



On 1 September 2017, GeneSeek Australasia Pty Limited (GAA), a wholly owned Neogen Corporation Company, acquired 100% of the assets and business of The University of Queensland's Animal Genetics Laboratory (UQ AGL).

GAA is dedicated to ensuring continuity and consistency of genotyping services for our customers; therefore the laboratory and the technical and customer support centre, as well as most UQ AGL staff, will remain in Gatton, QLD.

We want to assure you that you can expect the same high level of product and service that you have enjoyed in the past. You as the customer should recognize no material changes to your service. GeneSeek Australasia will be the sole provider of services as we move forward and all Australian samples will be processed at GAA leading to improved service. The only difference that you will see is the invoicing and accounting will be under the GAA entity.

Who is Neogen?

Headquartered in Lincoln, Nebraska, GeneSeek Inc. has been leading advancements in genomics on a global basis since 1998. Acquired by Neogen in 2010, and expanded upon over the years, Neogen is the global leader in animal genomic testing and services. The Gatton laboratory will join GeneSeek's other genomics service centres in Lincoln, Nebraska USA, Ayr, Scotland, and Sao Paolo, Brazil. Neogen Corporation is dedicated to being the leading company in providing food and animal safety solutions (www.neogen.com).

What will change?

Products, services and processes will remain largely unchanged in the first few months; you will still send samples the same way (hair on cards) and fill in an excel based submission form. You may find that the reports you receive are different in appearance, but they will still include the same information. A new service agreement for your society and its members is currently being negotiated, the details of which will be disseminated to members upon its completion. Broadly, it is our collective aim to offer more SNP based markers at a lower cost to members. Reason are threefold: (a) SNP, unlike MiP, opens up doors into genomic testing in the future; (b) costs of parentage via SNP are coming down but costs of parentage via MiP are going up, driven by technological advances in SNP genotyping and disinvestments globally in microsatellite technologies; (c) SNP-based technology will also allow for the bundling of eligible tests to reduce overall DNA testing costs. The changes to invoicing and accounting mentioned above will not impact individual members.

MiP vs SNP

Historically, all DNA and parentage testing has been completed using the microsatellite (MiP) technology. Single Nucleotide Polymorphism (SNP) testing is one of the newest forms of DNA technology and has the potential to be used in new and exciting ways.

What is MiP Typing & Parentage Testing?

There are regions in our DNA that contain highly repetitive sequences, for example, ACACACAC. These are sometimes referred to as 'junk DNA'. The correct names for these sequences are DNA Microsatellite Markers or Short Tandem Repeat Markers. The number of repeat motifs in the sequence varies between individuals; one individual may have 50 AC repeats, while another individual may have 58 AC repeats. This repeat variation makes the size of the marker different between individuals and this size difference can be detected in the laboratory. It is the size of each marker that is reported as an animal's 'DNA Type'.

Microsatellite Markers used in parentage testing can have many different sizes (20-30 variants) and it is this variability that makes them useful for parentage analysis. All animals, including humans, have two copies of each gene: parentage testing relies on the principle that an individual will inherit one copy from its mother and one from its father. Therefore, if a particular marker size (called an 'allele') is present in the calf, but absent in both of the nominated parents, then the parents must be excluded from the calf's pedigree.

What is SNP testing?

Single Nucleotide Polymorphism (SNP) testing is one of the newest forms of genotyping in the field of animal genetics. It differs from the 'traditional' microsatellite testing in that this technology looks directly at the nucleotides (AGTC) in the DNA strand rather than at repeating fragments. Specifically, SNP testing looks at changes to single nucleotides at specific places (markers), i.e. A to G at position X as seen below in figure 1.

The same principle applies in parentage analysis as with microsatellites. If a particular marker size (called an 'allele') is present in the calf, but absent in both of the nominated parents, then the parents must be excluded from the calf's pedigree.

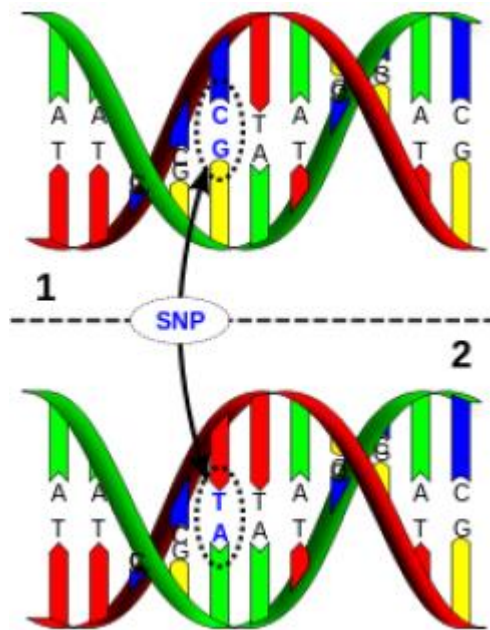


Figure 1: Single Nucleotide Polymorphism (source: http://en.wikipedia.org/wiki/Single-nucleotide_polymorphism)

SNP Testing at GAA

There are currently 3 levels of SNP testing at GAA:

Product Name	Approx. No. SNPs	Description
SeekSire	500	Small Subset of SNP markers for parentage ONLY
GGPLD	30 000 - 50 000	SNP markers for parentage, genomics, add-on content and compatible with BREEDPLAN (for some breeds)
GGPHD	>100 000	SNP markers for parentage, genomics, add-on content and compatible with BREEDPLAN (for some breeds)

The GGPHD test is recommended for all your highest value animals, and those who contribute the most genetics to your herd i.e. AI sires and ET donor dams. Your society may be in discussions with technical support services (SBTS or TBTS) to draw up a list of the animals with the greatest contribution of genetics across the whole breed, with a recommendation that these be focussed on in early rounds of HD testing. Genotyping these animals across such a high density SNP panel will lay a strong foundation for BREEDPLAN upgrades to blended EBVs and a more efficient service for producing them (single step genetic evaluation).

The GGPLD test is recommended as the standard across your working herd. This test allows for genomically assisted seedstock selection and accelerated breed improvement. Some recessive condition and production trait tests can be bundled with the GGPLD, potentially reducing your overall DNA test costs – contact your breed society for more details.

The SeekSire test is the low cost, easy entry to SNP testing. It can only be used for parentage verification. It is compatible with both GAA GGP products (LD and HD) as well as historical AGL GGP and SEQ results.

Things to Consider

One of the most important things to know about this new form of testing is that SNP and MiP (pre-2014 DNA testing) profiles are **not compatible for parentage**; we are not able to perform parentage verifications on SNP calves with MiP parents, or vice versa. If you decide to make the change to SNP typing, you may need to re-genotype your current parents. This may be possible on the samples already held at the AGL from past use but we cannot guarantee that there will be adequate hair left for every animal.

Noting this incompatibility, it is then of upmost importance to get in contact with the relevant breed society to determine what type of testing they are currently utilising and what their future plans are. This will ensure that you undertake the testing required to remain eligible to register your animals.

MiP to SNP Transition

GAA and your society are currently in negotiations to jointly offer a low cost, straightforward way to upgrade your current breeding stock from MiP to SNP. You probably won't even have to collect a new sample!

GAA will offer all testing relevant to this promotion at the lowest possible cost, even if it means running at a loss, to ensure that the transition from MiP to SNP is as quick and as easy as possible for all breed society members. GAA views this as an important investment and a commitment to the beef industry's future.

Conditions do apply, so please contact your breed society for more details.