

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).

Cell structure and metabolism

- *B. thuringiensis* is gram-positive.
- it has a thick cell wall that is comprised of peptidoglycan (amino acid polypeptide and a sugar). Between the cell wall and the plasma membrane is a small section called the periplasmic space which is essential for biosynthesis and protection.

History :

- *B. thuringiensis* was first discovered in 1901 by Japanese biologist Shigetane Ishiwata, most abundantly found in grain dust from silos and other grain storage facilities.
- In 1911, *B. thuringiensis* was rediscovered in Germany by Ernst Berliner, who isolated it as the cause of a disease called *Schlaffsucht* (excessive sleeping) in flour moth caterpillars, collected in the German province of Thuringia.

- Bt first became available as a commercial insecticide in France in 1938, and in the 1950s it entered commercial use in the USA.
- Whalon and McGaughey in 1998 showed that each strain of Bt produces a unique crystal protein which is encoded by a single gene located in the plasmid.

Habitats :

- Many different Bt subspecies have been isolated from dead or dying insects mostly from the orders *Coleoptera*, *Diptera* and *Lepidoptera*, but many subspecies have also been isolated from soil, leaf surfaces and other habitats.
- The carcasses of dead insects often contain large quantities of spores and ICPs that may enter the environment.