Birbal Sahni Institute of Palaeosciences
Monthly summary on Research Activities
(May, 2022)

1. Areas of Focus:

The institute carries out research on fundamental as well as applied aspects of Palaeosciences that includes Evolutionary history of biota, Paleoclimate, studies of past civilization, Human history and contemporary Climate Change issues, following an integrated and multi-disciplinary approach.

Key research activities under following objectives:

- Understanding origin and evolution of life through time and space.
- Understanding climate change in recent and deep geological times.
- Understanding past civilization and human history.
- Application of Palaeosciences in exploration of fossil fuel and coal industry.

2. Important Highlights of Major Research Programmes

a) Key Scientific Findings of the Month (May 2022)

- The Asian monsoon shows a weaker trend during the Little Ice Age (LIA) and relatively stronger during the Medieval Climate Anomaly (MCA). The tree-ring isotopic data shows that monsoon activity has decreased in the Indian Himalayan Region (IHR) during the last several decades whereas mean annual precipitation has increased in Tibet (Shekhar et al., 2022).

- Multi-proxy evidence support the idea that a regional sea level fall at Lothal (ancient Harappan dockyard of coastal Gujarat) might have adversely impacted ancient maritime Harappan trade and contributed to the declining /decentralizing Indus civilization during the end part of its mature phase (Das et al., 2022).

b) Palaeobotanical Society Lecture (April 28th, 2022)

Professor Kevin McCartney, Director, North Maine Museum of Science, University of Maine, USA delivered the second Palaeobotanical Society Lecture on 28th April, 2022 (Online). The title of the lecture was "Silicoflagellates: skeletal morphology and evolution**".** The Scientific Staff Members, Research Associates, Research Scholars of BSIP attended the Palaeobotanical Society lecture through online platform.

c) Swachhata Action Plan Lecture (March 13th, 2022)

Under Swachhata action plan for the year 2022-23, Dr. Vinod Jain, Professor of Surgery, King George Medical University, Lucknow, delivered a lecture entitled "Hygiene and Health: What we can do?" on May 13, 2022 in the main auditorium of the institute. All the scientific

staff, research scholars, technical and administrative staff members of the institute attended the event.

d) Celebration of Swachhata Pakhwada under Swachhata Action Plan (May 1st - 15th , 2022)

Under Swachhata Action Plan 2022-23, a fortnightly celebration of swachhata pakhwada with series of events was conducted from 01st – 15th May, 2022. A series of events including swachhata pledge, swachhata quiz, lectures, plantation, and cleanliness drive were undertaken during the celebration of this event. All the scientific staff, research scholars, technical and administrative staff members of the institute participated enthusiastically to make this swachhata festival a grand success.

S No.	Event	Date	Time	Venue
1.	Swachhata Pledge	May 2, 2022	11:00 AM	BSIP Main Auditorium
2.	Quiz Competition	May 6, 2022	3:00 PM	BSIP Main Auditorium
3.	Plantation Programme	May 9, 2022	4:00 PM	BSIP Campus
4.	Cleaning Programme	May 12, 2022	3:00 PM	BSIP Campus

e) Outreach Activity by BSIP to Nav Yug Kanya Mahavidyalaya, Rajendra Nagar, Lucknow (May 19th 2022)

Under outreach activity, BSIP scientist and museum convener, Dr. (Mrs.) Anju Saxena and her technical staff provided an *in-depth* tour of BSIP museum, palaeontological and palynological laboratories to students of Nav Yug Kanya Mahavidyalaya, Rajendra Nagar, Lucknow. The students were apprised about good research and clean lab practices by the various technical staffs of the institute. They were informed about Birbal Sahni institute and its glorious history to increase their awareness and infuse interest in students about Earth Science / plant- evolution studies. They were also encouraged and motivated to inculcate scientific practices for sustainable future.

List of Research Publications (May, 2022)

1. **Shekhar, M.**, **Sharma, A.**, Dimri, A.P., Tandon, S.K. (2022). Asian summer monsoon variability, global teleconnections, and dynamics during the last 1,000 years. Earth Science Reviews 230. DOI: 10.1016/j.earscirev.2022.104041. **(Impact factor: 12.413).**

2. **Chaddha, A.S.**, Singh, N.K., Malviya, M., **Sharma, A.** (2022). Birnessite-clay mineral couple in the rock varnish: a nature's electrocatalyst. Sustainable Energy & Fuels. DOI: 10.1039/D2SE00185C. **(Impact factor: 6.367).**

3. Das, A., Sodhi, A., Vedpathak, C.D., Prizomwala, S.P., **Agnihotri, R.**, Makwana, N., Joseph, J., **Patel, N.**, Chopra, S., Kumar, M.R. (2022). Evidence for seawater retreat with advent of Meghalayan era (~4200 a BP) in a coastal Harappan settlement. Geochemistry, Geophysics, Geosystems. DOI: 10.1029/2021GC0102643.624. **(Impact factor: 3.624)**.

4. Sehrawat, J.S., **Agrawal, A.**, Sankhyan, D., Singh, M., **Kumar, S.**, Prakash, S., **Rajpal, R.**, Chaubey, G., Thangaraj, K., **Rai, N.** (2022). Pinpointing the geographic origin of 165-Year-old human skeletal remains found in Punjab, India: Evidence from mitochondrial DNA and stable isotope analysis. Frontier in Genetics. DOI: 10.3389/fgene.2022.813934. **(Impact factor: 4.599).**

5. **Singh, H.**, **Agnihotri, P.**, Sharma, J. (2022). Amber flora and fauna from Early Eocene Significance. Journal of Geological Society of India 98, 661–668. DOI: 10.1007/s12594-022-2042-x. **(Impact factor: 1.459).**

6. **Quamar, M.F.**, Singh, P., Garg, A., **Tripathi, S.**, **Farooqui, A.**, Shukla, A.N., Prasad, N. (2022). Pollen characters and their evolutionary and taxonomic significance: using light and confocal laser scanning microscope to study diverse plant pollen taxa from central India. Palynology. DOI.: 10.1080/01916122.2022.2070294. **(Impact factor: 2.344).**

7. **Tripathi, S.**, Garg, A., Shukla, A.N., **Farooqui, A.**, **Pandey, A.**, Tripathi, T., **Singh, V.K.** (2022). Pollen micro-morphometry of two endangered species of *Rauvolfia L.* (Apocynaceae) from the Indo-Gangetic plains of Central India using LM, CLSM and FESEM. Palynology. DOI: 10.1080/01916122.2022.2072966. **(Impact factor: 2.344).**

8. **Kumar, Y.**, **Sharma, M.**, Goswami, S. (2022). Possible Ediacaran discs from the Paniam Quartzite, Kurnool Group, South India. Current Science 122, 885-887. **(Impact factor: 1.102).**

9. Khan, I., **Trivedi, A.**, **Ali, S.N.**, Bali, R., Sangode, S.J., Deepak, O. (2022). Late Pleistocene-Holocene vegetation and climate variability of the western Himalaya, India. Journal of Asian Earth Sciences 233. DOI: 10.1016/j.jseaes.2022.105245. **(Impact factor: 3.449)**.

Photographs showing important highlights of major programs/research activities organized during May, 2022: