

## **STEM CELL THERAPY FOR ARTHRITIC DOGS**

The art of stem cells

Worldwide media reports about stem cell therapies and being pursued in diverse areas including cardiology, orthopedics, oncology and internal medicine. One area where the stem cell technologies are advanced is in the treatment of osteoarthritic dogs.



Statistics show 1 of 5 dogs suffers from osteoarthritis, a chronic, painful and debilitating disease without known cure. Stem Art has a commercial therapeutical method, which contains adult mesenchymal stem cells and associated cell populations derived from fat tissue. The procedure is being utilized to treat dogs with arthritis and is already demonstrating very promising results.

Stem Arts regenerative procedure for arthritic dogs utilize the body's own ability to heal it. This safe technology is being used to heal painful arthritic joints such as knees, elbows, shoulders and hips, and has also been successfully used to treat dogs with hip dysplasia. It has been shown pain reduction and no dependence on medication and improves a general wellbeing of dogs that had previously struggled to walk or run. Stem Art company utilizes the dog's own fat cells which carries no risk of rejection. Adipose tissue is used for its abundant supply of adult mesenchymal stem cells. These stem cells are also easier to harvest, unlike the bone marrow stem cells, which are extracted from the hipbone during complex surgery. Recent experiments have demonstrated that adult adipose-derived cells secrete proteins that are having potentially powerful anti-inflammatory capabilities. The Stem Art three step procedures contain:

**Veterinarian Health & Wellbeing Assessment**

- A complete veterinary history and examination by the clinic
- Neurological and orthopedic examination and scoring
- Diagnostic imaging including high definition CT Scanning to help reduce imaging time, significantly increase joint details
- Joint fluid cytology and culture and sensitivity, or synovial biopsy where indicated
- Gait analysis

### 1. Adipose Tissue Extraction



Sampling of adipose tissue is carried out under general anesthesia and is performed either via removal of the inguinal fat pad or via liposuction. Once the adipose tissue-derived material is harvested (two tea spoons or 20 grams of fat), the affected joints are shaved and the dog have to be removed from general anesthesia.

### 2. Isolation of adult stem cell population

The adipose tissue is processed according to the Stem Art procedure. The cell population contains a mixture of various cell types including adult mesenchymal stem cells and their derivatives. A minimum of 30 millions of cells are delivered within 2 weeks and can be injected in one or more joints.

### 3. Transplantation of autologous cells

The patient is lightly re-anaesthetized and the joints are surgically prepared. Transplantation is performed via a standard injection for each joint. Joint fluid is aspirated to ensure correct placement before the cells are injected. It is advisable not to inject more than 4 joints at the same procedure.

## Results



During clinical trials around the world, thousands of dogs that received stem cell treatment for arthritic joints were assessed prior to, and after treatment. The assessment involves a veterinary examination prior to treatment, and assessment at 30 days intervals for 3 months. The examination involves scoring for lameness, range of motion, functional disability, and pain on manipulation, proprioception, swelling and ability to climb stairs and to jump.

Within 10 days after treatment with stem cells, some arthritic dogs shows a significant and in certain cases, a dramatic improvement in mobility. At the

six-month point, results showed all dogs that suffered from osteoarthritis and joint pain, improved after the Stem Art treatment. All dogs showed improvement in mobility in their arthritic joints. The improvements ranged from 50 % better mobility, which represents the worst result, to 100% improvement. Average mobility improvement is 85%. An independent survey with dog owners confirmed these results. Dog owners total satisfaction rate was almost 100%, three months after treatment. Results shows a 100% of dog owners consider the severity of their dogs arthritis had decreased after Stem Art treatment.

There are a number of possibilities why Stem Art procedure produces such dramatic improvements, including the molecules produced by the transplanted stem cells that are leading to anti-inflammatory effects and the local environment being stimulated to generate a new cartilage.

When adult mesenchymal stem cells are transplanted into damaged joints, the cells are observed to embed into the surrounding tissue and to generate new cartilage (Murphy, Fink et al. 2003; Wakitani, Goto et al. 1994). Beyond the risks of anesthesia, fat harvest site bruising and irritation, as well as the minimal risk of infection in the harvest or implantation site, the Stem Art procedure is well tolerated by dogs.

Most dog owners are generally surprised at the degree of recovery the day after the procedure. If the surgical excision wound is bruised and in some cases swollen, this rarely creates problems for the dog. Of the cases treated to date, only a few dogs have shown no signs of improvement and no dogs have had worsened their condition with this procedure.