D1.3 Mutation: data-based questions

What the Cell · DP Biology · data-based questions

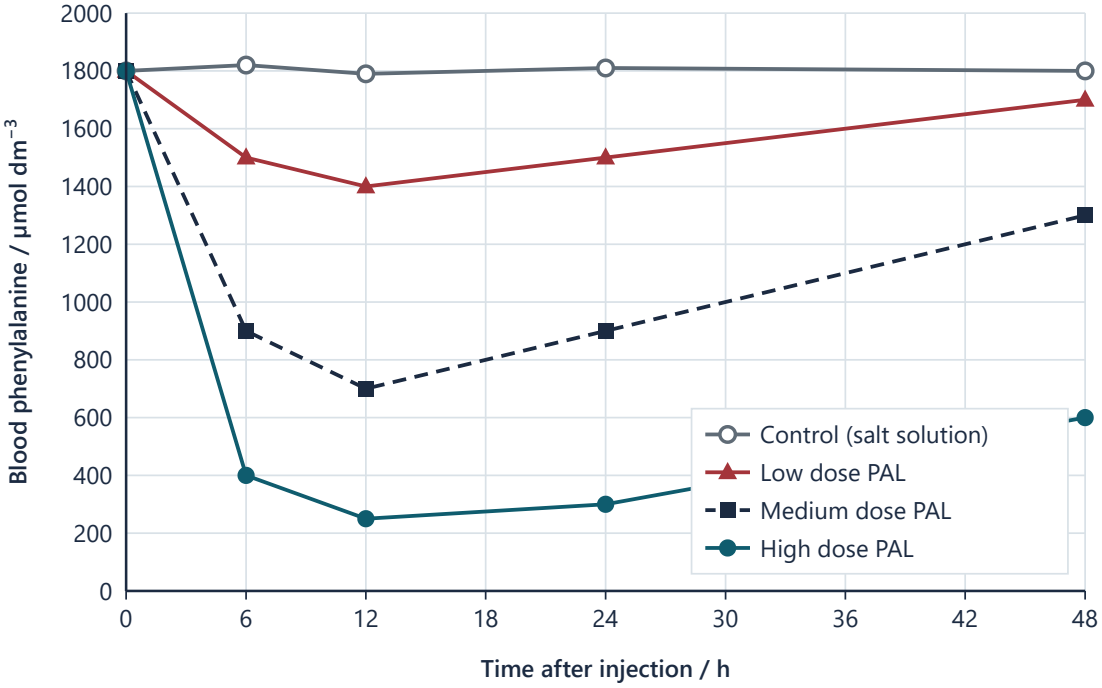
Name _____ **Date** _____ **Total** _____ / 8

Read the data carefully before you answer. The number of marks shows how many separate points to make. Show your working in calculations.

1 Enzyme therapy for phenylketonuria

8 marks

Phenylketonuria (PKU) is caused by a mutation in the gene for an enzyme that breaks down the amino acid phenylalanine, which then builds up in the blood and can damage the brain. Mice with PKU were given one injection of another enzyme, PAL, which also breaks down phenylalanine, at one of three doses. A control group was injected with salt solution. The safe level for people with PKU is below 360 μmol dm^{-3}.



a **State** the blood phenylalanine concentration of the control mice. **[1]**

b **Describe** the effect of the high dose over the 48 hours. **[2]**

c **Calculate** the percentage decrease in blood phenylalanine 12 hours after the high dose. **[1]**

d **Discuss** how effective the three doses are as a treatment for PKU. **[3]**

e **Outline** how the mutation that causes PKU differs from the cause of Down syndrome. **[1]**