

Sunway University

Research Ethics Committee – Animal Welfare

Appendix: Techniques Used in Animal Research

Category A

Number	Technique	Anaesthesia code	Comments
A1	Variation in the composition, constituents, quantity and/or availability of the diet and/or drinking water which may cause pain, suffering, distress or lasting harm	AA	Includes withholding of food and/or water, and administration of substances by addition to food or the drinking water
A2	Administration of substances by intravenous, subcutaneous, intradermal, intramuscular or intraperitoneal injection; by the oral route (including by gavage); by inhalation; by immersion; in the aqueous medium or topically to the skin, conjunctiva or surface of eye	AA	
A3	Administration of substances or withdrawal of fluids via previously implanted cannula, catheter, or delivery or access system	AA	This does not include the surgery or anaesthesia required for placement. Includes use of stomas or similar
A4	Withdrawal of blood from superficial blood vessels by non-surgical methods	AA	Does not include venesection or tail tip removal
A5	Collection of cells or secretions from the oral or nasal cavities, the vagina or rectum, or the external structures of the eye.	AA	
A6	Breeding and maintenance of genetically altered animals	AA	This regulated procedure involves pairing to produce a new individual and keeping alive an individual with potential for harm

A7	Non-surgical implantation of a microchip or telemetry device	AA	
A8	Restraint by physical means, or by confinement within a restricted area, of a nature or duration that may cause pain suffering distress or lasting harm	AA	This includes restraint using fixation devices previously implanted under separate authority and confinement in a metabowl, primate chair or sling
A9	Cannulation of blood vessels, ducts or cavities by non-surgical means	AA	Includes genitourinary tracts
A10	Killing by dislocation of the neck other than as specified in a method of killing on Schedule 1	AA	
A11	Decapitation other than as specified in a method of killing on Schedule 1	AA	
A12	Manipulation of germ cells, gametes, fertilized ova or pre-implantation embryos with the intention of producing genetically altered animals	AA	Includes microinjections and electroporation
A13	Exposure to ionising and/or non-ionising radiation	AA	
A14	Exposure to infectious or toxic agents in the environment	AA	This includes situations where the agents may be transmitted by contact, inhalation, or in feed or on grazing
A15	Non-surgical placement or removal of electrodes, probes or other devices that may cause pain, suffering, distress or lasting harm	AA	
A16	Stimulation via electrodes previously placed under separate authority	AA	This does not include the surgery required for placement
A17	Locomotor or maze testing that may cause pain suffering distress or lasting harm	AA	Includes rotorod tests, elevated and plus mazes and open field test in potentially compromised animals.

A18	Forced learning procedures that may cause pain suffering distress or lasting harm	AA	For example the use of water baths, electric shocks and exposure to noxious substances
A19	Exposure to other animals (including con-specifics) with the intention of producing aggression, abnormal behaviour or fear/anxiety	AA	
A20	Exposure to environmental conditions that may cause pain suffering distress or lasting harm.	AA	This includes social deprivation, housing in conditions outside of the Code of Practice Guidelines that may cause pain suffering distress or lasting harm, housing in a barren environment and housing in permanent darkness, changes in the gaseous environment such as hypoxia or warming/cooling to a stressing extent
A21	Application of, or exposure to, physical stimuli that may cause pain suffering distress or lasting harm	AA	Includes auditory, thermal or pressure exposure, inflation of gastrointestinal balloon that has been placed under separate authority
A22	Administration of substances or withdrawal of fluids/tissues from tracts or cavities or body structures by non-surgical means	AA	Includes the respiratory system peritoneal cavity, gastrointestinal, urogenital tracts, subcutaneous pouches.
A23	Physical damage to superficial tissues	AA	Includes abrasion of skin or mucus membrane
A24	Maintaining an animal in an environment which may restrict the animal's ability to satisfy its physiological and ethological needs	AA	
A25	Non-surgical embryo transfer	AA	

Category B

Number	Technique	Anaesthesia code – for reference only	Comments
B1	Induction of general/local anaesthesia by use of agents and by routes suitable for the species, nature and duration of the procedure	AA/AB/AC	General anaesthesia for non-surgical or minor procedures only or for procedures under brief general terminal anaesthesia. Does not include maintenance of balanced anaesthesia
B2	Withdrawal of blood from superficial blood vessels by direct puncture or by removal of a tail tip or scab	AB/AC	
B3	Administration of substances by intravenous, subcutaneous, intradermal, intramuscular or intraperitoneal injection; by the oral route (including by gavage); by inhalation; by immersion; in the aqueous medium; or topically to the skin, conjunctiva or surface of eye	AB/AC	
B4	Administration of substances or withdrawal of fluids via previously implanted cannula, catheter, or delivery or access system	AB/AC	This does not include the surgery or anaesthesia required for placement. Includes use of stomas or similar
B5	Biopsy of superficial tissues or tail tip removal. Collection of cells or secretions from the oral or nasal cavities, the vagina or rectum, or the external structures of the eye	AB/AC	
B6	Non-surgical implantation of a microchip or telemetry device	AB	
B7	Restraint by physical means, or by confinement within a restricted area, of a nature or duration that may cause pain suffering distress or lasting harm	AB/AC	This includes restraint using fixation devices previously implanted under separate authority and restraint in a stereotaxic frame, primate chair or sling

B8	Cannulation of blood vessels, ducts or cavities by non-surgical means	AB/AC	Includes genitourinary tracts, bladder, trachea
B9	Killing under terminal anaesthesia by exsanguination and/or perfusion with fixative	AC	
B10	Decapitation other than as specified in a method of killing on Schedule 1	AC	
B11	Withdrawal of blood by cardiac puncture under terminal anaesthesia	AC	
B12	Cannulation of the heart and /or major blood vessels, ducts, tracts or cavities under terminal anaesthesia	AC	This includes hollow organs such as the gall bladder and urinary bladder. If complex and/or prolonged surgery is needed a Category C licence is required
B13	Exposure and removal of organs and tissues, including withdrawal of blood from heart or vessels or of body fluids, under terminal anaesthesia	AC	If complex and/or prolonged surgery is needed a Category C licence is required
B14	Exposure to ionising and/or non-ionising radiation	AB/AC	
B15	Non-surgical placement or removal of electrodes, probes, tags or other devices that may cause pain, suffering, distress or lasting harm	AB/AC	
B16	Stimulation via electrodes previously placed under separate authority	AB/AC	This does not include any surgery required for placement
B17	Application of, or exposure to, physical stimuli that may cause pain suffering distress or lasting harm	AB/AC	Includes eg auditory, thermal or pressure exposure, inflation of gastrointestinal balloon placed under separate authority
B18	Administration of substances or withdrawal of fluids/tissues from tracts or cavities or body structures by non-surgical means	AB/AC	Includes the respiratory system (intranasal, intratracheal), thoracic or peritoneal cavities, gastrointestinal, urogenital tracts, subcutaneous pouches,

			intraarticular, into bones (non-surgically) or intraocular space, cerebrospinal fluid
B19	Physical damage to superficial tissues	AB/AC	Includes abrasion or incision of skin or mucus membrane
B20	Endoscopy with or without biopsy	AB/AC	
B21	Destruction of the brain and spinal cord by mechanical means	AC	

Category C

Number	Technique	Anaesthesia code	Comments
C1	Induction and maintenance of general/regional anaesthesia by use of agents and by routes suitable for the species, nature and duration of the procedure	AA/AB/AC	For balanced and/or prolonged general anaesthesia
C2	Biopsy or removal of internal organs or tissues	AB/AC	
C3	Surgical cannulation of blood vessels, ducts, tracts or hollow organs	AB/AC	
C4	Subcutaneous, intramuscular or intraperitoneal implantation or removal of any device, tissue, substance or delivery system	AB/AC	Includes minipumps and radiotracking devices
C5	Exposure, section, partial removal, crush, ligation, occlusion or de-occlusion of vessels, peripheral nerves or ducts	AB/AC	Includes vasectomy, and lesioning by ligation or compression of peripheral nerves
C6	Surgical administration of substances or implantation of tissue into or onto organs, cavities, ducts, tracts including	AB/AC	

	into or onto the central nervous system		
C7	Surgical exposure of tissues, organs, vessels, ducts, tracts or cavities including the central nervous system	AB/AC	
C8	Surgical biopsy or removal of organs or tissues	AB/AC	
C9	Implantation of ova, and/ or embryos into the reproductive tract	AB	
C10	Surgical implantation with or without exteriorisation, and/or removal of cannula, electrodes, microdialysis probes or other devices into discrete areas of the central and peripheral nervous system or other internal tissues or organs	AB/AC	This includes implantation or insertion into muscles or joints
C11	Lesioning of discrete areas of the central nervous system, tissues or organs by chemical, thermal or physical means	AB/AC	Includes lesioning using ultrasound or local irradiation
C12	Implantation of fixation devices and/or recording or observation chambers	AB/AC	
C13	Transplantation of organs, vessels, ducts, tracts, tissues or nervous tissue	AB/AC	
C14	Surgical manipulation of the circulatory system	AB/AC	Includes formation of arterio-venous shunts, carotid loops.

Category D

Number	Technique	Anaesthesia code	Comments
D1	Induction and maintenance of neuromuscular blockade by the use of neuromuscular blocking agents	AB/AC/AD	Neuromuscular blocking agents may not be used in place of anaesthetic agents

