Novel techniques for the prevention of mitochondrial DNA disorders: an ethical review

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NUFFIELD COUNCIL ON BIOETHICS

Introduction and overview of the report

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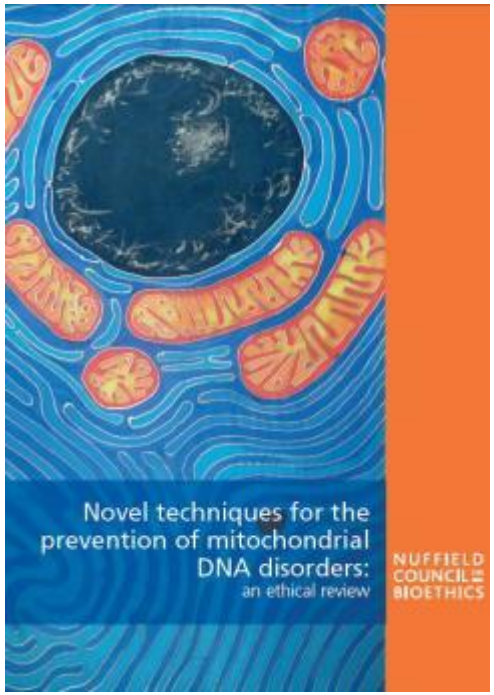
Background to the report

- 6 person Working Group
- Meetings held over 6 months
- 1 month open call for evidence, almost 100 responses received
- Various fact finding meetings and ethics presentations



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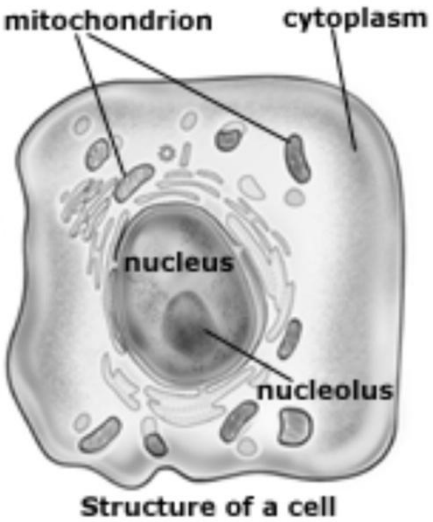
Mitochondrial disorders

- Mitochondria: the ‘batteries of a cell’
- Contain their own DNA system (mtDNA)
- Maternally inherited (but not a unique link between mother and child)
- Mutation rate about ten times that of nDNA



Structure of a cell

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Mitochondrial disorders

- Sufficient levels of mutation in the mtDNA can cause severely debilitating and disabling health problems including
  - heart and other major organ failure
  - stroke
  - dementia
  - blindness or deafness
  - premature death

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Current options

- Preventing transmission
  - Transmission is complex and hard to predict
  - Only definite option is to avoid using own eggs (egg donation or adoption)
- Minimising risk
  - Preimplantation genetic diagnosis (PGD)
  - Prenatal diagnosis (PND)

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Why now?

- The UK is at the forefront of research on new techniques to prevent transmission
- The techniques are currently unlawful but regulatory-making powers exist that could enable the Secretary of State to permit these techniques in future
- Increasing pressure from patient groups and research funders
- HFEA are consulting the public over summer and autumn 2012

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