Over five years, Dr. Sears became increasingly concerned about why so many in the New Zealand population were suffering—and some even dying—from asthma. Then, a colleague mentioned a longitudinal study of children being conducted in his own medical school.

A GROUNDBREAKING STUDY
Researchers at the University of Otago were following over 1,000 children born in 1972-1973, collecting a variety of data, from infant feeding habits to parents' socioeconomic status. The work was called the Dunedin Multidisciplinary Health and Development Research Study. Dr. Sears approached the study's director and obtained permission to include studies of asthma and allergies. His team began their detailed research when the children were nine years old, continuing to the present.

The Dunedin study has since gained widespread recognition for the quality of its data, allowing researchers to examine physical, emotional, cognitive, and social development from pregnancy to adulthood. During that time, Dr. Sears continued his work on asthma, exploring the causes of its development in children. In 1990, Sears was recruited by McMaster University to teach in the Faculty of Medicine and direct the Firestone Institute of Respiratory Health.

A NEW CANADIAN BIRTH COHORT
Some answers may come from a new longitudinal study that Dr. Sears and colleagues hope to begin in Canada. It may one day rival the Dunedin study. “Because the first detailed study of asthma with the Dunedin group started when the children were age nine, we had to build a lot of infor-
LONG-TERM EFFECTS OF ASTHMA

“Reducing asthma rates will also have an impact on the children’s overall development,” adds Dr. Sears. Asthma, the most common chronic respiratory disease in children, is responsible for over one-quarter of school absences. Daily medication, visits to the emergency room, sleepless nights from wheezing—all these take their toll on children and their families. “There is a great deal of stress associated with asthma,” says Dr. Sears, “there may be frustrations because of limitations on exercise. Then there is the whole issue of having to keep treating the disease for the rest of the person’s life.”

As asthma rates in children continue to climb, the need for research becomes ever more pressing. “Unless the causes that drive allergies and asthma are understood, prevention is next to impossible,” says Dr. Sears.

Only by unraveling the complex interplay of genetic and environmental factors will researchers be able to guarantee that all children can breathe normally.

If early maternal separation is not good for humans, it is clearly dangerous for many other species. Studies show that separating a baby rodent or monkey from its mother provokes a series of biological and behavioural changes in the young animal. Maternal separation (MS) increases an animal’s responses to stress, and those changes affect gene expression. However, until recently, scientists had not looked as closely at the issue of reversibility. In other words, once MS has taken its toll, can the effects be modified or reversed in some way? And does the reversibility occur only at the level of behaviour or does the change extend to the gene expression?

A group of McGill researchers has tackled this question, looking at the impact of an “enriched environment” (cages with special toys) for rats that had been separated from their mothers three hours daily in the first two weeks of life. After undergoing separation, rats were then put into the more enriched environment.

Through a series of tests, researchers found that the enrichment made the animals less fearful and less stressed when exposed to new situations. However, the enrichment did not reverse the adverse effect on gene expression that had been done. Rather, the animals had developed ways to compensate for the early maternal separation but the effects on gene expression remained.

“The study offers intriguing ideas to those working in the early childhood field,” says Janice MacAulay, Acting Executive Director of the Canadian Association of Family Resource Programs. “It is important to emphasize that this is rat behaviour. But the study establishes that in spite of less than ideal conditions at the early stages, when rats were provided with greater enrichment, there was some mediation of the negative effects of those early experiences.” While the enrichment did not “fix” the damage, it did attenuate the effects of early adversity.

The study also highlights the need for further research into both the timing and the kinds of services provided to young children. “Those early years are precious. We need to help families in every way we can to provide that nurturing environment,” she says.

Given the extensive developmental changes that occur in the early years, more research should focus on the timing of services. “We need to see if there are optimal times for certain interventions,” MacAulay says. Researchers should also be exploring the kinds of services and programs offered.