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# Glycoform biomarkers of endometrial receptivity

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## Abstract

Unexplained female infertility is increasingly prevalent, and increasing numbers of women are seeking help from assisted reproductive technologies. The endometrial lining of the uterus is 'receptive,' allowing an embryo to attach, for only few days in each menstrual cycle. The mechanism of this 'receptivity' is unknown. To date a number of laboratories have sought to identify biomarkers present in either endometrial tissue or secretion which may be used assess 'receptivity' aiding clinicians with optimal timing of embryo transfer, with the expectation of improving pregnancy outcome rates.

Our previous 2D-DIGE studies identified dysregulated proteins secreted into the uterine cavity by the endometrium of infertile compared to fertile women. However their use as biomarkers is not possible as the identified dysregulated protein spot represents just one of many post-translationally modified (PTM) forms of the protein, thus rendering standard immunoassay methods ineffective. Given that many of these PTM's arise from glycosylation we have identified, using lectin arrays, specific glycoforms of secreted proteins as present in endometrial lavage, and in some cases absent from blood. This presents the possibility of designing antibody-lectin assays to quantify specific glycoforms, and in addition negate the inherent issue of blood contamination in collected uterine lavage.

Given the possibilities raised by our initial findings we have undertaken a proteomic study utilizing lectin affinity capture to identify potential novel markers of receptivity. We have identified dysregulated glycoproteins and subsequently used the same lectin affinity in designing antibody/lectin assays for quantitative testing of panels of individual women.

## Biography

Tracey Edgell obtained her Ph.D from Hertfordshire University, UK (1999), developing soluble fibrin assays and applying them to study the relationship with cardiovascular disease. She then worked in the field of biomarker research and assay design both in a number of commercial and most recently academic settings. Currently, she is a Senior Research Scientist in the laboratory of Professor Lois Salamonsen at Prince Henrys Institute in Melbourne, Australia, investigating endometrial receptivity and female infertility.