

## Breastfeeding and Reduced Obesity Risk

### Research overview

Breastfeeding on demand enables infants to self-regulate their nutrient intake. This is a multifactorial event that is likely facilitated by a complex system of breastmilk components including appetite hormones. These are thought to not only confer short-term appetite control to the infant, but also program the infant's appetite regulating system, providing long-term developmental benefits that have been associated with reduced risk of overweight and obesity later in life.

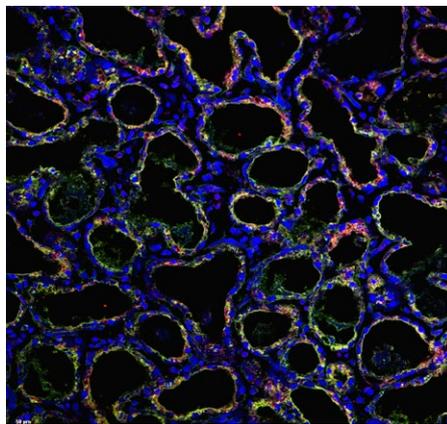
This project has three main aims:

- 1) To develop and optimise the methodology for measurement of appetite hormones in breastmilk
- 2) To elucidate the origin, properties, and mechanisms of action of appetite hormones in breastmilk
- 3) To examine maternal and infant characteristics that may influence the levels of appetite hormones in breastmilk.

This study is expected to provide new insights into how breastfed infants regulate their appetite, and factors that may disrupt this system. This will have direct applications in early interventions against the obesity epidemic.

### Research achievements

In the last year, the methodology was optimised to assess leptin and adiponectin in human milk. Skim milk was found to contain low levels of leptin, which was not significantly associated with feeding/milk removal or infant gastric emptying. In contrast, whole milk contained higher levels of leptin, which is likely due to the leptin present in breastmilk cells and potentially also in the fat fraction of the milk. These results are being further investigated to provide insight into how breastmilk leptin and other appetite hormones may influence the short-term nutrient intake of breastfed infants.



*Figure. Human lactating breast tissue stained for leptin (red) and alpha-lactalbumin (green), showing the presence of leptin in milk-secretory cells of the lactating epithelium. The blue stains the nuclei of the cells (DAPI). By Foteini Kakulas.*

### THE TEAM

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