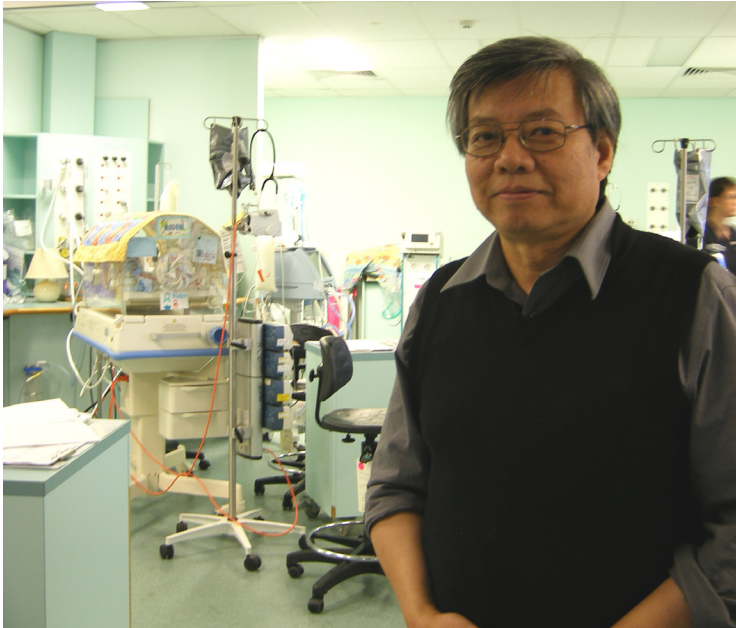




NEC - Piecing together a complex puzzle



Associate Professor Kei Lui in the Newborn Care Centre

Necrotising Enterocolitis (NEC) is a devastating disease affecting low birth weight, extremely premature babies. It's a condition where the bowel becomes infected and inflamed due to poorly developed immune and digestive systems common in such babies. But thanks to the hard work of doctors at the Royal, working with scientists from the Sydney Children's Hospital, the mystery surrounding its causes and how best to treat it, may soon be revealed.

The life of a baby in utero is pretty simple – all that needs to be done is sleep and grow by taking in its mother's amniotic fluid. For the extremely premature baby, life is far more complex. At birth they have a very poor immune system and an extremely immature gut with no gut bacteria. Having no barrier intact to protect their digestive tract, once these babies start taking in milk, they're suddenly exposed to gut flora. When inflammation is present and the balance between good and bad bacteria is not normal, disaster often strikes.

The big question is, what is "normal" in terms of the type and quantity of bacteria present? That's what the NEC research team is trying to find out.

Leading this crucial research is Associate Professor Kei Lui, Head of the Royal's Newborn Care Centre and Dr Steve Leach, a post-doctoral scientist at the Sydney Children's Hospital. Preliminary results of their research, based on advanced stool analysis, have been encouraging.

In the past two years, the team has collected stools from approximately 80 premature babies of less than 30 weeks' gestation. Within this group, about five or six have developed NEC. What's more, those with NEC had an inflammatory substance in the stool, compared to those who did not. "Stools are a very meaningful way of looking at inflammation", says Kei.

The next step for the team is to very precisely compare the bacteria in the stools of the NEC babies with those who did not develop NEC and see the differences.

Just how will they do this? With the help of a highly advanced machine, called a 454 sequencer. This cleverly maps the DNA of bacteria in stools to identify, from the genetic material, exactly what the bacteria is. The exciting thing about this method is that previous techniques only identified about 20% of bacteria, whereas, as Steve comments, "with this method we hope to identify 99.9%". More importantly, as Steve remarks, "as well as identifying the good bacteria that are (continued over page)

Our Vision

'Helping provide care
in partnership with women'

The Royal Hospital for Women Foundation
Locked Bag 2000, Randwick NSW 2031
ABN 79 276 416 465
ph 02 9382 6720
fax 02 9382 6762
www.rhwfoundation.com