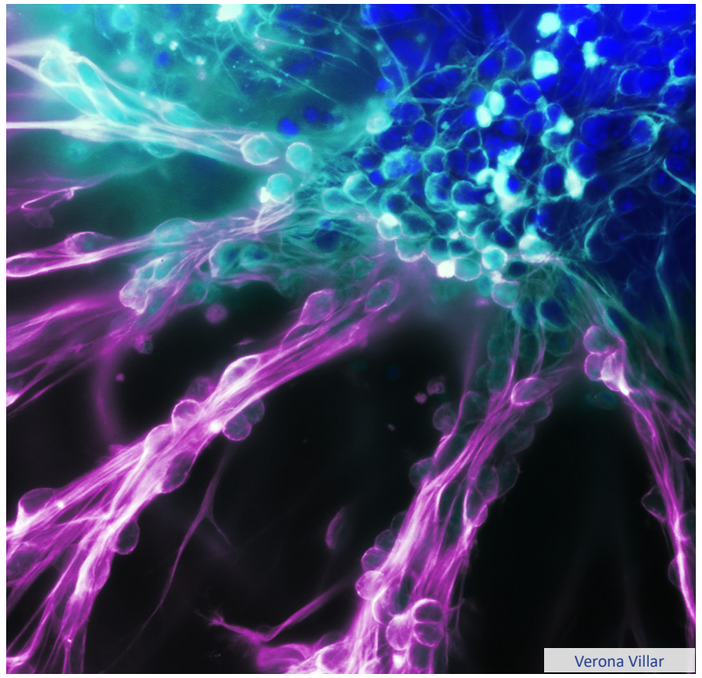
Imaging Facility

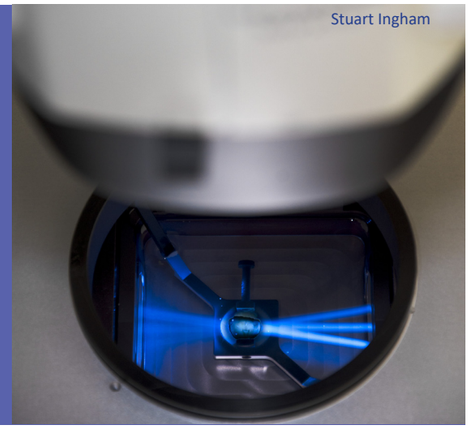
Instituto de Neurociencias


Verona Villar

The Imaging Facility of the Instituto de Neurociencias is a platform for microscopy and image analysis available to internal users that also offers external services. It has a set of state-of-the-art equipment for performing a wide variety of techniques such as confocal, multiphoton, light sheet microscopy (in vivo and clarified) and super-resolution (SR-SIM, PALM / dSTORM). Images and videos of both fixed samples and living tissue can be acquired in our equipment, including cell cultures, slices and even intact animals. In addition, it has high-performance workstations and scientific software for 2D, 3D and 4D image processing and analysis.

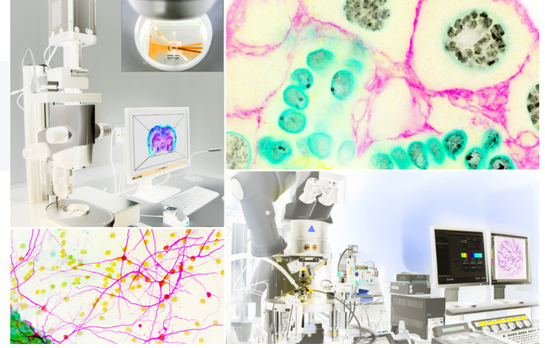
Services offered:

- Training and assistance in all microscopy techniques, image analysis and image processing.
- Advice on experimental design.
- Assistance in the writing of materials and methods for publications.
- Advice on the acquisition of equipment.
- Equipment maintenance.
- Workshops and demonstrations organization.
- Participation in outreach activities.

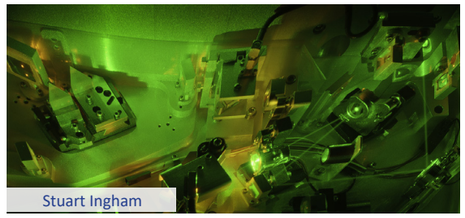

Stuart Ingham

The combination of nervous system scientific knowledge, with the latest generation technology in image acquisition, processing and analysis, make the Instituto de Neurociancias a reference center for collaboration in R & D projects.

Technological offer

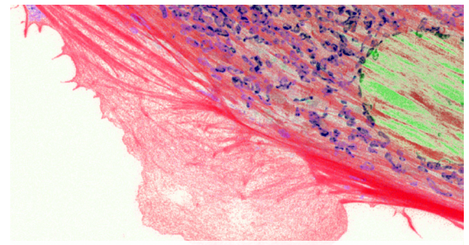


Variety of **confocal microscopes** that allow the capture of high resolution 3D / 4D images of fixed, live samples, and intact animals. These equipments provide high definition images for the precise identification of the structures of interest, since they eliminate the light that is outside the focus plane.


Stuart Ingham

Multiphoton microscopes adapted for both cell cultures and intact animals, with which greater penetration into the samples and low cell damage is achieved using lasers of higher wavelength than confocal microscopy. This technology also allows us to perform ablation experiments in specific regions of interest.

With **super-resolution microscopy** we managed to break the resolution barrier of 250nm light diffraction of conventional optical microscopy, achieving resolutions of up to 20-30nm. Thanks to these techniques, a great variety of structures and phenomena can be solved at the subcellular level, including the monitoring of biochemical processes at the level of individual molecules in living systems.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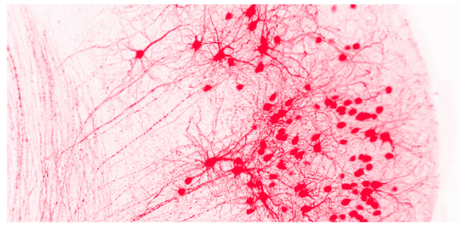
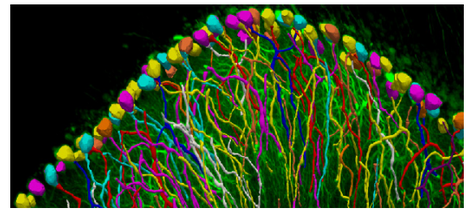
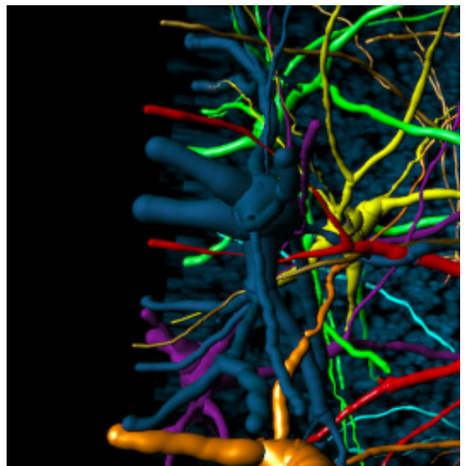


Microscopes with **light sheet technology** for the acquisition of 3D/4D images of live or fixed transparent samples, as well as clarified samples. The advantage of this technique is the speed in capturing images, with minimal damage to the sample during illumination, while it does not require prior tissue sectioning.

Image capture system coupled to programs for the **reconstruction and analysis of neurons**, as well as **analytical mapping of the brain.** This equipment allows the tracing of cells of the nervous system for their reconstruction and morphological analysis. The additional stereological analysis tool allows us to automate the study of the distribution of neuronal populations.





High-performance workstations equipped with state-of-the-art scientific software for processing and analysis of 2D, 3D and 4D images obtained with different microscopy techniques. These programs enable the interactive visualization of 3D/4D images, facilitating the understanding of the context in which the structures of interest are integrated. In turn, they allow reconstructions of the different cell types and subcellular structures present in the tissue for their quantification and analysis.

http://in.umh-csic.es/si_presentation.aspx

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Instituto de Neurociencias
Universidad Miguel Hernández - CSIC
Tel. + 34 965 23 37 00/ ext 9256, 9266
e-mail: microscopia@umh.es