



MINISTERIO
DE CIENCIA, INNOVACIÓN
Y UNIVERSIDADES



REAL JARDÍN
BOTÁNICO



The Conference of IAB, iMOSS and SEB
Royal Botanical Garden (RBG), Madrid, July 9-12th, 2019

BRYOLOGY2019 CERTIFICATE

Madrid, 27th July, 2019

This is to certify that **Lia Valeeva** (Kazan Federal University, Kazan, Russia) attended the Bryology2019 Conference, held in Madrid on July 9-12, 2019.

The Chair of the Organizing Committee.

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Presentation type: Oral Presentation, Poster Presentation

The role of prenyltransferases in the thallus development of *Marchantia polymorpha*

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Protein prenylation is one of the most important post-translational modifications that plays an important role in processing of normal cellular mechanisms, such as signal transduction, polar cell growth, membrane and cell wall modifications. All of these processes are an integral part of the functioning of multicellular organisms. Knockouts in prenyltransferase genes can lead to dramatic changes in plant growth and development, up to the loss of the ability to form normal multicellular tissues. Multicellularity transition is one of the most important events in the evolution of living organisms, but most facts about this event remain to be unknown. Using of plants, especially evolutionally ancient groups like Bryophytes, allows us to find out new regulatory mechanisms involved in development of multicellular organisms.

We investigated the role of farnesyltransferase and geranylgeranyltransferase genes in the *Marchantia polymorpha* multicellular thallus' development. We obtained knockout lines for three genes of prenyltransferases subunits: a gene of the alpha-subunit PLP (Mapoly0093s0047), common for farnesyl- and geranylgeranyltransferase; a gene of farnesyltransferase beta-subunit ERA (Mapoly0123s0027) and a gene of geranylgeranyltransferase I beta-subunit GGB (Mapoly0010s0084). Knockout plants for each genes were generated by CRISPR/Cas9 technology. It was shown that *Marchantia* lines with mutations in the sequence of the alpha subunit gene (Δplp) formed callus-like dense tissues that were composed of round-shaped cells of various sizes and easily disintegrated into separated fragments. Although Δplp mutants retained the ability to aggregate into tissue, they were not capable for forming a normal thallus that undoubtedly indicates the important role of prenyltransferases in the development of tissues, cell differentiation and the formation of multicellular thallus.

The work was supported by the Russian Science foundation grant 18-74-00112.

Keywords: prenyltransferases, *Marchantia polymorpha*, development, multicellularity