

# Identifying and Isolation of Gene Related Kidney Shape Egg (*ki*) in *Bombyx mori* Embryo Using Microarray

Sun-Mee Hong<sup>1</sup>, Seok-Woo Kang<sup>2</sup>, Nam-Soon Kim<sup>3</sup>, Jin-Sung Lee<sup>4</sup>,  
Tae-Won Goo<sup>2</sup>, Kwang-Ho Choi<sup>2</sup> and Si-Kab Nho<sup>1</sup>

<sup>1</sup>College of Agriculture and Life Sciences, Kyungpook National University, Daegu 1370, Korea,

<sup>2</sup>Department of Sericulture and Entomology, NIAST, RDA, Suwon 441-100, Korea,

<sup>3</sup>KoreaGenome Research Center Korea Research Institute of Bioscience and Biotechnology,  
Taejeon 305-333, Korea,

<sup>4</sup>CoreBio Research Institute of Lifescience Biotechnology Seoul, Korea 461-6

The domesticated silkworm, *Bombyx mori* has been recognized as a model insect for basic studies and provides a number of mutants and genetically improved strains. Microarray analysis was used to isolate egg-shape mutant genes from embryo of *Bombyx mori*. Embryogenesis is a complex process that requires the interaction of large groups of genes and is accompanied by changes in gene expression. We constructed a *Bombyx* cDNA microarray containing 2,446 unique genes identified from un-normalized and normalized embryo cDNA libraries. To identify genes related egg malformation of *Bombyx mori* during embryogenesis, we examined the patterns of gene expression between normal egg and malformation egg (kidney-shape). On the basis of two repeated experiments, a student's t-test was performed and then we chose  $\geq 2.0$  as the cutoff value for up-regulated genes and  $\leq 0.5$  for down-regulated genes. Nine genes down regulated. Differentially expressed genes are histon H3, kekkon-1, apolipoprotein A-1 binding protein, polyprotein, unknown gene, CG 11670 and ENSANGP00000005267. Of those, many genes of unknown function were identified that may be involved in the control and execution of development. The kekkon 1 of selected genes is also expressed in other patterned epithelia, such as the follicle cells of the developing egg chamber, where it is found in a dorsal-ventral gradient around the oocyte. But our clone with kekkon similitude is not the kekkon gene. We have identified a novel gene in *Bombyx mori* that encode putative embryo formation and this named noki. Transcripts of isolated cDNA were identified by Northern blot analysis. Expression of the noki gene only was observed during the embryo. But novel gene causes no obvious developmental defects.