

these studies suggested that Cd exposure of *G. mellonella* may influence its whole body lipid contents. We decided, therefore, to analyze lipid content of *G. mellonella* exposed to different concentrations of Cd. Lipid concentrations were measured photometrically by phosphovanillin method. Significant decrease in the total lipid content was found in Cd-contaminated larvae and pupae.

**E116**

**Purification and Characterization of the Lipid Transfer Particle (LTP) for the Larvae of Wax Moth, *Galleria mellonella***

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A lipid transfer particle (LTP) was partially purified from the hemolymph of wax moth, *Galleria mellonella* by 2 step KBr density gradient ultracentrifugation, anion exchange chromatography (resource Q) and gel permeation chromatography (superose 6) using fast performance liquid chromatography (FPLC) system. LTP of *Galleria mellonella* is composed of 3 subunits (Apo-LTP I, Apo-LTP II, Apo-LTP III). Molecular masses of each subunit were determined. The confirmation of LTP was determined by western blotting with polyclonal antibody for *Bombyx mori* LTP because LTP is non species-specific. Apo-LTP I and Apo-LTP III of *Galleria mellonella* react intensively with that of *B. mori* LTP whereas Apo-LTP II react weakly with that of *B. mori* LTP. Localization of LTP was also performed with polyclonal antibody for *B. mori* LTP. We will perform further works including purification of LTP, lipid transfer assay with radiolabeled HDLp, human LDL and determination of N-terminal sequencing and amino acid composition of each subunit.

**E117**

**Cloning of the Bilin Binding Protein (BBP) cDNA in Fall Webworm, *Hyphantria cunea***

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The bilin-binding protein is a blue pigment protein binding heme-related compound in insect. The amino acid sequence from the bilin binding protein (BBP) of the fall webworm has been determined. The apoprotein shows a molecular mass of around 20 kDa. This cDNA has high homology with human apolipoprotein D, insecticyanin, and human retinol binding protein. Computer searches of data banks yielded in a new member of this superfamily, the alpha 2-microglobulin superfamily whose other members transport small hydrophobic ligands in a wide variety of biological contexts.

**E118**

**Two Vitellogenic Carboxypeptidases (VCPs) Purified from Ovary of Mosquito, *Aedes aegypti***

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In response to a blood meal, the fat body of the female mosquito, *Aedes aegypti*, begins massive production of several yolk proteins which are subsequently stored in the developing oocytes by the receptor-mediated

endocytosis. There are vitellogenin (Vg), lipophorin (Lp), cathepsin B-like protease (VCB), vitellogenic carboxypeptidase (VCP) as four major yolk proteins. For the research of the characterization of VCP receptor, VCP, 53 kDa, was purified effectively by chromatofocusing and Con A Sepharose affinity chromatography from mosquito ovaries, and had two bands separated by 4-15% gradient native PAGE.

**E201**

**Chemical Induction of Cytochrome p450s in the Liquid Cultured Cells of Jerusalem artichoke (*Helianthus tuberosus* L.)**

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Cytochrome p450 inducers phenobarbital and aminopyrine were examined for their effect on liquid cultured cells of Jerusalem artichoke (*Helianthus tuberosus* L.). Cytochrome p450 content and, to a lesser extent, the activity of t-cinnamate 4-hydroxylase were induced by the treatment of 8 mM phenobarbital to 10-day old cultured cells. On contrast aminopyrine, which is well known p450 inducer in intact plant system, did not significantly affected on both cytochrome p450 content and cinnamate 4-hydroxylase activity. Interestingly cultured Jerusalem artichoke cells was found to have a noticeable amount of cytochrome p420, which was not detected in Tulip bulb. And treatment of chemicals markedly increased the content of cytochrome p420 in Jerusalem artichoke comparing to that in control. Apparently this enhancement could arise by a specific manner since the activity of peroxidase, another heam protein, was not affected, or even inhibited, by the treatment of chemicals.

**E202**

**Brassinosteroids in Shoots of Maize Seedlings are Biosynthesized by the Late C6-oxidation Pathway**

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GC-MS/SIM analyses of 4-demethylsterols in shoots of maize seedlings revealed that campesterol and campestanol, biosynthetic precursors for the early and late C6-oxidation pathway for brassinosteroids (BRs) biosynthesis, were contained in the shoots. To determine which pathway is operative, endogenous BRs in the shoots were examined. 6-Deoxocasterone and castasterone, members of the late C6-oxidation pathway, were successfully identified, but any members of the early C6-oxidation pathway were not identified, suggesting that BRs in the shoot were biosynthesized by the late C6-oxidation pathway. In the presentation, confirmatory results established by enzymatic conversions of BRs included in the late C6-oxidation pathway of the maize shoots will be also discussed.

**E203**

**Brassinolide and (26, 28-<sup>2</sup>H<sub>2</sub>)-brassinolide are Differently Demethylated by Loss of C-26 and C-28, Respectively, in *Marchantia polymorpha***

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