

Health & SCIENCE

The male ego takes another hit

Researchers say mothers alone may pass on the genes which determine a child's intellectual power, while fathers impart those genes controlling more instinctual, 'primitive' mental functions.

An article in this week's New Scientist magazine says studies in mice are revealing that "the mother's genes contribute more to the development of the 'thinking', or 'executive', centers of the brain, while paternal genes have a greater impact on the development of the 'emotional' limbic brain."

Ongoing research at England's Cambridge University is exploring what scientists call 'imprinted' genes, and their role in reproduction and evolution. Imprinted genes differ from other genes in that their activation within the developing child depends upon the sex of the parent from which the gene came.

"Some imprinted genes work only if they come from the mother," the New Scientist article explains. "The same gene is silenced if it is inherited via the sperm rather than the egg."

Cambridge scientists stumbled upon this fact in 1984, during research which sought to discover if mammals could grow into maturity when supplied with the genes of just one parent. But they found

such "androgenic (mouse) embryos died, because certain vital genes had been switched off by the (donor) father."

Delving deeper into this phenomenon, researchers realized that certain genes controlling the development of the conscious, 'higher' level of brain function — intelligence — are silenced in the paternal version, but operative in the maternal one. Conversely, genes controlling more primitive limbic function — emotions, and the drives to eat, copulate, and compete — are silenced in the mother's genes, but activated in the father's.

In another study, Cambridge researchers examined the brain development of mouse embryos, abnormally weighted with extra amounts of the genes of either one parent or the other. "As the embryos matured... cells that carried only paternal genes accumulated in clusters scattered throughout the 'emotional' brain — the hypothalamus, the amygdala," New Scientist reports. In embryos with maternally supplied genetic material, "cells containing only maternal genes were absent from the emotional brain. Instead, they selectively accumulated in the brain's executive region (the seat of higher, cognitive intelligence)."

Of course mice and men do dif-

fer. "It is very important work, and very, very promising," says Wolf Reik, who is studying the 'imprinting' phenomenon at the Babraham Institute, near Cambridge. However, he admits that, at this stage "everyone is a little bit lost as to what it really means."

But some psychologists are already trumpeting the discoveries as vindication of Freudian theory. Christopher Badcock, author of PsychoDarwinism, believes paternal genes help build Freud's famous 'id' — the instinctual, emotional, unconscious self — while the mother's genes are behind the more rational, conscious 'ego'. During development, "maternal and paternal genes compete for control of behavior," Badcock writes, "culminating in a mind divided into two conflicting parts strikingly similar to Freud's ego and id."

Whatever the psychological implications, experts believe 'imprint' genes (of which only three or four have been identified so far) may number in the hundreds or thousands. Improperly switched on or off, they could also be the cause of numerous genetically inherited diseases.

Researchers say more research may lead to ways of controlling the expression of such genes.

Fen-Phen

The death of a woman in Massachusetts who was taking diet drugs to fit into her wedding dress has increased scrutiny of an unapproved but widely used drug mixture known popularly as fen-phen.

Before Mary Linnen died in February from a heart and lung disorder, the manufacturer warned doctors that taking its appetite suppressant, fenfluramine, with competing phentermine is "not recommended."

The FDA has never approved the drug cocktail, but doctors remain free to prescribe it. Last year 7 million prescriptions were written.

The combined drug is banned in Sweden and Tennessee and is popular at weight-loss centers such as Nutri/System.

Debate over the drug was rekindled when Ms. Linnen's family filed a lawsuit last Monday against the manufacturer, the pharmacy and the doctor who prescribed it.

Studies show the drugs taken separately cause primary pulmonary hypertension, an elevated blood pressure of the lungs that can cause the heart to fail. But because the drugs were not meant to be taken together, there is no authoritative research to gauge the risk of taking fen-phen.

"There's no question that fen-phen produces primary pulmonary hypertension," said Dr. Lewis Rubin, director of pulmonary and critical care at the University of Maryland Medical System in Baltimore. "There is no question that either drug alone can produce pulmonary hypertension. What we don't know at this point in time is the magnitude of the risk of taking these drugs together."

Did you know.....

59% of Americans say they eat too much fat?

Smokers earn less money by about 4% - 8%?

35% of Americans have high blood pressure and don't know it?

40% of Americans spend 10 hours a month doing volunteer work?

59% of Americans use a daily 'to-do' list?

Drinking water while you exercise keeps your heart rate down.

In case you're interested.

New findings on fat

When food hits the body, the calories can be stored away in fat cells or burned to produce heat - a process that takes place in specialized adipose tissue called brown fat. Lucky individuals are thought to have an excess of brown fat, allowing them to eat whatever they want without gaining weight.

And obesity experts hoped that if they could "turn up the heat" or stimulate the brown fat's heat producing ability, it could help steer calories away from becoming excess pounds. Now, two new studies in the current issue of Nature suggest that the relationships between food, fat storage, and heat-production are more complex than previously thought.

The protein that is responsible for switching calories from the fat storage track to the heat-producing track is called uncoupling protein, or UCP1. The protein is found inside mitochondria, energy-producing powerhouses found inside cells - and in extra amounts in brown fat.

But when a team of researchers genetically engineered "knockout" mice that lacked the protein, the results were surprising.

As expected, the mice were unable to generate body heat and were sensitive to cold. But instead of channeling those excess calories into body fat, the mice were anything but obese. Indeed, they were just as lean as mice that had UCP1, and did not eat any more than normal mice, according to researchers. It's possible that a second uncoupling

protein, called UCP2, may have taken over for the missing UCCP1, according to an editorial by Jules Hirsch, of Rockefeller University in New York.

UCP2 is found in both brown and white fat, the type of fat most commonly found in adult animals - including humans.

The obvious next steps are to make knockouts of UCP2 (the gene) and to determine whether UCP2 (the protein) is normally involved in burning away extra calories, and whether it's dysfunctional in the obese," Hirsch wrote. "In spite of these findings, the long search to find the heat producer that keeps its lucky possessors - svelte is far from over."

In the second study in mice, researchers knocked out the ability to make epinephrine (adrenaline) and norepinephrine, two substances that play a key role in the sympathetic nervous system, which controls the balance energy production and fat storage. The compounds stimulate food intake, activate brown fat to produce heat, and can regulate heat loss by constricting blood vessels.

The genetically engineered mice became sensitive to cold, ate more food, but again - did not gain weight because of an unexpected and unexplained increase in metabolism, according to researchers from the University of Washington in Seattle.

"Our research suggests that obesity is not likely to involve defects in the sympathetic nervous system or adrenaline."

Women's exercising & breast cancer

A new study in the May issue of the New England Journal of Medicine provides the strongest evidence yet that regular exercise helps protect women from breast cancer. The research, conducted in Norway, found

that women who exercise at least four hours a week have about a 1/3 lower than usual rate for breast cancer than women who do not.

Whether exercise truly prevents breast cancer, though, is less clear.

Women who work out generally have other healthy habits including diet and rest. But at least a dozen studies have now found a link between exercise and lower rates of breast cancer for women.

Elderly oppose legalizing assisted suicide

In the growing debate over euthanasia and physician-assisted suicide, how do those most often affected feel about it?

A recent Gallup poll focusing on senior citizens discovered that they found the idea much less appealing than the general population - being 20% less likely to support physician-assisted suicide than those in the general population. The majority of seniors polled opposed physician-assisted suicide.

"Support for legalization of physician-assisted suicide...among older Americans was lower than that documented in recent surveys of the general population," noted University of Rochester researchers in a study funded by the National Institute of Mental Health.

Since changes in euthanasia and assisted suicide laws would especially affect the elderly, the study examined attitudes of more than 800 U.S. senior citizens, av-

eraging age 71, in a Gallup national poll. The researchers also looked at whether those endorsing euthanasia had other risk factors for suicide.

The study found men, whites, and less religious persons showed the most lenient attitudes toward suicide, which matches with the relatively higher suicide rates in these groups.

"Just as other studies have shown that religious commitment is one of the strongest deterrents to committing suicide at any age, this poll of senior citizens found religious commitment to be the greatest predictor of opposition to physician-assisted suicide," noted Dr. David Larson, research psychiatrist at the National Institute for Healthcare Research (NIHR).

Religious commitment affected attitudes more strongly than health, income, race gender, age, marital status, and quality of relationships with relatives.

In fact, only 38% of people indicating that religion played a major role in their lives endorsed the statement that laws should allow physicians to assist senior citizens in committing suicide, while 65% of senior citizens who indicated that religion played little or no role in their lives agreed with the statement.

Older people with poor family relationships were more likely to feel that suicide was a personal decision and others should not become involved.

This finding of persons more at risk for suicide "because of conflicted or impoverished familial relations...underscores the need" for helping older persons in a broader family context, the researchers commented.

Unfortunately, the Gallup poll did not include questions regarding depression or recent stress, which can also affect attitudes toward suicide, the researchers noted.

Medicare billing changes

More doctors and other health care providers have agreed to take fees set by Medicare as payment in full for their services, keeping medical bills down for senior citizens.

As of January, 80% of all health care providers participated in a program that helps keep out-of-pocket expenses low for Medicare patients.

"The rising participation rate is good news for medicare beneficiaries because it means they can see more providers without worrying about being charged more than the standard co-payment amount," said Donna Shalala, the Secretary Health and Human Services.

Dr. Patrick B. Harr, president of the American Academy of Family Physicians, said one incentive for care-givers to participate is free access to an electronic Medicare claims-processing system.

"I think it's becoming more of a

hassle to be a nonparticipating physician," Harr said.

Medicare encourages health care providers to keep patient co-payments low by setting fees about 5% higher for those who cooperate.

Care givers who agree to the system collect 80% of those fees from the government and bill patients for the other 20%.

Those who don't participate get a little less from the government but can add up to 15% to their total bill, making Medicare patients pay more.

For example, if Medicare sets the cost of a doctor's appointment at \$100, a physician agreeing to accept that as payment in full would get \$84.00 from the government and \$21.00 from the patient.

A physician who refuses would get \$80.00 from the government, but could charge patients up to \$35.00 per visit.

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