

RESEARCH PROGRAMME IN DOG AND CAT GENOMICS

Faculty of Veterinary Science, University of Sydney

What is genomics?

Genome science is concerned with the structural, genetic and physiological consequences of an organisms genome composition. With the recent enormous advances in data and concomitant application and development of information technology (bioinformatics), the discipline of genome sciences has expanded rapidly. The rapid expansion has had an impact on many existing fields of biological research, and given rise to a convergent field of study sometimes referred to simply as “omics”, hence proteomics, functional genomics, lipidomics, immunomics etc. The common features of omic research are that they are information rich and based on data that results from studies of gene variation or expression. The focus on genome research has led to an equally impressive technological expansion that is facilitating further advances, and together with the growth of fundamental genome based knowledge, is a major driving force in biology and medical research.

Dog and cat genomics

Genomic research is becoming more powerful as more mammalian genomes are sequenced. Many of the genomes for which we now have full sequence information are directly relevant to Animal and Veterinary Sciences. This now includes the dog, and the cat genome sequencing effort is near completed. Because of the fundamental nature of the knowledge encompassed by genomic sciences, it is complementary to many areas of research e.g. medicine, nutrition, behaviour. We are now in a period in which advanced studies in dog and cat genome sciences are possible and desirable.

The Faculty Programme

The Faculty has a major strength in genomics research that developed through staff with leading positions in livestock genomics programmes. This was built on a history of Faculty research in quantitative and molecular genetics, statistics and comparative bioinformatics.

This expertise and capacity is now being applied to dog and cat research. The genomics programme provides a framework for focusing research activities in dog and cat research by fostering interaction and collaboration and is facilitated by new developments in dog and cat genomics. The programme involves project leaders, research scientists, junior academic staff and undergraduate and graduate students.

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