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Editorial: Animal fibers

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Editorial on the Research Topic

Animal fibers

The Research Topic of animal fibers aimed to examine the recent research advances in the characterization and production of wool, cashmere, mohair, camel, alpaca, angora, cashgora, and similar animal fibers. Nowadays, there are many challenges that the production of animal fiber faces like price volatility, animal welfare, and the need to be socially and environmentally friendly. One of the challenges in the sheep production industry, for example, is that farmers are interested in producing more lamb meat. In other words, they are interested that nutrients in the sheep's body are used to produce meat instead of wool. Furthermore, sheep farmers like breeds that do not require shearing. Animal science researchers can find suitable solutions to these new challenges through the tools of management, animal nutrition, physiology, and genetics. Despite the little contribution of animal fibers to global textile materials (approximately 1.5%), they share common features like being natural, biodegradable, breathable, soft, and non-inflammatory. Therefore, animal fibers used in clothing can benefit the health of the population and the environment. The importance of raising animals for fiber production is further highlighted by the fact that the livelihoods of some farmers in extensive animal production systems depend on selling animal fibers. In terms of geography and vegetation, there are regions in the world where livelihoods depend solely on the breeding of fiber-producing animals, such as those where cashmere, alpaca wool, camel wool, and cashgora are produced.

The aim of this Research Topic was to draw the attention of researchers to the recent contributions to the fields of physiology, breeding, genetics, and management aimed at improving the production and quality of animal fibers. Four articles were reviewed and accepted to be published on the Research Topic of animal fibers. The article written by [Zhang et al.](#) is a foundational paper on follicular growth, investigating the relationship between exosomes and hair follicle development. This paves the way for future applied research in animal husbandry. Maximizing the utilization of nutrients is essential for producing protein-based products, and similar studies could explore the role of circulating exosomes in animal fiber synthesis. The hair follicle can be considered a small factory and a model for physiological research. [Zhang et al.](#) also showed that microRNA can be regulated by circulating exosomes in different species. Therefore, it is evident that the hair follicle is a tissue of interest for research in other branches of biology and that a new approach to

treating skin baldness has been presented. Of the two articles on this Research Topic, [Melo-Rojas et al.](#) dealt with molecular genetics and [Pinares et al.](#) with the phenotypic traits of alpaca fiber. Generally, less research has been conducted on alpacas than on sheep, and more research is needed to identify all aspects of raising alpacas for fiber production. [Melo-Rojas et al.](#)'s paper aimed to explore the association between polymorphisms in SNPs related to the tyrosinase-related protein 1 (TYRP1), dopachrome tautomerase (DCT), and RAS-related protein 38 (RAB38) genes and coat color in South American camelids. Understanding the mechanism of color inheritance in fiber-producing animals is important from both an animal breeding and an end-use perspective in the textile industry. Although a white color is preferred in most fiber-producing animals ([Esfandyari et al., 2011](#); [Rafat, 2022](#)), the presence of natural pigmentation and the absence of the need for chemical dyeing are considered advantages in alpacas. [Pinares et al.](#)'s paper examined the environmental effects on alpaca fiber quality and how alpaca farmers consider fiber quality characteristics in addition to color. [Sacchero et al.](#) investigated the impact of environmental factors on the income generated from Angora goat farming in an extensive system. In the selective breeding of Angora goats, we are dealing with the phenomenon of multiple trait selection. Knowing the relationship between different mohair traits enables us to determine the appropriate economic weighting for the selection index. We expected to receive more papers for this Research Topic, but it seems that the volume of research on fiber-producing animals has decreased relatively. In conclusion, the higher price of meat compared to animal fibers seems to have affected the research quantity on animal fibers. However,

for some species, such as the alpaca, there is still a need for animal scientists to work on various aspects of this valuable animal in terms of animal fiber. There are some geographical areas where livestock farmers are interested in producing animal fiber, such as the Osh Mountains in Kyrgyzstan or Lighvan in Tabriz ([Figure 1](#)). In these areas, animal science research needs to focus on producing dual-purpose breeds, where fiber traits are maintained and improved in addition to reproductive traits and lamb or milk.

Author contributions

SR: Writing – original draft, Conceptualization, Writing – review & editing. GR: Writing – review & editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.



FIGURE 1

Milk-wool sheep production in a semi-extensive system, Qizil breed, Lighvan, Tabriz, East Azerbaijan.

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