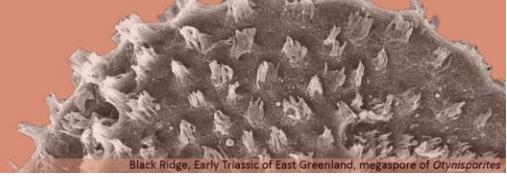
Палеоботанический онлайн семинар 2024



Дорогие коллеги!

Следующее заседание нашего семинара состоится **7 ноября**, в четверг, в **19.00**. Обратите внимание на позднее время начала! Будет представлен доклад **“On the evolution of the life cycle of land plants” (S.S. Renner, D.D. Sokoloff)**. Тезисы доклада – на второй странице пдф-версии этого объявления. Подключиться можно по ссылке https://us02web.zoom.us/j/82260062582?pwd=OVpMZ2VLN3FVSzROeXJablQ2Y1Mzdz09, Meeting ID: 822 6006 2582, Passcode: 778985. Пожалуйста, в своем профиле в zoom ОБЯЗАТЕЛЬНО указывайте свою фамилию и имя.

Мы будем рады всех вновь увидеть на нашем семинаре!

С наилучшими пожеланиями, Наталья Завьялова

On the evolution of the life cycle of land plants

Susanne S. Renner[1], Dmitry D. Sokoloff[2]

[1] Department of Biology, Washington University in Saint Louis, St. Louis, MO 63130, USA

[2] School of Plant Sciences and Food Security, Faculty of Life Sciences, Tel Aviv University, Tel Aviv 6997820, Israel

e-mail of the corresponding author: srenner@wustl.edu

The evolution of the land plant alternation of generations has been an open question for the past 150 years. Two hypotheses have dominated the discussion: the antithetic hypothesis, which posits that the diploid sporophyte generation arose de novo and gradually increased in complexity, and the homologous hypothesis, which holds that land plant ancestors had independently living sporophytes and haploid gametophytes of similar complexity. Changes in ploidy levels were unknown to early researchers. The antithetic hypothesis fit well with the idea of vascular plants being derived from a grade of bryophyte lineages with their simple sporophytes, but phylogenomic data tend to suggest monophyly of bryophytes. Since the 1980s, data on coeval gametophytes and sporophytes of Lower Devonian Rhynie chert plants, which had similar morphologies, have contradicted the antithetic hypothesis, and some even more ancient sporophytes exhibit comparable, if not higher, complexity (corresponding gametophytes remain unknown). A major problem of the homologous hypothesis has been the absence of multicellular sporophytes in all three extant lineages of algae most closely related to land plants because of their apparently consistent zygotic meiosis. New and previously overlooked data regarding the life cycles of these algae demonstrate their lability of (i) ploidy levels, (ii) relative timing of spore wall formation and meiosis, and (iii) types of reproduction. Based on these data, we propose that the ancestors of land plants possessed unstable life cycles (as regards ploidy), likely with predominant clonal growth, as is common in conjugate algae. When sexual reproduction became stabilized, the timing of gamete fusion, meiosis, and resistant wall formation became standardized, with wall formation permanently delayed. Under our hypothesis, independently living adult sporophytes are the land plant ancestral condition, and life-long sporophyte retention on the gametophyte is a bryophyte apomorphy.