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Multiple phosphorylation events allow for finely balanced enzyme activity in cells. Glycogen synthase uses a complicated **series of phosphorylation events** to alter its activity (pp. 230). This enzyme is important to build glycogen stores and this process needs to be carefully regulated.

3. Protein processing.

An inactive precursor (**zymogen or proprotein/proenzyme**) is cleaved into an active form. Common in proteolytic enzymes since these enzymes need to be made in an inactive form, then activated when they are needed in the correct place (e.g. stomach).

For example, trypsin is made in the pancreas in an inactive form (Trypsinogen). It becomes active in the small intestine where it is cleaved into trypsin by the enzyme enteropeptidase (secreted by the intestinal gland cells). Once active, trypsin cleaves chymotrypsinogen (also made in the pancreas) into chymotrypsin which activates the enzyme.

These enzymes can only be inactivated by other **inactivating proteins** binding to them like trypsin inhibitor for trypsin.

Preview from Notesale.co.uk Page 2 of 2