

Eckes P.
Vijtehaal B.
John G.
1989

MEDICAL SCIENCES BRANCH
UNIVERSITY OF CALIFORNIA
LIBRARY

FOR LIBRARY USE ONLY

Journal of Cellular Biochemistry

Supplement 13D, 1989

**UCLA SYMPOSIA ON
MOLECULAR & CELLULAR BIOLOGY**

Abstracts

18th Annual Meetings

MARCH 27 - APRIL 7, 1989

Alan R. Liss, Inc., New York

M 515 A SHOTGUN STRATEGY FOR EXPRESSION OF FRAGMENTS OF A VIRAL GENOME IN TRANSGENIC PLANTS: PERSPECTIVES FOR STUDYING VIRAL FUNCTIONS RESPONSIBLE FOR PATHOGENESIS AND FOR OBTAINING NOVEL TOLERANCE GENES. Mylene Durand-Tardif, Christophe Robaglia, Sylvie Dinant* and Francine Casse-Deibart, Laboratoire de Biologie Cellulaire, Laboratoire de Pathologie Végétale*, INRA, Centre de Versailles, 78026-Versailles Cedex, FRANCE. We have used random primed cDNA synthesis to construct a bank of the 10kb RNA genome of the Potato Virus Y (N strain). This bank was used to obtain the complete nucleotide sequence of the virus (Robaglia *et al.*, J. Gen. Virol., in press). We are currently using the same method to construct a cDNA bank of the PVY and of the Lettuce Mosaic Virus genomic RNA in an expression vector for plants. We will insert random c-DNA fragments in between the promoter of the Cauliflower Mosaic Virus 35S RNA and the coding region of the kanamycine resistance gene, flanked by the terminator of the nopaline synthase gene. These banks of viruses genomes will be introduced in tobacco cells by electroporation. Transgenic plantlets will be selected for their resistance to kanamycine encoded by the viral-kanamycine resistance fusion protein. We will look for tobacco plants with disease symptoms in order to identify which part(s) of the genome are responsible for the pathogenicity. We will also investigate plants which show tolerance to the pathogens. In order to develop novel types of tolerance genes.

→ **M 516** A SYNTHETIC GENE CONFERS RESISTANCE AGAINST THE BROAD SPECTRUM HERBICIDE L-PHOSPHINOTHRICIN IN PLANTS, Peter Eckes, Bert Uijtewaai, Gunter Donn, Hoechst AG, Pflanzen-schutzforschung Biochemie, 6230 Frankfurt 80, W.-Germany, L-Phosphinothricin (L-PPT), the herbicidal moiety of bialaphos, a compound produced by some Streptomyces strains, is the active ingredient of the herbicide BASTA. It can be inactivated by a specific N-acetyltransferase, which is also expressed in these Streptomyces strains. Based on the amino acid sequence of one such acetyltransferase, which acts during biosynthesis of bialaphos in *S. viridochromogenes*, a gene has been synthesized with a codon usage, optimized for expression in plants. This synthetic gene was fused between the 35S-promotor and -terminator of CaMV and transferred to plants such as *N. tabacum*, *L. esculentum* or *M. sativa*. Data on the expression of this gene in transgenic plants, the inactivation of the herbicide and the resulting resistance of these plants against L-PPT will be presented.

M 517 EXPRESSION OF FUNCTIONAL PEA LECTIN IN TRANSGENIC POTATO PLANTS, Glyn. A. Edwards, Andrew Hopher*, Stephen P. Clerk* and Donald Boulter, Department of Biological Science, Durham University, U.K., * Shell Research Ltd., Sittingbourne, U.K. Lectins are a widely distributed group of carbohydrate-binding proteins. Their presence at relatively high concentrations in legume seeds has been associated with a possible role as a pest resistance mechanism. A clone encoding the preproprotein of the pea (*Pisum sativum*) lectin has been expressed in transgenic potato plants using either a CaMV 35S promoter or a tobacco Rubisco small-subunit promoter. Presence of the lectin to levels greater than 1% of total soluble protein was demonstrated by radioimmunoassay. The preprolectin was processed, generating α and β subunits that assembled to give isolectin forms observed in pea seeds. The fidelity of subunit assembly was verified by demonstrating that the haemagglutination activity of the pea lectin synthesised in transgenic potato leaves was comparable to purified lectin from pea cotyledons. Experiments are in progress to determine the intracellular location of the processed lectin in transgenic plants. Additionally, such plants are currently being assessed for enhanced pest resistance.