



remote areas after graduation. "They would sign a contract stipulating that they would practise for 5 to 10 years in rural Manitoba," Chomiak said. The college in turn proposed that the foreign-trained doctors be eligible to work as physician assistants in remote areas so that their verbal, medical and other skills could be assessed.

Meanwhile, the shortage grows worse, with all 3 physicians recently leaving the small town of Deloraine. Dr. David Lindley said he is moving to a medical centre in Nebraska where he can practise his surgical skills. "There is no anesthetist in De-

loraine, even though we have been trying to recruit one for years, and if I remain here another year my surgical skills will have to be reassessed." Grant Cassils, president of the Deloraine Chamber of Commerce, is considering sending a delegation to the United Kingdom to search for replacements.

Meanwhile, Praznik said he has not given up on his plan to recruit Germans. The government can grant a ministerial waiver that places doctors on a conditional register that allows them to work immediately. —

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Teens charged with Ritalin trafficking

The RCMP have charged 5 Manitoba teens with trafficking in methylphenidate, which is normally prescribed to treat attention deficit hyperactive disorder. The youths, aged 13 to 15, live in Boissevain, which is south of Brandon near the US border. Police confirmed that 2 of those charged had legal prescriptions for the drug. The police became involved after parents, concerned about missing tablets, contacted police.

Research Update • Le point sur la recherche

The enteropathogen has landed

A recent Canadian discovery concerning the virulence of enteropathogenic *Escherichia coli* is an unprecedented finding in microbiology.



Photomicrograph of *E. coli* bacteria (each about 1 micron in diameter) attaching to the epithelial cells of the intestinal wall

Researchers at the University of British Columbia biotechnology laboratory have found that enteropathogenic *E. coli* injects its own receptor molecule into the intestinal cell wall for the bacterium to attach itself to (*Cell* 1997;91:511-20). This is a completely new concept in biochemistry, says Dr. Brett Finlay, one of the study's authors.

Conventional wisdom assumes that microbes lock onto existing host molecules. A year ago Finlay and his colleagues knew that the bacteria bound to the intestine but did not know precisely how. In fact, they inject a soluble protein into the host membrane, preparing a landing field for the bacteria themselves.

After the bacteria pass through the stomach they shoot the receptor into the intestinal membrane, using numerous accessory proteins to ensure that it docks suc-

cessfully. The bacteria then attach themselves firmly to these receptors.

To verify this sophisticated sequence of events, the researchers observed specially produced large protein receptors (fusion proteins) entering human cells. They then eliminated the bacterial gene — coding for the protein — and found that the bacteria could no longer bind to human intestinal cells.

This discovery allows researchers to target the bacterial molecule, rather than the host molecule, in their next phase of work. They will now begin shutting down the bacterial injection machinery in an effort to develop *E. coli* vaccines for beef cattle. The goal is to immunize cattle against the molecule so that they do not harbour *E. coli* and pass it to humans. Three Canadian companies are working on vaccines and developing compounds to block receptor delivery.

Although he acknowledges the hit-and-miss history of vaccines, Finlay hopes one is ready within 1 or 2 years. He speculates that other microbes, including the *Salmonella* and *Shigella* species, may use a similar mechanism to install receptor proteins in human cells. — © H. Kent