



There *is* a Difference

NEOGEN®

Advanced DNA testing solutions for Angus seedstock cattle

The Fastest Way to **Better Results**

Scan to learn more today!



Premium Genomic Testing for the Australian Angus Industry

Neogen is proud to partner with Angus Australia to offer comprehensive and cost-effective genomic solutions tailored specifically for Angus seedstock cattle in Australia.

Our comprehensive suite of genomic tools provide valuable insights to help you:

- ✓ Assign parentage and/or reduce parentage errors
- ✓ Make faster rates of genetic gain in a breeding program
- ✓ Make more accurate selection decisions
- ✓ Make selection decisions earlier in an animal's life, and with more confidence
- ✓ Make selection decisions for traits that can't be routinely measured on-farm
- ✓ Fast track introgression of favourable qualitative traits into a herd
- ✓ Streamline the management of recessive genetic conditions
- ✓ Benchmark the genetics of a beef breeding enterprise, and track genetic progress over time



Premium genomic testing
delivered in collaboration with



So why should you test with Neogen?...

Because ‘There *is* a Difference’



1. Australia Based Genotyping Laboratory

Why send your samples offshore for testing when you can utilise a genomic laboratory based right here in Australia?

Neogen is the only option available to Angus Australia members who wish to genotype their animals in a laboratory located within the Australasia region.

Neogen’s new, \$11 million, state-of-the-art genomics laboratory is located at Ipswich, west of Brisbane in Queensland, and is the largest livestock genomics laboratory in the southern hemisphere.



2. Unparalleled Testing Turnaround Times

Neogen understands that time is money and prides itself on offering the fastest testing turnaround times of any livestock genomics laboratory.

Through utilisation of a genomics laboratory located within Australasia, the time taken to send samples to an offshore laboratory is removed, as is the risk of disruption to global mail and courier services causing delays.

The average turn-around time for Angus GS testing requested by Angus Australia members (i.e. the time from when the DNA order is processed in the Angus Australia office to when results are returned to Angus Australia) is 3-4 weeks, with less than 10% of requests taking longer than 30 days.



3. Customised DNA chip – built for Angus by Angus

Rather than rely on generic genotyping platforms, Neogen Australasia offers a customised genomic chip to Angus breeders in Australia and New Zealand.

The chip, known as Angus GS, was built specifically for Angus cattle in a partnership between Angus Genetics Inc and Neogen, and contains over 72,000 single nucleotide polymorphisms (SNPs) that were selected specifically to explain the most genetic variation between Angus animals.



4. Genotyping Partner of Choice for the Angus Sire Benchmarking Program

Neogen is proud to be Angus Australia’s genotyping laboratory of choice for the Angus Sire Benchmarking Program (ASBP), with all progeny in the ASBP genotyped through the Neogen laboratory. At the time of writing, over 12,000 animals have been genotyped as part of the ASBP.

In addition to genotyping all progeny in the ASBP, Neogen is also proud to contribute to the ongoing maintenance and expansion of the Angus Australia genomic reference population, with a proportion of revenue Neogen receives from the provision of genomic services to Angus Australia members returned to Angus Australia to assist with the operation of the Angus Sire Benchmarking Program.



5. Optimised Handling & Storage of TSUs

Neogen has invested in the latest robotic equipment to optimise the handling and storage of Allflex Tissue Sampling Units (TSUs), ensuring samples are available for additional genotyping in the future.

All TSUs samples submitted by Angus Australia members for genomic testing by Neogen are restored to their initial form after genotyping, with the ear notch sample still intact, and returned to Angus Australia for storage in Angus Australia’s DNA sample facility in Armidale, NSW.

The TSU samples are easily retrieved by Angus Australia staff if additional genotyping is required in the future, or if preferred, can be returned to the member upon request for storage on-farm.

To find out more about the ‘Neogen Difference’, and how we can help your business grow, contact your local Neogen territory manager today, or visit neogenaustralasia.com.au

Genomic Solutions for Angus Seedstock Cattle

Neogen's comprehensive range of genomic tests, ordered through Angus Australia, includes:

- ✓ Genomic profiling
- ✓ Parentage assignment
- ✓ Screening for genetic conditions and traits of relevance to the Angus breed
- ✓ Incorporation of genomic profiles into the TransTasman Angus Cattle Evaluation for the calculation of genomically enhanced breeding values.

Neogen's genomic test bundles simplify decisions about what genomic tests to order, and include all genomic tests of relevance for Angus cattle in Australia.

Genomic Testing Options

Genomic Test Bundles

Standard Bundle - Includes genomic profiling (Angus GS), parentage verification*, and genomically enhanced EBVs*

Sale Animal Bundle - Includes genomic profiling (Angus GS), parentage verification*, genomically enhanced EBVs*, and screening for the 4 most common genetic conditions in the Angus breed (AM, CA, DD & NH)

Elite Animal Bundle - Includes genomic profiling (Angus GS), parentage verification*, genomically enhanced EBVs*, and screening for all genetic conditions and traits recognised by Angus Australia (AM, CA, DD, NH, DW, OH, OS, MA, HH, RG & NT821)

Ultrablack Bundle - Includes genomic profiling (Angus GS), parentage verification*, genomically enhanced EBVs*, and screening for horn/poll and coat colour. *Analysis completed by Angus Australia

Add-On Genetic Traits & Conditions (Can be ordered in association with the Standard Bundle)

Core Genetic Test Bundle - Includes screening for the 4 most common genetic conditions in the Angus breed (AM, CA, DD & NH)

Full Genetic Test Bundle - Includes screening for all genetic conditions and traits recognised by Angus Australia (AM, CA, DD, NH, DW, OH, OS, MA, HH, RG & NT821)

Developmental Duplications (DD) - Includes screening for DD only

Coat Colour (RG) - Includes screening for coat colour (red/black) only

Add-On BVDV Testing (Can be ordered in association with the Standard Bundle, Sale Animal Bundle, Elite Animal Bundle or Ultrablack Bundle)

Bovine Viral Diarrhoea Virus (BVDV) - Includes screening for animals persistently infected (PI) with BVDV. TSU samples only.

Standalone Genetic Traits & Conditions (Can be ordered as standalone testing i.e. not in association with one of the genomic test bundles)

Full Genetic Test Panel - Includes screening for all genetic conditions and traits recognised by Angus Australia (AM, CA, DD, NH, DW, OH, OS, MA, HH, RG & NT821)

Arthrogryposis Multiplex (AM)

Alpha-Mannosidosis (MA)

Contractural Arachnodactyly (CA)

Neuropathic Hydrocephalus (NH)

Developmental Duplications (DD)

Oculocutaneous Hypopigmentation (OH)

Dwarfism (DW)

Osteopetrosis (OS)

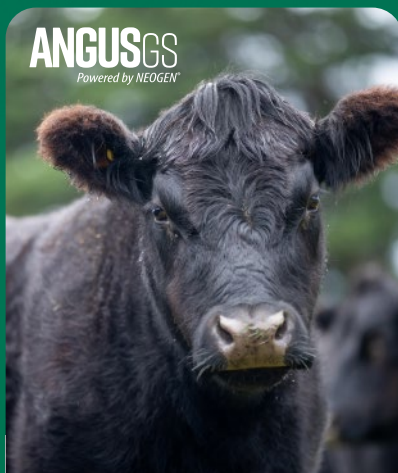
Horns (HH)

Coat Colour (RG)

Myostatin (6 variants) - Includes NT821, C313Y, E226X, F94L, NT419 and Q204X variants

Standalone Parentage Verification (Can be ordered as standalone testing. Includes genomic profiling (SeekSire) and parentage verification only.)

Base Panel (543 SNPs)



Angus GS

Designed specifically for Angus cattle – built ‘For Angus, By Angus’.

Contains approx. 72,000 Single Nucleotide Polymorphisms (SNPs).

Genomic Profiling With A Difference

Rather than utilising generic genotyping platforms, Neogen’s genomic test offering for Angus cattle includes the genomic profiling of animals with Neogen’s premium, proprietary genotyping array, Angus GS.

Angus GS has been designed and developed to explain maximum genetic variation in the Angus breed, delivering value for money from your investment in genomic testing.

Angus GS contains 72,000 markers, known as single nucleotide polymorphisms (or SNPs), and is the largest breed specific product on the market.

Angus GS was built ‘for Angus, by Angus’, meaning it was designed specifically for Angus cattle in a partnership with Angus Genetics Inc, and is available exclusively to members of Angus Australia and Angus New Zealand.

Angus GS is saturated with markers that are informative in Angus cattle, and is the genotyping platform of choice for inclusion in the TransTasman Angus Cattle Evaluation and World Angus Evaluation.

Angus GS contains highly informative markers for parentage verification, and is also compatible with ‘add-on’ testing for recessive genetic conditions and qualitative traits relevant to the Angus breed.

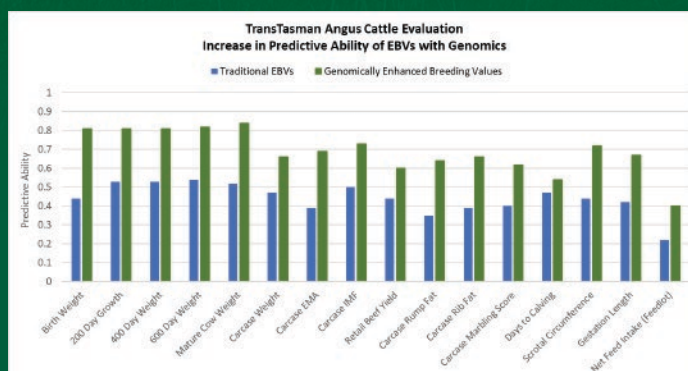
Traits Evaluated

Angus GS genomic profiles are incorporated into the calculation of genomically enhanced breeding values in the TransTasman Angus Cattle Evaluation for the following traits.

BIRTH	Calving Ease Direct, Calving Ease Daughters, Birth Weight, Gestation Length
GROWTH	200 Day Growth, 400 Day Weight, 600 Day Weight, Milk
FERTILITY	Scrotal Size, Days to Calving
MATERNAL	Mature Cow Weight, Mature Body Condition, Mature Cow Height
CARCASE	Carcase Weight, Eye Muscle Area, Rib Fat, Rump Fat, Retail Beef Yield, IMF, Marbling Score, Shear Force
TEMPERAMENT	Docity
EFFICIENCY	Net Feed Intake
RESILIENCE	Coat Type, ImmuneDEX

Genomically Enhanced Breeding Values Are More Accurate

Research conducted by the Animal Genetics & Breeding Unit (AGBU) has shown that the inclusion of genomic information in the TransTasman Angus Cattle Evaluation improves the predictive ability of EBVs by 25%, on average, clearly demonstrating the benefit of undertaking a genomic testing program in an Angus seedstock breeding enterprise.



The Genomic Testing Process

Genomic testing for Angus seedstock cattle should be ordered from Angus Australia using the process below:

Get Organised

- Contact the relevant Neogen Australasia Territory Manager to identify the genomic testing that best fits the needs of your breeding program.
- Purchase your TSU applicator and TSUs from Neogen Australasia.
- Ensure that you are a current, financial member of Angus Australia and have nominated that you wish to utilise Angus Australia's genetic evaluation services.
- Ensure your calves are recorded with Angus Australia. All animals must be recorded with Angus Australia prior to genomic testing

Collect DNA Samples

- Collect DNA samples from your animals.
- TSUs are the most common form of DNA sample, however tail hairs or semen straws can also be submitted for testing.

Submit Your DNA Order

- Orders can be submitted using Angus ONLINE, or by completing the Excel based 'DNA Test Request Form'.
- To use Angus ONLINE:
 - Sign into angus.tech on the Angus Australia website using your username and password, and select 'Create New Order' from the 'DNA Services' menu.
 - Enter the details of your order.
 - When ready, click 'confirm' to submit your order to Angus Australia.
 - Once your order has been submitted, download and print the 'DNA Order Submission Report' document, and mail the document, along with your samples, to Angus Australia, Locked Bag 11, Armidale, NSW, 2350.
 - If you are located in New Zealand, mail the document, along with your samples, to Breedsmart, PO Box 136, Temuka 7920, rather than Angus Australia
- To use the Excel based 'DNA Test Request Form':
 - Obtain a copy of the form from the Angus Australia website
 - Enter the details of your order
 - Email an electronic copy of the request form to regos@angusaustralia.com.au
 - If you are located in Australia, print and mail a hard copy of the request form, along with your DNA samples to Angus Australia, Locked Bag 11, Armidale, NSW, 2350.
 - If you are located in New Zealand, Angus Australia will process the electronic copy of your request form, and email you a 'DNA Order Submission Report'. Print and mail the submission report, along with your samples, to Breedsmart, PO Box 136, Temuka 7920.
- Upon receipt of your DNA order, staff at Angus Australia will process your order, and forward your samples to the Neogen lab for genotyping. If you are located in New Zealand, Breedsmart will forward your samples directly to the Neogen lab.
- When completing your DNA order, make sure you complete the animal ident and the test required, and if parentage verification is required, the ids of the possible sire/s and dam/s. If sires and dams are not nominated, parentage verification will not be conducted.

Genotyping & Analysis

- When received at the Neogen lab, genotyping of your samples will be undertaken, and results (e.g. genomic profiles and genetic condition results) will be returned to Angus Australia.
- Where applicable, genomic profiles will be automatically included in the TransTasman Angus Cattle Evaluation.

Access results

- Results will be provided to you via email by Angus Australia.
- Parentage and genetic condition results are usually available within 3-4 weeks.
- Subject to the TransTasman Angus Cattle Evaluation genetic evaluation schedule, genomically enhanced EBVs are usually available within 6-8 weeks.

To find out how we can help your business grow, contact your local Neogen territory manager today.

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