

**MENDELIAN INHERITANCE IN SHEEP (MIS)  
- A REPORT FROM COGNOSAG**

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**SUMMARY**

Mendelian Inheritance in Sheep (MIS) is being prepared as a listing of identified loci and alleles in sheep, with recommended names and symbols, together with an assessment of the reliability of the evidence put forward by different authors for the existence of each allele.

**INTRODUCTION**

The three main objectives of COGNOSAG are to publish  
Mendelian Inheritance in Sheep (MIS),  
Mendelian Inheritance in Goats (MIG) and  
Mendelian Inheritance in Cattle (MIC)

COGNOSAG is the Committee on Genetic Nomenclature of Sheep and Goats. Its alias is Comité de nomenclature génétique des Ovins et Caprins, or COGOVICA.

On January 25, 1984, COGNOSAG was founded, as described by Rae (1988), who clearly set out the most important goal --- "The most important goal is to establish rules for the naming of identified genes in Sheep and Goats and to review these rules whenever this may be required by the advances in knowledge of genetics of the two species. The system of nomenclature needs to meet the requirements that it be: (i) sufficiently flexible to accommodate loci with widely different functions and effects on the organism, e.g. from genes with visible effects through to those which are identified only by their DNA sequences; (ii) able to take account of the established homologies of genes between species; and (iii) simple from the viewpoint of typing, printing and computerisation".

**PRESENT PROCEDURES**

It is important that we not lose sight of the fact that COGNOSAG's ultimate aim is to benefit the sheep, goat and cattle industries of the world; and that the way to do this is to benefit the sheep, goat and cattle producers.

For identified genes, this we aim to do by

- \* marshalling all of the published references on each locus and allele,
- \* recommending names and symbols for loci and genes in accordance with the COGNOSAG Guidelines for Nomenclature,
- \* assessing the reliability of the evidence put forward by different authors for the existence of each allele,
- \* commenting on the loci and alleles, where this is useful, and
- \* publishing the work so that it is readily accessible to sheep, goat and cattle breeders, extension workers, research workers with sheep, goats and cattle, gene mappers, veterinarians, data bankers and quarantine workers who are specifying restraints on the import of unwanted genes.

#### **THE FOUR CATEGORIES OF GENES**

In each of the species sheep, goats and cattle, - four categories of genes are considered. These are:

- Category 1 Coat Colour
- Category 2 Visible Traits other than Coat Colour
- Category 3 Blood and Milk Polymorphisms
- Category 4 Mapped Loci and Other Genetic Systems

Within each species, there is a Working Group of COGNOSAG members for each Category.

Each of the Working Groups of COGNOSAG is an expert review panel in the realm of its particular Species/Category and this reflects well the unique contributions which are made by the COGNOSAG Working Groups. Certainly, individual members of Working Groups have other roles related in one way or another to the genetics of sheep, goats or cattle, but their basic contributions to COGNOSAG are their skills when on a scientific expert panel.

It is important that a reader of a COGNOSAG treatment of a locus should feel confident that it includes all or most of the references contributing to knowledge about the locus, and that, at least in the first instance, the reader would be able to accept the COGNOSAG comments and assessments of reliability of evidence without doing it all over again.

#### **SOME COGNOSAG PUBLICATIONS**

The guidelines for gene nomenclature in ruminants which had been drawn up by COGNOSAG have been published by Andresen et al (1991). These guidelines were revised at the 1993 Workshop at Turretfield and have been published (COGNOSAG 1995).

The procedures which have been used for listing loci and alleles of ruminants were published by Andresen et al (1992).

A list of loci for visible traits and for blood and milk polymorphisms in sheep and goats was published in 1989 (Lauvergne). This list did not include coat colour.

Loci for coat colour in sheep and goats were published in 1990 (Lauvergne).

A list of alleles for blood and milk polymorphisms in cattle, sheep and goats was published by Larsen et al, (1992). This list was noteworthy in that both the guidelines for nomenclature of COGNOSAG and the nomenclature decisions of the 21st International Conference on Animal Genetics (at Michigan, 1990) were taken into account in its preparation.

#### **MENDELIAN INHERITANCE IN SHEEP (MIS)**

Mendelian Inheritance in Sheep will embrace the identified genes and their markers, but will not include those characters for which heritability estimates only are available. It is anticipated that more characters will, in the future, have identified genes associated with them, and COGNOSAG plans that MIS will be a convenient and reliable first point of reference for these genes.

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