

## Project proposal template

### Graduate School studentships

### March 2015

<i>Project title</i>	Exploring the relationship between bone metabolism and inflammation in pre-eclampsia
<i>First Supervisor</i>	Dr <input type="text" value="Dhaya Perumal"/>
<i>Second Supervisor</i>	Dr Hossein Ashrafi
<i>School</i>	Pharmacy and Chemistry <input type="button" value="v"/>
<i>Other member of supervisory team (no more than three KU supervisors in total)</i>	Dr N. Anim-Nyame (Consultant Kingston Hospital, Kingston)
<i>Specific requirements beyond 2:1 degree</i>	Previous experience in a research project will be advantageous.

**Project summary**  
**(max 4,000 characters)**

Pre-eclampsia (PE) is a multisystem disorder of the second half of pregnancy characterized by hypertension and proteinuria. It is clear that the placenta is pivotal to the disease, since removal of the placenta cures PE. The current view is that PE is a disorder of generalized endothelial cell dysfunction. The primary pathology appears to be abnormal implantation with release of as yet poorly characterized factors into maternal circulation leading to widespread endothelial cell dysfunction. The condition is associated with insulin resistance, and inflammation. This systemic inflammatory response may be central to increased maternal bone turnover seen in PE. The mechanism of increased bone turnover is unclear, although several poorly characterised circulating factors such as proangiogenic factors, cytokines, growth factors and their binding proteins, leptin and oxidative stress markers, may be involved. While considerable data exists on how inflammatory cytokines regulate bone turnover, little is known of these mechanisms with respect to bone turnover in PE.

Hence, this study in collaboration with Kingston Hospital, aims to investigate the relationship between bone turnover and inflammation in PE and will utilise a combination of cellular biology and molecular pathology techniques. An understanding of the mechanism of altered bone metabolism will contribute to an understanding the complex pathophysiology of PE, help to predict future bone health of women with PE-complicated pregnancies and allude to potential targets of PE treatment.

