Name: _____

Animal Genetics and Diseases

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Reducing the risk of animal welfare problems

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Animal genetics has great potential to contribute towards improvements in the welfare of animals, but in the past it has also contributed to animal welfare problems. In this presentation a distinction will be made between animal protection (what we ought to do to ensure good animal welfare), animal welfare (the animal's experience of its current situation) and quality of life (the level of welfare assessed over a longer period of time). Since disease is a major cause of poor welfare, genetic improvements resulting in enhanced resistance to disease usually also lead to improved welfare. But good welfare is much more than the absence of disease and changes that affect animals' interactions with their environment and their responses to challenges can sometime have unforeseen welfare consequences. Some of the good and less good examples of breeding programmes in companion and farm animals will be used to illustrate this point. In the future, while taking advantage of the new opportunities that breeding programmes can offer, there is clearly a need to pay attention to the broader impact of these programmes on animal welfare.

The interplay of genetics and welfare is complex, and it is two-way. Thus, in addition to considering how breeding programmes may affect animal welfare in the future, consideration should also be given to how the current welfare status of the animals may be affecting the efficiency of the breeding programme here and now. For example, immunosuppression is one of the consequences of stress. Animals that are stressed, or who have poor welfare for whatever reason (e.g. inappropriate housing or handling) are unlikely to be good models for genomic studies. This will be discussed with examples from laboratory animals.

Animal welfare science is a well-developed discipline and there are several researchers actively linking animal welfare and animal genetics, and there is even work in the epigenetics of animal welfare. There are challenges, but there are also great benefits and advances to be made by closer links between the disciplines.