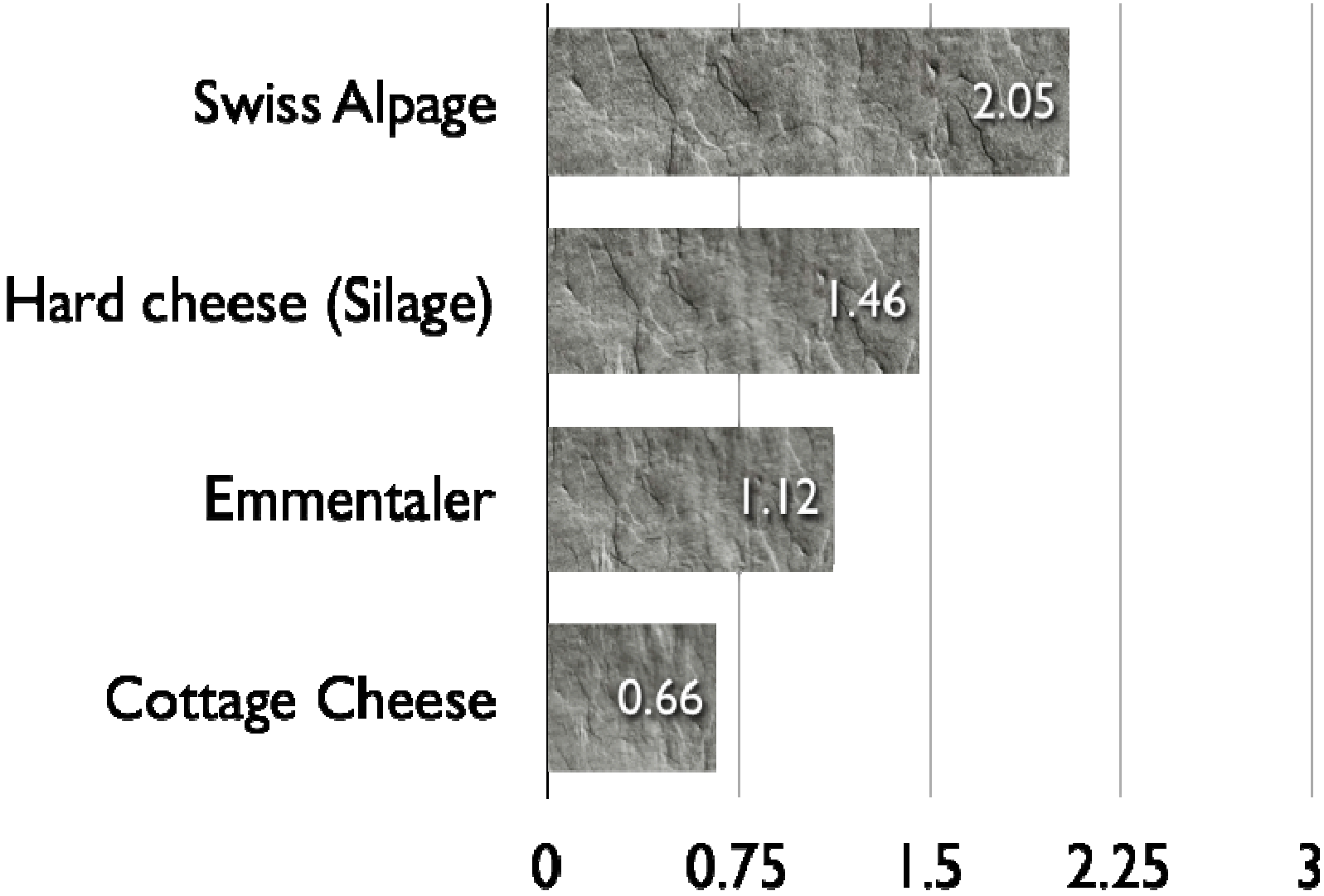
The Swiss Alpine and other Paradoxes

– by Caroline Hostettler

Studies show that the Swiss who live in alpine regions have longer and healthier lives than the rest of the population. The main reason: quality of the milk

Transhumance - a Journey to Better Quality

Amount of Omega-3 in cheeses in %/gram



vs.

A fondue meal made with Alpage cheeses has the same amount of unsaturated Omega-3 fatty acids as a salmon steak (180 g portions)

The Richness of the Alpine Meadow...

…provides more than one hundred different herbs and grasses, the basis for the highest quality of milk!

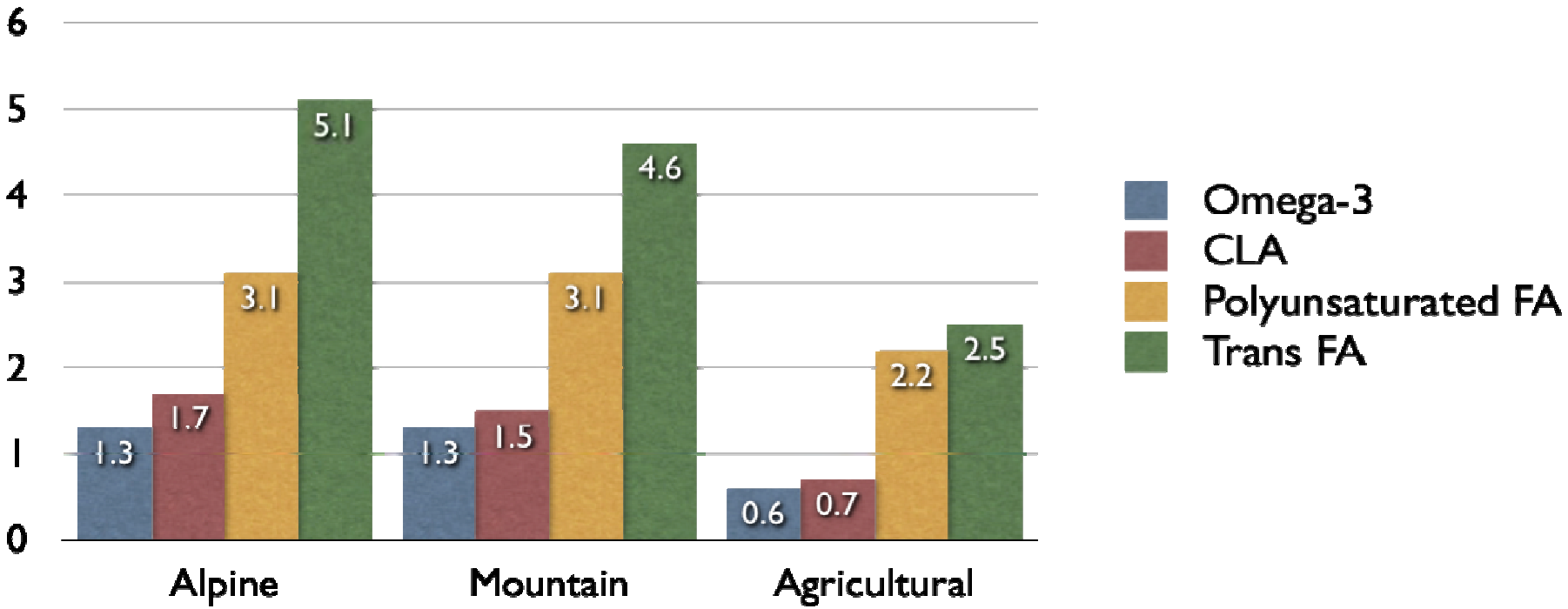
FACT

- Hansruedi Giger is one of the milk providers for cheesemaker Willi Schmid. Several years ago he changed to organic farming, supported by the Federal Institute of Technology (ETH) in Zurich, one of the leading Universities in the world.
- Within six months his meadows had added more than 60 new herbs and grasses!

Germany's MUVA Institute compared fatty acid amounts from three regions: alpine, mountain, low-lands (industrial agriculture), confirming a study by Agroscope in Switzerland:

1) Highest quality of milk comes from alpine regions

2) Animals fed on grass produce better quality of milk



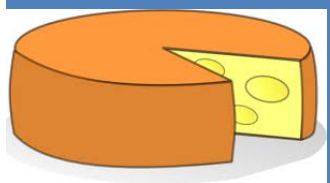
Values are all g/100 g

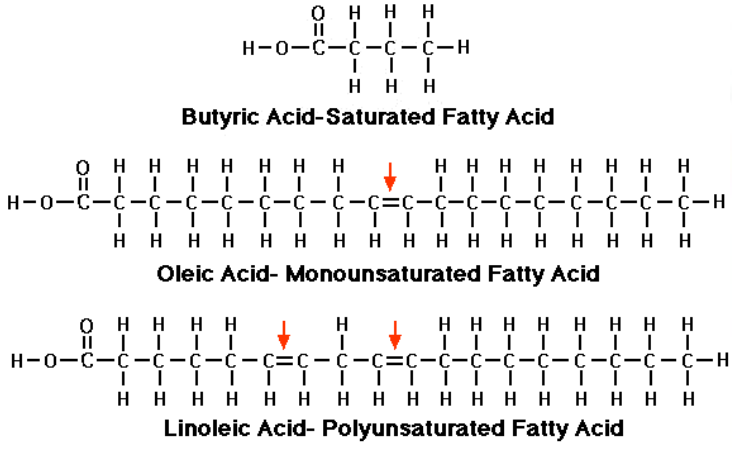
QUOTE

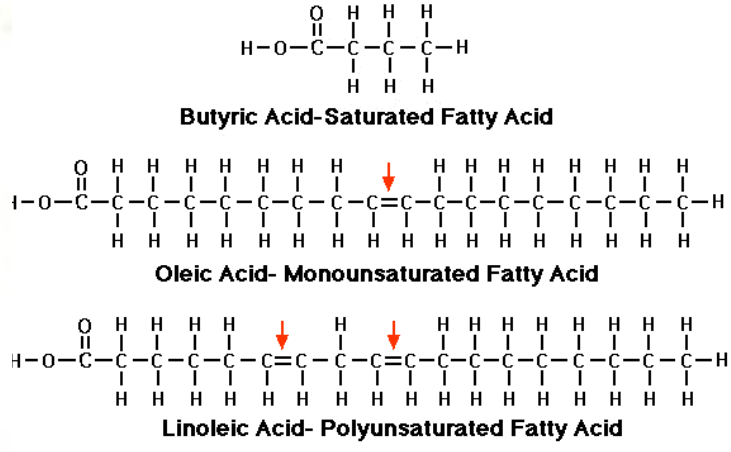
"Our studies show that grass feeding significantly increases Omega-3 and CLA in milkfat. Hence, in a traditional way, functional food is created."

•*muva kempten*

Functional (or healthy) food







Milk and cheese contain an average of 20 to 35% fat in dry matter, which is why cheeses taste so good.

One kg of milk fat contains 600g of saturated, 235g of monounsaturated, and 46g of polyunsaturated fatty acids. There is a large seasonal variation in the trans fatty acids, from 73.5g per kg in the summer to 38.3g in the winter.

Here's the question, though: Is **fat** really bad for you?

Fat Kills?

Saturated fatty acids, it is said, have a negative influence on blood lipids, with the possible promotion of coronary heart disease.

Not all saturated fatty acids are the same!

Saturated fatty acids in dairy products provide a series of nutritionally important fatty acids.

More “Bad” News

Trans fatty acids (there are many in cheese) increase risk of coronary heart disease - *at least, that was the conclusion.*

The types of TFA produced by ruminants do not support this hypothesis. On the contrary: studies show a slightly negative correlation.

The TFA “bad guys” that increase risk of coronary heart disease come from plants!

Secret Agent CLA

The conjugated linoleic acid (CLA) is a trans fatty acid typical for ruminants – an agent with positive health effects on humans.

Compared to other regions, alpine milk contains three times the amount of CLA

CLA is known to help regulate body weight and is extra efficient against abdominal fat.

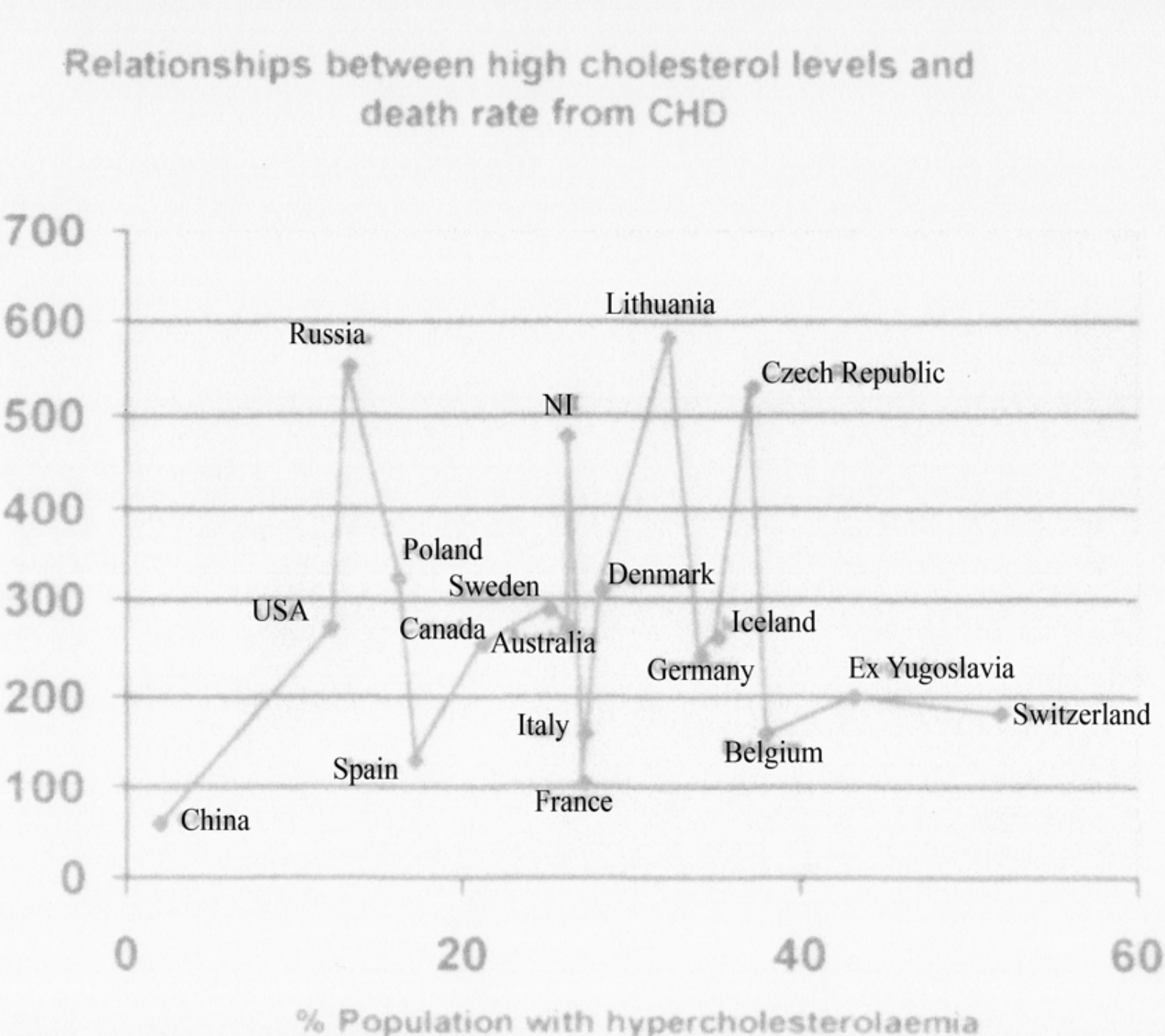
Health Benefits of High Quality Cheese

- Weight reduction (Anti-Obesity-Effect)
- Hypertension
- Bones
- Teeth

MONICA tells you:

High Cholesterol ≠ High Risk of Heart Disease

- The World Health Organization (WHO) inquired about the relation between high cholesterol in men and risk of coronary heart diseases in 19 countries. The stunning result: There seems to be no relation at all!
- There's not just the French Paradox, there's also the Swiss, the Lithuanian, the Russian, etc.


Relationships between high cholesterol levels and death rate from CHD
700
600
500
400
300
200
100
0
0
20
40
60
% Population with hypercholesterolaemia
Lithuania
Russia
Czech Republic
NI
Poland
Denmark
Sweden
USA
Iceland
Canada
Australia
Germany
Ex Yugoslavia
Switzerland
Italy
Belgium
Spain
France
China

FACT

Saturated Fatty Acids with short chains like myristic acid are associated with a blood picture low in LDL (bad cholesterol).

The fat in cheese consists of about 9% of short chain fatty acids, an unusually high percentage compared to other fats.

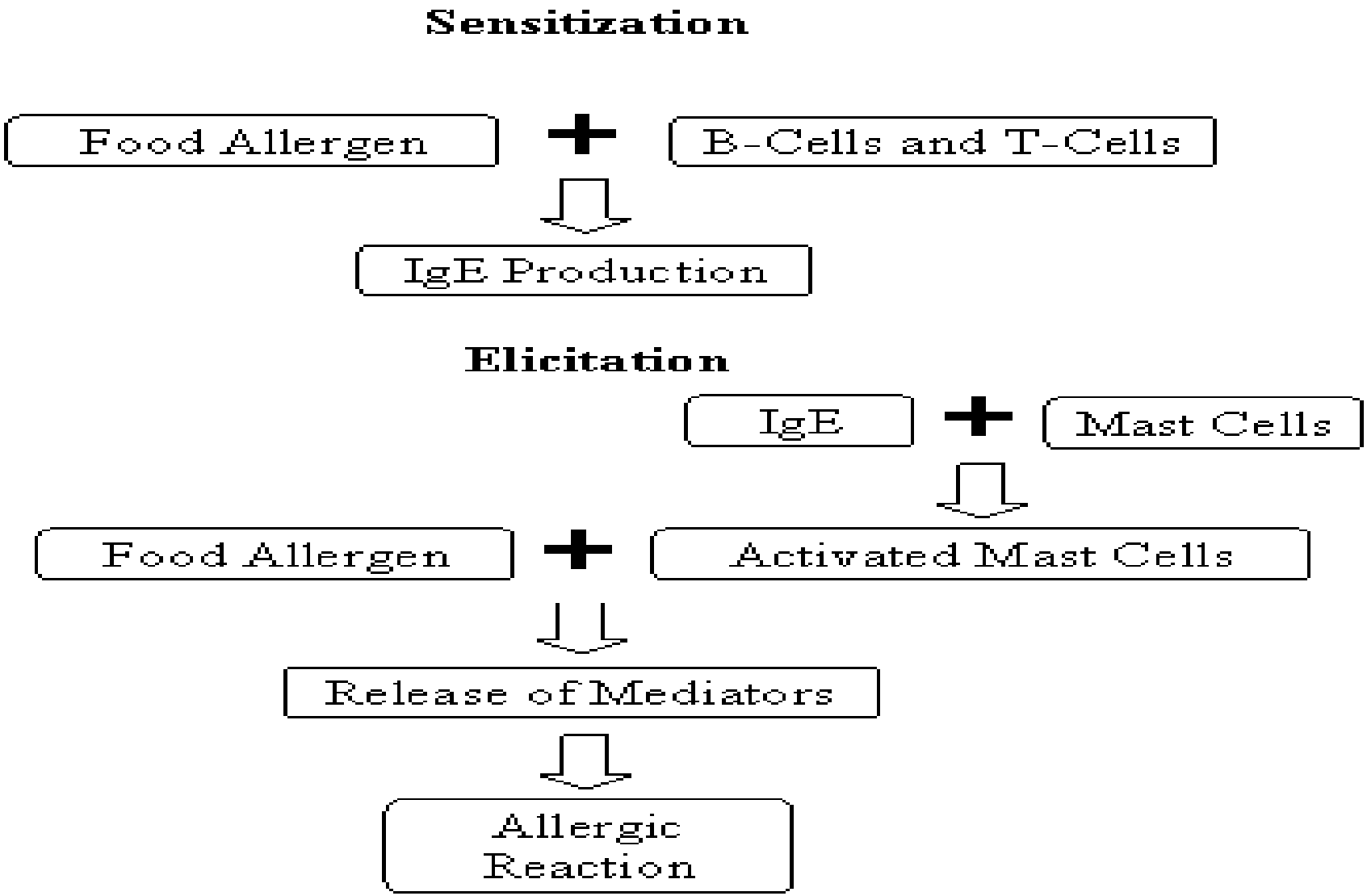
Thanks to the work, efforts and studies by Acroscope, Berne (Switzerland), muva kempten (Germany), Dr. Malcolm Kendrick, the WHO (World Health Organization), University Hospitals of Zurich and Baden (Switzerland)

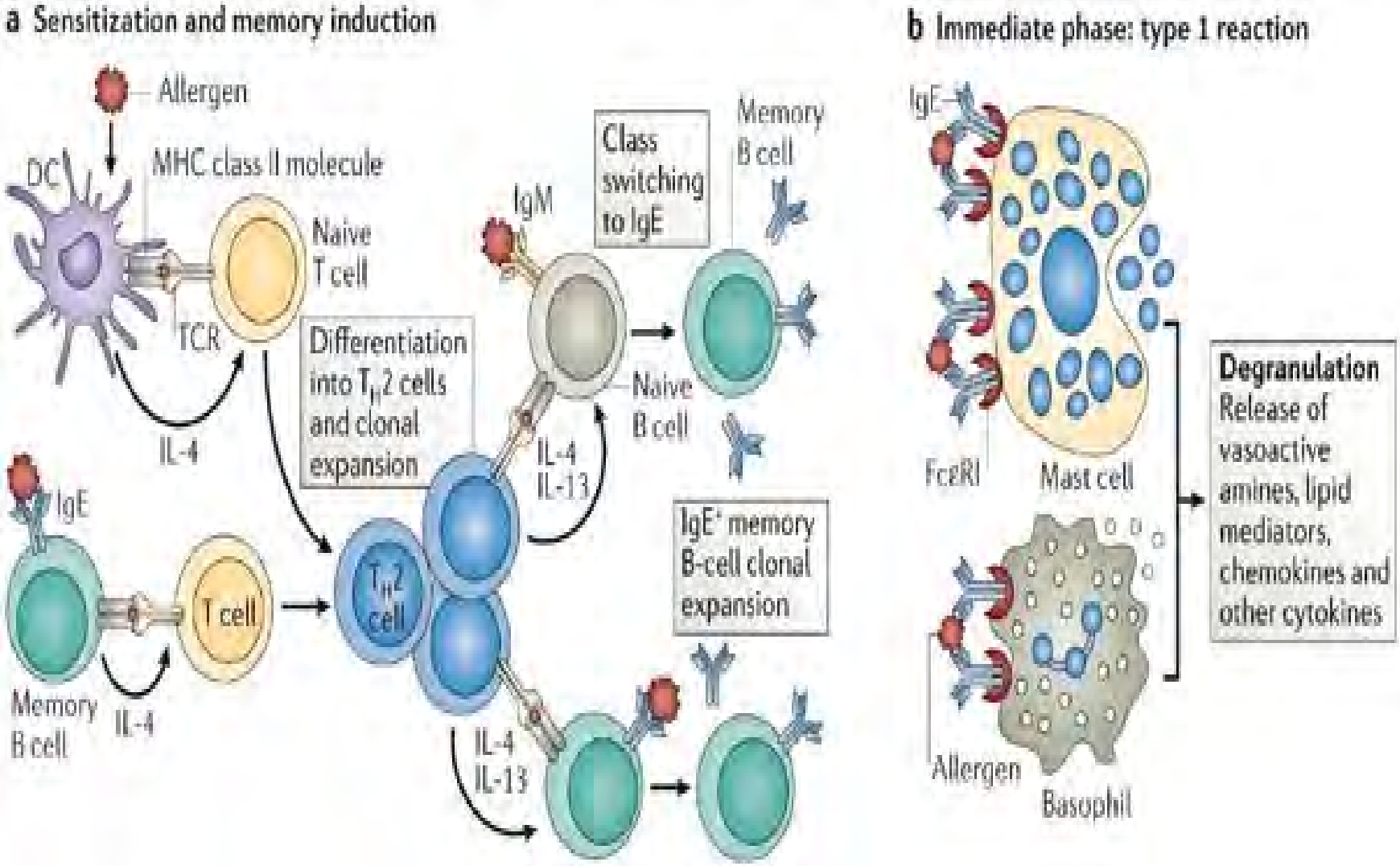
ACS session: A Near Perfect Food.

Mark R Windt M.D.

CAARD
CENTER FOR ASTHMA, ALLERGY AND RESPIRATORY DISEASE, PLLC

Mechanism of allergic food reactions




a Sensitization and memory induction
Allergen
MHC class II molecule
DC
Naive T cell
TCR
IL-4
Differentiation into T_H2 cells and clonal expansion
IgM
Class switching to IgE
Memory B cell
Naive B cell
IL-4
IL-13
IgE
Memory B cell
T cell
IL-4
T_H2 cell
IgE+ memory B-cell clonal expansion
IL-4
IL-13
b Immediate phase: type 1 reaction
IgE
FcεRI
Mast cell
Degranulation
Release of vasoactive amines, lipid mediators, chemokines and other cytokines
Allergen
Basophil

Allergy prevalence in the US

Table II-2. Allergy Prevalence in the United States

Age Group	Percentage of the Population								
	All Allergens	Milk	Egg	Peanut	Tree nuts	Fish	Shellfish[a]	Wheat	Soy
Children	6.0	2.5	1.3	0.8	0.2	0.1	0.0	UNK[b]	0.2
Adults	3.7	0.3	0.2	0.6	0.5	0.4	2.0	UNK[b]	UNK[b]

[a]Shellfish includes both crustaceans and mollusks. [b]UNK = unknown.

Sources: Cordle, 2004; Sampson, 1997; Sampson, 2004; Sampson, 2005; Sicherer *et al*., 2003; Sicherer *et al*., 2004.

Symptoms

Food allergies:

- Nausea and vomiting
- Diarrhea and bloating/bloody stools
- Hives (urticaria)/angioedema (swelling of the lip or tongue)
- Eczema
- Pruritus (itchiness)
- Sneezing and Wheezing
- Anaphylaxis

Treatment

Avoidance!!

- Antihistamines
- Epinephrine
- Desensitization
- Anti-IGE (Xolair)

Myths

- You can never outgrow food allergy
- False: many allergies are outgrown by adulthood
- Milk allergy is the most prevalent allergy in childhood
- True: milk is 2x's egg, 4x's peanut, 10x's tree nuts, and 25x's fish
- Eating small amounts of food to which you are allergic is safe
- False: even minute amounts of the allergic food can cause an anaphylactic reaction

CAARD
CENTER FOR ASTHMA, ALLERGY AND RESPIRATORY DISEASE, PLLC

Lactose Intolerance

- Definition: the inability to digest lactose. Lactose intolerance occurs when the small intestine does not make enough of the enzyme lactase.
- Occurs in Caucasian children beginning at age 5, in African-American children as early as age 2.
- It is more common in Asian, African, Native American, or Mediterranean ancestry.
- Approximately 30 million American adults are lactose intolerant by age 20.

Symptoms

Symptoms often occur 30 min. to two hours after you eat or drink milk products.

Symptoms include:

- Abdominal bloating
- Abdominal cramps
- Diarrhea
- Gas (flatulence)
- Nausea

Treatment

- Decreasing or eliminating milk products from your diet
- Add lactase enzymes to regular milk
- Take lactase enzymes as supplement in capsule or chewable tablet form

These milk products may be easier to digest:

❖ Buttermilk

❖ Fermented milk products such as yogurt

❖ Goat's milk

❖ Aged or hard cheeses

❖ Lactase treated cows milk for older children and adults

Myths

Raw milk cures lactose intolerance	Wrong: there is no indigenous lactase in milk
There is more lactose in raw milk than in pasteurized milk	Wrong: pasteurized milk and raw milk from cows contain about the same amount of lactose-4.8%
All milk contains the same amount of lactose	Wrong/Right: human milk contains approx.-9%, cows milk-4.8%, sheep-4.6%, goat-4.1%, Buffalo-4.86%

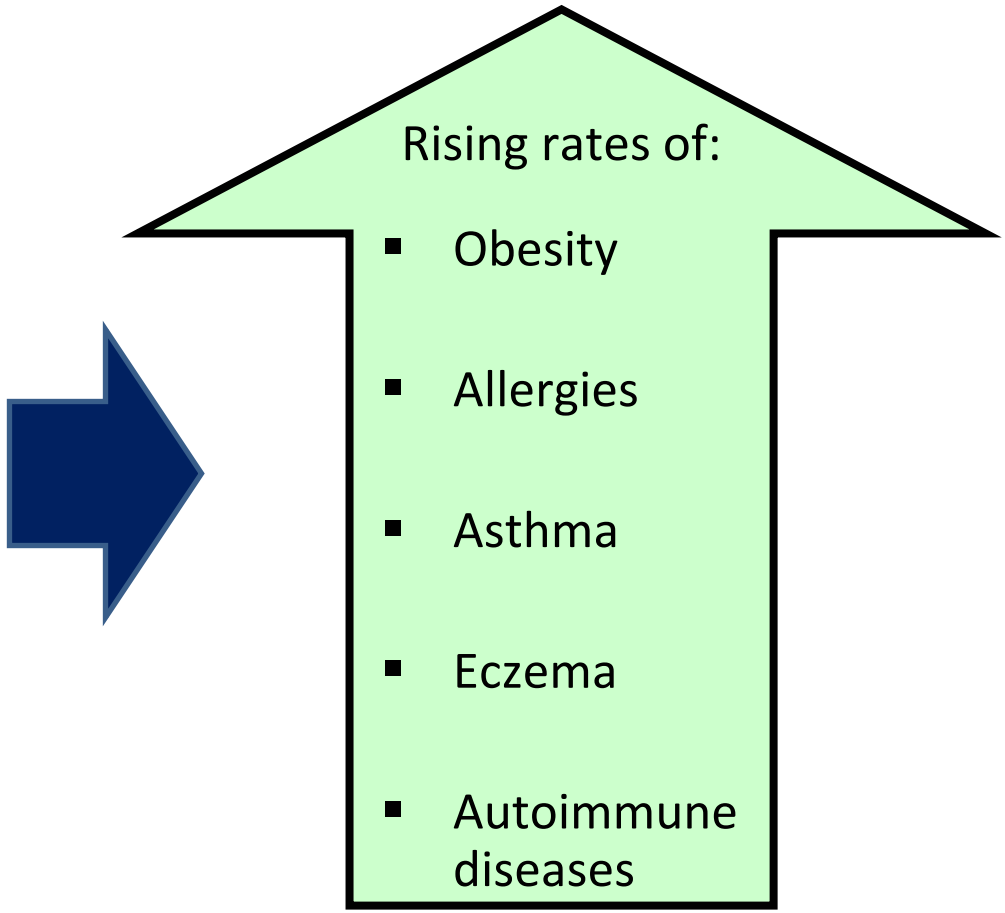
CAARD
CENTER FOR ASTHMA, ALLERGY AND RESPIRATORY DISEASE, PLLC

The Hygiene Hypothesis

The protective effect of raw milk consumption on asthma and allergy

Hygiene Hypothesis

- Water is cleaner
- Food is more processed
- Disease treated with more antibiotics
- Livestock fattened through greater use of antibiotics
- Hands, surfaces, even windows cleaned with antibacterial products



Landmark Studies

The PARSIFAL Study

Inverse association of farm milk consumption with asthma and allergy in rural and suburban populations across Europe: M. Waser, et al. Clinical and Experimental Allergy, **37**, 661-670, 2006

The GABRIELA Study

The protective effect of farm milk consumption on childhood asthma and atopy: The GABRIELA study

Georg Loss, MSc, et al. J Allergy Clin Immunology 2011; 128:766-73.

Results

The GABRIELA study

- Reported raw milk consumption was inversely associated to asthma, atopy, and hay fever independent of other farm exposures.
- Boiled farm milk did not show a protective effect.
- Total viable bacterial counts were not significantly related to asthma or atopy

Results

The PARSIFAL study

- There was a significant inverse association between farm milk consumption and childhood asthma, rhino conjunctivitis, sensitization to pollen, a mix of food allergens, and horse dander.
- Only farm milk butter consumption showed an inverse relationship to asthma and wheezing

What Are Probiotics?

- Meaning “for life”
- Commonly associated with GI tract health
- Key factors in the “hygiene hypothesis”

Human Microbiome Project

"People think bugs are out to get us. But we're the ones changing our inner ecosystem."

- Lita Procter, head of the Human Microbiome Project

U.S.A. Today, July 17, 2012

"Scientists are studying links between changes in our microbial inhabitants and a variety of increasingly common ailments."

- Julie Segre, National Institutes of Health

U.S.A. Today, July 17, 2012

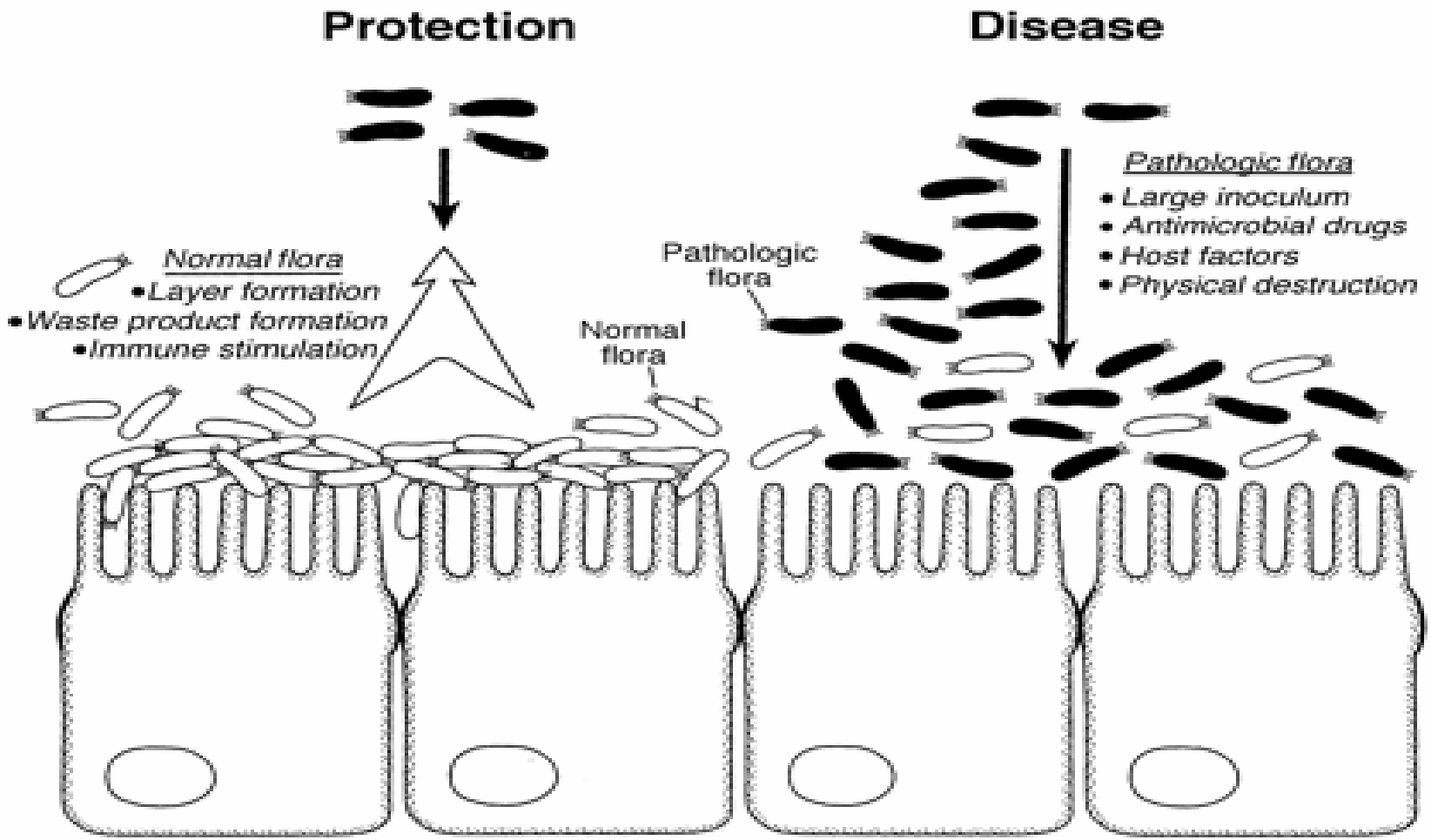
Microbiome Medicine?

- Biggest changes to microbiome occur in first few moments of life
- C-sections have lowered exposure to beneficial organisms during birth
- Identifying the “normal” microbiome helps us balance abnormal states
- Opens up a whole new field of medicine

Restoring the Balance

- Probiotics combat “leaky gut” by replenishing good bacteria
- Crowd out bad bacteria and provide physical barrier to entry, resulting in:
  - Improved immune system via increased anti-inflammatory responses
  - Allergy prevention
  - Yeast infection elimination
  - Essential vitamin production and metabolism regulation

Healthy vs. Unhealthy Gut



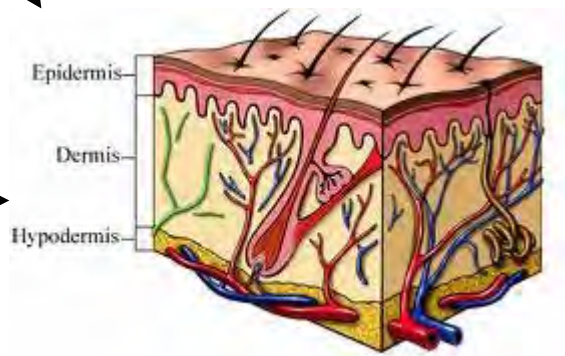
What Affects the Skin

Exogenous Factors

Lifestyle

Climate

UV Exposure



Free Radicals

Food

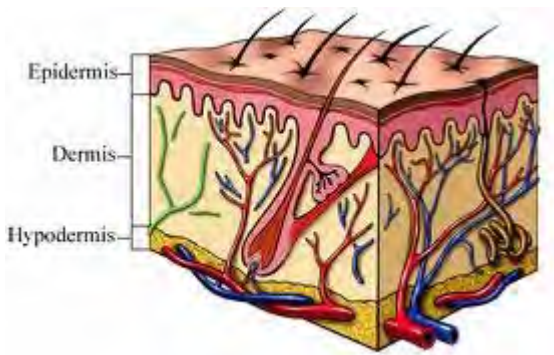
Toxins and allergens

Mechanical Damage

Endogenous Factors

Hormonal Status

Stress



Immunological Status

Inflammation
Photoaging
Dryness
Wrinkles

Bugs for Beauty

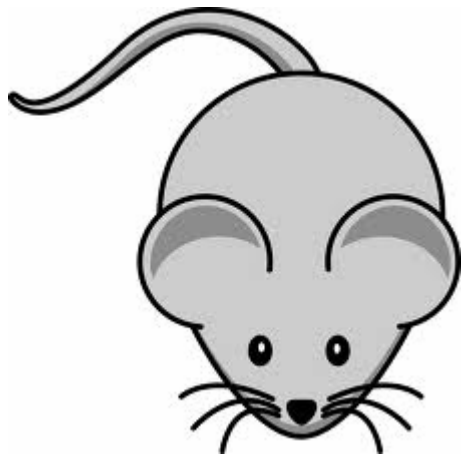
- Long used for atopic dermatitis and eczema
- Used for acne
  - "gut-brain-skin axis" also helps with depression
- Other skin uses
  - Dandruff
  - Malassezia
  - Psoriasis
- Now for anti-aging

Mice on Yogurt

- Highlights of a study making way into lay press[1]
- "Mice on Yogurt" showed significant health and appearance improvements:

Fewer incidences of skin ulcers

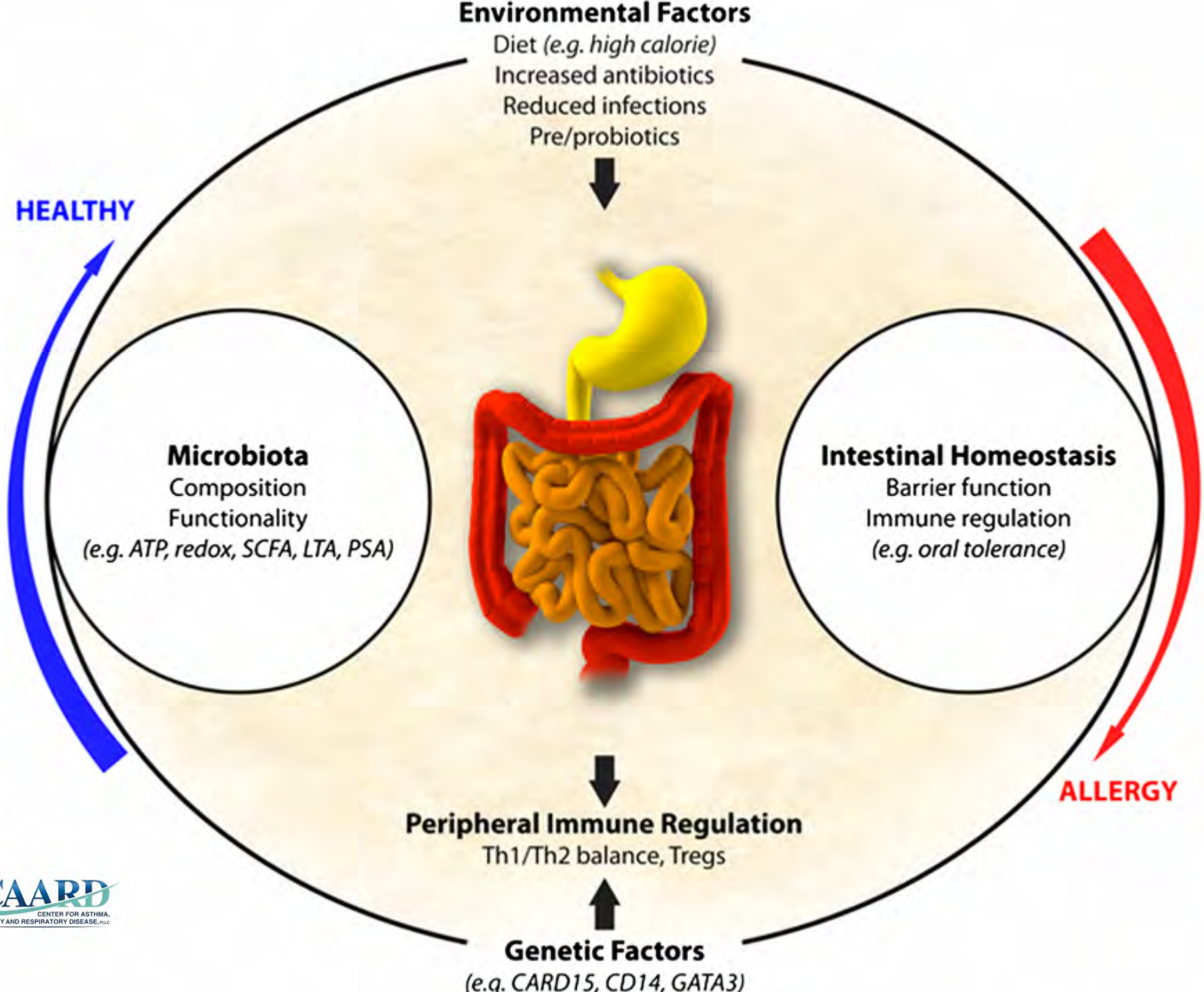
Reduced bone density loss



Reduced hair loss

Weight loss

[1] "Yogurt Makes Mice Slimmer, Sexier," Katie Moisse, ABC News May 2012



CAARD
CENTER FOR ASTHMA, ALLERGY AND RESPIRATORY DISEASE, PLLC

CHEESE

Can you handle it?

American Cheese Society Conference
Raleigh, North Carolina
August 2012

By Michael Kalish

Quality Assurance

Food Safety Plan

1. Hazard Analysis Critical Control Point (HACCP) Plan or Hazard Analysis Risk Prevention Control (HARPC) Plan.
   - Instructions for how to develop a HACCP Plan: http://www.fsis.usda.gov/OPPDE/nis/outreach/models/HACCP-1.pdf (Food Safety and Inspection Service website)
2. Food Processing Plant, Warehouse, and Retailer Standards: http://www.nsf.org/business/NSF_cook_and_thurber/guidelines.asp?program=NSFCooThu

Develop a Supplier Approval Program

A documented Supplier approval program ought to identify criteria* for approving suppliers

1. Supplier approval policies and procedures
2. Incoming vehicle inspection and documentation
3. Release criteria for ingredients
4. Storage and Handling policies and practices
5. Bulk receiving systems – sanitation and monitoring
6. Restricted and/or sensitive ingredient control , including chemical compounds

* Cook & Thurber criteria for Food Warehouses and Distribution Facilities, http://www.nsf.org/business/NSF_cook_and_thurber/guidelines.asp?program=NSFCooThu

“Training”

January 2010- February 2012

- 32 dairy-related outbreaks with 309 illnesses
  - 22 from fluid raw milk
  - 2 from aged raw milk cheese
  - 2 from pasteurized milk
  - 6 from mexican-style cheese.

- 33 recalls in which no illnesses were reported
  - 14 from raw milk dairies (7 fluid raw milk, 7 aged raw milk cheese)
  - 15 from pasteurized cheese
  - 4 from inadequate pasteurization

January 2010 – February 2012

- The illnesses reported included:
  - Campylobacter Jejuni
  - Coxiella Burnetii (Q fever, causing Meningitis)
  - Salmonella Enterica
  - Listeria Monocytogenes
  - Shiga toxin-producing E. Coli
  - E. Coli 0157:H7
  - Staphylococcus Aureus
  - Cryptosporidium Poarvum
  - Yersinia enterocolitica
  - High coliform counts (15 times the allowable level).

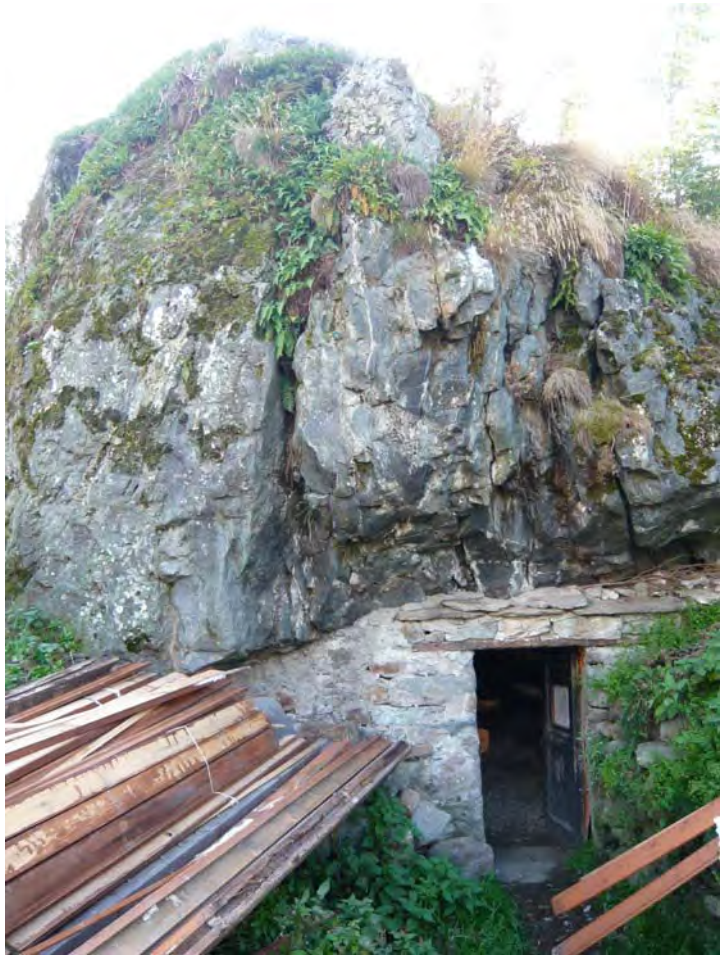
of microorganisms need to cause illness varies with:

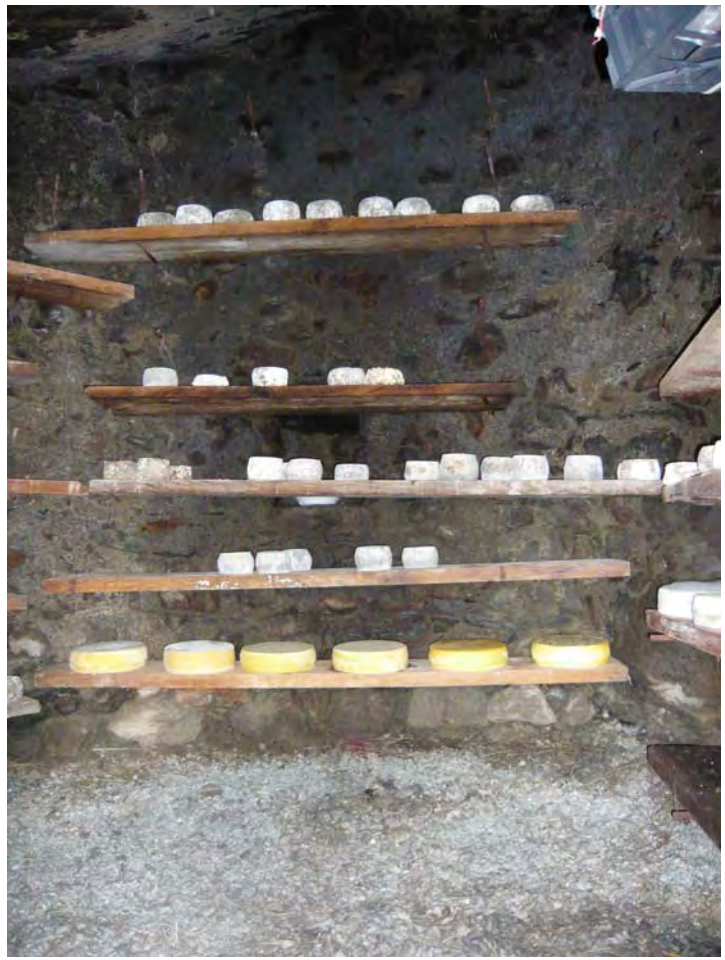
1. Specific strain of the microorganism
2. Susceptibility of the host
    - Elderly
    - Young
    - Debilitated
    - Suffering from other illnesses or injuries
    - Immunocompromised
    - Somehow less resistant
3. Subsequent mishandling

January 2010 - February 2012

- 32 dairy-related outbreaks with 309 illnesses
  - 22 fluid raw milk
  - 2 aged raw milk cheese
  - 2 pasteurized milk
  - 6 mexican-style cheese
- 33 recalls in which no illnesses were reported
  - 14 raw milk dairies (7 fluid raw milk, 7 aged raw milk cheese)
  - 15 pasteurized cheese
  - 4 inadequate pasteurization

“Common Sense”





Random Testing

Bibliography

- Neuman, William, “As Cheesemaking Blooms, So Can Listeria” ; New York Times, November 19, 2010
- News Desk, “Dairy-Related Outbreaks, Illnesses, Recalls: 2010 to Present”; Food Safety News, www.foodsaftetynews.com/2012/04/dairy-related-outbreaks-illnesses-recalls-2010-to-present/; April 11, 2012.

Cheese is not perfect yet given a choice of foods there is no other that matches the complete nutrition cheese provides.

No other food has a better track record for food safety.

Cheese is derived from our first food – milk.

Thank you!