The role for autocrine regulation of IGF-1 in pregnancy related obesity, a potential biomarker for weight loss

1Jian Guan, 2Karen Liu, 2Gagan Singh Mallah, 3Lesley McCowan, 4John Thompson, 5Ed Mitchell, 6Rennae Taylor, 7Paul Harris, 8Margaret Brimble, 9Eric Thorstensen and 10Rinki Murphy

1The Department of Pharmacology and Clinical Pharmacology, 2Liggins Institute, 3Department of O&G, 4Department of Paediatrics, 5Department of Medicinal Chemistry, 6Department of Medicine, University of Auckland, New Zealand

OBJECTIVES
Impaired insulin-like growth factor-1 (IGF-1) function associates with obesity and hypertension with weak correlation to circulating IGF-1. As a metabolite of IGF-1, the ratio of cyclic Glycine-Proline (cGP)/IGF-1 regulates IGF-1 bioavailability. We evaluated its association with obesity and/or hypertension and the changes of obesity status between early pregnancy and post-partum.

METHODS
We compared plasma concentration of IGF-1, cGP and IGF binding-protein (IGFBP)-3 in the women with obesity and/or hypertension to normal controls. We then compared the differences of these parameters between 15 weeks gestation and 6 years post-partum in women who were either remained to be normal, or become obese or recovered from obese or remained to be obese at 6 years post-partum. cGP was measured using HPLC-ms and IGF-1 and IGFBP-3 were measured using ILESAs.

RESULTS
Changes between 15 week of pregnancy and 6 year of post partum

CONCLUSIONS
cGP/IGF-1 ratio may be associated with obesity. The autocrine regulation with collective responses of reduced IGFBP-3 and increased cGP/IGF-1 ratio may play a role in weight loss.

References