

## Things about brain structure that we still want to learn

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Artificial neural networks and artificial intelligence are terms that suggest a similarity with what we know about the brain and human behaviour. And indeed, the successes in the application of artificial intelligence are impressive and sometimes indistinguishable, e.g. when you see the results of modern AI writing assistants. But does this also mean that neurones in artificial networks are built and arranged in a similar way to those in natural networks and therefore function in a similar way? The complex architecture of nerve cells and their connections has fascinated scientists for more than 100 years and ushered in the era of brain mapping. With the help of AI, it is now possible to refine these maps down to the level of individual cells and place them in a spatial context with their connection structure and molecular properties - a kind of Google Maps - but for the brain. This approach of integrating different size scales and modalities allows completely new research questions to be asked and structure-function relationships to be investigated and predicted. These allow new insights into the complexity of the brain and also illustrate its unique structure.