Lefties: Are they born that way?

A surprising new study suggests a weak link between ultrasound exposure in the womb and the tendency to left-handedness later in life.

Although obstetricians consider ultrasound during pregnancy safe, some concerns linger about this common procedure. Researchers have shown that ultrasound isn't associated with severe birth defects, yet some scientists still worry about subtle types of brain damage.

Last year, a Norwegian team led by Kjell Salvesen of the University of Trondheim found no evidence that *in utero* exposure to ultrasound increased the risk of learning disabilities in school-age children (SN: 4/4/92, p.218). Now, that team has offered another view of ultrasound's fetal effects.

The Norwegian researchers studied 2,161 children born in the cities of Trondheim and Alesund from 1979 to 1981. Approximately half the kids had been exposed to ultrasound during gestation. The other children had no such exposure.

During the children's first year of life, the researchers put them through a battery of tests designed to assess neurological functioning. They found no clear differences between the ultrasound-screened kids and their peers.

While that's reassuring news, Salvesen's team did find a weak association between ultrasound exposure in the womb and the chances of being a leftie by age 8 or 9. That link appeared independent of a family history of left-handedness.

However, those findings could be the result of chance, the team cautions in the July 17 British Medical Journal.

Alternatively, they say, the sound waves employed by ultrasound scanners may influence the migration of neurons in the developing fetus. Changes in fetal brain formation could cause a child to favor its left rather than its right hand. Although the new study hints at this scenario, further research must be done to prove ultrasound's influence on brain development.

DNA repeats associated with cancer

In recent months, researchers have linked several genetic diseases to three-part bits of genetic code that repeat more often than normal (SN: 7/10/93, p.20).

Larger repeating bits, called minisatellites, can also cause problems, says Theodore G. Krontiris at Tufts University School of Medicine in Boston. Unusual variations in the number of one particular repeat are associated with one in 11 breast, colorectal, and bladder cancers, he and his colleagues report in the Aug. 19 New England Journal of Medicine.

Krontiris and his colleagues examined a 28-base-pair repeat that occurs shortly after a gene called HRAS1. Nucleotide bases are the building blocks of a gene's DNA. HRAS1 codes for a protein that helps control the timing of cell division and differentiation. Tumors can develop when this gene doesn't work right, Krontiris says.

These 28 base pairs can repeat 30 to 100 times, creating at least 30 versions – or alleles – of this section of DNA. Earlier, Krontiris' group had shown that about 94 percent of all Caucasians possess one of four of these versions. In contrast, people with cancer are up to three times as likely as people without cancer to have different, rarer versions.

Krontiris and his colleagues have now strengthened the link between rare alleles and some cancers. They examined this part of the genetic code in 439 people with cancer and 390 people visiting the hospital for reasons other than cancer. In addition, they compiled and analyzed similar data from 22 other studies – 4,250 people all together – to assess the relationship between these rare alleles and cancer.

No single rare version correlates strongly with cancer, but taken together, rare alleles prove quite significant, says Krontiris. The association was strongest for bladder cancer.

The repeat may upset the regulation of HRAS1, either by altering the DNA's structure slightly or by allowing gene-regulating proteins to bind to this section of genetic material, suggests James F. Gusella from Harvard University.

Krontiris suspects that other variably repeating regions influence the development of other diseases with genetic components, including diabetes.

Antibiotics help fight stomach cancer

New evidence reinforces the link between the ulcer-causing bacterium *Helicobacter pylori* and stomach cancer (SN: 12/14/91, p.399). Pilot studies in Europe suggest that treating people with antibiotics to get rid of these bacteria can also quash some early forms of this cancer.

It seems that when the bacteria infect the stomach lining, they cause an immune response that can lead to cancerous growth, says Peter G. Isaacson from the University College, London, Medical School in England. He and his colleagues treated six infected patients who had developed lymphoid tumors in their stomach linings. The antibiotics eliminated the bacteria in all six, and the cancer disappeared in five, they report in the Sept. 4 Lancet.

In a commentary accompanying the Isaacson report, Manfred Stolte from the Institute of Pathology in Bayreuth, Germany, says he also saw tumors regress in 12 of 32 similar cases, results that agree with other, unpublished work in Austria.

Isaacson and his colleagues also exposed tumor cells grown in the laboratory, some of which came from infected stomach linings, to different strains of dead *H. pylori*. They then monitored the changes in immune-system messengers and in cellular activity.

The bacteria seem to exert their cancer-causing influence by stimulating the immune system's T-cells, which then produce chemical messengers that cause different lymphoid cells, B-cells, to increase in number, Isaacson says. But the bacteria had no effect on B-cell tumors taken from other parts of the body or on more aggressive stomach tumors, the group reports.

The eradication of both tumor and infection suggests that *H. pylori* stimulates tumor growth and that antibiotics should be tried as an inexpensive first line of attack in these early stomach cancers, the researchers conclude.

Try this voice on for size

The Stairmaster may do when the stomach sags or leg muscles turn to flab. But when the larynx loses its tone, a hydroxylapatite implant may be the best solution.

This rectangular, chalky white prosthesis represents one of the latest attempts to help people with paralyzed or weakened vocal cords, says Charles W. Cummings, an otolaryngologist at Johns Hopkins University School of Medicine in Baltimore. The device pushes the vocal cords together.

Most of the time, surgeons carve these implants to fit a particular larynx while the patient lies on the operating table. But Cummings and his colleagues instead offer patients five sizes of preformed implants. The surgeon slips one into a slit cut into the anesthetized throat and then gets the recipient to sound out the alphabet. If the restored voice doesn't suit its owner, then the surgeon tries out another size, says Cummings.

Already, the group has restored the voices of 39 people – more than 80 percent of whom report significant improvements in their ability to talk, says Cummings. These results will appear in an upcoming Annals of Otology, Rhinology and Otolaryngology. Meanwhile, the implant's designers plan a larger study of the new device that will involve three other research centers, he adds.