

body&soul

Saturday May 24 2008 • "Though science can cause problems, it's not by ignorance that we solve them" Isaac Asimov, 1920-92

INSIDE



HONEY OR HYPNOSIS?

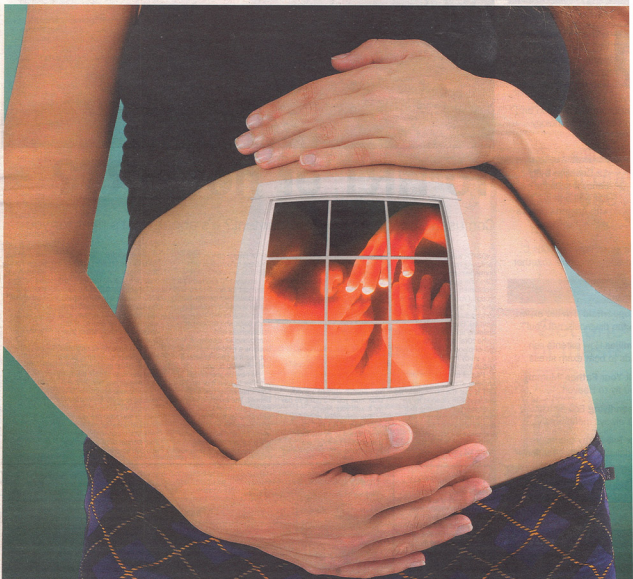
Ten remedies for hay fever **8**

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recipes with online video **16**

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While mouse models of Huntington's exist, rodents are not ideal for studying the human brain: the similarity of primates to homo sapiens makes them very valuable in neurological research.

The development of a primate model is particularly important for Huntington's: it is one of the cruellest of all genetic diseases and it has so far resisted attempts to develop effective therapies.

While people with this condition are healthy as children and young adults, at some point between their 20s and 50s they will start to suffer neurological decline. The first effects are depression, mood swings, strange behaviour and a characteristic tremor. That is followed by progressive damage to the nervous system, dementia and death. There is no cure.

What is more, Huntington's is caused by a dominant mutation in a single gene, which always triggers the disease. The precise characteristics of the mutation will affect only the age at which symptoms begin. This means that people with a parent with Huntington's know that even though they might

THE EXPERIMENTS ON THESE ANIMALS ARE ESSENTIAL

currently be healthy, there is a 50 per cent chance that they have inherited the disease themselves.

This rare example of true genetic determinism hangs over whole families like a death sentence. In the absence of good therapies, many people who know they are at risk choose not to be tested for the mutant gene.

This explains why Dr Chan says it would be unethical not to apply his team's expertise in genetic modification to Huntington's. For all the understandable qualms people have about primate suffering, he is right. While it is impossible to be certain that these transgenic animals will lead to a cure, they will bring a new dimension to research.

It would probably be proper to create GM monkeys to investigate diseases that are less serious or intractable than Huntington's, if the work is necessary. For this peculiarly unpleasant condition, the ethical balance between animal suffering and medical opportunity is clearer still.

Mark Henderson is Science Editor of The Times

Look at my baby

New technology now allows us to see extraordinary pictures of unborn children, says Liz Hollis

Prominent in the news this week were breathtaking, high-definition images of babies in the womb, as MPs voted not to lower the upper time limit on abortions. The debate was made more poignant by these extraordinary pictures of fetuses, which were made possible by giant leaps in baby-scanning technology.

Until recently, scans of unborn children were used solely by doctors to diagnose foetal abnormalities. But baby scanning is rapidly moving into the commercial sector, being billed as high-tech family entertainment. According to the sales pitches of growing numbers of non-diagnostic scanning packages advertised in baby magazines and on websites, these futuristic scans can help parents, friends and family "bond" with the unborn baby. The private scanning company www.beforeshorok.co.uk claims on its website: "Ultrasound scans are believed to enable families to form an early affectionate bond to their unborn child."

With dofling parents-to-be willing to pay up to £250 for images of their unborn children, baby scans have suddenly become big business.

Brave new unborn world

So what's so special about the new technology? Conventional pregnancy scans, the standard option offered to most NHS patients, are static images taken with a two-dimensional (2-D) scan. Parents take home a grainy black-and-white photograph. However, in these blurry 2-D images, it is sometimes hard to make out which bit of the baby's body is which. Commercial clinics, on the other hand, are offering ever better quality scans that produce amazing, high-definition moving images that can be downloaded on to a computer or mobile phone.

At the moment, mums-to-be have NHS ultrasound scans at 12 and 20 weeks to check that the foetus is healthy. These new moving images, described somewhat unscientifically as "4-D" (the fourth dimension being time), are for the most part intended to be used in addition to the 2-D scans, rather than in place of them.

The Portland, a private hospital for women and children in Central London, recently opened a new scanning unit offering the latest 4-D scans. However, for them, medical diagnosis rather than entertainment is the priority, according to Dr Pranav Panday, the co-director of foetal medicine. These 4-D scans, which are performed at 24 to 30 weeks, can be downloaded on to an iPod, e-mailed to friends or even used as a screensaver.

"With 4-D scanning, the image is in real time and you can show parents moving images of the

expression on their baby's face or its legs kicking," says Dr Panday.

Meanwhile, the technology company Philips has just released a cutting-edge vision of how pregnancy scans might look in the next five years. For its prototype, the Celebrating Pregnancy scanning system, both parents sit on a comfortable double seat. There's no cold gel or uncomfortable probe, just a soft fabric belt that wraps gently round the pregnant belly and provides real-time sound and vision from the womb on to a giant rounded tummy-shaped screen on the wall.

This is still a "concept system" and has yet to be developed in the laboratory. However, according to Frank Rettenbacher, a Philips consultant product researcher, this or something similar is predicted to become reality within three to five years. "This is on our roadmap at

FOR: 'It's especially moving for dads'

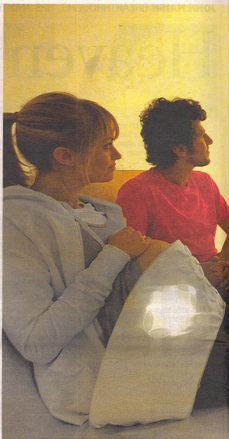


Joanne Marsh, owns the 4-D scanning company, Beforethehorok.co.uk. She has two children, 5 and 7 months

When Marsh, from Liverpool, was pregnant with her first child five years ago, she was dissatisfied with her NHS ultrasound, so she found the whole process impersonal. "I wanted to see and know more, and in a more relaxed atmosphere." She had a 4-D scan for her second child and

has since set up the scanning company www.beforeshorok.co.uk with two friends. "When I had my 4-D scan with my second baby I was amazed; the faces that he did in the pictures represented his personality. I showed my daughter and she thought it was great. She actually realised it was a baby, which she wouldn't have been able to do from a 2-D black-and-white image."

"The scans seem to help the bonding process. It's especially moving for dads, as they don't feel the movements that the mums do. Many cry when they see the images."



Family entertainment: seeing 4-D images of unborn children is sold as a "leisure" activity



The future of scanning? The Philips prototype will project real-time sound and vision from the womb on to a screen

Philips. We will definitely see some dramatic changes in baby scans in the next few years," he says.

The Philips system will transfer the scan to a "bebescope", a hand-held device that parents can take home, which shows a virtual reality image of the baby complete with real recordings of the baby's heart beat and sounds from her womb. "Parents can move backwards and forwards through time to track development and rotate their 'virtual' baby in any direction for the view of their choice," says Rettenbacher.

"Ultrasound birth scans are traditionally viewed as a risk-reduction measure. But the sight of an unborn baby is a source of joy, reassurance and affirmation, not just for a mother-to-be, but for the whole family," he says. "Unlike traditional 2-D imaging, which is often

grainy and unrecognisable, 4-D technology allows parents to 'see' their baby in amazing detail, giving them a bonding experience that will last a lifetime."

Do we really need to bond before birth?

This futuristic system heralds a new era of baby scans as a leisure activity. But do we really need to bond with unborn babies?

Dr Panday says: "I think this baby-bonding business before birth is commercial rubbish. For centuries women have been having babies and the first time they see them is at the birth and the attachment and bonding is fantastic. I am sceptical that there is any evidence that seeing a 4-D baby scan makes the bonding process any better than seeing a 2-D image."

He says that the amazing images are a bonus, but the scans at the Portland are primarily used

▶▶▶ To see an extraordinary, colour video of a 4-D prenatal ultrasound scan, log on to timesonline.co.uk/health

to check foetal health, for example, checking where the placenta is, checking that growth and development are normal.

Dr Sandra Wheatley, a psychologist who specialises in the mental health of new mothers, is concerned that the technology may make pregnancy even more stressful for some expectant parents. "It can bring with it expectations that you should bond even before your baby is born," she says. "It's unwelcome pressure for some. There is plenty of time to bond after the baby is born."

However, she concedes that some families may find the whole thing exciting and want as many pictures as possible. "If somebody wants a set of coasters made showing the baby's head in 4-D, we may think it's in bad taste, but we shouldn't prevent them from doing it."

Could there be a health risk?

Dr Kevin Martin, the president of the British Medical Ultrasound Society, is concerned that keepsake scans might also be a health risk. For this reason, he says they should always be done by a professional who follows strict safety guidelines and has proper procedures in place to check for abnormalities and, if necessary, to counsel the parents.

However, checking that a professional is qualified is not always simple. There is no single regulatory body for practitioners, although a consultation is under way to change this. The British Medical Ultrasound Society recommends asking the sonographers what their qualifications are and who they are registered with; the main two bodies will be the Society of Radiographers and Royal College of Midwives.

"A souvenir scan has no medical benefit, so patients should not be exposed to any risks even at the lowest level," says Dr Martin. "Souvenir scans should never be carried out in the first trimester when the baby is most delicate. If you must have one, it should be done in the second or third trimester and you should always ensure that the person is properly trained and knows what to do if he or she incidentally finds an abnormality."

He adds that souvenir home video clips of scans could also worry some vulnerable expectant parents who might anxiously review the footage at home, imagining that they can see abnormalities.

But it is the ability of these new 4-D scans to diagnose abnormalities ever earlier that is their true benefit. "The sort of abnormalities, such as structural malformations and heart defects, that we were looking for at 20 weeks' gestation just five years ago, we can spot on these scans at 11 weeks. Never forget that baby bonding and pretty pictures are just optional extras."

"What this 4-D technology is really there for is to allow clinicians to improve the health of mother and baby — and it will eventually be available throughout the NHS," says Dr Panday.

PROF OF THE WEEK CLEARING THE



Professor Ken Donaldson, 58, is Chair of Respiratory Toxicology at the University of Edinburgh

Why him? Because his interest in nanotechnology has led to the development of lightweight fibres that make bike frames, rackets and car parts stronger. His research this year suggests that these fibres may be harmful as they cause asbestos-like diseases in the lungs. Should we be scared? "No. Only some tiny nanotubes could be potentially harmful to people most at risk: those who work with them in industry."

So they were used in tennis rackets they're embedded in the material. Rackets and bikes aren't like Coke Flasks; they won't crumble in your hand.

Why the interest? "I started off as a technician examining the lungs of dead cows. After the mines were closed I looked at asbestos, air pollution and nanotechnology."

Not tempted to see the weekend? "I've smoked. It made it worse. At the weekend I do music in my recording studio. I used to be a band member and a bank manager. I was called Rover and we were terrible. It's to find academics to new groups, but no one wants to join a rock band."

Interview: Kate Walker

AGAINST: 'Beware the embarrassment factor'



Anne Ashworth, the Property Editor of The Times, has a son, aged 17

A sure way to make a teenager cringe is to show his cutie-pie toddler snaps to his mummy. So picture, then, the degree of chagrin that will be felt 15 years hence by the baby born this year whose parents had him scanned in 4-D. The squirming of this

adolescent at the sight of his in utero self will resemble nothing so much as the writhing and turning of the foetus on the DVD.

When I asked several mothers-to-be if they would like to see their progeny in 4-D living colour, they were not keen; the unseared produce among those happy to be pregnant by the recent row over terminations was a big factor in this distaste and disapproval.

Some were deterred by the weirdness of the images; one wondered if the early suggestion that the baby could develop his

father's nose, or his mother's forehead might cause discord, rather than cooing. Others, however, thought the fee (about £150) might be worth paying "for the emotional input".

But there are signs that 4-D technology may be raising expectations among the expectant. It's not only fashion pictures that get Photoshopped. One creative mother "bided up" her 20-week scan. There was no problem with the baby, but the image was patchy and ill-defined. Who doesn't want their child to look their best — whatever their age?



Prof. A. H. Beckett OBE, PhD, DSc, FRPHarrMS Professor Emeritus, University of London

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