

The importance of being adhesive

Keith G Davies and Arohi Srivastava

Department of Biological and Environmental Sciences

University of Hertfordshire, College Lane, Hatfield, United Kingdom, AL10 9AB

- Plant-parasitic nematodes cause around \$100 billion losses to crops per year.
- Nematicides that have been used to control them are highly toxic to humans, animals and the environment and alternatives are being sought.
- *Pasteuria penetrans* is a Gram-positive endospore producing bacterium (Fig 1); it infects nematodes and has potential to be developed into a biocontrol agent.
- One isolate of *Pasteuria* will attach to and infect one population of nematode but not another.
- Understanding adhesion is essential for their successful deployment in the field.

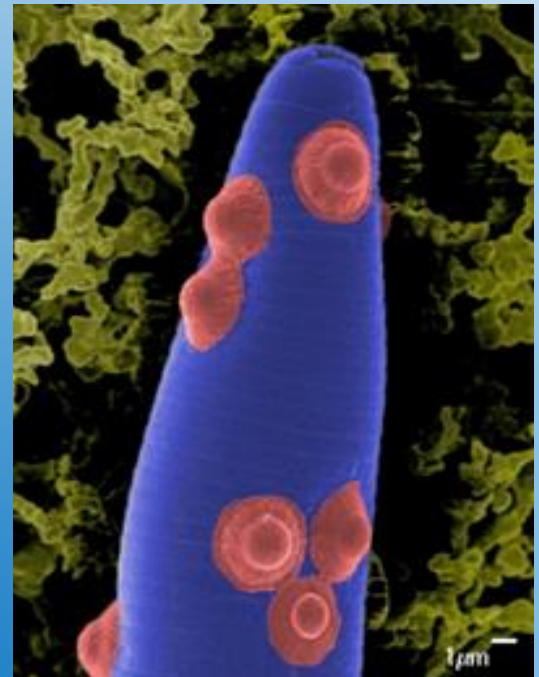


Fig 1. Head of an infective J2 nematode with attached *Pasteuria* endospores

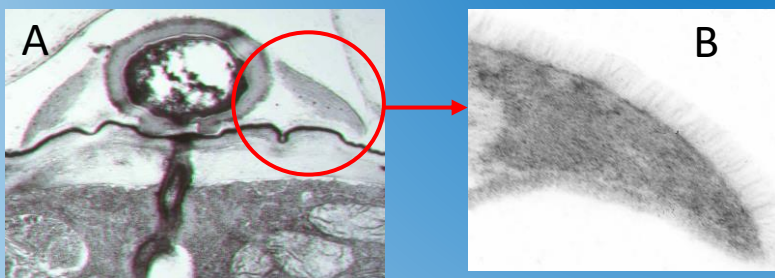


Fig 2. TEM of an endospore attached to the cuticle of a nematode (A); magnified skirt of the spore showing fibrous nap (B)

Fig 3. The number of endospores that adhere to infective nematodes is around 15 per individual. Pre-incubation of endospores with anti-collagen Pab 1981, collagenase, wheat germ agglutinin (WGA) and N-acetyl-glycosaminidase (NAG) all reduced adhesion of *Pasteuria* endospores.

- The fibrous nap (Fig 2) of the endospore in other closely related bacterial species are made up of collagen-like glycoproteins.
- Sequence analysis of the *Pasteuria* genome has identified 17 putative collagen-like genome sequences.

