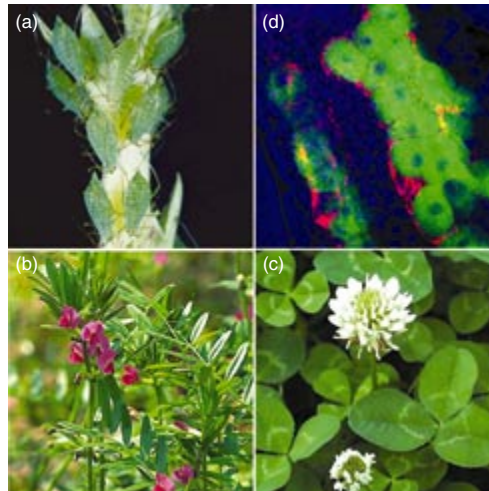


# Symbiotic Bacterium Changes the Plant Specialization of Host Insect

We discovered that host plant specialization of a herbivorous insect, pea aphid, is substantially affected by a facultative endosymbiotic bacterium.

Thus far, ecological properties of an organism, such as plant specialization and environmental adaptation, have been, needless to say, simply regarded as attributes of the organism encoded by its genome. However, this discovery suggests that, although unseen and therefore unrecognized, endosymbiotic microbial communities might sometimes have a substantial influence on a variety of macroscopic biological phenomena that we observe.

Ref. Tsuchida, T., Koga, R. and Fukatsu, T. (2004) Host plant specialization governed by facultative symbiont. *Science* 303: 1989.



(A) Pea aphid, (B) vetch and (C) white clover. In Japan, the aphid mainly feeds on these plants. (D) Endosymbiotic system of pea aphid. Green, the essential symbiont *Buchnera* harbored in mycocytes; red, a facultative symbiont called PAUS (pea aphid U-type symbiont) localized in sheath cells; blue, nuclei of host cells. PAUS infection is preferentially found in aphids on white clover, and confers a significant positive effect on the host fitness.

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*AIST Today* Vol. 4, No.6 (2004) 7-9

## Information and Communication Technology

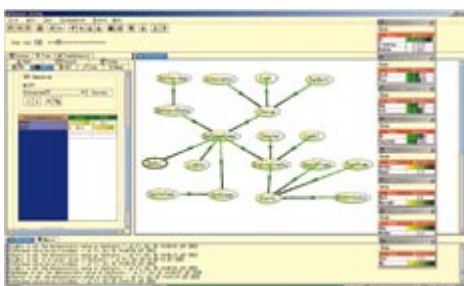
# “Bayesian Network Software BayoNet: Probabilistic Reasoning and Statistical Learning”

Bayesian networks are probabilistic models that can be used for applications like diagnosis, trouble-shooting, prediction under uncertainty, user-modeling customer-modeling, and so on. We need suitable Bayesian network models and probabilistic reasoning methods for practical applications. Our software (BayoNet) can construct Bayesian networks from statistical data in SQL DBs or CSV

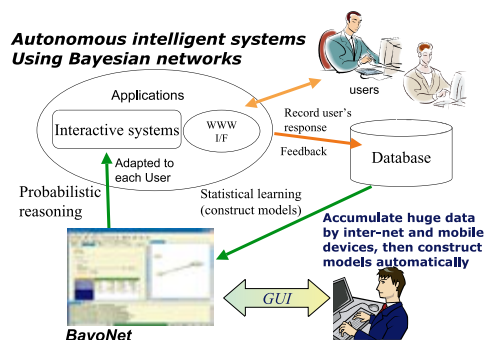
files. After constructing the model, BayoNet executes probabilistic reasoning via a fast approximate algorithm for practical application systems. BayoNet has been licensed to companies. We apply Bayesian network modeling to marketing, constructing user models that can predict and apply user intentions for interactive systems.

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*AIST Today* Vol. 4, No.4 (2004) 13



Bayesian network software BayoNet



Application image using BayoNet