

➤ Genetic determinism of quality of lamb leather in Lacaune dairy sheep breed

L. Drouilhet, E. Dugas, F. Woloszyn, F. Plisson-Petit, J. Gayraud, J.-C. Duchêne, J. Frayssignes, A. Gille, S. Brenot, D. Allain and H. Larroque



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L'Europe investit dans les zones rurales

➤ Co-products related to keratinous tissues : leather and wool

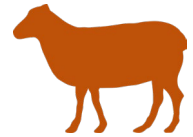
➤ Animals commonly used to produce leather

- **Cattle (Cows and Bulls):** clothing, footwear, bags, and furniture
- **Sheep and Lambs:** softer, more supple leather (clothing, gloves, accessories) + fleece-lined skins
- **Goats:** soft and flexible : bags, gloves, and jackets
- **Pigs:** durable and used for shoes, bags
- **Buffalo:** strength and durable : heavy-duty items like shoes, belts, and furniture
- **Exotic Animals:** such as alligators, crocodiles, snakes, ostriches, kangaroos, and stingrays : high-end, exotic leather products like luxury handbags, shoes, and accessories

Each type offering distinct characteristics suited to specific applications



➤ French dairy sheep populations in selection: 3 main areas and 5 breeds



Western Pyrenean



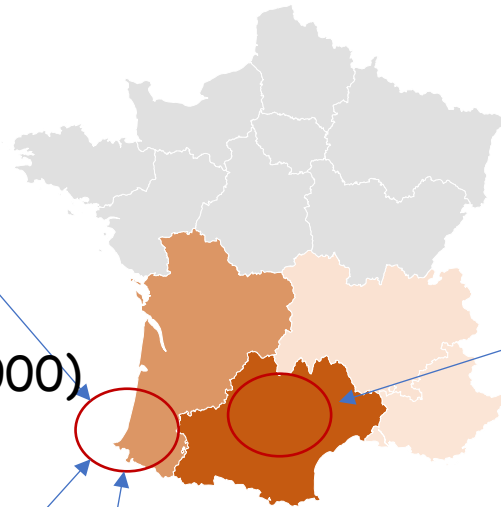
Manech Tête Noire(83,000)



Basco-Béarnaise (84,000)



Manech Tête Rousse (296,000)



Roquefort area



Lacaune (1,027,000)

Fattened lambs: a secondary product of the dairy industry
(yet economically significant)



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Corsica island



Corse (83,650)

Breeds	Milk Yield
Lacaune	346 L
Manech Tête Noire	183 L
Basco-Béarnaise	222 L
Manech Tête Rousse	245 L
Corse	153 L

> Lacaune lamb skins



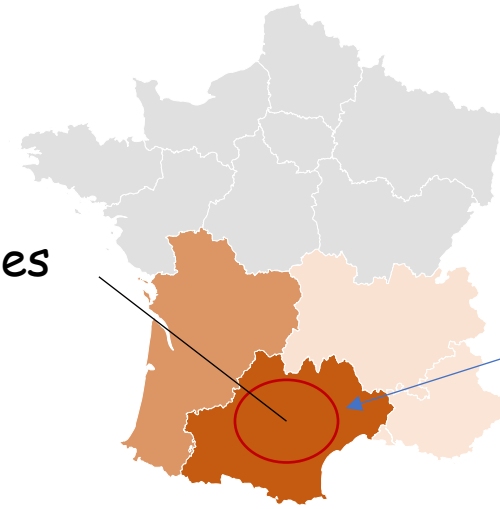
Photo: ALRIC

Millau, capital of tanneries
→ local supply



Photo: ALRIC

Lambskin is the leather produced from a sheep
before it has grown to maturity



Roquefort area



Lacaune (1,027,000)

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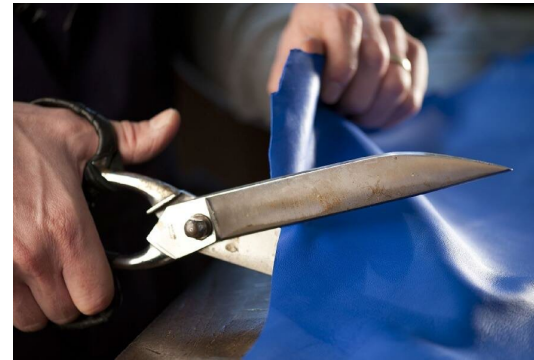


Photo: L'atelier du Gantier



Photo: Office du tourisme de Millau

➤ Issue : Lamb skin quality decrease

pinhole



small holes in the grain
surface of the dewooled pelt

straw-like bushiness



perforations due to the presence
of forage debris planted in the
thickness of the dermis

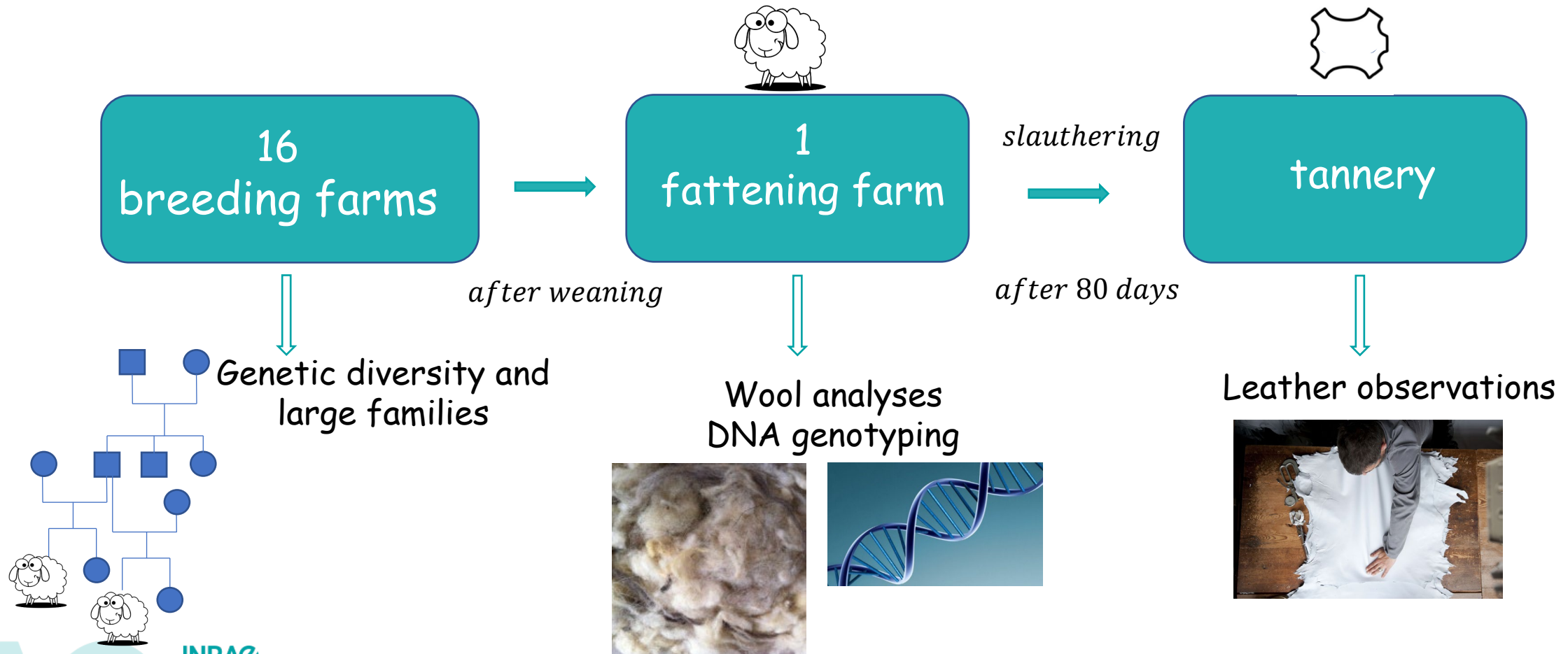
➤ Issue : Lamb skin quality decrease

- Impact on local supply : diversification (more distant sourcing)
- Economic loss
 - For breeder : A skin without defect can earn the breeder 2.5 times more
 - For tanneries : the need to process a significant number of skins in order to identify a small selection of top-quality ones.
- Environmental impact from transporting and processing skins

What are the environmental and genetic factors that affect the frequency of two leather defects?

➤ An innovative protocol in a conventional farming context

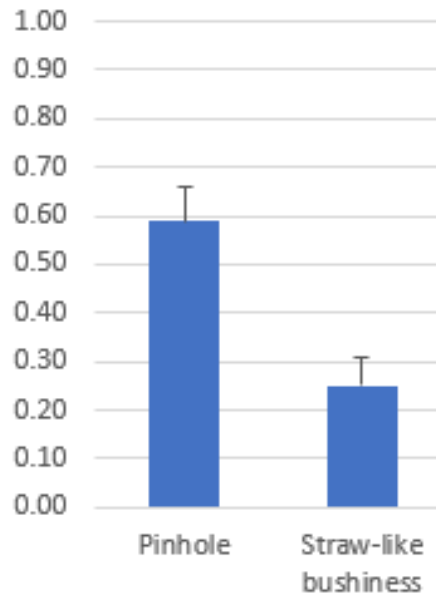
Individual tracking of around 1400 lambs



⇒ Extensive coordination among all project stakeholders

➤ Genetic parameters

Estimated heritability



Leather defects

- Pinhole
- Straw-like bushiness



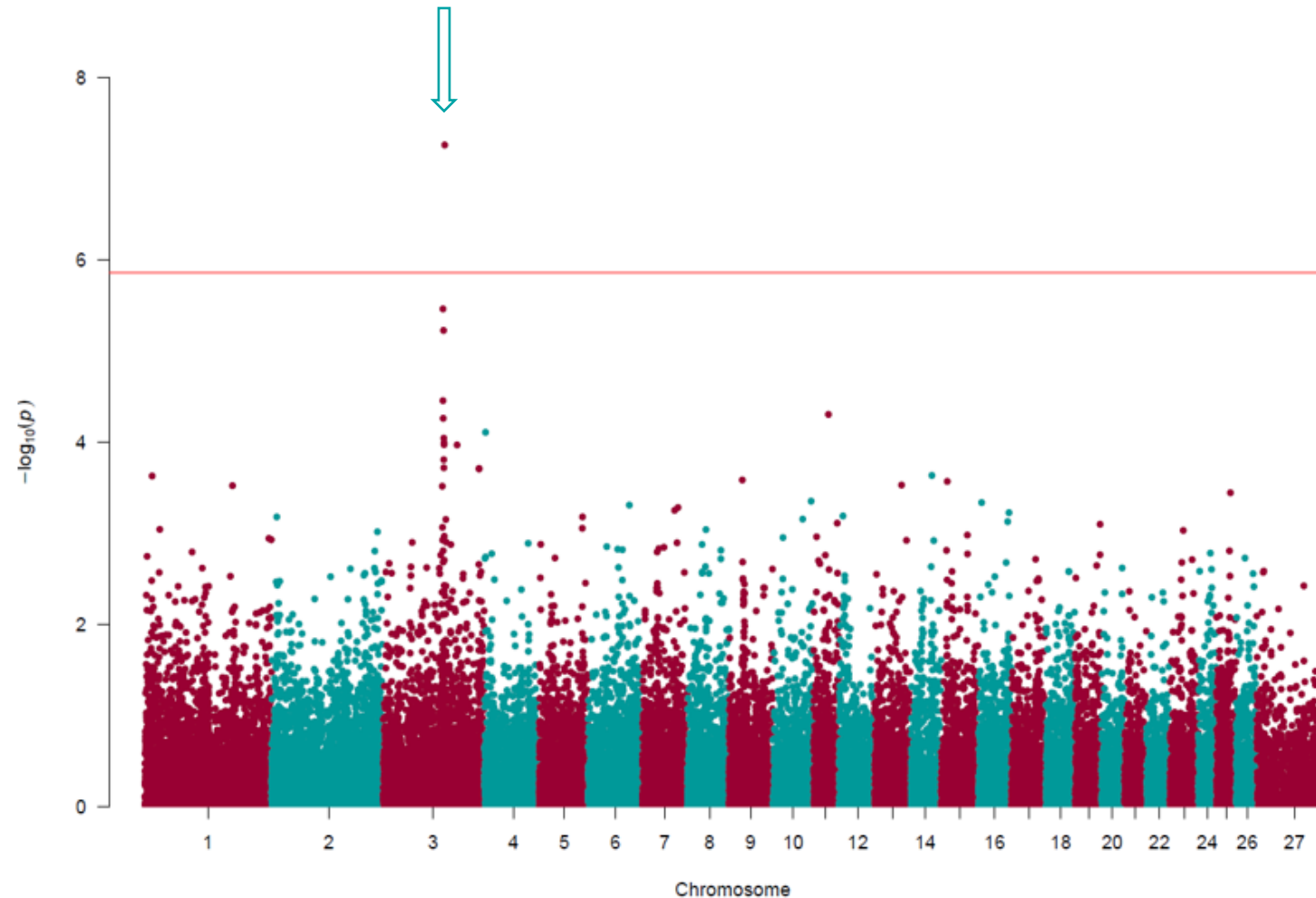
Pinhole defects has a high heritability estimates (0.59)

Straw-like bushiness has

- a lower heritability
- is largely influenced by the type of hayrack (elevated or ground-level) and fattening duration

➤ Genome wide association study

A significant signal was detected at the genome-wide threshold on chromosome 3

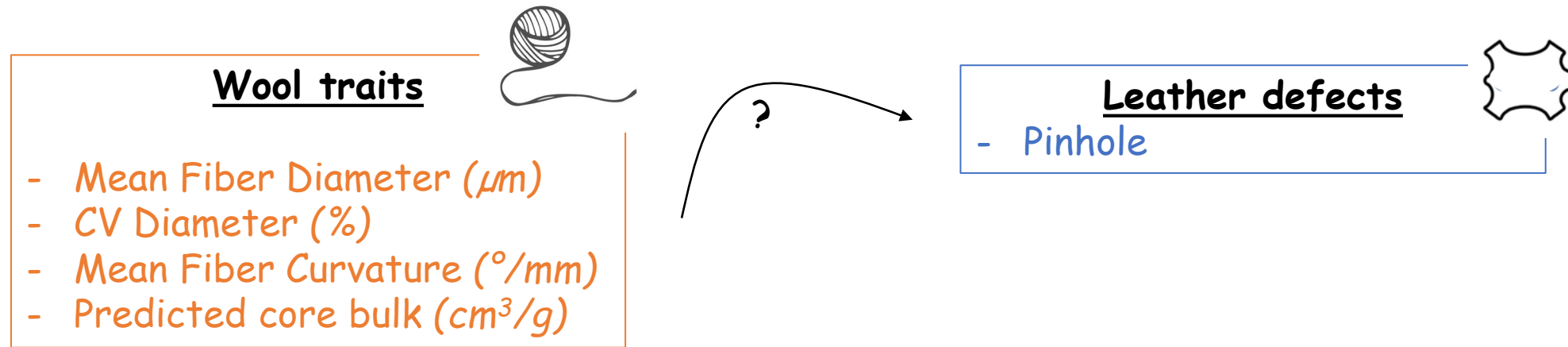


Near a Keratin cluster genes



> Proxy ?

Can we predict the presence of pinhole defect on alive animals?



Pinhole defect has a strong genetic correlation with

- Mean Fiber Curvature (0.38 ± 0.09)
- Predicted core bulk (0.54 ± 0.08)

> To conclude

The two skin defects $\xrightarrow{\text{null or weak genetic correlations}}$ with milk production traits

For pinhole defect

- high heritability
- strong genetic correlation with a wool trait measurable on live animals
- detection of a QTL affecting it

↪ a genetic selection could be considered

> Thanks for your attention !

