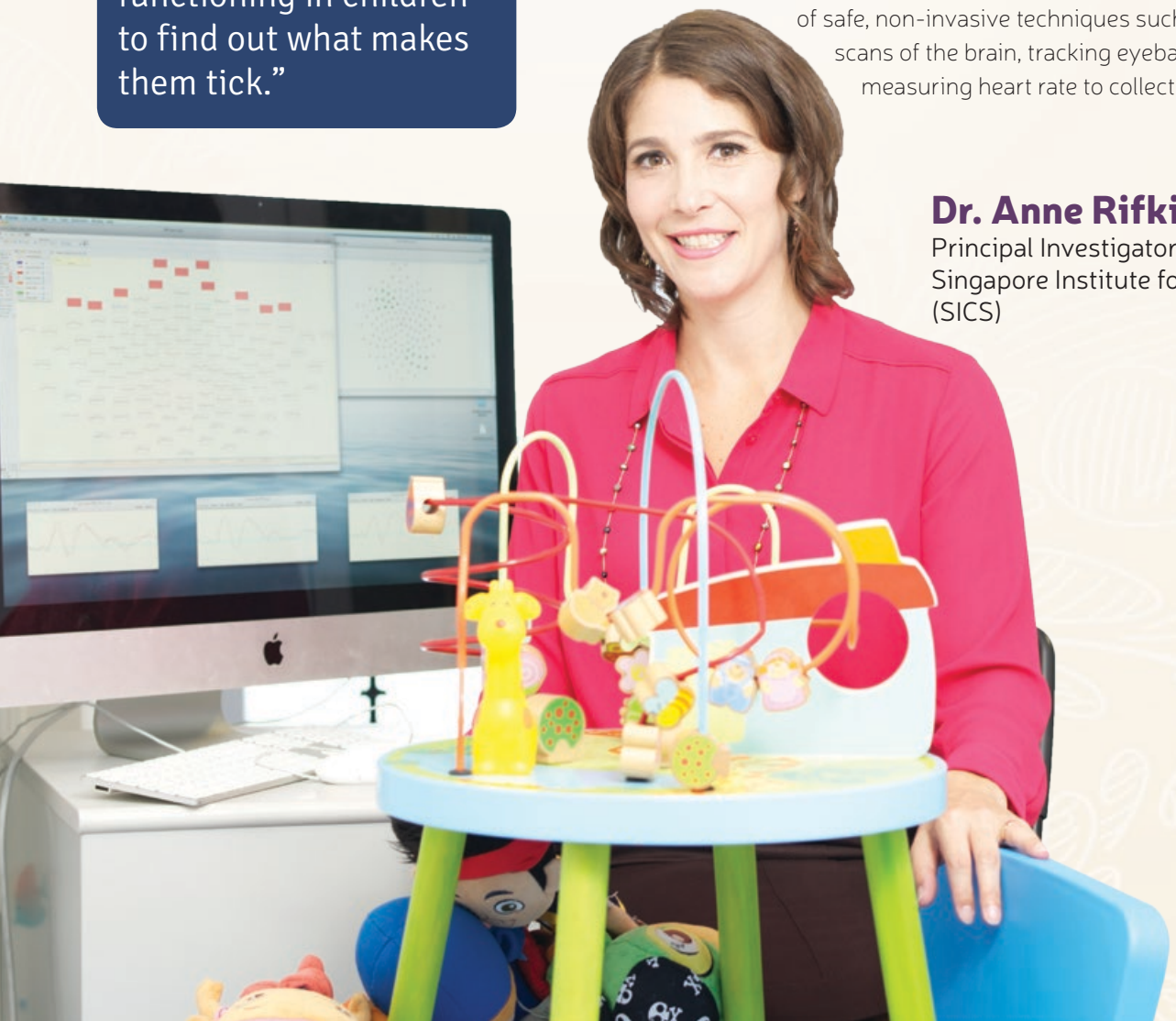
UNRAVELLING MYSTERIES OF THE MIND

It is an odd moment at the hospital ward when you see Anne Rifkin-Graboi poking her tongue out at a new-born baby. The point of it – to see if the baby would mimic her behaviour.

Anne is one of the principal investigators leading the A*STAR's Neurocognitive Development Centre to unravel the mysteries of the mind. Anne and her team spearhead research in neurocognitive development amongst infants and children taking part in "Growing Up in Singapore Towards Healthy Outcomes (GUSTO)." GUSTO, which is led by National University Health System, is part of a multi-agency study including SICS and KKH. "When you look at children, you see a lot of variation in how they respond to different stimuli, and in terms of their capacity for attention, learning and memory retention. What I try to do is understand what predicts the differences, so that we can know more about why children go on different pathways." said Anne.

Starting from the day a baby is born, the team begins to follow the infant's development. Plans are underway to study the children till they are nine years old. These researchers and their close collaborators employ an array of safe, non-invasive techniques such as taking MRI scans of the brain, tracking eyeball movement and measuring heart rate to collect data.

"I am interested in understanding the differences in brain, cognitive and emotional functioning in children to find out what makes them tick."



Dr. Anne Rifkin-Graboi
Principal Investigator
Singapore Institute for Clinical Sciences (SICS)

Tasks are assigned to the infant. "For instance, when they are six months old, we'll show them how to use a glove puppet and put it on and take it off. And we'll observe if they remember how to do it a few hours later," shares Anne. "These tasks become more complex as they grow older."

For Anne, trying to map the neurocognitive development of these infants is just a small part in her quest to answer bigger questions. She recounts the story behind this drive, "During my sophomore year, a wonderful professor led me to understand that knowledge concerning both why and how things happen can have a great impact on subsequent policies and interventions aimed to help human health. Because of that, I decided that I would pursue a career that would not only aid others but would be intellectually exciting on a personal level."

It's About Finding Answers

And certainly, this is what Anne's work has been all about. Besides her own research, there is also a considerable amount of data about the child and the mother collected through the multi-agency study, such as nutrition and biological information. Analysing the data in conjunction with her work opens up more useful possibilities, such as identifying potential risk factors in the brain's development and designing intervention programmes.

"Many of the brain regions I focus on are highly implicated in both mental health difficulties and school performance. We are also learning that relative difficulties in things like attention, and emotion and stress regulation may impact performance, well-being and physical health, and this in turn affects our society at large," adds Anne. "What we do can help shape policy and clinical work."

Dream Job

Working at A*STAR has been a fulfilling journey for Anne, whose time here has been marked by many memorable experiences. One that stood out was the establishment of the Neurocognitive Development Centre at St Andrew's Community Hospital. Her team rushed to get the laboratory ready in record time for the first batch of infants to be studied, while taking care to create a child-friendly environment. "I was so proud of my team!" beams Anne. "We built an amazing experience for the children and this allowed us to capture unprecedented amounts of data."

Doing the research she loves, being part of an exciting project that she helped design, having the opportunity to work with leaders in neurocognition, passionate young researchers and scientists from other institutes, this is a dream job for Anne. The strong support at her workplace to balance work and family needs makes it all the more ideal.

A mother of two young children, Anne puts it this way, "Given my research interests, it is perhaps not surprising that it is very important to me that I spend time with my own children. I personally feel that the early years are very important to their development and I don't want to miss out on their growing up. It is great that there is growing appreciation for flexibility in working hours. This can be beneficial to productivity as it keeps many smart and dedicated working parents involved in science!"