Inhibin analogues for menopausal complications

THERAPEUTIC: Women's health

Product Type	Therapeutic protein (engineered)
Indication/ROA	Post-menopausal osteoporosis, prevention of weight gain/ injectable
Target/MoA	Inhibin levels decline across the menopause transition, correlating with a rapid decrease in bone mass, increase in FSH and recently we have shown that inhibin curbs fat production during menopause. Highly potent agonist inhibin analogues that are free of activin contamination can be used as an inhibin replacement therapy to prevent menopausal weight gain and osteoporosis.
Development Stage	Lead series
Brief Description & Differentiation	We have developed super- inhibin analogues that can be used to prevent osteoporosis and weight gain during menopause, and beyond. The potential for inhibin therapeutics has been challenged by the concomitant production of activins, which induces cachexia in inhibin-null mice. We have identified mutations that eliminate activin formation in the the production of potent inhibin analogues that can be used develop a first inhibin replacement therapy.
Research Team	A/Prof. Craig Harrison, Dr. Kelly Walton
Intellectual Property	Novel compositions. Patent to be filed.
Key Publications	Walton KL, *et al* & Harrison CA (2016) *Endocrinology. 157(7)*:2799-809. doi: 10.1210/en.2015-1963.
Future	Further optimisation and testing in *in vitro* and *in vivo* (inhibin insufficiency and disease models). Progress to manufacturing scale up and formal preclinical studies enabling human testing in phase 1a/b clinical trial.

➢ Key Data

We have developed a new model of inhibin insufficiency that is independent of activin. In this model, female inhibin mutant mice present with an obese phenotype, with weight gain occurring after 12 weeks. This model can be used to test inhibin analogues for the prevention of weight gain.

We have engineered inhibin developing mutants that can be produced free of contaminating activin and have increased affinity for target receptors, betaglycan and ActRII.

Figure 1. Potency of Inhibin analogue. Activity read out for inhibin analogues in suppressing activin-mediated cells luceriferase reporter response.