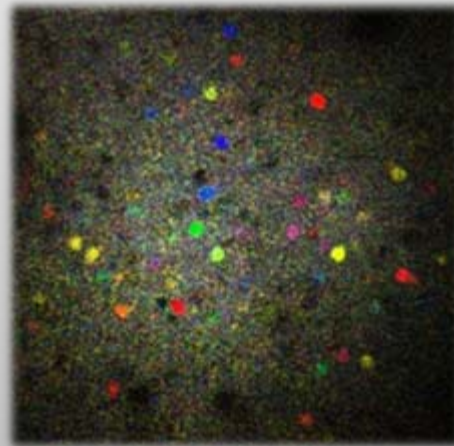


ERC Starting Grant

Project title: **How neuronal networks in primary visual cortex encode visual information**

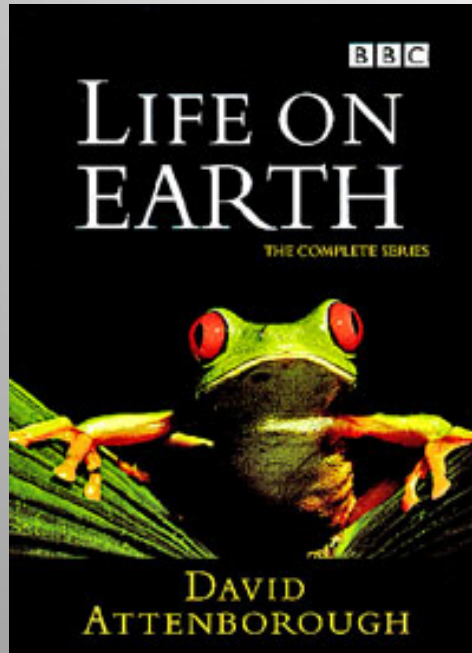


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Oxford University

1993-96 BA Biological sciences

1996-97 MSc Neuroscience

1997-01 PhD Neuroscience



Dept. of Tobias Bonhoeffer

Max Planck Institute of

Neurobiology, Munich

2001-07 Postdoctoral research



University College London

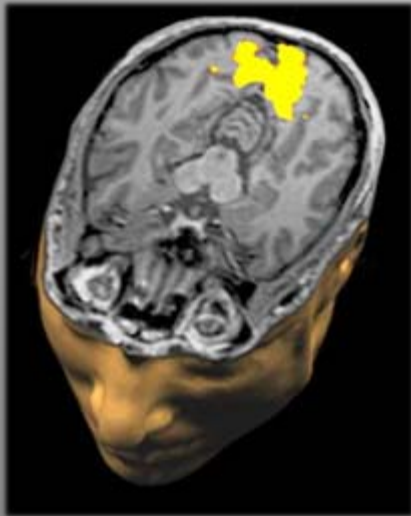
2007- Lectureship

QUESTIONS

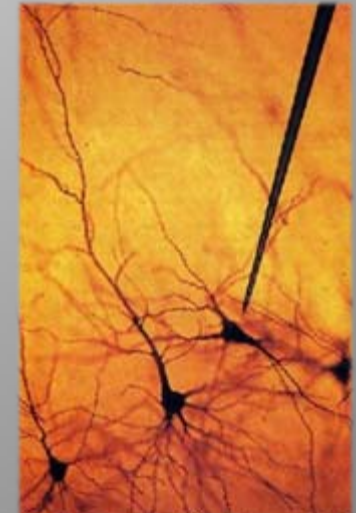
1. How do brain networks represent the outside world?
2. How is the brain organised functionally at the single-cell level?
3. How do experiences shape brain function and wiring?



Functional imaging



Single-cell recording



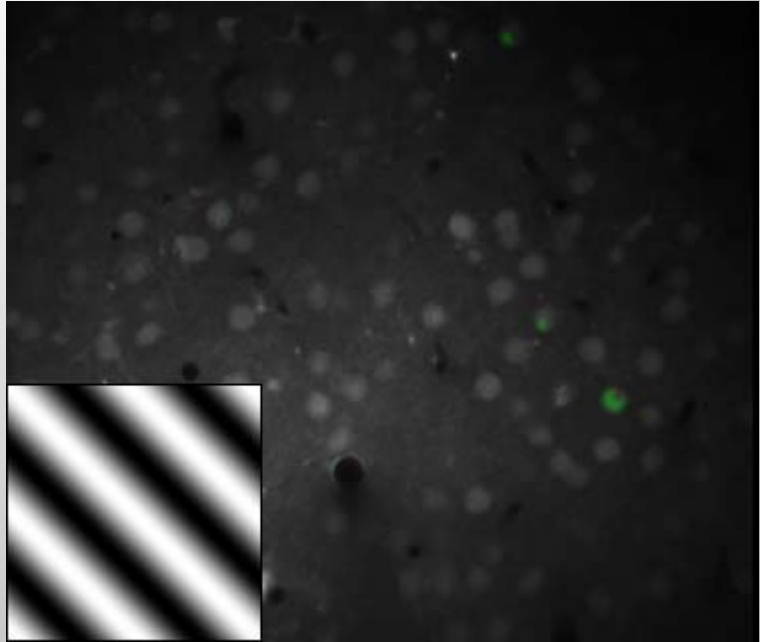
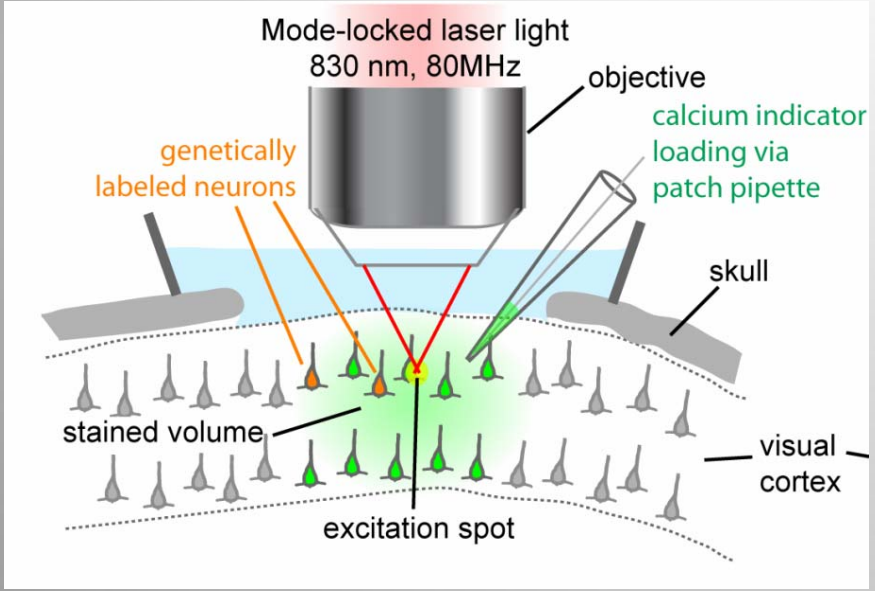
PROBLEM

These methods do not tell us how cells work together to process information and give rise to perceptions!

SOLUTION

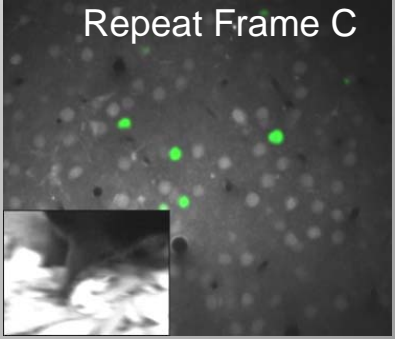
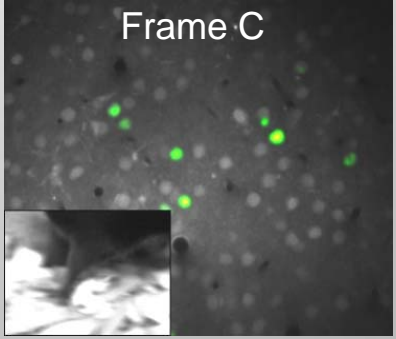
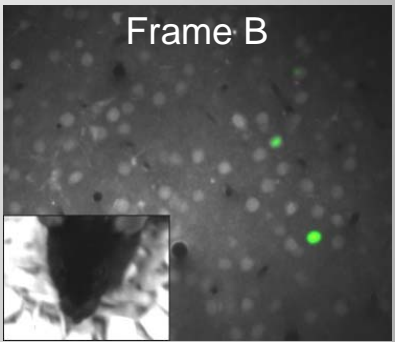
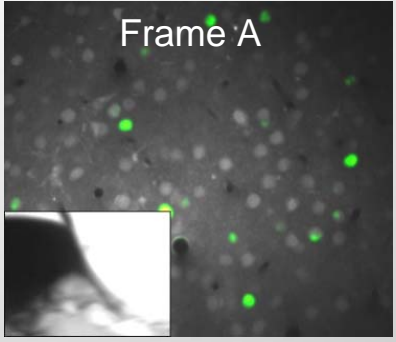
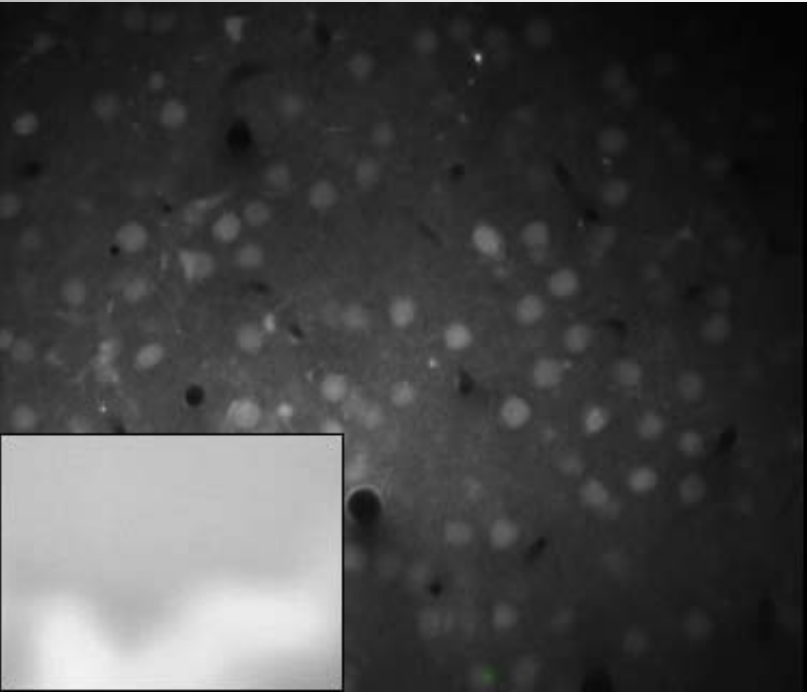
We must look at many cells at the same time! But how?

Two-photon laser scanning microscope



Mouse visual system





**TRYING TO UNDERSTAND
THE NEURAL CODE**

Reasons

1. Starting my own lab (without core institutional funding)
2. State-of-the-art equipment is expensive!
3. Worry-free research for 5 years
4. Flexibility to explore new avenues of research

Funding needed!

UCL Departmental start-up package (generous for UK standards!):

1. 30,000 euro
2. PhD student for 3 years (60,000 euro)
3. Laser (90,000 euro)
4. Refurbished lab space

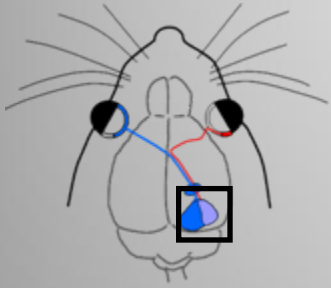
What I required (minimum):

1. Postdoc for 5 years in London (355,000 euro)
2. Two-photon microscope setup (170,000 – 400,000 euro)
3. Running costs for 5 years (120,000 euro)

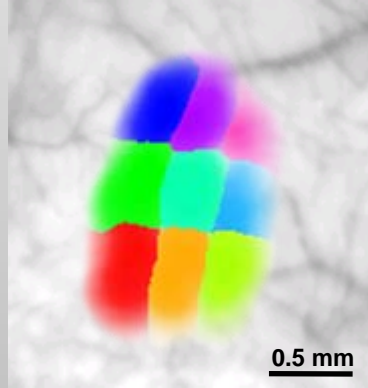
What helps

1. Important or exciting questions
2. Clear ideas for experiments
3. Combine methods – new approaches
4. Proven track record
5. Adventurous but doable
6. Clear future directions

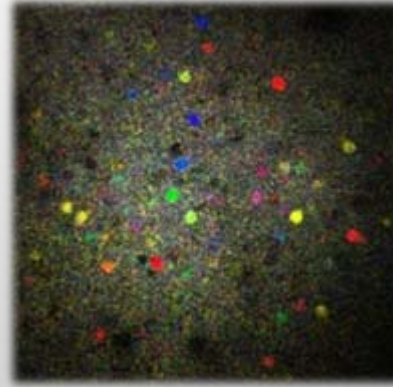
Brain



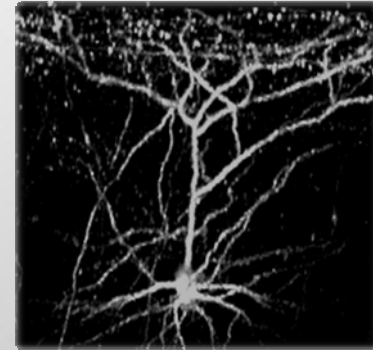
Maps



Networks



Cells



Connections

