

# **Bacillus thuringiensis**

***Bacillus thuringiensis*** (or **Bt**) is a facultative anaerobic, gram-positive, soil-dwelling bacterium, commonly used as a biological alternative to a pesticide; alternatively, the Cry toxin may be extracted and used as a pesticide.

## **Characteristics of Bt :**

- Bt subspecies can synthesize more than one parasporal inclusion. The parasporal inclusions are formed by different insecticidal crystal proteins (ICP).
- The crystals have various shapes (bipyramidal, cuboidal, flat rhomboid, spherical or composite with two crystal types), depending on their ICP composition.

## Genome structure

*B. thuringiensis* has a circular chromosome and a GC-content of approximately 32%~35%. It has a genome size of between 5.2–5.8 Megabases. It is a facultative anaerobic organism. It has many plasmids and Bt's strains harbors a diverse range of plasmids that vary in number and in size (2–200kb).

- Cry toxins have specific activities against insect species of the orders Lepidoptera (moths and butterflies), Diptera (flies and mosquitoes), Coleoptera (beetles), hymenoptera (wasps, bees, ants and sawflies) and nematodes.
- Different domains of the ICP are responsible for host susceptibility (receptor recognition) and toxicity (pore formation).

