

French research program for adaptative fine milk composition

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Context:

- From milk quantity to **milk quality**
- New phenotypes for new breeding goals : **product criteria**

Objectives

- 1) Develop analysis method for milk **Fatty Acid (FA)** profile
- 2) Create reference analysis method for milk **Individual protein (IP)** profile
- 3) Create huge **database**: feeding strategy records, genotypes, individual milks and blood, Mid Infra-Red (MIR) spectra
- 4) Determine **genetic and feeding factors** impacting fine milk composition

Partners

CNIEL (Dairy industries and farmers)

France Génétique Elevage:
 (France Livestock Genetics)

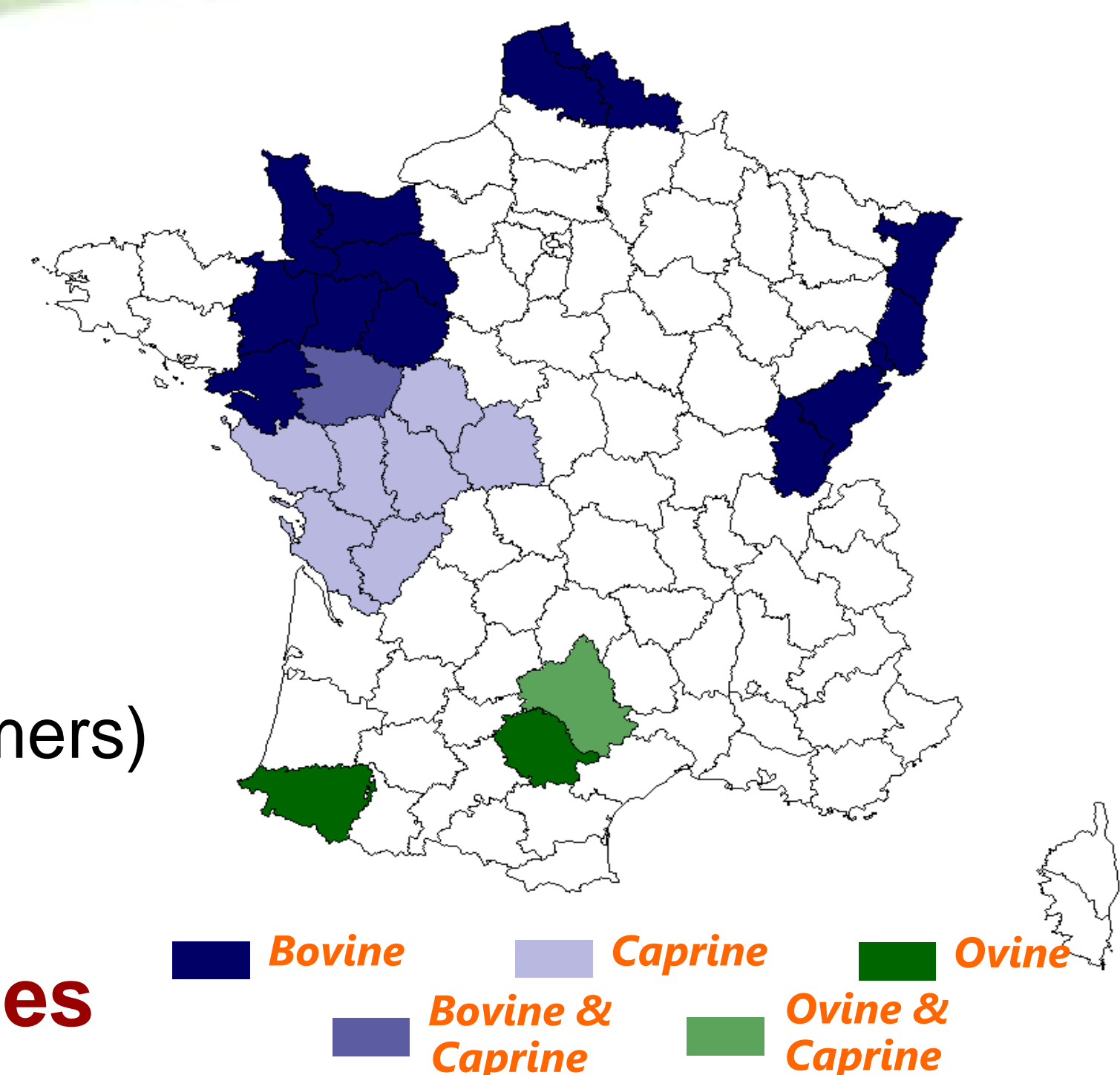
UNCEIA, ANIO and Capgenes
 (about 10 breeding companies)

FCL and CNBL
 (Milk recording organizations)

Actilait and regional laboratories

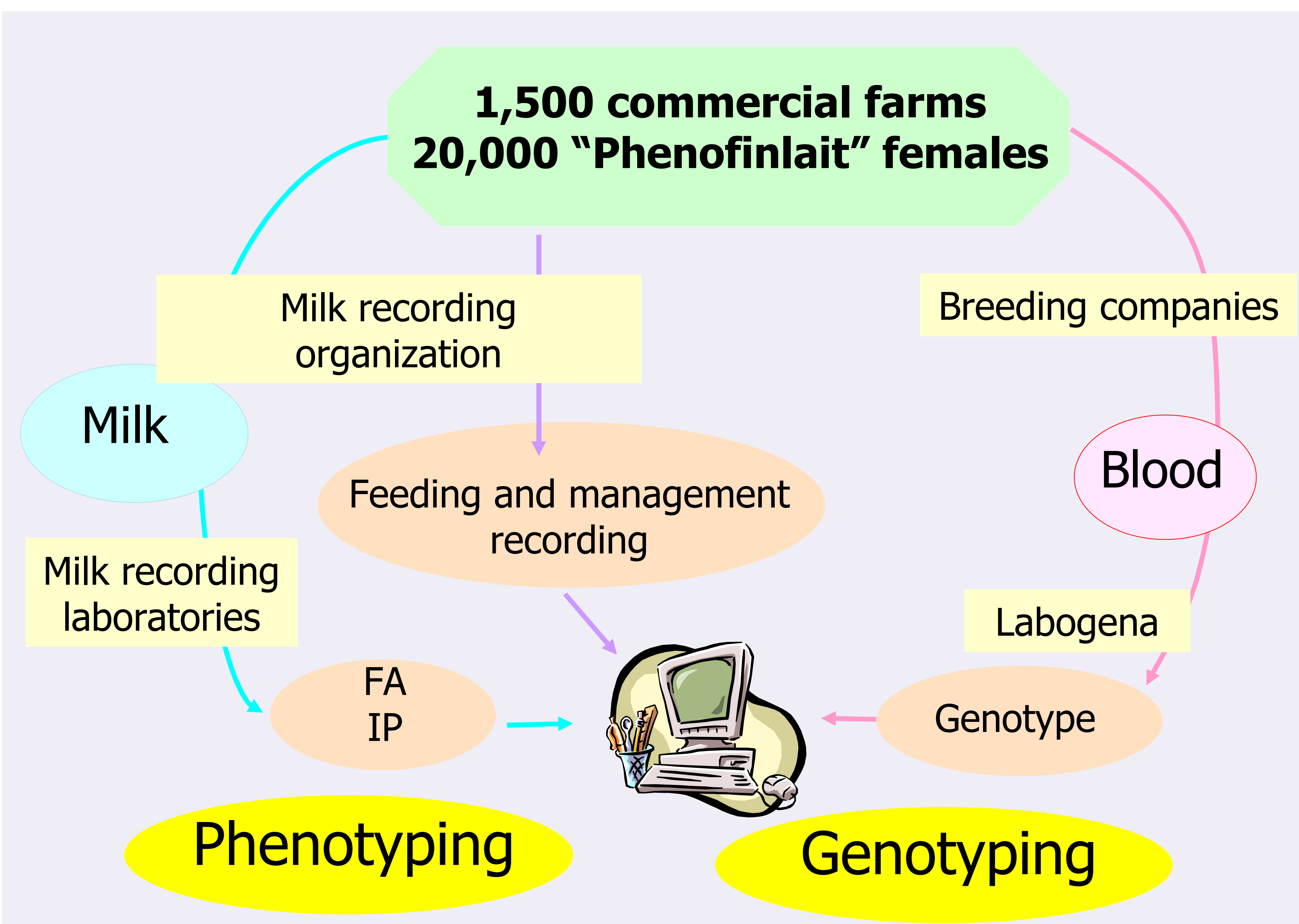
INRA
 (French National Institute for Agricultural Research)

Institut de l'Élevage
 (French Livestock Institute)

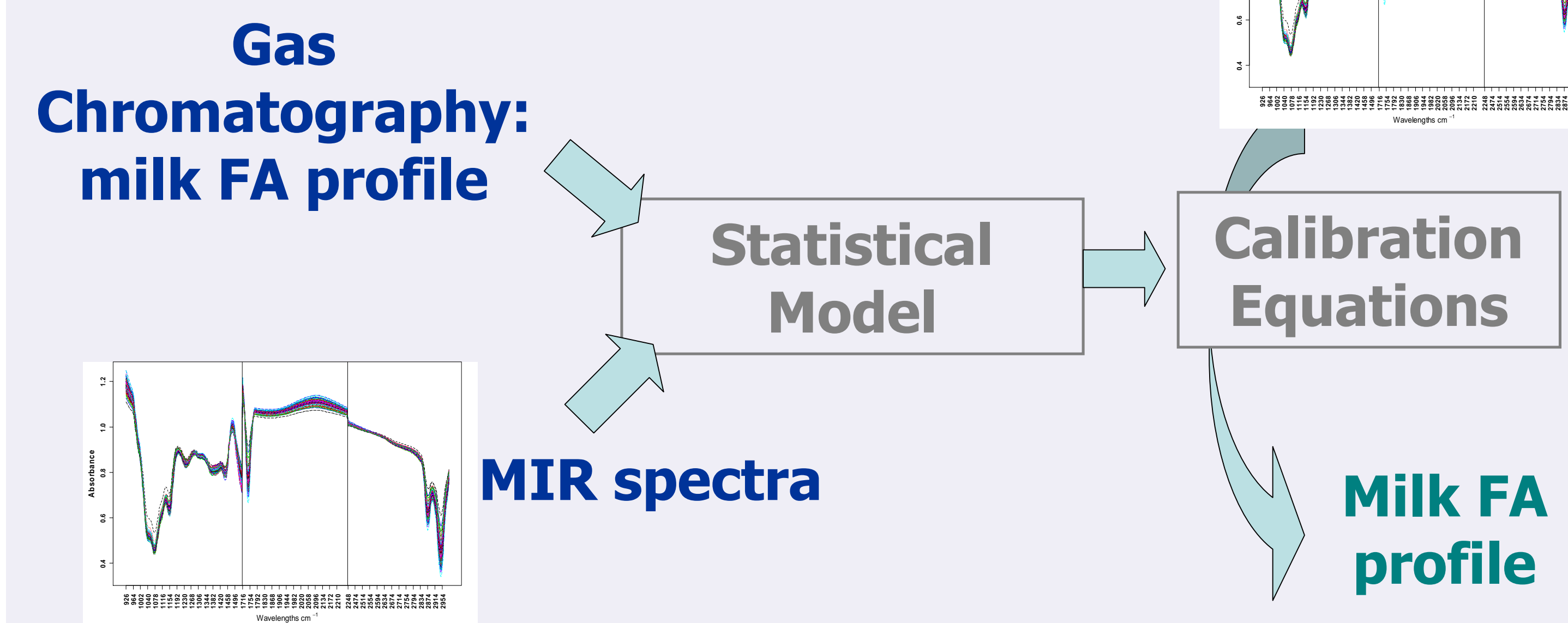


26 departments, 3 species (bovine, caprine and ovine), 7 breeds

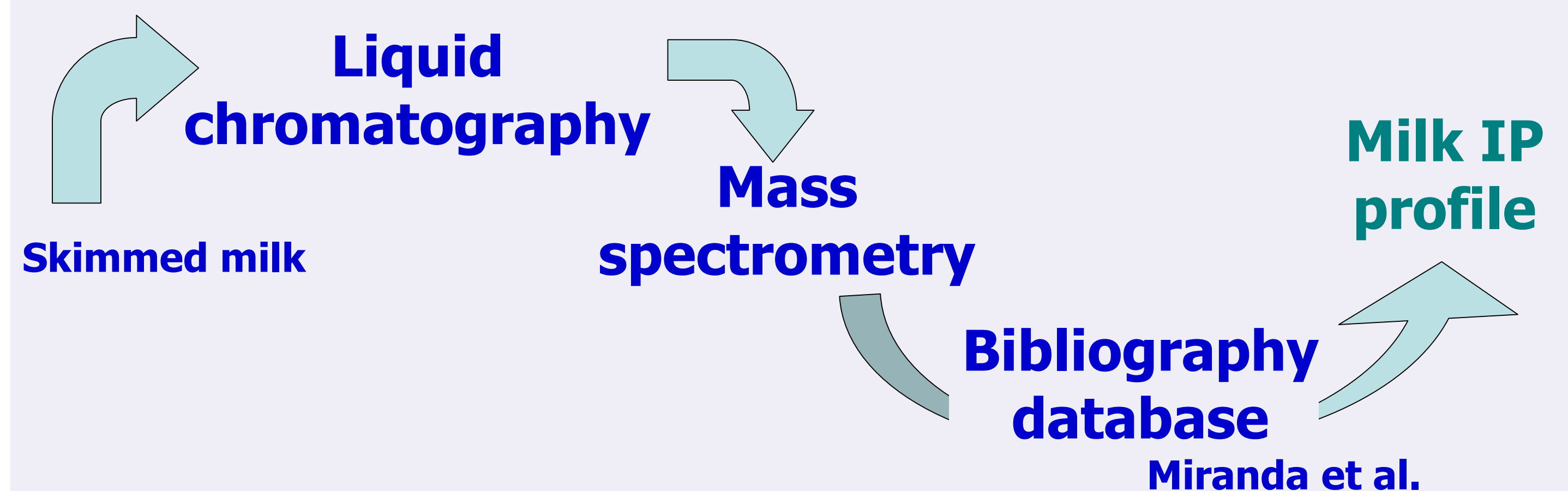
Material and methods



Analysis method for FA



Reference analysis method for IP



First results

- 15 to 20 milk FA well estimated with MIR spectra
- Huge database: 780,000 MIR spectra, 7,100 diets composition records, about 14,000 milk and 17,000 blood samples
- First results confirmed or suggested effects of animal physiology, breed, diet and genetic on milk FA composition

What next?

- For milk composition analysis: improve MIR Spectra equations to estimate milk FA profile, set equations for FA estimation usable with every milk recorder, analyze protein composition.
- Genotyping of 8,000 cows, 3,000 ewes and 4,000 goats in order to relate markers to milk FA and protein composition.
- Have a more precise definition of feeding systems and their impact on fine milk composition.