## DETECTION OF LYMANTRIA DISPAR NUCLEAR POLYHEDROSIS VIRUS IN INFECTED LARVAE USING A DNA HYBRIDIZATION ASSAY

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### ABSTRACT

The incidence of nuclear polyhedrosis virus in gypsy moth populations is currently measured by rearing field-collected larvae until death. Dead larvae then examined microscopically to confirm the presence of virus. Beside from being quite tedious, this method has several inherent difficulties and inaccuracies. In order to circumvent some of these problems, we have developed a DNA hybridization assay using radio- and digoxigenin-labeled viral probes to identify virus infected larvae using slot blot vacuum filtration and whole larval squashes. These methods are less tiresome and give more definitive results which are comparable with mortality data obtained from laboratory experiments as well as field collected larvae.

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## GENETICALLY-ENGINEERED BACULOVIRUS PESTICIDES AND THEIR ENVIRONMENTAL SAFETY

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### ABSTRACT

Baculoviruses such as the *Lymantria dispar* nuclear polyhedrosis virus (LdMNPV) are ecologically attractive alternatives to chemical insect pesticides but have a slow rate of control. To overcome this we have developed and are field testing an environmentally acceptable strategy which can be used for the introduction and expression of pesticide-enhancing genes by baculoviruses. The field release data will be used to construct environmentally-safe, viral pesticides which have improved pesticidal properties and which will not persist in nature.

The model virus for this study has been the *Autographa californica* nuclear polyhedrosis virus (AcMNPV). Similar genetic constructions are being performed with the LdMNPV. Genetic alterations to the polyhedrin region of the LdMNPV will provide a phenotypic and genomic marker for release studies. The markers will provide a method to study the epidemiology of the LdMNPV in nature. In addition the genetic alterations are being made in such a way as to allow for the insertion and expression of foreign pesticidal genes.

An important ecological consideration involving the release of a genetically altered LdMNPV is the possibility of vertical transmission and persistent infections. In an effort to document and assess the extent of persistent virus infections, we have conduct experiments designed to induce productive LdMNPV replication in "persistently" infect gypsy moth larvae. A polyhedrin-minus mutant of the AcMNPV has been injected into gypsy moth larvae in an attempt to induce LdMNPV productive replication. We will report on the extent and nature of polyhedra produced in challenged, laboratory reared larvae.