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## Bringing data to life

by Heather Doran, Science Editor

How we interpret data is affected by the way it is presented. Data visualization is an extremely important part of science and discovery. The digital tools that are now available for data visualization are wide-reaching and go well beyond the humble (but still very important) graph.

This issue presents some practical examples of how data can be visualized to support discovery and communication including the use of Python and R.

There is a fantastic opportunity with data visualization to engage those outside research. Indeed, the presentation of data visually has been an incredibly important tool for communication throughout the COVID-19 pandemic. I was really excited to see an article in this issue that discusses not only the presentation of information visually but encourages interaction with biological data through visualization. Surely this presents an opportunity for more discovery as it allows more people to bring knowledge to these systems?

Data visualization also presents the opportunity to combine data and allows scientists to bring it to life in 3D, as it exists within biology. My PhD was focused on an orphan GPCR, which at the time had no determined structure; being able to see these biological structures at molecular levels can provide extremely important information about how they function. I know how much I considered this and tried to visualize systems from static information and convert them to moving systems in my head when I was thinking about my research!

Another challenge for science is the sheer amount of data that can now be produced. It is impossible for all of this data to be analysed only by humans and we might not be best placed to do that. The introduction of machine learning and the presentation of this information in a visual format can support the research. There is of course an important caveat to this: the ability to convert data into a visualization is a skill that requires knowledge of how the conversion is done – what is presented visually needs to be accurate – otherwise what is identified from the visualization might not be true.

It is an incredibly exciting time for data visualization and I hope you enjoy and learn from the articles in this issue to apply them to your own area of work.



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