Art Inspired by Science

Open Call

Creative responses are now being invited from both creative professionals, and the wider community, including Durham University students and pupils from schools across County Durham. Pieces created in response to the images below will be selected by a panel and displayed alongside the original images in an Art-Science exhibition to be held in 2024. Unfortunately, no funding is available to cover the costs of preparing these pieces. Any costs associated with exhibiting them will be covered for those selected for the exhibition. Please **get in touch** if you have any questions about the exhibition or how to get involved.

Submit your artwork here: https://forms.office.com/e/EW2rt0D3h9

What will the exhibition involve?

The exhibition will be hosted by the Botanic Garden Cafe for one month. The artworks will be for sale (prices set by artists) and on an online gallery on the University Website.

Deadline : 7th February 2024

Timeline

7 February 2025	Closing date for call
28 February 2025	Board select artworks for the exhibition (all artworks will appear on the website)
March 2025	Time to preparing artworks for exhibition
April 5th 2025	Exhibition at the Botanic Garden (one month)

Find out more

About the exhibition: Art Inspired by Science - An Exhibition 2025

About Dr Bob Banks: Robert Banks - Durham University

About the Biophysical Sciences Institute: Biophysical Sciences Institute - Durham University

Image 1

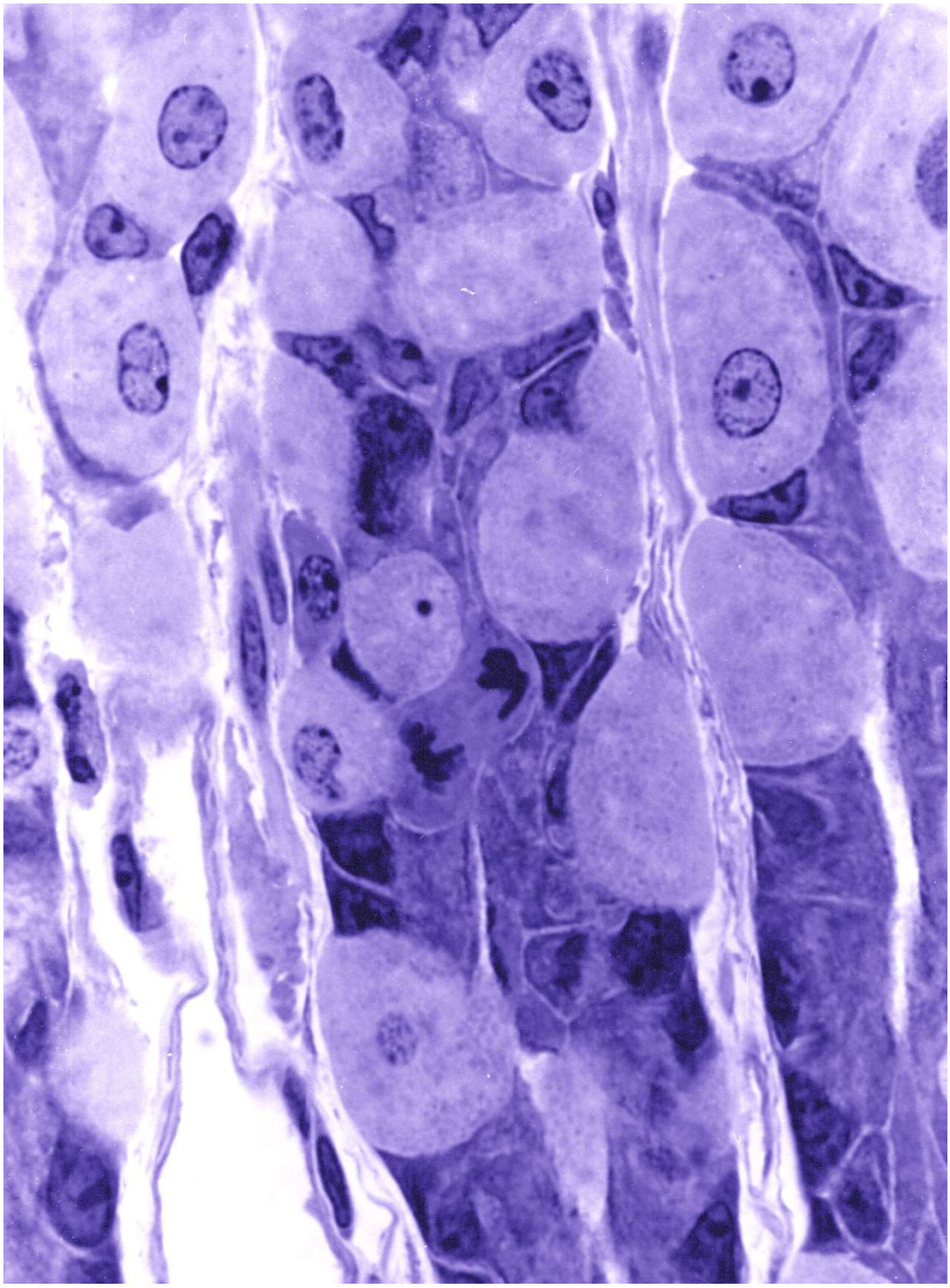


Image 2

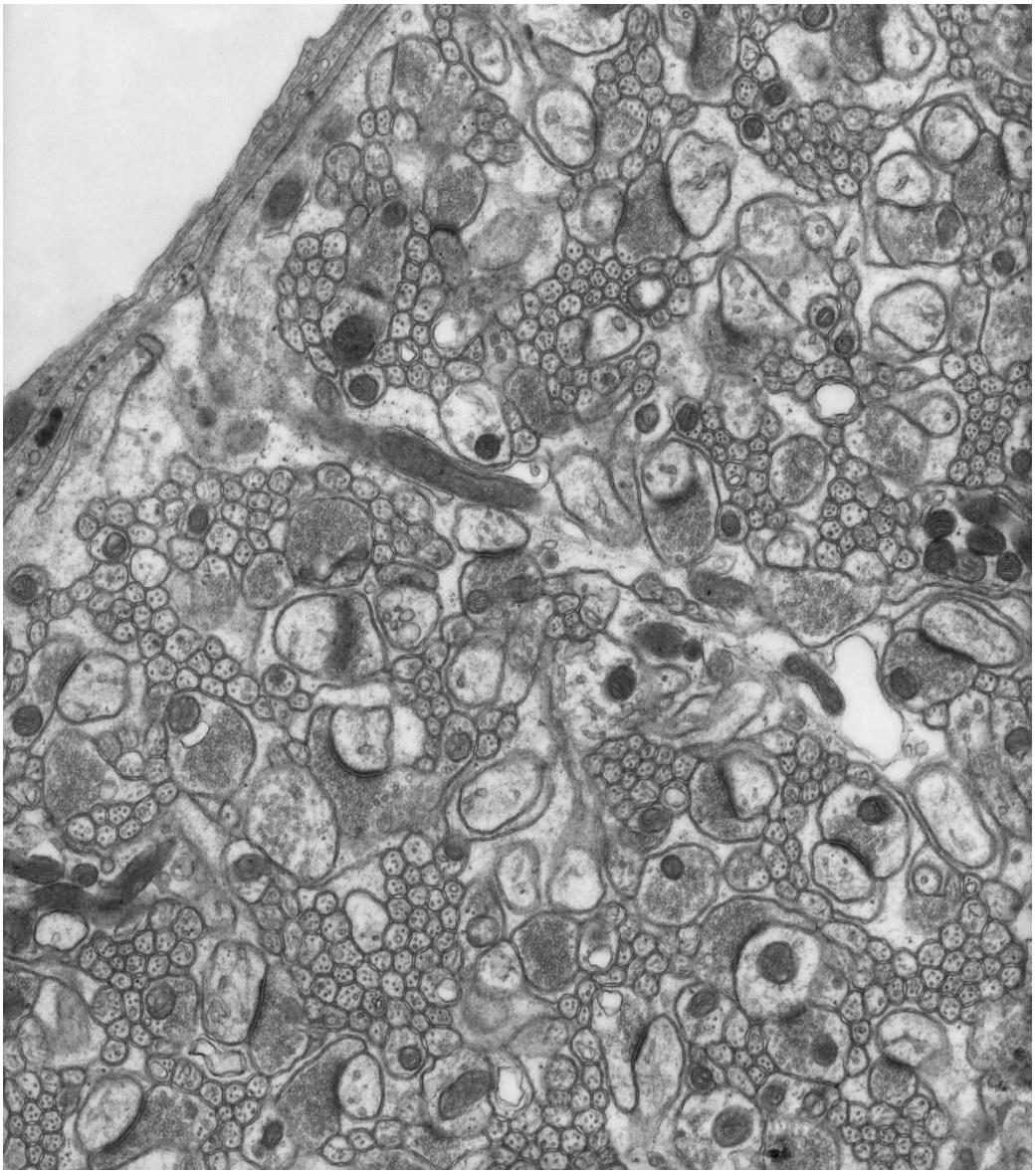


Image 3

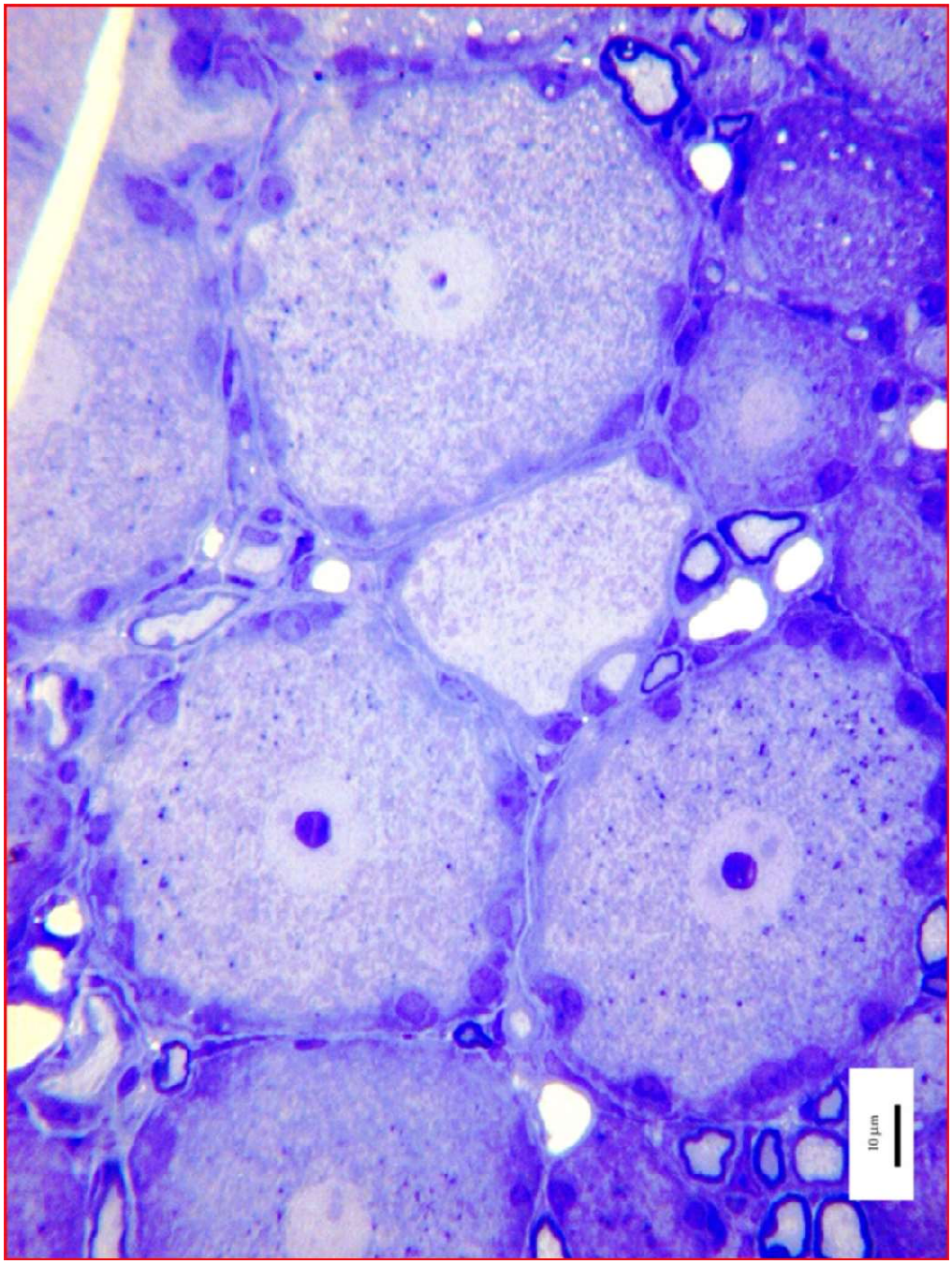


Image 4

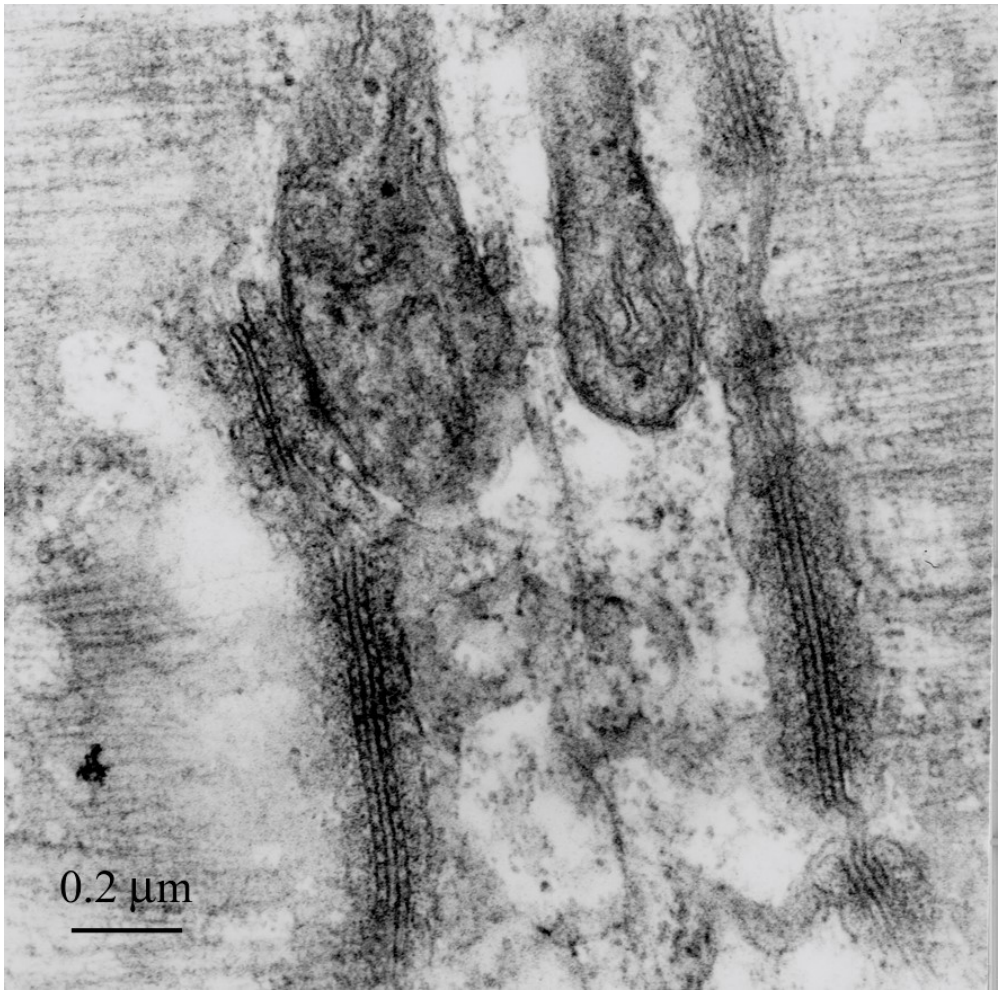


Image 5

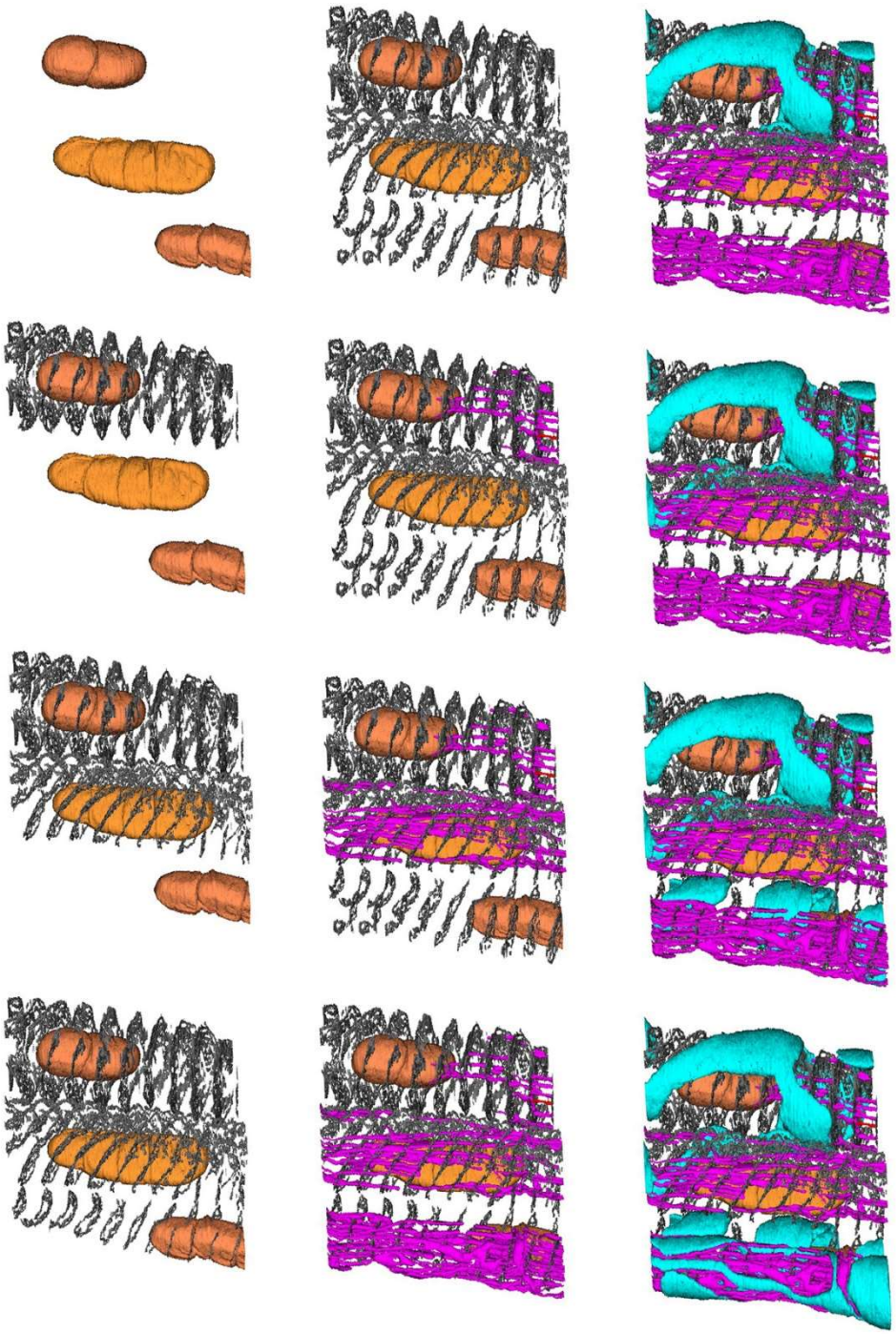


Image 6

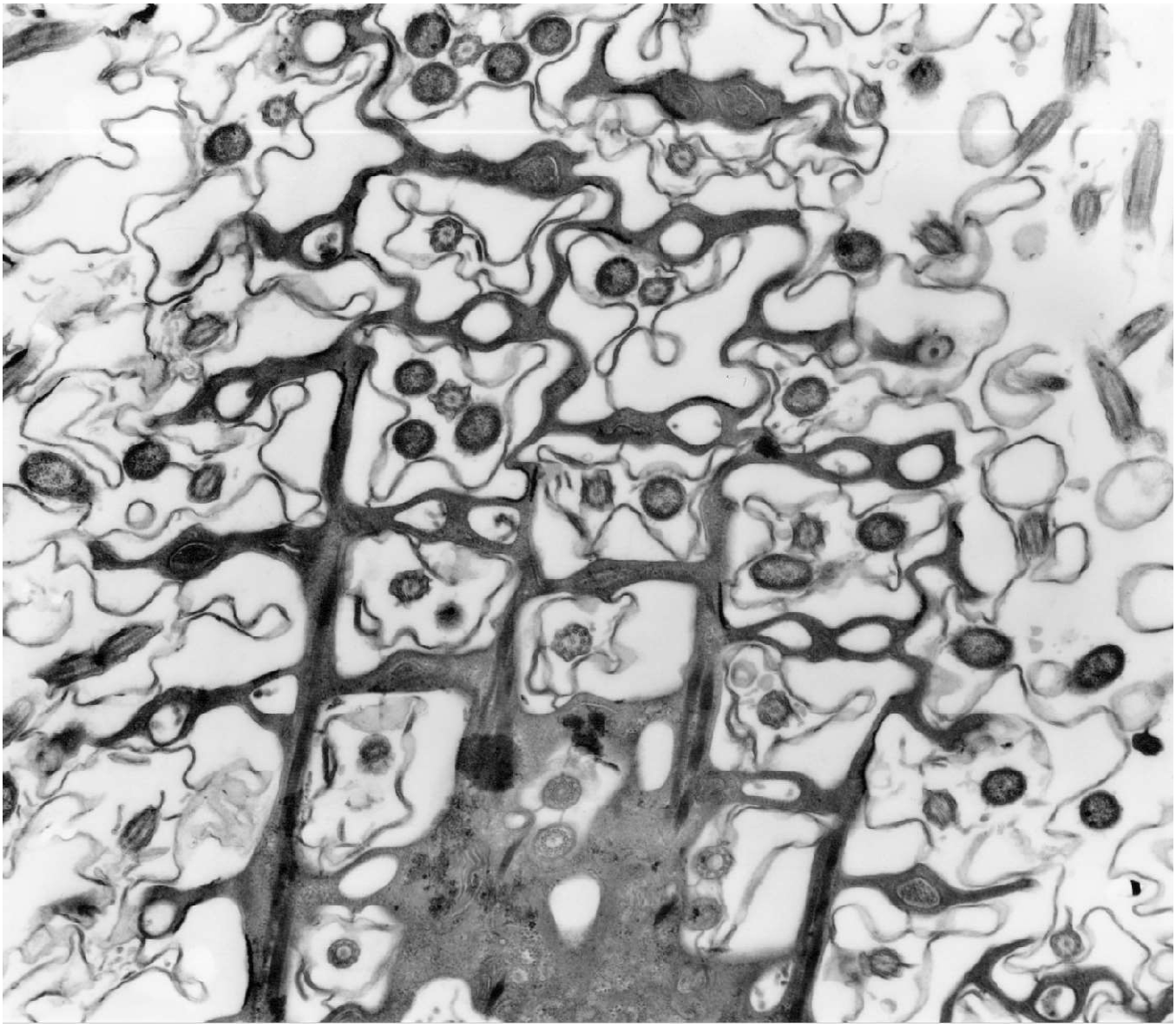


Image 7

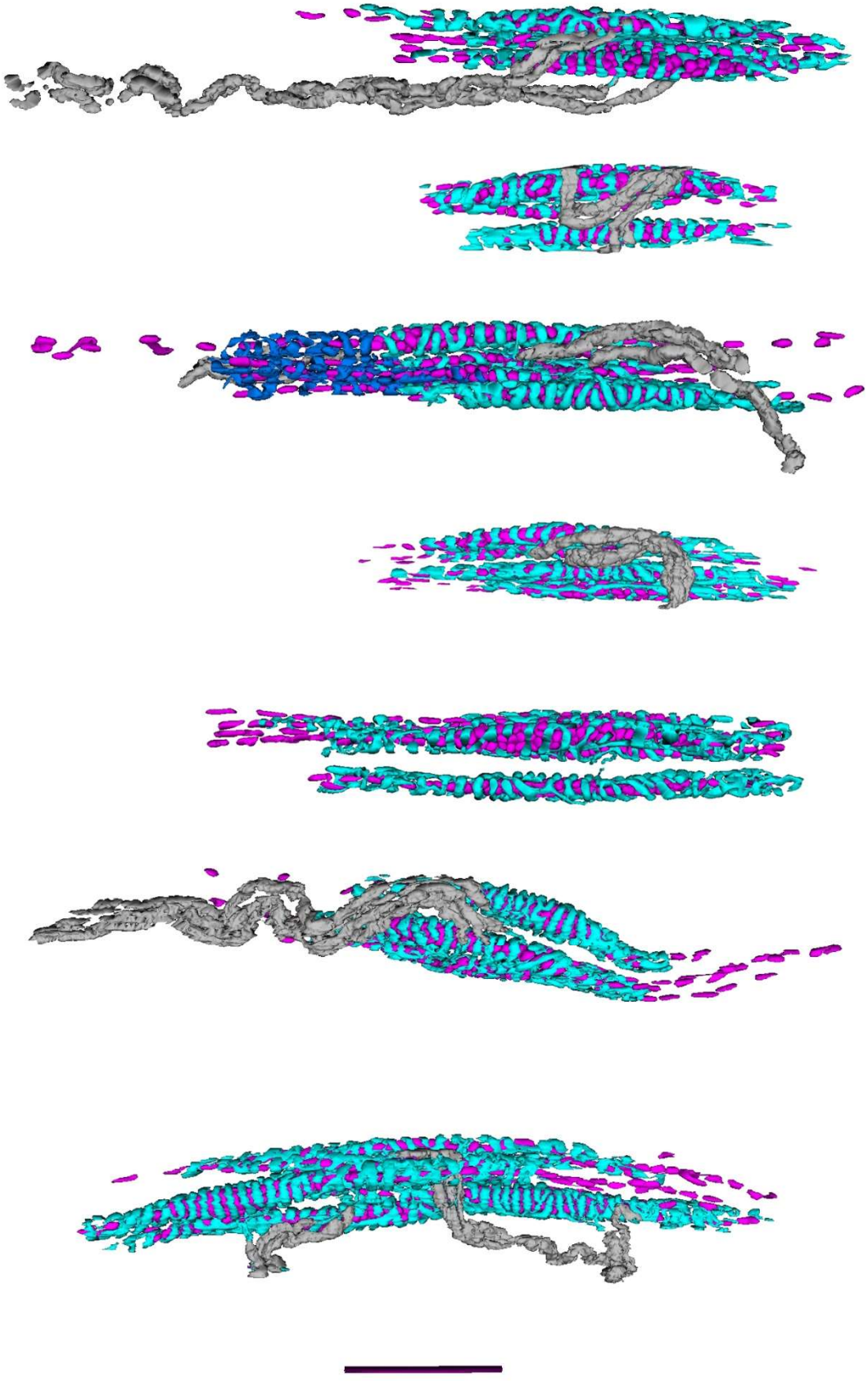
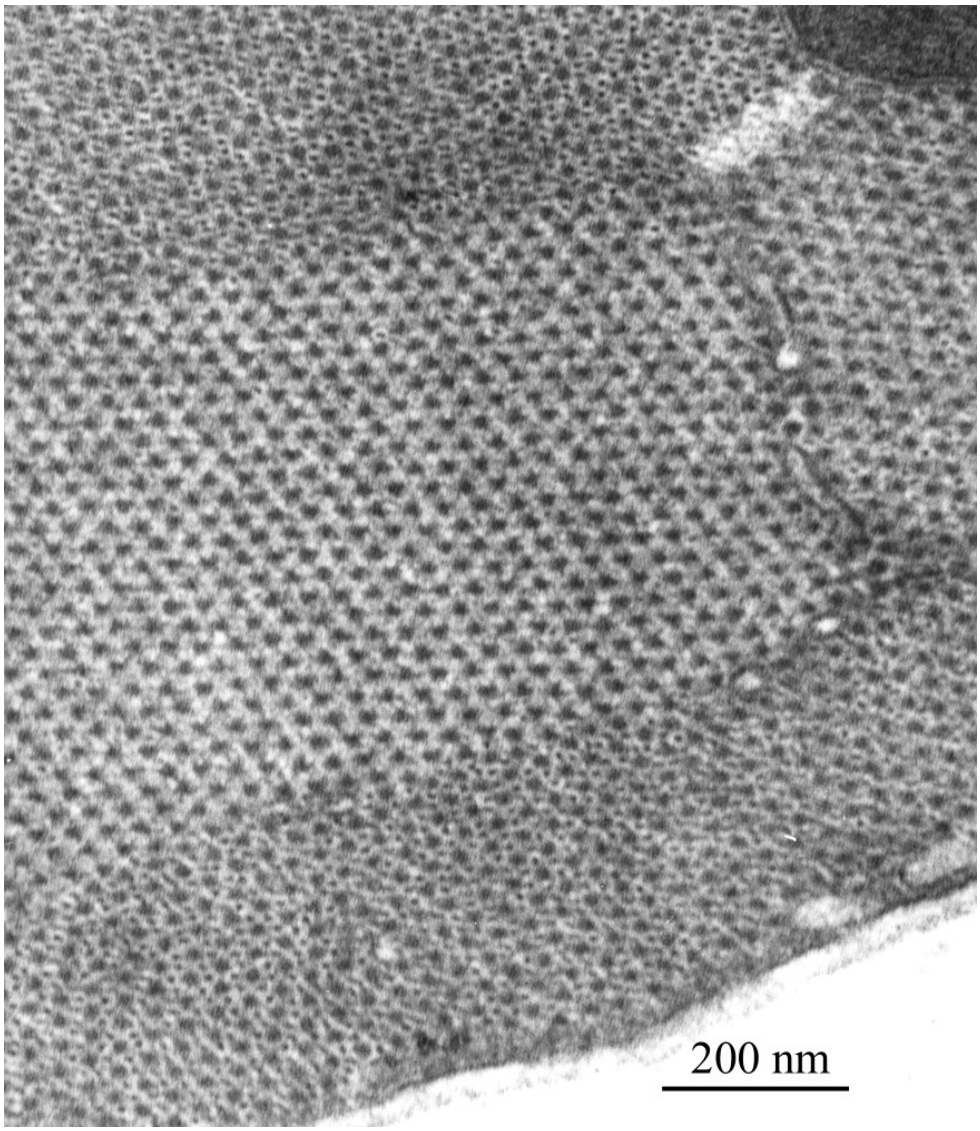


Image 8

Image 9



Information about the Images

Image 1

Gastric glands of the lining of the stomach
The large, pale cells secrete hydrochloric acid; the smaller, darker cells secrete mucus. One cell near the centre of the image is dividing, having almost completed anaphase when the two sets of daughter chromosomes move apart. The tissue has been chemically fixed, dehydrated, and embedded in epoxy resin. The section was cut with a glass knife and is 1 micrometre thick. It was stained with toluidine blue for light microscopy.

Image 2

The outer layer of the cerebellar cortex
An electron micrograph of the outer (molecular) layer of the cerebellar cortex, containing many connexions, or synapses, between nerve cells. The cerebellum is a large part of the brain, and most of its complex functions are automatic. Disease of, or damage to, the cerebellum is often associated with loss of normal motor control. The tissue has been chemically fixed, dehydrated, and embedded in epoxy resin. The section was cut with a glass knife and is about 80 nanometres thick. It was "stained" with lead citrate and uranyl acetate to provide sufficient contrast in the electron microscope.

Image 3

Sensory nerve cells
Sensory nerve cells such as these are located in a swelling, or ganglion, on the dorsal root of a nerve connected to the spinal cord. Each gives rise to a single nerve fibre, or axon, that branches once within the ganglion. One branch enters the spinal cord to make connexions with other nerve cells, while the other passes through peripheral nerves to form a sensory ending in skin, muscle, joints, viscera, etc. The endings are usually specialised to respond variously to touch, pressure, movement, heat, etc. The tissue has been chemically fixed, dehydrated, and embedded in epoxy resin. The section was cut with a glass knife and is 1 micrometre thick. It was stained with toluidine blue for light microscopy.

Image 4

Structures Deep Within Skeletal Muscle Fibre
An electron micrograph showing internal membranous structures deep within the substance of a skeletal muscle fibre. At the top are a pair of mitochondria that provide energy for muscle contraction. The elongate structures running from top to bottom of the image are called triads because of their three membranous components. The middle of the triad is the transverse (or T-) tubule, which carries the electrical command to contract deep into the muscle fibre. It is connected to sac-like compartments (the sarcoplasmic reticulum) on either side by the row of dark, peg-like structures. When the electrical signal reaches them, the "pegs" open minute channels releasing calcium ions from the sarcoplasmic reticulum, and the calcium ions instruct the contractile proteins of the muscle fibre to begin to contract. The tissue has been chemically fixed, dehydrated, and embedded in epoxy resin. The section was cut with a glass knife and is about 80 nanometres thick. It was "stained" with lead citrate and uranyl acetate to provide sufficient contrast in the electron microscope.

Image 5

Section of a Muscle Spindle

Muscle spindles are sense organs in skeletal muscles that respond to the length and changing length of muscles. They are extremely important in motor control. These images show a virtual reconstruction of a small portion of a muscle spindle using a technique known as serial block-face scanning electron microscopy (SBF-SEM) in which thin slices are repeatedly taken off the face of the block of tissue. A scanning electron micrograph is made of each successive face of the block. This reconstruction was made from 300 serial images, each 70 nanometres apart. Starting at the top left the images progressively include additional features, as follows: the brownish blobs are nuclei in specialised muscle fibres within the spindle; the dark grey lacey things are parts of the contractile structure of the muscle fibres (Z-lines); the purple things are mitochondria in some of the muscle fibres; and the turquoise things are sensory nerve endings.

Image 6

Paramecium

This is an example of a free-living, single-celled organism, known as *Paramecium*. *Paramecium* lives in fresh water; it moves and feeds using tiny, hair-like projections from the surface of the cell, called cilia (singular – cilium). The image is of a section of about 80 nanometres thickness passing almost parallel to the cell surface, which is sculpted into squarish pockets with a cilium at the centre of each one. Next to the cilium in many of the pockets are symbiotic bacteria that appear as dark, roughly circular structures. Lead citrate and uranyl acetate “stains” were used to provide contrast in the electron microscope.

Image 7

Sensory Endings of Muscle Spindles

Muscle spindles are sense organs in skeletal muscles that respond to the length and changing length of muscles. They are extremely important in motor control. These images show virtual reconstructions of the main (“primary”) sensory endings of seven spindles, made using serial sections for light microscopy. Each section was I micrometre thick and they were stained with toluidine blue dye. The colours used in the reconstructions are arbitrary: sensory endings, with characteristic annulo-spiral form, are shown in turquoise; they are supplied by myelinated nerve fibres shown in grey. Annulo-spiral endings are wrapped around specialised muscle fibres, only the nuclei of which are shown (in purple).

Image 8

A nerve cell, or neuron, from the cortex of the cerebellum
The cerebellum is a large part of the brain, and most of its complex functions are automatic. Disease of, or damage to, the cerebellum is often associated with loss of normal motor control. The tissue has been chemically fixed, dehydrated, and embedded in epoxy resin. The section was cut with a steel knife and is about 100 micrometres thick. There are many hundreds of different types of neuron in the nervous system, of which this, the Purkinje cell, is just one example. Its body, or soma, contains the cell's nucleus and is the dark blob near the bottom of the image. The very extensive, tree-like branches arising from the soma, the dendrites, receive synaptic input from thousands of other neurons. The dendrites and soma integrate the information to produce an output in the form of nerve impulses that travel away from the soma along the axon, the start of which is just visible on the lower right of the soma. The Purkinje cell has been visualised by the Golgi method that more or less randomly stains a few neurons with a silver chromate precipitate, leaving the majority unstained.

Image 9

Skeletal Muscle Fibre
An electron micrograph showing part of a skeletal muscle fibre, sectioned transversely across the length of the fibre. The larger dots in hexagonal array are cross-sections of thick filaments formed mostly of the protein myosin. In the upper and lower parts of the image additional, smaller, dots may be seen. These are cross-sections of thin filaments formed mostly of the protein actin. Notice that each thick filament is surrounded by six thin filaments. Sliding together of the thick and thin filaments is the basis of muscle contraction. The section was cut at about 80 nanometres thickness, with a glass knife, from chemically fixed and dehydrated tissue embedded in epoxy resin. Lead citrate and uranyl acetate "stains" were used to provide contrast in the electron microscope.