Палеоботанический онлайн семинар 2023

Палеоботаническая комиссия РАН

Дорогие коллеги!

Мы начинаем новый семестр нашего семинара. Первое заседание состоится **16 февраля**, в четверг, в **19.30**. **Mihai Tomescu** представит доклад на тему **«Evolution and the arrow of time: bringing paleobotany to the "high table" of evolutionary plant biology»**. Обратите внимание на вечернее время начала. Тезисы доклада – на второй странице пдф-версии этого объявления. Подключиться можно по ссылке https://zoom.us/j/9825956451 Пожалуйста, в своем профиле в zoom указывайте фамилию и имя.

Весной мы надеемся прослушать следующие доклады (формулировки тем предварительные): А.В.Степанова «К вопросу о мумифицированных древесинах», С.С.Попова «Реконструкция палеорастительности при помощи классификации функциональных типов растений. История метода, интерпретация результатов», А.В.Лидская «Верхнеюрская биостратиграфическая схема Русской плиты по диноцистам: состояние, проблемы», Л.Б.Головнева «Эволюция и районирование позднемеловой флоры Горной Охотско-Чукотской палеофлористической провинции», Su Tao «The evolution of plant diversity in central Tibet», Е.М.Бурканова (тема будет объявлена дополнительно).

Мы будем рады всех вновь увидеть на нашем семинаре!

С наилучшими пожеланиями, Наталья Завьялова

P.S. Записи прошедших семинаров смотрите на https://www.youtube.com/@paleobotany_seminar

Evolution and the arrow of time: bringing paleobotany to the "high table" of evolutionary plant biology

Mihai Tomescu

Biological evolution is the history of life and its diversity. As a historical process, biological evolution is underpinned by contingency – prior states determine the subsequent states – and can be reconstructed only by following the arrow of time, i.e., by taking a “bottom-up” or upward outlook. Within this framework, fossils provide the only direct evidence to reconstruct evolutionary patterns and processes, especially those of deep time. Recognition of this reality drove the “paleobiological revolution”, which in the 1980s led to the elevation of paleobiological disciplines from a previously perceived status of “stamp collecting” science to significant players in the efforts to reconstruct the history of life. However, during the four decades since the paleobiological revolution, neontological disciplines have slowly reverted, to a great extent, to a “top-down” approach that reconstructs evolutionary pattern and process using data from the modern biota, and relegates information derived from fossils to the role of mere checkpoints with no direct bearing on inferences of evolutionary processes or relationships. This epistemological pattern is conspicuous in the field of phylogenetics, where it has generated a vast body of literature that is replete with conflicting results and hypotheses. In contrast to phylogenetics, the field of evo-devo, which addresses the evolution of development and its regulation, has seen preciously few attempts to compare or integrate inferences of neontological studies with data from the fossil record. This is at least in part because the methods and epistemological paradigms of paleobiological studies raise intimidating barriers for those neontologists interested in querying the fossil record, if they lack extensive training in paleobiology. Thus, while evo-devo studies are ripe for integration of fossils, it befalls us, paleobotanists, paleontologists and paleobiologists, to lead the integration efforts by shining the limelight on fossil data in ways that make them meaningful to neontologists. I will discuss three examples, drawn from work undertaken in my lab on Early Devonian plants, of how integration of data from fossils informs our understanding of the evolution of plant development. The first example concerns the anatomy of *Psilophyton*, which supports a hypothesis on the shared evolutionary origin of conducting and sporogenous tissues and origination of the former by sterilization of the latter. The second example reviews the diversity of vascular architectures encountered in the Early Devonian, which confirm a pattern of early high anatomical disparity and biphasic evolution of disparity in euphyllophytes. The third example concerns the earliest woody plants, whose anatomy indicates that the regulatory toolkit responsible for secondary growth was assembled in a modular fashion at the base of the euphyllophyte clade. These examples will hopefully inspire other paleobotanists to look at the fossils they investigate also through the broader lens of evo-devo studies.