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Combining techniques to determine the cellular mechanisms responsible for whole-brain function

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Combining techniques to determine the cellular mechanisms responsible for whole-brain function

The brain is an immensely complicated and fascinating organ. Efforts to better understand it have made progress, but are still just scratching the surface. Part of the challenge is being able to understand how the cellular-level processes lead to whole-brain function. Currently, there is no single technique capable of providing detailed information at both cellular and whole-brain levels. Consequently, my research aims to combine multiple techniques to extract whole-brain and cellular-level information simultaneously. This data will then be used to help determine how cellular activity leads to complex brain behaviour. Knowing this information can help physicians better characterize normal brain function to more accurately differentiate between healthy and diseased brains. Furthermore, researchers can build off this work to understand the cellular mechanisms that lead to specific brain functions such as memory, spatial awareness, and consciousness.