

The Human Genome Project

Answer	Marks
 a) - knowledge of the location of specific genes within the genome has made it more efficient for scientists to identify these genes in individuals Finding it has made it possible to target medical treatments to specific disease causing genes Allowed DNA probes to be developed Allows comparison of DNA between different individuals Advances gene therapy/gene technology 	3 marks
 ii) <u>Advantages:</u> Allows embryos created in IVF to be screened for diseases before implantation Allows pre-natal genetic testing Pre-symptomatic testing in adults for diseases Genetic Counselling: Inform individuals of their risk of developing certain diseases so they can alter their lifestyle or take preventative measures Improves detection/diagnosis/treatment diseases Gene therapy to replace faulty genes 	5 marks
 iii) <u>Disadvantages:</u> <u>Social:</u> Expensive so only available to some individuals 'Designer babies' genes for intelligence, attractiveness etc. Not the capability to sequence everyone's genome 	8 marks

-	particular diseases would potentially be destroyed Pre-natal screening could increase the number of terminations carried out (religious/moral issues)	
-	Legal: - employment issues: individual who has been screened and found to have a gene for certain disease may be at a disadvantage for a job May cause a disadvantage to health insurance eligibility Would need to be strict laws in place to control what gene research was carried out Using DNA knowledge to create a forensic DNA database/data protection/ over powerful state	
_	<u>Biological:</u> -There may be side effects to gene manipulation in future generations Some diseases provide resistance towards other diseases which is beneficial and could be lost (e.g. sickle cell anaemia causes resistance to malaria)	