Genetic basis of "Royal Disease" revealed

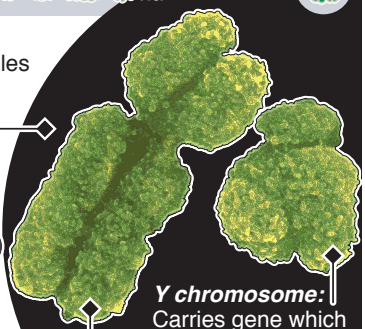
DNA samples from the recently-identified remains of Russia's Romanov family confirm a severe form of haemophilia B – the blood-clotting disorder that afflicted descendants of Great Britain's Queen Victoria

Chromosomes: Human cells contain 23 pairs of chromosomes – DNA molecules which carry our genetic blueprint

Each person has one pair of sex chromosomes in each cell. Females have two X chromosomes, while males have one X and one Y chromosome

DNA specimens from bones of Tsarina Alexandra and her son Alexei show X chromosomes carried mutant genes for factor IX

Gene for factor IX
Deficiency of F9 gene causes haemophilia B



Y chromosome: Carries gene which determines gender

X chromosome: Carries genes that produce blood-clotting factor VIII and factor IX proteins

Queen Victoria

Haemophilia was passed to Russia's imperial family by Victoria's third child, Alice, through her daughter Alix (Alexandra)

Alice
Carrier

Alexandra
Carrier

Nicholas II
Normal

Anastasia
Likely to have been carrier

Alexei
Suffered from haemophilia B

Pictures: Getty Images, State Archive of the Russian Federation

Source: Science