Disease area	Mouse models	Outcome and limitations
Diabetes	Mutants available including type I and type II diabetes models (see paragraph 7.9 (i)).	Insights into genetic pathways involved in diabetes and the hormonal and metabolic control of blood sugar.
Obesity	Mutants available that contribute to obesity under a variety of conditions.16	Fundamental insights into the hormonal (leptin) and hypothalamic pathways of obesity have been obtained through the use of mouse models and newly engineered mutants.
Neurological	Mutants available that affect neuronal growth, differentiation and plasticity.17	Significant new information on genes involved with the development of neuronal processes. This knowledge is important for the development of therapeutic approaches to neurological disease.
Neurobehavioural	Mutants available that affect a number of endophenotypes (see paragraph 7.10) of more complex behavioural processes, including: circadian rhythms, learning and memory, anxiety, feeding, sexual behaviour, aggression and maternal care.	None of the available mutants are true models of the complex behavioural outcomes of psychiatric disease in the human population (see paragraph 7.9 (iii)).
Sensory	Mutants available that affect both hearing and vision (see paragraph 7.9 (ii)).	Significant insights into the genetics of deafness in the human population. While there are many useful models of retinopathies in the mouse, the short lifespan of this species may restrict its usefulness for studying some aspects of retinal degeneration.
Cardiovascular	Several mutant models available.18	Some progress, for example, in the study of atherosclerosis through the use of apoE mutants. However, progress in GM models has been slow and has only just begun to accelerate. Until recently, the rat was a preferred model for studying hypertension and other cardiovascular phenomena.
Cancer	Mutants and strains of mice which show significant variation in both frequency and types of cancer (see paragraph 7.9 (vi)).	Historically, a focus of GM mouse research. While the formation of tumours in the mouse does not always mirror that in humans, many insights into the role of genes that are responsible for causing cancer in mammals have been gained.
Musculoskeletal	Many myopathy models;19 but fewer GM mutants available that model human bone disease.	Mouse models have provided insights into the genes involved with myopathies in the human population. These mutants have been crucial to developing a better understanding of myopathic processes in humans and in the assessment of potential therapies.
Ageing disorders	Mutants available for Alzheimer's and Parkinson's disease (see paragraph 7.9 (iv)).	Considerable progress has been made in understanding Alzheimer's disease, Parkinson's disease and other neurodegenerative disorders. Receptors that could act as targets for future new drugs have been identified.