



Department of Biomedical Engineering
Graduate Seminar



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Subject: Social transmission of maternal behavior

Bio:

Ioana grew up in Romania, where she studied medicine. She came to the US for her doctoral studies on developmental mechanisms of neural circuit assembly, working with Deanna Benson at Mount Sinai School of Medicine. She then worked with Robert Froemke at NYU School of Medicine, on neuro modulatory mechanisms for auditory perception, attention and social (maternal) behavior. She started her own lab at Rutgers BHI in 2018, where she investigates neural circuit mechanisms for social behaviors. In parallel, she aims to translate her findings in rodents to human research, via a collaboration with the CINETic institute in Bucharest.

Abstract:

Maternal care is critical for mammalian survival, and in many species it is the shared responsibility of parents and non-parental caregivers. The hormone oxytocin plays an essential role in the acquisition of maternal behavior by both parents and caregivers. In mothers, labor and lactation trigger the release of oxytocin. What mechanisms engage the oxytocin system in non-parental caregivers during the acquisition of maternal care? To answer this, we continuously monitored homecare behavior of female virgin mice co-housed for days with an experienced mother and litter, synchronized with recordings from virgin PVN cells, including from oxytocin neurons. With this setup, we identified two novel spontaneous interactions between mothers and virgins, and showed that they can increase firing of oxytocin neurons in the hypothalamus of virgins, and subsequently increase maternal behavior in these animals. Thus, we find that rodents can acquire maternal behavior by social transmission, and our results describe a mechanism for adapting brains of adult caregivers to infant needs via endogenous oxytocin.

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