Human breast milk is a unique, natural source of nutrition for the infant. Breast milk plays dual role in neonatal organism. First, it shapes the composition of microbiotic flora of the neonate, indirectly influencing the immune system's development and function. Secondly, breast milk directly "educates" the neonatal immune system to react with appropriate innate or adaptive immune responses upon microbial and antigenic challenge. Its composition varies by stage of lactation and between term and preterm infants. When maternal breast milk is unavailable, the alternative is infant formula. An event better option however, is feeding infants with breastmilk obtained from donors. Compared with infants fed on formula, infants fed on breast milk have a lower incidence of digestive problems (diarrhea, constipation) and are less likely to develop gastrointestinal and respiratory infections. Despite the fact that breastfeeding is known to be the best method for nourishing infants, how exactly breastfeeding works to provide the best nutrition and protect infants against disease is not fully understood. Although many studies of human milk composition have been conducted but most of information refer to milk from mothers after delivery on time but very little is known about milk composition from preterm delivery women. Thus composition is still unidentified. Understanding the composition of human milk is necessary to facilitate management of infant feeding, particularly of fragile, high risk infants, and for understanding the potential impact of storage and pasteurization on milk components.

In this project we would like to investigate differences between human breast milk from preterm delivery women and term delivery. The aim of the project is to seek miRNAs and innate immune factors differentiating milk for preterm infants with milk for term newborns. Meanwhile, we would like to investigate influence of high pressure pasteurization (HPP) on miRNA and innate immune factors in human breast milk.