Why Use Miniature Swine in Osteoporosis Research?

Miniature swine have been used as a model of osteopenia at Sinclair Research Center since 1989. Miniature swine have a lot to offer to the field of osteoporosis. The following list is a summary of the positive attributes of miniature swine for osteoporosis research.

- The miniature swine is a remodeling species with trabecular as well as intra-cortical remodeling.
- Adult body size similar to humans.
- Bone development is well documented in miniature swine.
- Miniature swine are polyestrous (21-day estrous cycle) and omnivorous.
- Miniature swine have a documented history: genetic, herd health and individual medical history.
- All routes of drug delivery can be used in miniature swine: oral, trans-dermal, subcutaneous, intramuscular, intravenous, intra-nasal, and most other delivery routes. Miniature swine is the species of choice for trans-dermal drug delivery.
- Similar bone response to osteoporotic agents: estrogen, calcitonin, biphosphonates, fluoride.
- Histomorphometry parameters are well documented.
- Miniature swine are also an excellent model for atherosclerosis and diabetes. Miniature swine can be used as a dual animal model of osteoporosis.
- Osteoporosis studies using miniature swine are more cost efficient than with monkeys.
- Supportive data using miniature swine as the pivotal pre-clinical study for osteoporosis agents has been favorably reviewed by the FDA.
- The few zoonosis of the miniature swine produced by Sinclair Research Center do not represent a threat to immuno-competent humans.

Sinclair’s Contributions to the Osteoporosis Research Field


