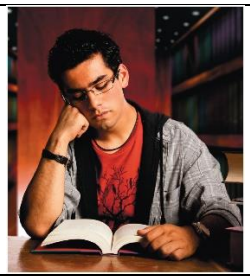
SCIENTIFIC SKILLS EXERCISE:
Making a line graph and calculating a slope

Does the rate of glucose 6-Phosphatase activity change over time in isolated liver cells?



Background: Glucose 6-phosphatase, which is found in mammalian liver cells, is a key enzyme in the control of blood glucose levels. The enzyme catalyzes the breakdown of glucose 6-phosphatase into glucose and inorganic phosphate (P_i). These products are transported out of liver cells into the blood, increasing blood glucose levels. Graph data from a time-course experiment that measured P_i concentration in the buffer outside isolated liver cells, thus indirectly measuring glucose 6-phosphatase activity inside the cells.

Methodology: Isolated rat liver cells were placed in a dish with buffer at physiological conditions (pH 7.4, 37^o C). Glucose 6-phosphate (the substrate) was added to the dish, where it was taken up by the cells. Then a sample of buffer was removed every 5 minutes and the concentration of P_i determined.

Results:

Time (min)	Concentration of Ⓟi (µmol/mL)
0	0
5	10
10	90
15	180
20	270
25	330
30	355
35	355
40	355

Data from S. R. Commerford et al., Diets enriched in sucrose or fat increase gluconeogenesis and G-6-Pase but not basal glucose production in rats, *American Journal of Physiology—Endocrinology and Metabolism* 283:E545–E555 (2002).