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# Artificial intelligence

**by Colin D. Bingle, Scientific Editor, University of Sheffield, Sheffield,** United Kingdom

Welcome, to the May edition of the *Biochemist* with its focus on artificial intelligence (AI). It appears that not a week goes by when AI is not in the headlines. May has already seen the introduction of the latest version of ChatGPT from OpenAI and the announcement of AlphaFold 3 by Google DeepMind, itself following hot on the heels of the recently released RoseTTAFold All-Atom protein structure prediction tool. It's really hard to keep up.

Although AI is becoming all pervasive in society, it is having a particularly significant impact in the molecular biosciences field. For example, and in an area close to my heart, AI-driven advances in *de novo* protein prediction have transformed our understanding of protein structures. This issue contains a number of articles that highlight the growing importance of AI in almost every aspect of the biosciences. AI is allowing us to solve complicated problems with greater accuracy. A good example of this is the recent identification of NCK-interacting kinase (TNIK) as an anti-fibrotic target solely using a predictive AI approach.

Although the explosive development of AI may suggest that the area is 'new', many of the tools that we have increasingly come to rely on have reasonably long histories. One of the articles outlines something of this history of neural networks, an AI method that teaches computers how to process data in a manner similar to that which occurs in the human brain. Neural networks are a type of machine learning, called deep learning, that uses a layered structure of nodes resembling neurones in the brain. These create an adaptive system that computers use to continuously improve performance of a task by learning from mistakes and they underpin much of AI. Another article gives a clear description of the application of different AI machine learning tools to the prediction of protein structures and outlines how these will enable the community to speed up research and design appropriate experiments. The final article highlights the strengths and weaknesses of the large language models (LLMs). LLMs underpin the generative pretraining methods such as ChatGPT and were initially able to process written text. However, newer developments are enabling the building of multimodal LLMs that are able to process images and audio as well. The addition of blending of biological and chemical data into these models will greatly enhance their power. Not only is AI transforming the way that science is done at the lab bench (and on the laptop) but also the way that science education is delivered and assessed in the classroom and examination hall, and the discussion article describes how AI may impact on teaching and assessment in the biosciences.

This issue also contains an article about the 2025 Biochemical Society Award winners that were announced in April. These

prestigious awards recognize outstanding molecular bio-scientists from right across the spectrum of age and experience. What's more, anybody can propose an awardee and I would urge you to think of and nominate potential candidates when the call for the 2026 awards is made later in the year. We are also publishing an important position statement from the Biochemical Society on equity, diversity and inclusion in the molecular biosciences jointly produced by the EDI and Policy advisory panels of the Biochemical Society.

I hope you enjoy the fruits of our labour and would welcome any feedback on the volume ■.



 