

MedBulletin by Jacqueline Ho

Storing Soldier Sperm and the Many Unanswered Questions

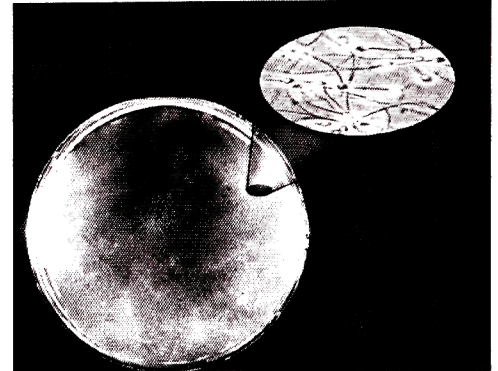
Over the last few years, a new wave of preparation has been employed by soldiers heading off to battle in addition to legal and financial affairs. This practice is sperm banking. There are two main reasons for the increasing number of deposits by soldiers in sperm banks. First, it serves as a precautionary tactic against possible sterility attributed to weapons such as insecticides and nerve gas. Second, it allows the soldier's wife or girlfriend to bear his child if the soldier is killed in battle.

In light of this development, several issues have yet to be addressed. One such concern is the lack of options for female troops who seek to preserve their reproductive abilities. In comparison with sperm banking, freezing eggs is a far more delicate and expensive procedure. Therefore, the cost of tens of thousands for egg preservation in comparison with the few hundred dollars for sperm banking means that preserving eggs is impractical to implement.

There are further questions regarding the usage of a sperm from a deceased soldier. Should only wives and fiancées have the right to use to the sperm? Sperm banks currently limit the number of children a live donor can produce to ten, but how many children can a deceased donor legally father?

Although technological advances have given soldiers options that were previously nonexistent, there are currently no rules, laws or legislation regarding the questions that have been raised. Nonetheless, loved ones ought to know what will or will not happen when trying to access the sperm of a deceased significant other.

Caplan A. (2003). Soldier's sperm offers biological insurance policy But storing semen raises many unanswered questions. MSNBC. Retrieved November 11, 2006, from <http://www.bioethics.net/articles.php?viewCat=2&articleId=23>



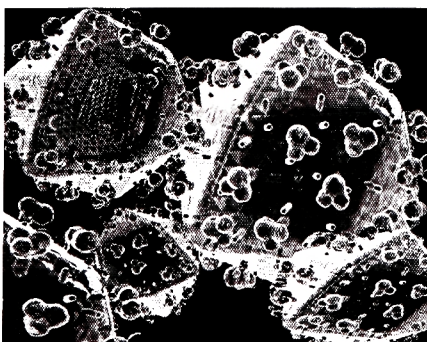
A cure for HIV, or not?

MedBulletin by Siddhi Mathur

Researchers at the University of Pennsylvania have treated five HIV patients with a disabled version of HIV. Though they had not responded to traditional therapies, they showed a positive response to the deactivated virus. The HIV levels in the patient's blood either decreased or stayed the same for about nine months; one participant displayed a significant drop in the virus count.

This disabled virus carries extra genetic material that blocks HIV production, which reduces the levels of HIV circulating in the bloodstream. The patients were injected with an infusion of their own immune system, in which their T-cells were genetically modified with the manipulated versions of HIV. Such an alteration interferes with the reading of genetic material and hinders the process that HIV uses to reproduce in infected cells.

Investigations have also focused on using lentiviruses as a vector for gene therapy. Lentiviruses also change the DNA by inserting themselves into infected cells, however, they are much safer. Their ability to colonize cells slowly and persist afterwards offers promise to this emerging gene therapy vector.



However, the extensive manual labour required for these types of treatments is a barrier to their practical application. Furthermore, experts at the World Health Organization claim that the sample sizes for the trials done were not large enough and it could be years before gene therapy is deemed effective and safe for HIV patients. Nonetheless, aforementioned developments are definitely an alternative to anti-retroviral drugs, and may develop into a useful tool for the sustained application of gene therapies.

(November 6, 2006). HIV gene therapy 'shows promise'. Retrieved November 10, 2006, from <http://news.bbc.co.uk/2/hi/health/6120042.stm>

■ Whose Fault is it Anyways?

MedBulletin by Siddhi Mathur

Two men in West Bengal, India have been arrested for selling expired pregnancy and HIV test kits. Sarda and Gansham, owners of Monozyme, take no responsibility for the use of these kits.

This mishap has resulted in infected people being given the thumbs-up to donate blood. Authorities located about 200,000 kits that were used past their expiration date. At least 117 people were given the wrong diagnosis when taking an HIV test, and their infected blood is now being used in blood banks. In total, Monoenzyme supplied over 200,000 kits and attempting to trace all the donated blood is nearly impossible.

With the potential of infecting hundreds of people, no authority has taken the responsibility for this mishap. Owners Sarda and Gansham are pleading not-guilty to malpractice charges. Were they responsible for making sure all the kits being distributed were not expired? What roles or responsibilities do the doctors or personnel administering these kits have in checking the expiration date? One may wonder if they knew where and how to check for this vital information. Furthermore, should the patients have taken the onus to ensure that the equipment being used on them was in proper functioning condition?

Resolving this issue will be particularly difficult as it revolves around the ethical misconduct of a chain of authority and may set a dangerous precedent.

(October 30, 2006). Two accused over 'fake' HIV tests. Retrieved November 3, 2006, from http://news.bbc.co.uk/2/hi/south_asia/6099064.stm



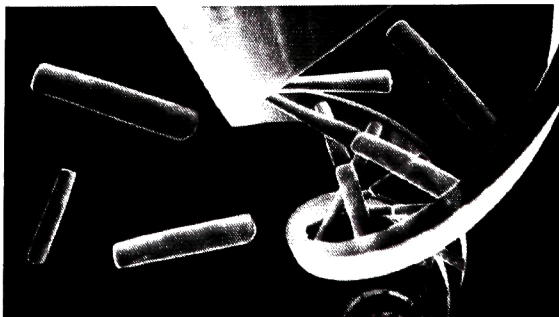
■ Genetic Therapy Wins the 2006 Nobel Prize for Medicine

MedBulletin by Jonathan Liu

One of the most important recent advances in medical research is the ability for scientists to control gene expression on a mass scale through RNA interference (RNAi). For discovering this technique, Andrew Fire and Craig Mello were awarded this year's Nobel Prize in Medicine.

RNAi was demonstrated nearly fifteen years ago when a group of plant researchers decided to inject a gene to over-express a certain pigment. Rather than intensifying the colour, however, the plant lost its colour leaving scientists puzzled by this result. In 1998, Fire and Mello set out to explore why injecting more of a gene in RNA form caused silencing, which seemed counter-intuitive. Using *C.elegans* as their model organism, the two discovered that double-stranded RNA (dsRNA) injections caused abnormal characteristics due to genes shutting off.

It was only years later that the mechanism for this phenomenon was elucidated. When dsRNA is injected into a cell, proteins (dicer) in that cell recognize these foreign nucleic acids and chop them up. These fragments then bind to a complementing portion of mRNA inside the cell, causing the excision of those native sections. Consequently, the loss of mRNA stops the production of a crucial protein leading to abnormal traits.



How does RNAi apply to us? This mechanism is inherent in all our cells to prevent the integration of foreign RNA, such as those from viruses. RNAi is currently being adapted as a novel way of managing HIV, cancer, hepatitis, and genetic disorders where certain gene expression is undesirable.

Mello, C.C., & Conte, D. (2004). Revealing the world of RNA interference. *Nature*, 43, 338-341.