

## BIOLOGY IN ENGLISH

### Making cheese: genetic engineering comes to the rescue

In the past, the cheese-making industry was dependent upon a substance called *rennet*. Rennet consists of two enzymes: *chymosin* and bovine *pepsin*. These enzymes, especially *chymosin*, are essential for coagulating milk and converting it to cheese. Traditionally, rennet was collected from the stomach lining of calves, where *chymosin* and bovine *pepsin* ensure the proper digestion of milk.

As the demand for rennet increased, scientists began testing various technologies to supply the substance, but they could find none that was satisfactory.

Finally, genetic engineering saved the day for the cheese industry. The gene responsible for the formation of *chymosin* was isolated from calf cells and cloned. The gene was then inserted into the genome of several organisms, including the bacterium *Escherichia coli*, the fungus *Aspergillus niger*, and the yeast *Kluyveromyces lactis*. The genetically engineered organisms produced copious amounts of *chymosin* with great success. Researchers confirmed that the new *chymosin* product contained no toxins and no living recombinant organisms.

Cheese containing *chymosin* was the first food dependent on genetic engineering in United States history.

Cheese made with genetically engineered *chymosin* is indistinguishable from rennet-produced cheese. It meets also the desires of strict vegetarians, since it contains no rennet.

#### ANSWER

Why do we prefer using GM bacteria instead of other GM organisms for industrial synthesis of biochemical products?

