

## IDENTIFICATION AND TRACEABILITY OF BIOTECHNOLOGY-DERIVED ANIMALS

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Reliable animal identification methods are critical to the success of tracking systems, whether used for genealogical, animal health and food safety traceback or for market-based applications. Given the variety of reproductive technologies and modes of genetic transmission possible, tracking of biotechnology-derived animals and their descendants can pose special challenges. An associated dilemma is how to differentiate genetically modified animals from those derived using traditional breeding methods, or those derived through assisted reproductive techniques, including Somatic Cell Nuclear Transfer (SCNT)-derived clones. The capacity for tracking and reliable traceback of animals generally relies on having a unique positive animal identification and verification against a central database. Various animal identification options are possible, though not all may be sufficient for biotechnology-derived animals, including SCNT-clones. Physical tagging and marking, DNA-based identification, radio-frequency identification (RFID) and retinal imaging are a few of the identification methods that can be used as part of a tracking system. In the case of animal clones, retinal imaging has been shown promise in this area. Regardless of which method is chosen, complications are sure to arise in the form of technical difficulties and associated expenses, to name a few. It is possible that a combination of molecular (e.g. DNA) together with another physical identification method may be required. The information stored in a centralised database could be made available as appropriate to various parts of the food and feed chain through means such as the internet. In all cases, consideration will need to be given to the possibility of tampering. Nevertheless, animal identification and capacity for successful traceability have in many countries become a requirement of the food, animal, and public health systems in order to protect public and animal health and allow consumers to have a better and informed choice. The OIE and Codex Alimentarius standards provide a baseline for identification and traceability systems for animals and their products. However, consideration should be given to developing additional recommendations on the methods that are most appropriate for use in the identification and tracing biotechnology-derived animals and their products.

**Key Words:** Biotechnology-derived animals – Genetically-modified animals – DNA based molecular technologies – OIE and Codex standards.

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