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“Ashoka University will soon launch first-of-its-kind spatial biology lab”

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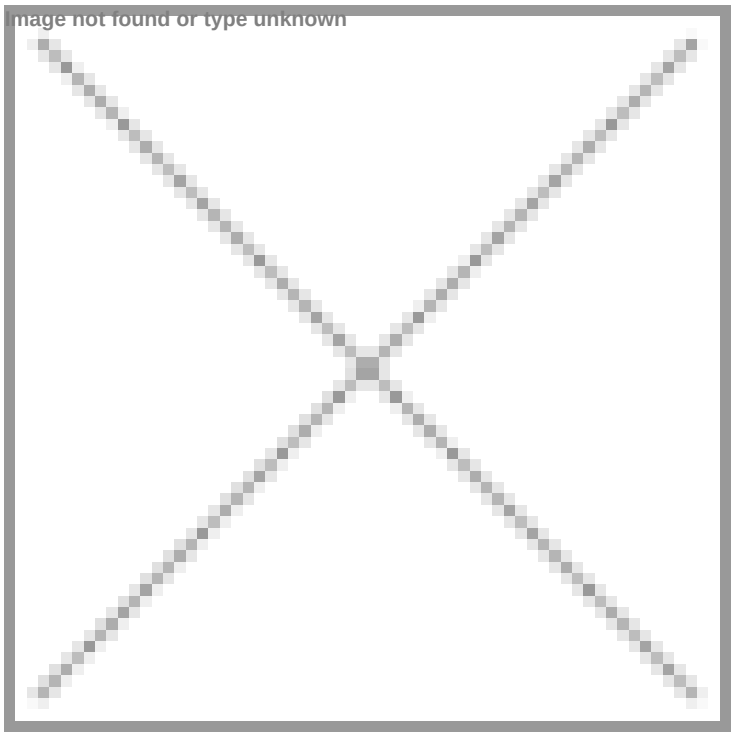
Artificial intelligence (AI) is revolutionising healthcare, driving advancements in diagnostics, predictive analytics, and digital health. To find out more about how AI is transforming healthcare learning, especially with hyper-personalised treatments, early disease detection, and predictive analytics, amongst others, BioSpectrum spoke to Dr Anurag Agarwal Dean, BioSciences and Health Research, Trivedi School of Biosciences (TSB) and Head of Koita Center for Digital Health (KCDH-A). At TSB, Dr Agrawal is spearheading pioneering research in emerging areas of biosciences and health and through KCDH-A, he is actively shaping the future of digital healthcare.



Please share details of key research projects taking place at Trivedi School of Biosciences (TSB), Ashoka University. Are new products being launched in the market?

TSB is a young place. However, in a short time, it has taken important strides towards becoming a hub of scientific activity. This has two parts – creating good infrastructure and bringing great people. In each, the focus has been on honing the cutting edge. Important research programmes have been started in anti-microbial resistance, shaping of immunity by environment, nutrition, and applications of data science / AI in health. A diverse faculty containing biologists, medical doctors, physicists, computer scientists, allows inter-disciplinary collaborations.

What are the major plans in store for 2025 at Trivedi School of Biosciences, Ashoka University?

2025 has seen the launch of the new TSB research building in February. It contains state of art facilities including the Zeiss-Ashoka imaging lab, with some of the most advanced microscopes in the country. In the next few months we will complete a spatial biology lab with spatial proteomics, a first in the country, already being functional, along with spatial transcriptomics and metabolomics. Facilities at Ashoka are being built for the entire community and we plan to make it easily accessible to others. The plan is to create a vibrant hub of research and interaction, such that great ideas can flow and take shape. We are planning to also build a great new undergraduate research hub, with world class mentors, within 2025. In the end, one must always think people, not equipment.

How do you view the growth of AI-based biotech/life sciences research in India? What are the current challenges in this space, and what is the way forward?

We are at a very primitive stage for AI-based life science research in India. This is concerning because we have good researchers of both types, but lack the interdisciplinary connectivity as well as dual-trained people. At TSB, we are certain that the future of biomedicine is at this intersection and the Koita Centre for Digital Health @ Ashoka is designed to promote such work. The Biotech-AI interface also needs much thought. Smart human use of AI can be used for accelerated discovery. New antibiotics have been discovered this way, many in the lab of Jim Collins, one of our advisors. However, there is a flip side - routine human work will be displaced by AI, creating job losses and lost opportunities if we don't evolve. This requires us to think differently, not just about education and training, but also the structure of our departments and institutions that are currently in silos

Why AI and related technologies are critical for addressing infrastructure gaps and workforce shortages in India's expanding healthcare sector?

India's expanding healthcare demands cannot be met by our current workforce. Both skill and scale are needed. First and foremost, we need to use AI to improve skills at scale. This use of AI in education and training of the health workforce is far less controversial than using AI to treat patients, and has excellent evidence. India has already invested in regional language systems like BharatGPT, which is essential. AI assistants for health professionals will be the next step, where they can augment efficiency and capacity. There is also going to be a role for autonomous patient-facing AI one day, but probably not yet.

What are the new research trends in the life sciences space where academia-industry partnership can be strengthened to elevate innovations in India?

The two most important trends for academia-industry partnership in life sciences that I see are - a) the use of AI in accelerating drug discovery, and b) multi -omics in precision health. I think it is already starting to happen but must be promoted more.

How can academia integrate AI into the healthcare/life sciences curriculum to equip students with the skills needed for the future of medicine and research in the country? Are there any global lessons that can be learnt?

This is tough. First and foremost we must stop wasting years of students time being coached for entrance exams to professional colleges. Instead we must instil curiosity and access to new technological trends. Second, we must strengthen the university system for both natural and social sciences. Health is a complex subject and we need more humanities in it.

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