

## Chen Institute Symposium 2023

**Speaker:** Ishmail Abdus-Saboor

**Talk title:** Skin-brain axis for rewarding social touch

**Abstract:** Pleasurable touch during social behavior is paramount. However, the identity and role of sensory neurons that transduce social touch, including sexual touch, remains unknown. The Anderson lab at Caltech demonstrated that a population of sensory neurons labeled by the G-protein coupled receptor Mrgprb4 detect mechanical stimulation in mice. Here, we study the social relevance of Mrgprb4-lineage neurons and reveal that these neurons are required for sexual receptivity and sufficient to induce dopamine release in the brain. Even in social isolation, optogenetic stimulation of Mrgprb4-lineage neurons through the back skin is sufficient to induce a conditioned place preference and a striking dorsiflexion resembling the lordotic copulatory posture. In the absence of Mrgprb4-lineage neurons, female mice no longer find male mounts rewarding: sexual receptivity is supplanted by aggression and a coincident decline in dopaminergic release in the mesolimbic reward pathway. In addition, we find a role for these neurons in preventing depression-like behaviors after stress. Together, these findings establish that Mrgprb4-lineage neurons initiate a skin-to-brain circuit encoding the rewarding quality of social touch, and when this is lost, adverse outcomes can arise.