



भौतिक अनुसंधान प्रयोगशाला, अहमदाबाद Physical Research Laboratory, Ahmedabad

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45_PRL Ka Amrut Vyakhyaan

Wednesday, 08 June 2022

@ 04:00 PM (IST)

**“Role of Plate Tectonics and Climate
in the Evolution of Tropical Angio-
sperms: Evidence from Indian Fossil
Records”**

Dr. (Mrs.) Vandana Prasad

Director, Birbal Sahni Institute of Palaeosciences, Lucknow.



https://youtu.be/kp_rJaJ7038



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Title: “Role of Plate Tectonics and Climate in the Evolution of Tropical Angiosperms: Evidence from Indian Fossil Records”

Speaker: Dr. (Mrs.) Vandana Prasad

Director, Birbal Sahni Institute of Palaeosciences, Lucknow.

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Abstract

Angiosperms are the most dominant plant community and represented in most ecosystems of the world. Tracing the evolution of angiosperms is arguably one of the most challenging and relevant issues in plant evolution. Angiosperms appeared during early Cretaceous, rapidly diversified and dominated the Earth’s terrestrial ecosystem by the Late Cretaceous. The Indian plate, after its separation from the Gondwana land, drifted towards the north but remained below the equatorial zone in the southern hemisphere during the Late Cretaceous. The Late Cretaceous infra- and intertrappean sedimentary successions from central India as well as the early Paleogene lignite successions from Kutch, Cambay and Rajasthan, western India, yielded a large number of tropical angiosperm fossils. Many of these fossils show similarity with the plants of the present-day tropical rain forests of Southern Western Ghats, India, Southeast Asia, evergreen vegetation of Africa, Madagascar, and South America. This provides clues regarding the role of plate tectonics and deep time climate change in the evolution, expansion, and dispersal of tropical angiosperms. An integrated study of morphological characters of the fossil pollen and the nearest living relatives (extant species) of the tropical angiosperms, along with molecular data of extant species are now being used under a phylogenetic framework to reconstruct the paleobiogeographic history of tropical angiosperms.

The Speaker

Dr. Vandana Prasad is currently the Director of Birbal Sahni Institute of Paleosciences (BSIP), Lucknow. She is a highly acclaimed palaeobotanist from India, and well known worldwide in professional circle of paleoscientists for her landmark contributions in Paleosciences which has immensely advanced the understanding in botanical aspects of Earth Sciences.

Her landmark research includes discovery of earliest grasses (65Ma) from India (Science, 2005); origin of 65Ma old wild rice from India (Nat. Comm., 2011); and evolutionary history of Sal-forest of Southeast Asia (Science, 2022). Her other well-cited publications deals with paleo sciences the 55Ma Gondwana relic rain forest in Southern-Western Ghats (J. Biosci., 2009); early Paleogene extreme global warm event from Indian sedimentaries (Geology, 2010); Effect of Deccan-volcanism at KT, Meghalaya (EPSL., 2011); Sequence-biostratigraphy of Vastan lignite (Facies, 2011); role of mid-Holocene climate on the Harappan civilization (Paleogeography, Paleoclimatology, Paleoecology, 2014). She has several such important research contributions to her credit numbering to around 50.

She has received several awards and honours at National and International Levels, including Smithsonian Fellowship and the Diamond Jubilee Medal of BSIP. She is a fellow of the Indian Academy of Sciences (Bangalore).



About PRL

The Physical Research Laboratory (PRL), known as the “cradle of space science” in India, is one



of the premier research institutes founded in 1947 by Prof. Vikram Sarabhai, a renowned Cosmic Ray Scientist, a great visionary and institution builder. PRL played a seminal role in producing a highly motivated cadre of space scientists and the technologists of highest international repute. The first scientific rocket launched from Thumba on 21st November-1963 and many other rockets launched thereafter contained payloads developed at PRL. Dr. Sarabhai initiated many of these scientific and technical activities at PRL which eventually led to the formation of the Indian Space Research Organization (ISRO). Therefore, PRL is known as the “cradle of space science” in India. Further, the research in the area

of Plasma Physics expanded to the formation of the Institute of Plasma Research (IPR).

As an institution PRL is unique in that it conducts fundamental research in a wide range of research areas from the Earth to the cosmos, and comprising Astronomy and Astrophysics; Solar Physics; Space and Atmospheric Sciences; Theoretical Physics; Geosciences; Atomic, Molecular and Optical Physics, Astrochemistry; and Planetary Sciences and Space Exploration. PRL is one of the rare research institutes of international repute wherein research in such diverse fields of sciences is carried out using several state-of-the-art experimental facilities that exist under one umbrella.

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