

A Short List of Scientific Terms Regarding the Tussock Moth Literature
Compiled by Dennis Will, January 2016

Benthic - of, relating to, or occurring at the bottom of a body of water

Chironomid - nonbiting midges are a family of nematoceran flies with a global distribution

Cytotoxicity - is the quality of being toxic to cells

Endocrine - secreting internally, denoting glands having an internal secretion

Endotoxin - a toxic heat-stable lipopolysaccharide substance present in the outer membrane of gram-negative bacteria that is released from the cell upon lysis. The basis of the Bt's bacterium's insecticidal power is a protein endotoxin (an endotoxin is a toxin that remains inside the bacterium). More correctly in terms of the lethal activity, the toxin is actually a so-called protoxin. That is, the molecule must be processed to some other form before the toxic activity is present.

Epidemiology - the study of how disease spreads and can be controlled

Epithelium - a membranous cellular tissue that covers a free surface or lines a tube or cavity of an animal body and serves especially to enclose and protect the other parts of the body, to produce secretions and excretions, and to function in assimilation

Erythema - is redness of the skin or mucous membranes, caused by hyperemia of superficial capillaries

Etiology - the cause of a disease or abnormal condition

Exotoxin - a soluble poisonous substance produced during growth of a microorganism and released into the surrounding medium

Facultative - of or relating to the grant of permission, authority, or privilege

Gram negative - not holding the purple dye when stained by Gram's stain - used chiefly of bacteria

Hyperemia - increase of blood flow to different tissues in the body

In vitro – in a test tube or artificial medium

In vivo – within a living organism

In vivo testing is often employed over in vitro because it is better suited for observing the overall effects of an experiment on a living subject.

Intraperitoneal injection - is the injection of a substance into the peritoneum (body cavity). IP injection is more often applied to animals for testing of toxicology

Lipids - any one of various substances that contain fat and that are important parts of living cells

Lipopolysaccharide - a large molecule consisting of lipids and sugars joined by chemical bonds

Lysis - the gradual decline of a disease process (as fever) or a process of disintegration or dissolution (as of cells)

Mesocosm - an experimental tool that brings a small part of the natural environment under controlled conditions.

NOAEL - The no observed adverse effect level denotes the level of exposure of an organism, found by experiment or observation, at which there is no biologically or statistically significant (e.g. alteration of morphology, functional capacity, growth, development or life span) increase in the frequency or severity of any adverse effects in the exposed population when compared to its appropriate control

Parasporal inclusion - is a crystalline protein that forms around a spore in some bacteria that acts as a toxin precursor when digested. For example, *Bacillus thuringiensis* and *Bacillus sphaericus* form a solid protein crystal, the parasporal body, next to their endospores during spore formation. The *B. thuringiensis* parasporal body contains protein toxins that kill over 100 species of moths by dissolving in the alkaline gut of caterpillars and destroying the epithelium. The solubilized toxin proteins are cleaved by midgut proteases to smaller toxic polypeptides that attack the gut epithelial cells. The alkaline gut contents escape into the blood, causing paralysis and death. One of these toxins has been shown to form pores in the plasma membrane of the target insect's cells. These channels allow monovalent cations such as potassium to pass through. *B. thuringiensis* toxin genes have been engineered to make a variety of pest-resistant, genetically modified plants.

Pathogenic - In biology, a pathogen in the oldest and broadest sense is anything that can produce disease. Typically the term is used to describe an infectious agent such as a virus, bacterium, prion, fungus, viroid, or parasite that causes disease in its host. The host may be an animal, a plant, a fungus, or even another micro-organism

Plasmid - an extrachromosomal ring of DNA especially of bacteria that replicates autonomously

Probit - a unit of measurement of statistical probability based on deviations from the mean of a normal distribution

Protoxin - The molecule must be processed to some other form before the toxic activity is present

Septicemia - invasion and persistence of pathogenic bacteria in the blood-stream

Titre (titer) - A specific example is a viral titer, which is the lowest concentration of virus that still infects cells.