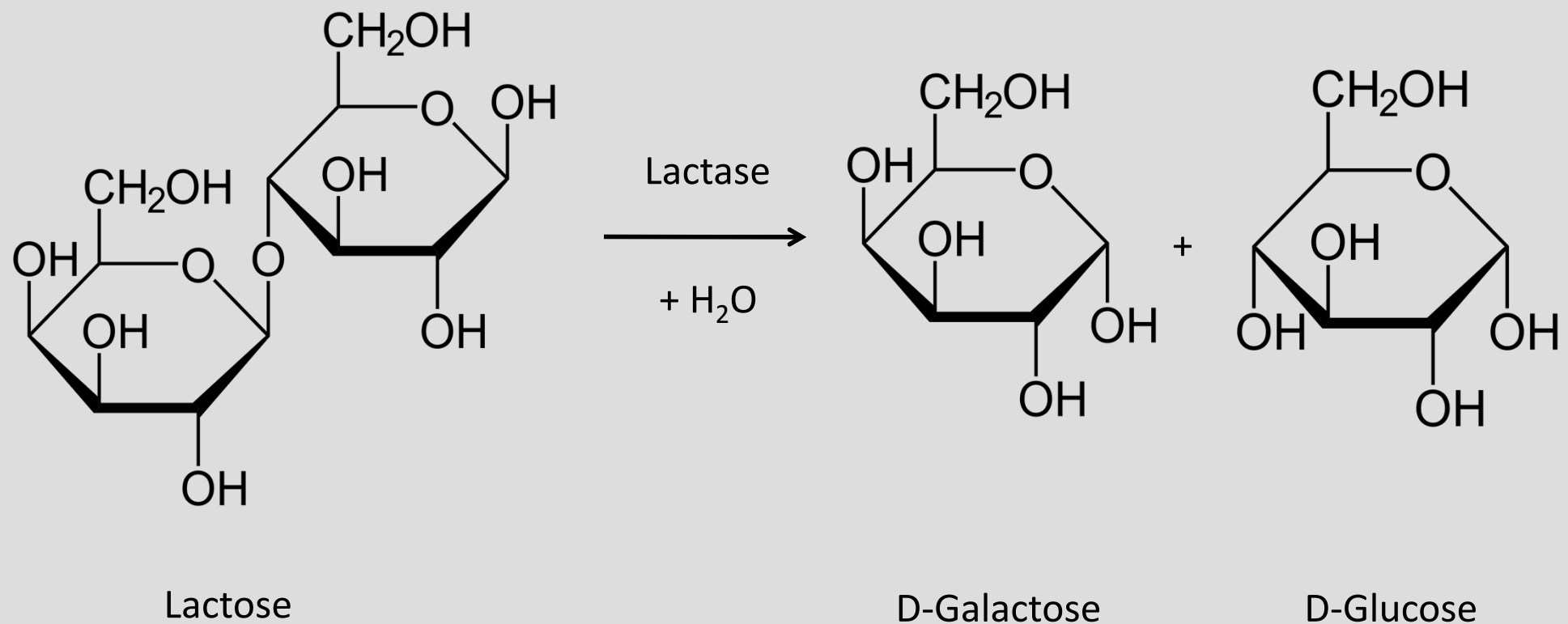


# Lactase: an enzyme that splits lactose apart



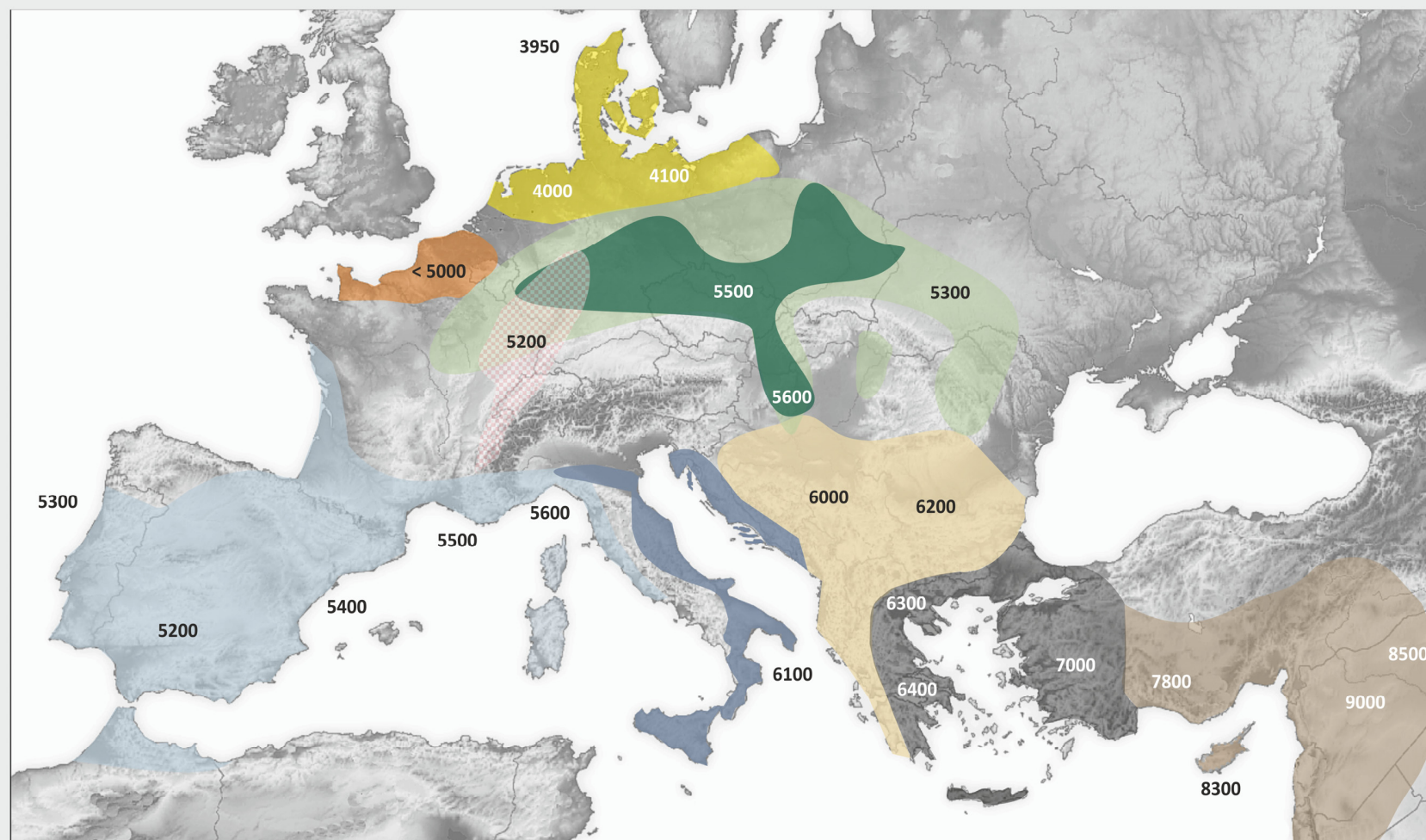
# Superpower?

- Lactase persistence in Europeans comes from a single nucleotide polymorphism, a T instead of a C at -13,910
- Researchers estimate people with the -13,910\*T mutation would have produced between 2 and 19 percent more offspring than those who lacked it.
- That degree of selection “among the strongest yet seen for any gene in the genome.” – *Bersaglieri et al, 2004*



# The Spread of the Neolithic in Europe (calendar years BC)

*From Burger and Thomas (2011)*



# The Neolithic Toolkit



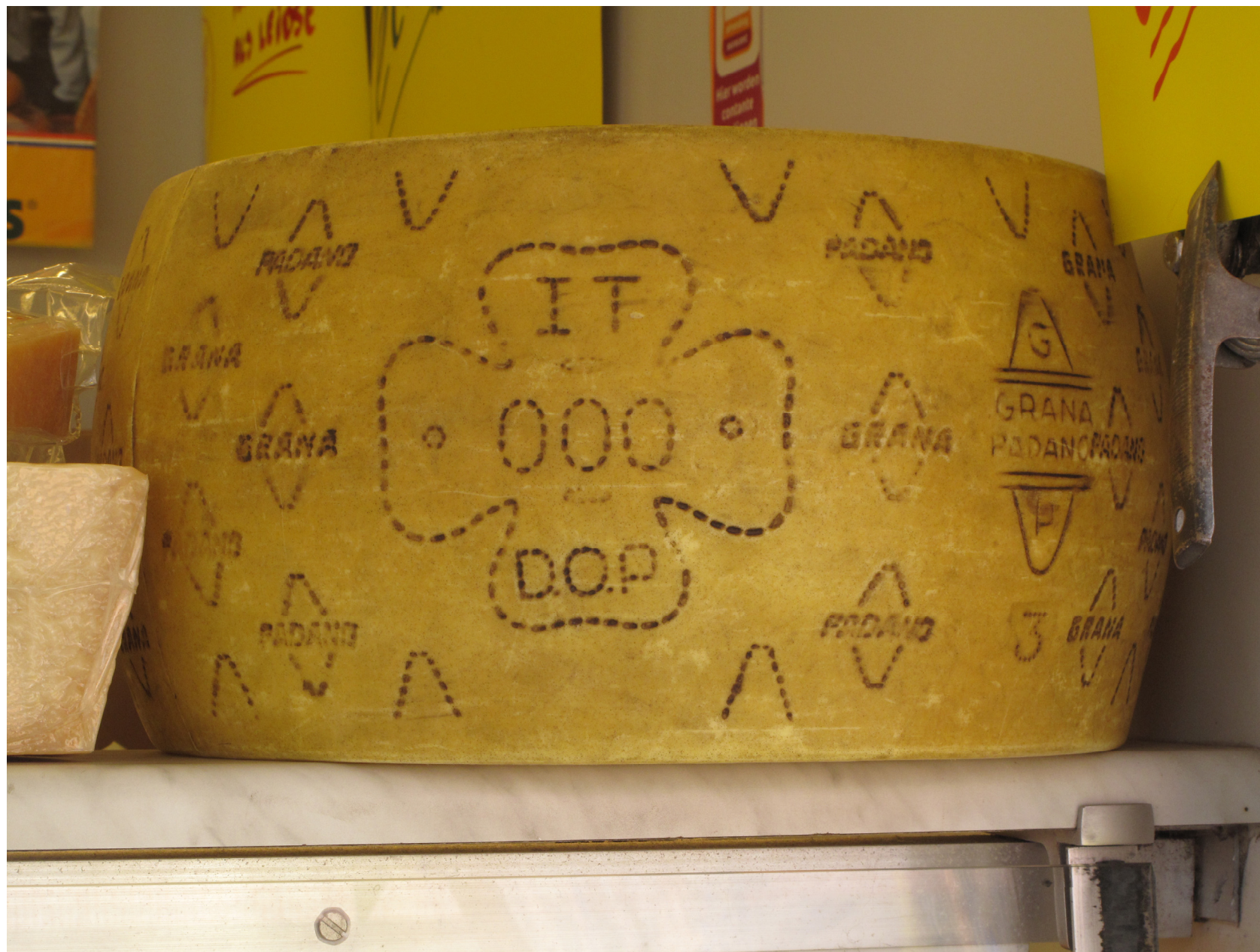


# One last tool...









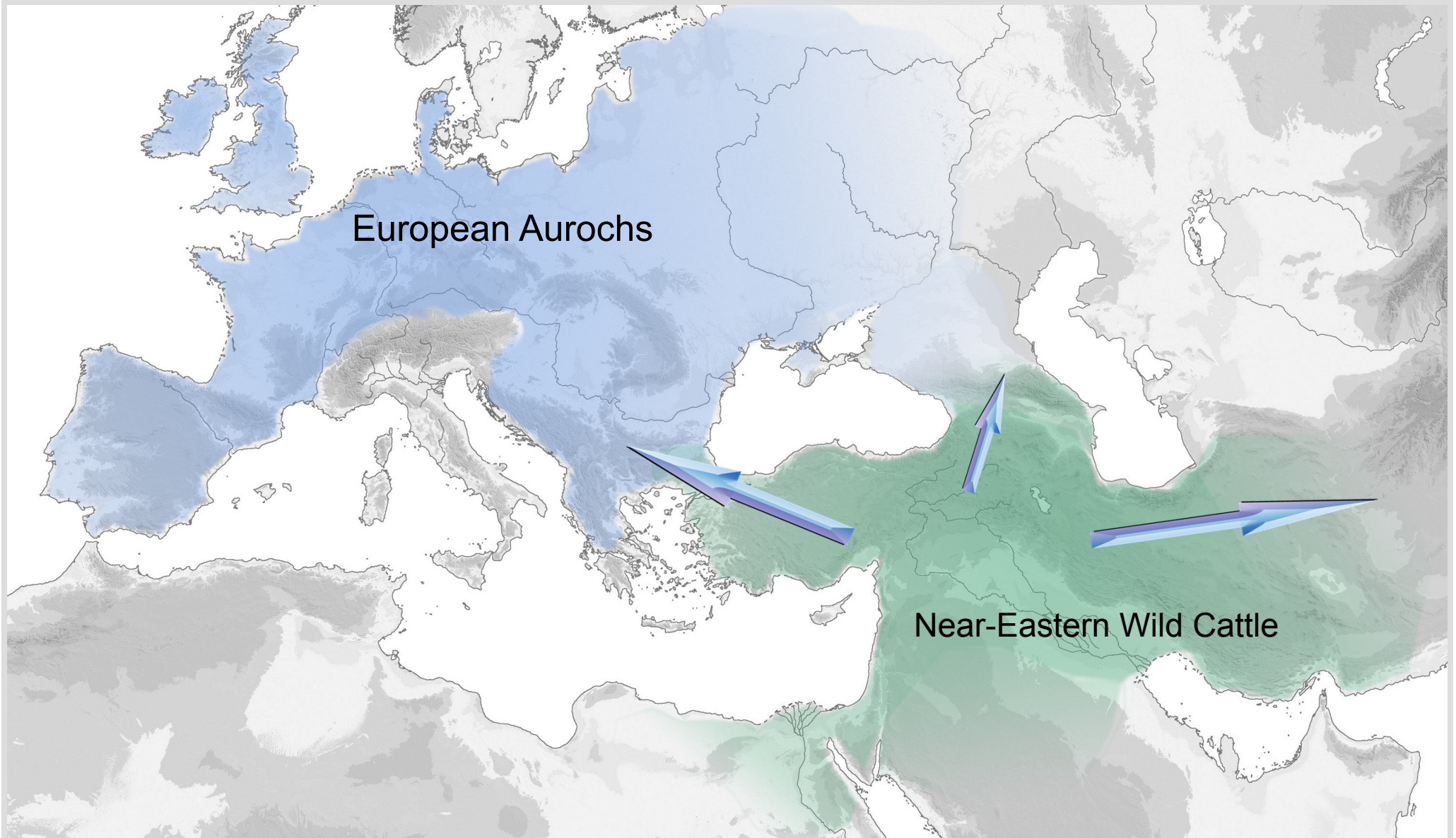






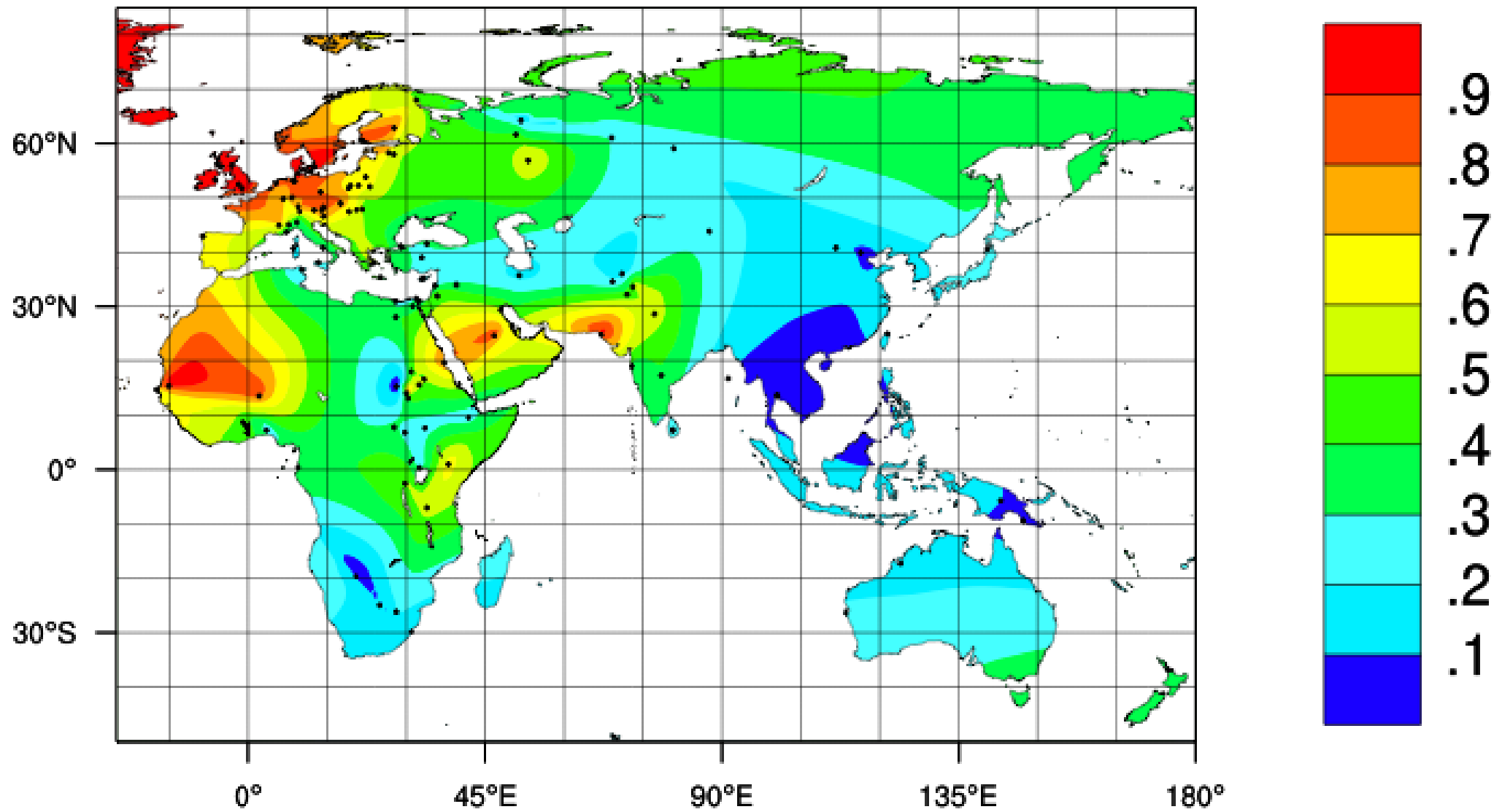
# Aurochs & wild cattle distribution at the end of the last Ice Age, 10,000 BC

*Bollongino et al. 2008 und 2012*



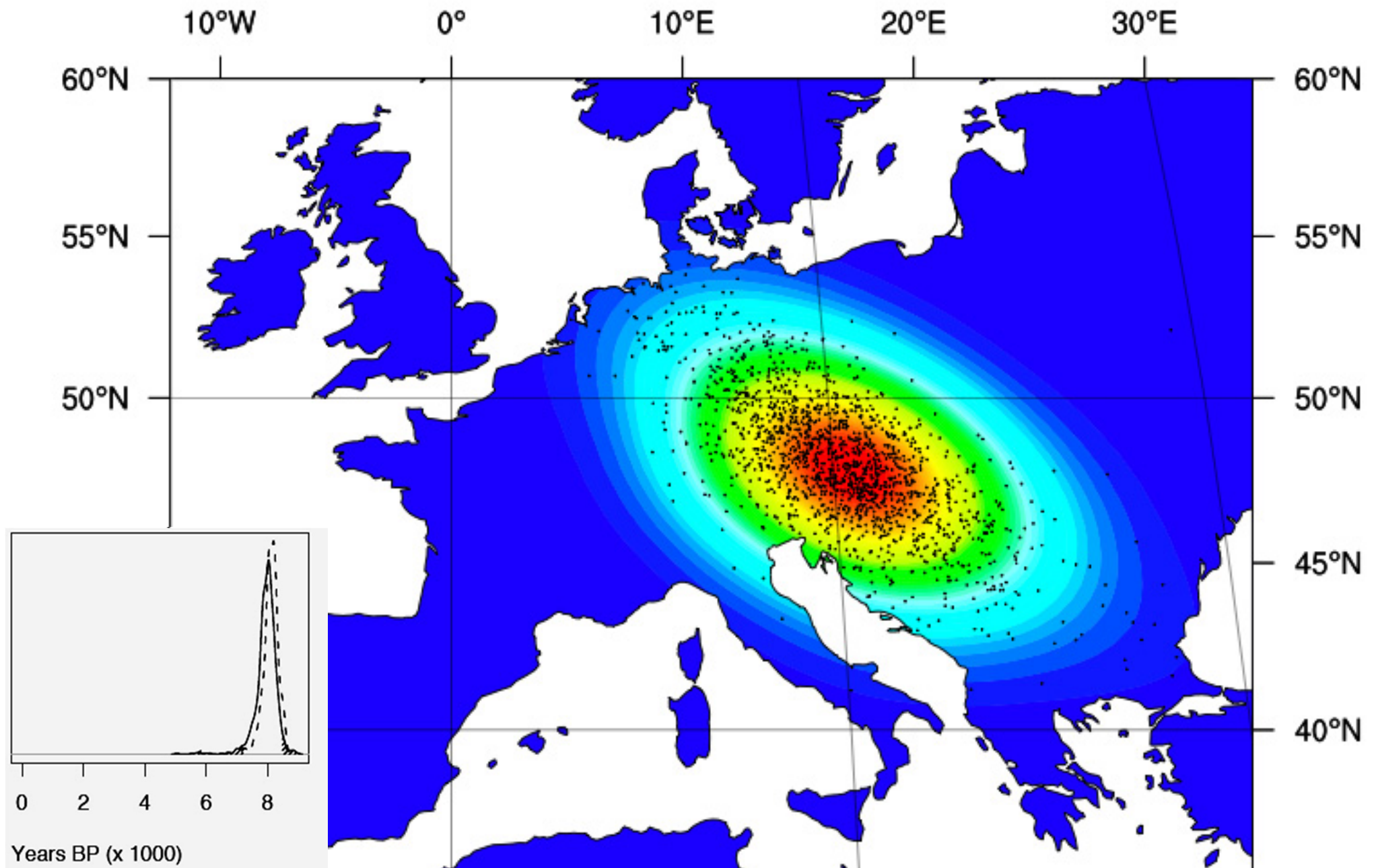
# Lactase Persistence Today

*Itan et al. 2010*



# Modeling the location and date of dairying / lactase persistence co-evolution

*Itan et al. 2009*





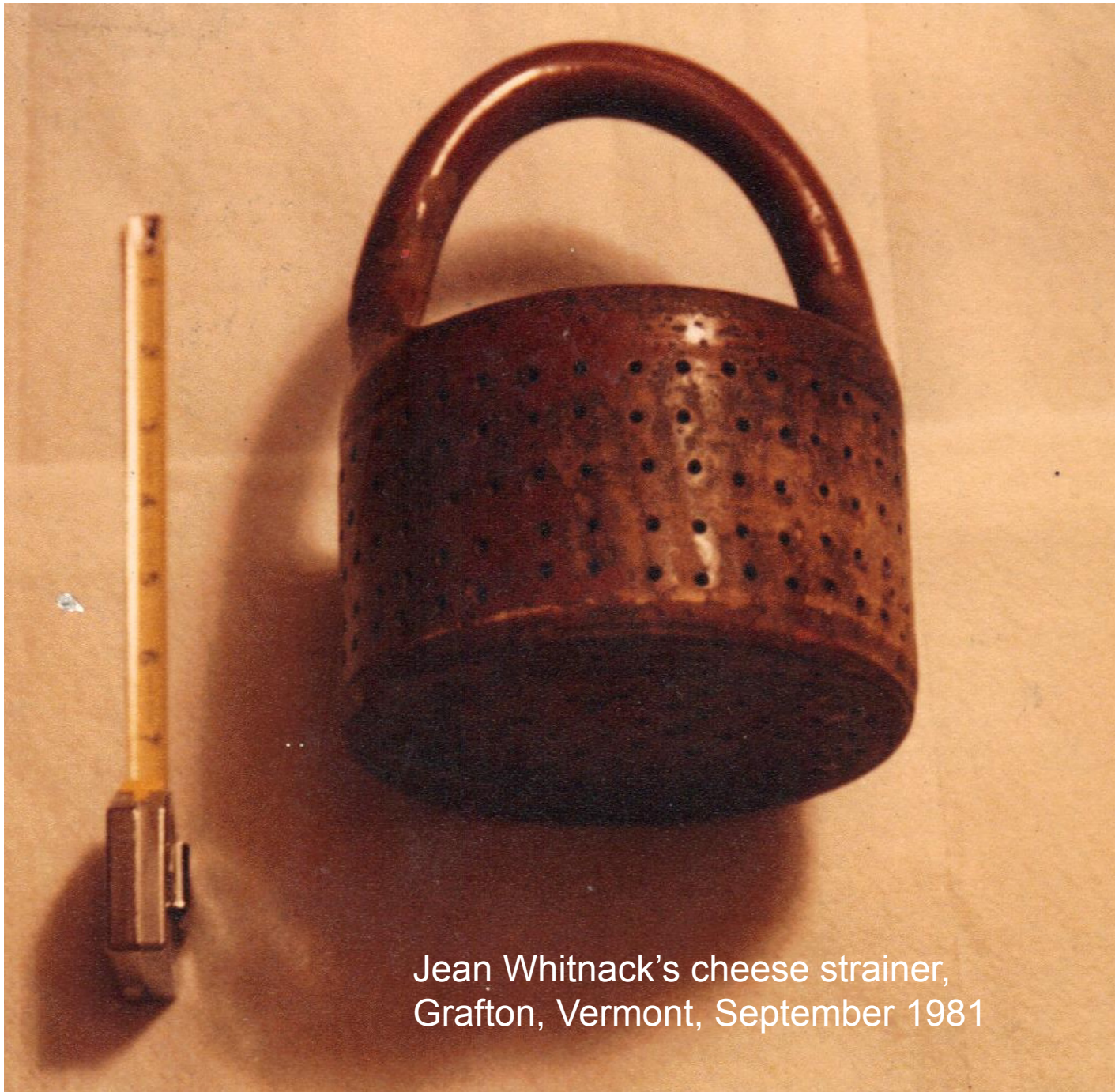






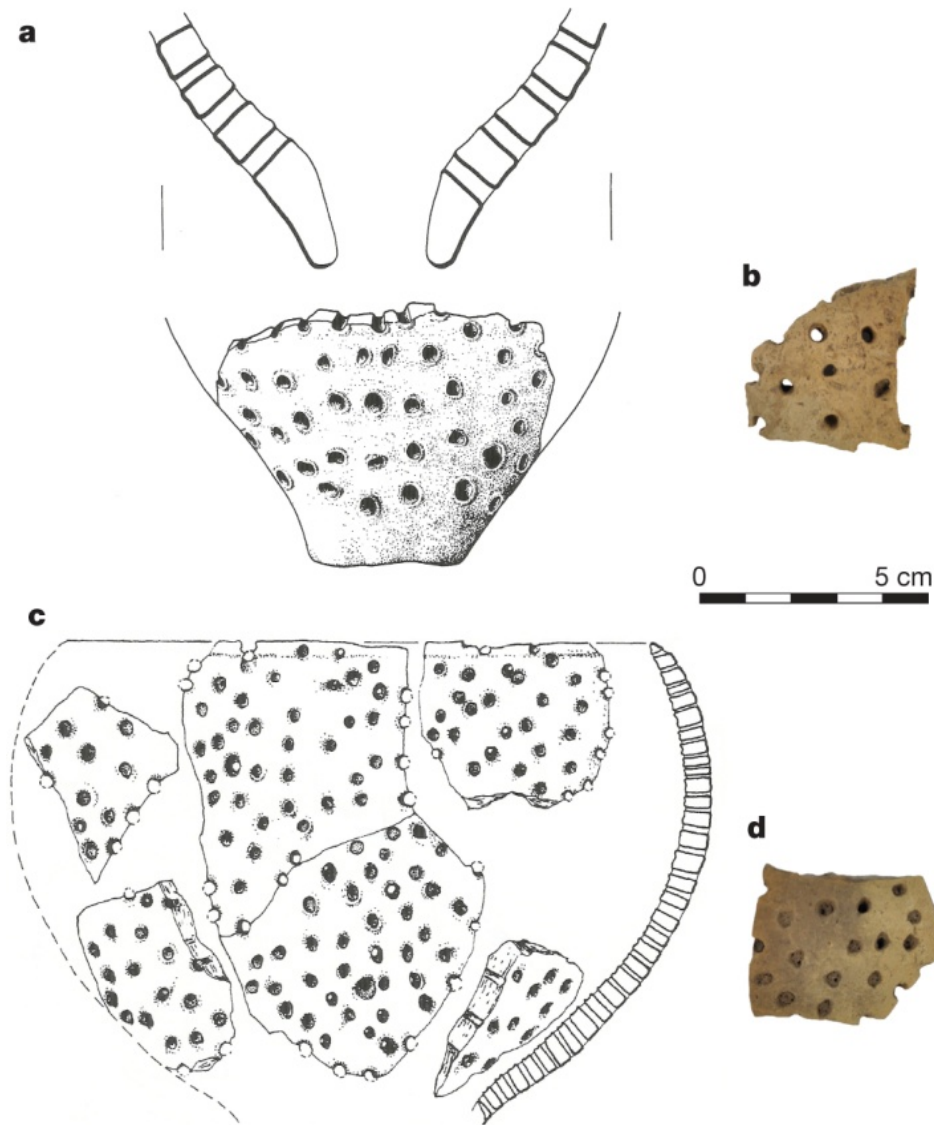






Jean Whitnack's cheese strainer,  
Grafton, Vermont, September 1981

Reconstructed Neolithic sieve vessels and sieve fragments from Kujawia, Poland, submitted to lipid residue analyses.

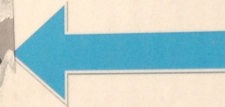


M. Salque *et al.* *Nature* 493, 522-25 (2013) doi:10.1038/nature11698





**Milchautomat**

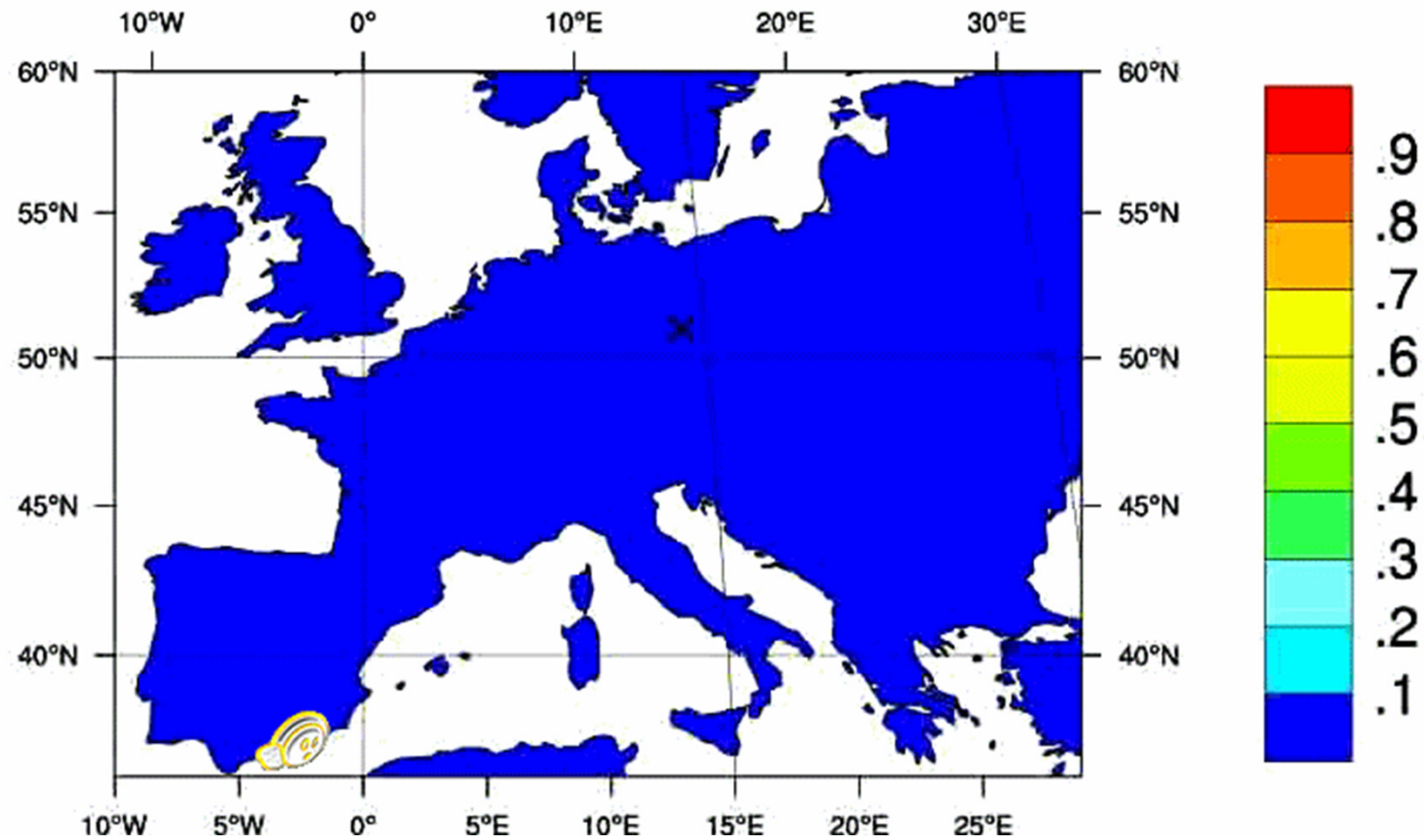


**24Std.**

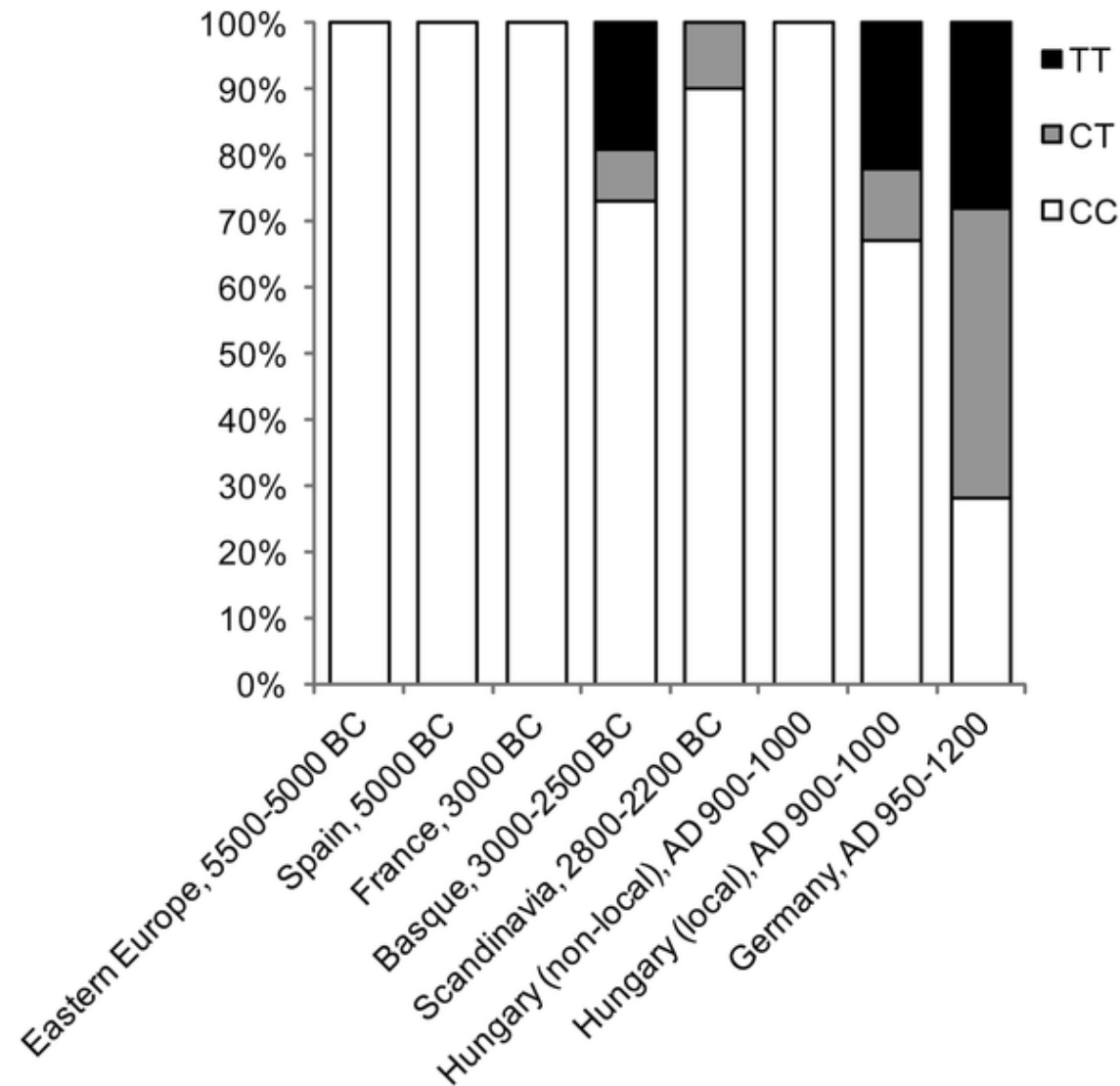
**In Betrieb**

# 360 generations later...

LP allele frequencies, generation 0



**Figure 1. Relative frequency of lactase persistence and non-persistence genotypes reported in past European populations.**



Krüttli A, Bouwman A, Akgül G, Della Casa P, et al. (2014) Ancient DNA Analysis Reveals High Frequency of European Lactase Persistence Allele (T-13910) in Medieval Central Europe. PLoS ONE 9(1): e86251. doi:10.1371/journal.pone.0086251  
<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0086251>

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**Andrew Curry – [www.andrewcurry.com](http://www.andrewcurry.com)**



# Germany, ca. 3,000 BC



First farmer of the Linear Pottery Culture in Neolithic Central Europe.

Illustration: Karol Schauer, State Museum of Prehistory in Halle (Saale), Saxony-Anhalt, Germany.