**FACT SHEET**

**Topic:** OSTEochondrodysplasia (DWARFISM)

**Variety Affected:** Miniature Poodle

**Description:** A disorder of the cartilage and bone characterized by stunted growth and abnormal movement. Most affected puppies are so severely disabled that they must be euthanized.

**Symptoms:** The disorder first becomes apparent at 3 weeks of age when affected puppies show signs of stunted growth and abnormal movement. Affected puppies go on to develop enlarged and stiffened joints, abducted hind limbs, dorsoventral flattening of the rib cage, shortened and bent long bones, undershot jaws, and elongated and misshapen paws that resemble clubfoot. Some affected puppies do survive and stiffness diminishes with age, but mobility remains restricted and arthritis often develops.

**Cause:** An autosomal recessive mutation in the SLC13A1 Sulfate Transporter gene. Individuals who carry two mutant copies of the SLC13A1 gene are affected. Individuals who carry one mutant and one normal copy of the gene or who carry two normal copies of the gene are unaffected. Sire and dam must each carry at least one mutant copy of the gene to have affected offspring.

**Method of Diagnosis:** DNA testing. The test detects the mutant, or abnormal, gene copy and the normal gene copy. The result of the test is a genotype and allows separation of dogs into three groups: normal, or clear (homozygous normal), carrier (heterozygous) and affected (homozygous mutant). DNA for the test is obtained from a cheek swab. The non-profit organization projectDog is currently offering DNA testing for the Osteochondrodysplasia mutation. For more information on testing see: [https://projectdog.org/](https://projectdog.org/)

**Recommendations:** Miniature Poodles should be tested for the SLC13A1 Osteochondrodysplasia mutation before breeding. Every breeding should include at least one parent that is normal/clear by DNA
testing for Osteochondrodysplasia. Any other combination has an unacceptably high risk of producing affected puppies.

**Information Sources:**

projectDog: [https://projectdog.org/](https://projectdog.org/)

Open access publication of the identification of the Osteochondrodysplasia gene in Miniature Poodles:


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