

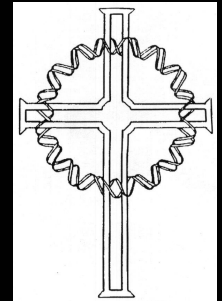
Gene Therapy: Playing God or Being Human?

Rt Revd Dr Lee Rayfield

Christians in Science (Ireland)

Belfast – 26 April 2010

Dublin – 27 April 2010

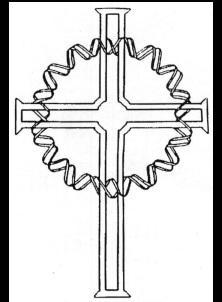


Gene Therapy: Playing God or Being Human?



My background

- **Biology then Immunology**
- **Post ordination – SOSc**
- **Lay Member GTAC UK 2000-09**

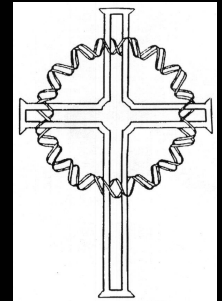


Gene Therapy: Playing God or Being Human?



What is Gene Therapy?

- **What is a gene?**
- **Nucleic Acid DNA as the molecular basis**
- **Base pairs (A/T/G/C) in triplets**
- **Two strands in double helix**
- **Translated into Amino Acids**
- **Transcribed into Proteins**



Gene Therapy: Playing God or Being Human?



The key definition for GTAC

“The deliberate introduction of genetic material into human somatic cells for therapeutic, prophylactic or diagnostic purposes.”

Includes techniques for delivering synthetic or recombinant

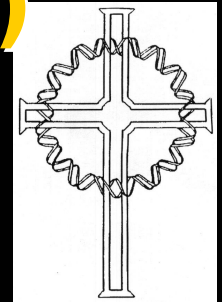


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The breadth of application

- **Genetically modified biological vectors (such as viruses or plasmids)**
- **Oncolytic viruses**
- **Nucleic acids associated with delivery vehicles (eg particles)**
- **Naked nucleic acids**
- **Genetic vaccines (eg tumour antigens)**

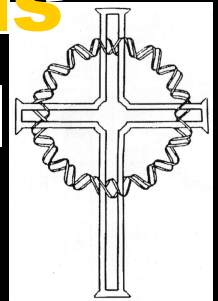


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The breadth of application

- **Antisense techniques (for example, gene silencing, gene correction or gene modification)**
- **DNA or RNA technologies such as RNA interference**
- **Genetically modified stem cells**
- **Xenotransplantation of animal cells (but not solid organs)**

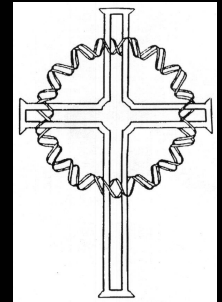


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Difficulties with the definition

- **Vaccination studies**
- **Antisense and small nucleotides**

- **Public confidence and protection**

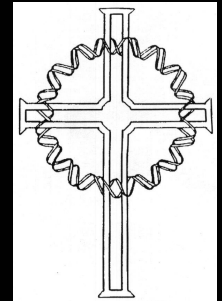


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Some examples of Gene Therapy

- **All experimental therapies in UK**
- **Treatment of X linked SCID**
- **Treatment of brain tumours**
- **Vaccinating with tumour related antigen**
- **Engineering cells with new molecules**

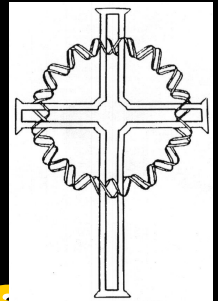


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GTAC and ethical review

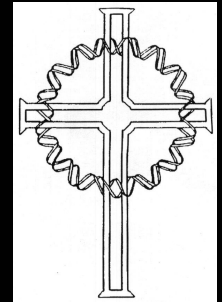
- **At present all Gene Therapy is research not treatment**
- **No germ line therapy is permitted**
- **Research and recruitment into trials**
strictly prescribed
- **Primary concern is ethical acceptability in human subjects**



Gene Therapy: Playing God or Being Human?

Getting behind the accusation

- **DNA as 'The Book of Life'**
- **Tampering with 'Nature'**
- **Potential for catastrophe**
- **Engineering humanity**
- **Complexity and powerlessness**
- **Tainted by association?**

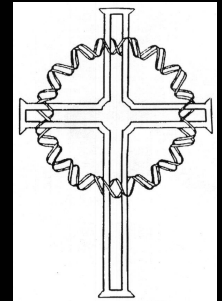


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Facing the accusation

- **Understand and appreciate concerns**
- **Need for transparency and honesty**
- **Value of caution and humility**
- **Address issues**

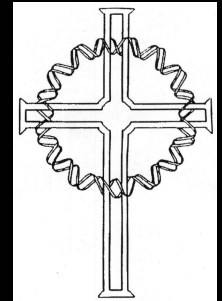


Gene Therapy: Playing God or Being Human?



Beginning to address the issues

- **The ‘quasi-religious’ status of DNA**
- **Minimising the possibility of catastrophe**
- **The spectrum of approaches**
- **Regulation and communication**
- **The current status of Gene Therapy**



Gene Therapy: Playing God or Being Human?

Playing God.. Or Being Human?

- **Christian perspectives**
- **DNA as 'of the essence of humanity'**
- **But there are other aspects of being 'in the image of God'**
- **A tale of two gardens**
- **The importance of accountability**



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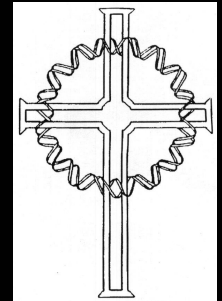


***“And what does the Lord require
of you?***

***To act justly, to love mercy, and
to walk humbly with your God.”***

Micah chapter 6 verse 8

***“I was afraid and went out and
hid your talent in the ground.”***



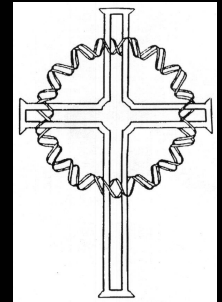
Matthew chapter 25 verse 25

Gene Therapy: Playing God or Being Human?



Holding the tensions

- **Being human – the downside!**
- **Responsibility and risk**
- **Safe(r) vectors**
- **Avoiding exploitation**
- **Protecting the vulnerable**

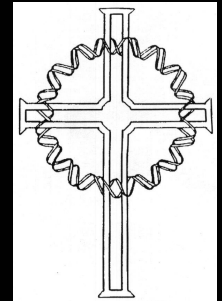


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But not all 'gene therapy' is GTAC

- **Impact of the Fertilisation & Embryology Bill 2008**
- **Opening possibilities for germ line modification**
- **Embryos with donor mitochondria**



Gene Therapy: Playing God or Being Human?



Moving ahead

- **Spirit of critical friendship**
- **Less hype, less suspicion, more reality!**
- **Clarify limits, raise inconsistencies**
- **Encourage partnerships**
- **Realise more of the promise**

