Modern Phytomorphology **4**: 29, 2013

ARABINOGALACTAN PROTEINS IN PLANTS

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Key words: AGP, function, distribution

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AGPs (arabinogalactan-proteins) are the major constituent of arabic gum and have been used as emulsifiers and stabilizing agents. They are also one of the most abundant and heterogeneous class forming a large family of proteoglycans that sculpt the surface not only of plant but also of all eukaryotic cells. Undoubtedly, AGPs appear in numerous biological processes, playing diverse functions. Despite their abundance in nature and industrial utility, the *in vivo* function(s) of AGPs still remains unclear or even unknown.

AGPs are commonly distributed in different plant organs and probably participate in all aspects of plant growth and development including reproduction (e.g. they are present in the stigma including stigma exudates, and in transmitting tissues in styles, pollen grains, and pollen tubes. The functions and evident involvement of AGPs in sexual plant reproduction in a few plant species as *Actinidia deliciosa* (A.Chev.) C.F.Liang & A.R.Ferguson, *Amaranthus hypochondriacus* L., *Catharanthus roseus* (L.) G.Don, *Lolium perenne* L. and *Larix decidua* Mill. are known from literature. The localization of two kinds of AGP epitopes, recognized by the JIM8 and JIM13 mAbs, in anatomically different ovules revealed some differences in spatial localization of these epitopes in ovules of monocots *Galanthus nivalis* L. and *Galtonia candicans* (Baker) Decne. and dicots like *Oenothera* species and *Sinapis alba* L. A detailed study of the localization of AGPs in egg cells, zygotes, including the zygote division stage, and in two-celled proembryos in *Nicotiana tabacum* L. prompts consideration of the necessity of their presence in the very early steps of ontogenesis.

The selective labeling obtained with AGP mAbs JIM8, JIM13, MAC207, and LM2 during *Arabidopsis thaliana* (L.) Heynh. development suggests that some AGPs can be regarded as molecular markers for gametophytic cell differentiation. Moreover, the results show evident differences in the distribution of specific AGP epitopes during both anther and ovule development. Previously, immunolocalization of AGPs (and pectins) was performed in *Actinidia deliciosa* pollen. The *in vitro* growing pollen tube in *Arabidopsis thaliana*, labeled by MAC207 monoclonal antibody, showed evident presence of AGP all over the pollen tube wall. The use of the immunogold method and the TEM facilitated immunodetection of the AGP epitopes that bind JIM13, JIM8, and LM2 antibodies during pollen exine formation in *Beta vulgaris* L. These literature data will be the background for presenting the author's recent achievements concerning investigations of AGPs.