

Smart Flock™ ELITE

Comprehensive Traits Bundle

Neogen Australasia offers a range of genomic tests to assist with the management of important qualitative traits and genetic conditions in sheep operations.

The Comprehensive Traits bundle is a comprehensive set of fertility, meat and health traits available for order with Smart Flock Elite. Included traits and their validated breeds are listed below.



Fertility Traits

Trait	Validated breeds	Description
Booroola	Merino and Composite Maternal.	The Booroola gene (FecB) is a major prolificacy gene associated with increased ovulation rate and litter size in sheep.
GDF9	Composite Maternal & Terminal, Ultrawhite, Border Leicester, Coopworth, Corriedale.	The Growth Differentiation Factor 9 gene (GDF9 FecG(F)), was originally identified in the Finn breed, and has been introgressed into various Australian sheep breeds including shedding and woolled terminals and maternal composites. Ewes carrying one copy of the gene typically exhibit a 30% increase in ovulation rate, while those with two copies can show up to a 60% increase, with no adverse effects on fertility.



Meat Traits

Trait	Validated breeds	Description
Myostatin	Texel	A mutation in the myostatin (MSTN/GDF8) gene is associated with an abnormal increase in muscular tissue caused entirely by enlargement of existing cells leading to the double muscling (DM) phenotype. The effects of the GDF8 mutation are generally more pronounced in homozygous animals and may lead to slightly reduced eating quality. Texel sheep are known for their pronounced muscle development, particularly in the hindquarters, and the mutation is near fixation in this breed. Myostatin has also been reported in other breeds including White Suffolk, Poll Dorset, Lincoln and Charollais.
Callipyge	Rambouillet, American Dorset, Southdown	The Callipyge trait (DLK1 gene) is an autosomal condition characterized by muscle hypertrophy—an abnormal increase in muscle mass due to enlargement of existing muscle fibers. Lambs expressing this trait show improved feed efficiency, higher retail yield, reduced fat thickness, and lower marbling, with no effect on carcass weight; however, meat tenderness is consistently reduced.



Health Traits

Trait	Validated breeds	Description
Hypotrichosis	White Suffolk	Animals affected with hypotrichosis are generally born with little or no hair on the head, ears and legs and develop a thick leathery skin. Wool on the body is lower density than average sheep, and shedding of this remaining wool occurs as the animal ages.
Achondroplasia	Cheviot	This bone growth disorder, primarily observed in the Cheviot breed, results from impaired cartilage development. Newborn lambs exhibit a “squashed” facial appearance due to underdeveloped cartilage in the nasal cavity, and may also have absent feet, as well as shortened tails and ears. The condition is commonly known as “stumpy lamb.”
Microphthalmia	Texel	This autosomal recessive congenital anomaly is characterized by abnormal smallness or complete absence of one or both eyes, leading to blindness in affected lambs. It results in severely underdeveloped ocular structures.
Ovine Progressive Pneumonia (Maedi Visna); OPP TMEM Susceptibility	Dorper, White Dorper, Dorset, Finn sheep, Katahdin, Navajo Churo, Rambouillet, Romanov, Suffolk, Texel and Polypay	Ovine Progressive Pneumonia (OPP), also known as Maedi Visna outside the US, is a slow-progressing infectious disease caused by the OPP virus, a Small Ruminant Lentivirus. It is fatal over time, with common symptoms including wasting (often referred to as “thin ewe syndrome”), reduced milk production (“hard bag syndrome”), and pneumonia unresponsive to treatment, accompanied by labored breathing, exercise intolerance, and coughing. Symptoms typically appear later in life, and infection status can only be confirmed through testing. The highly-susceptible TMEM154 alleles are present in most breeds around the world. There are 4 haplotypes for OPP resistance/susceptibility. Haplotypes 1 and 4 infer less susceptibility to OPP.



Smart Flock
ELITE

Reveal your flock's potential
Contact us today to find out more!