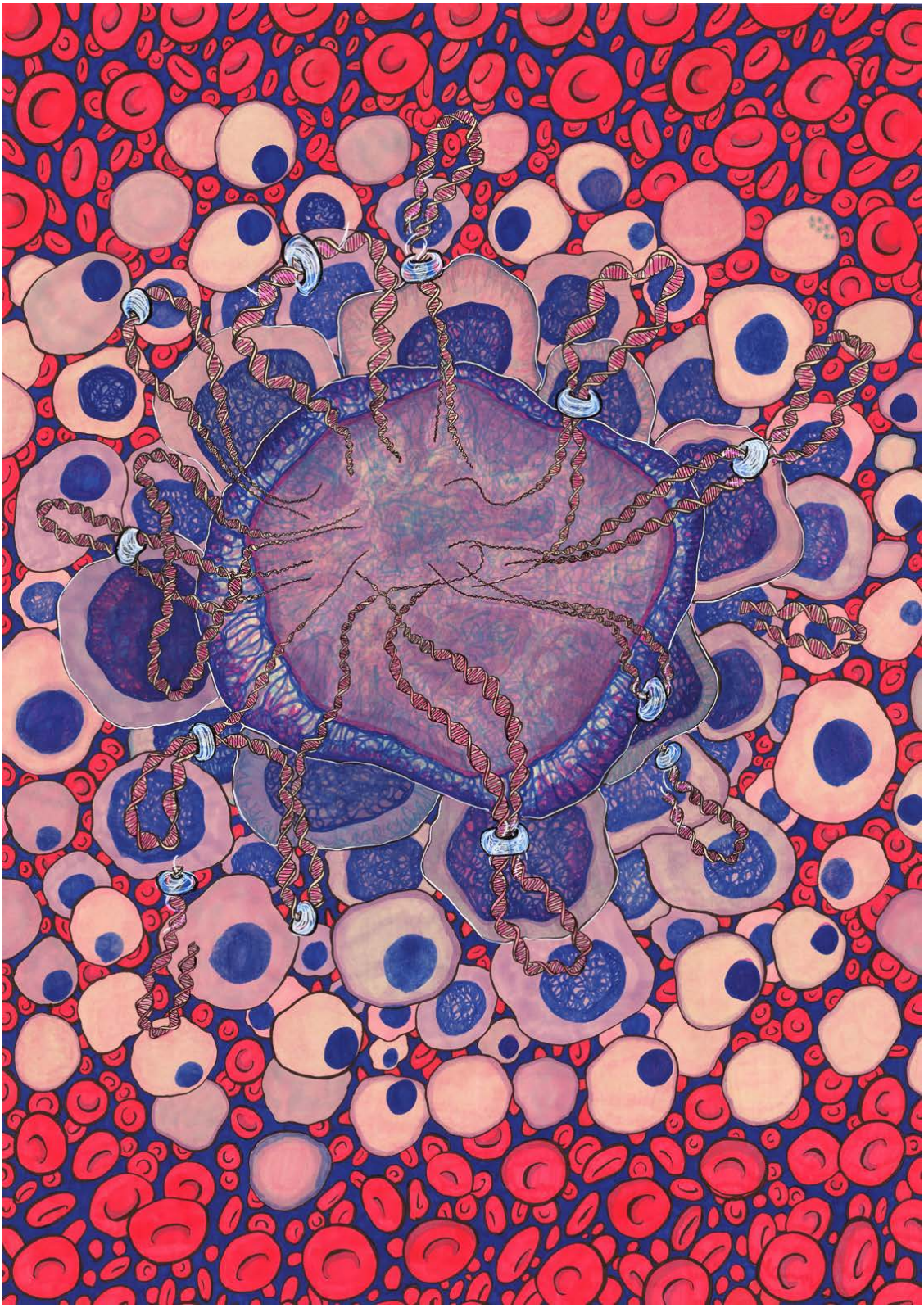
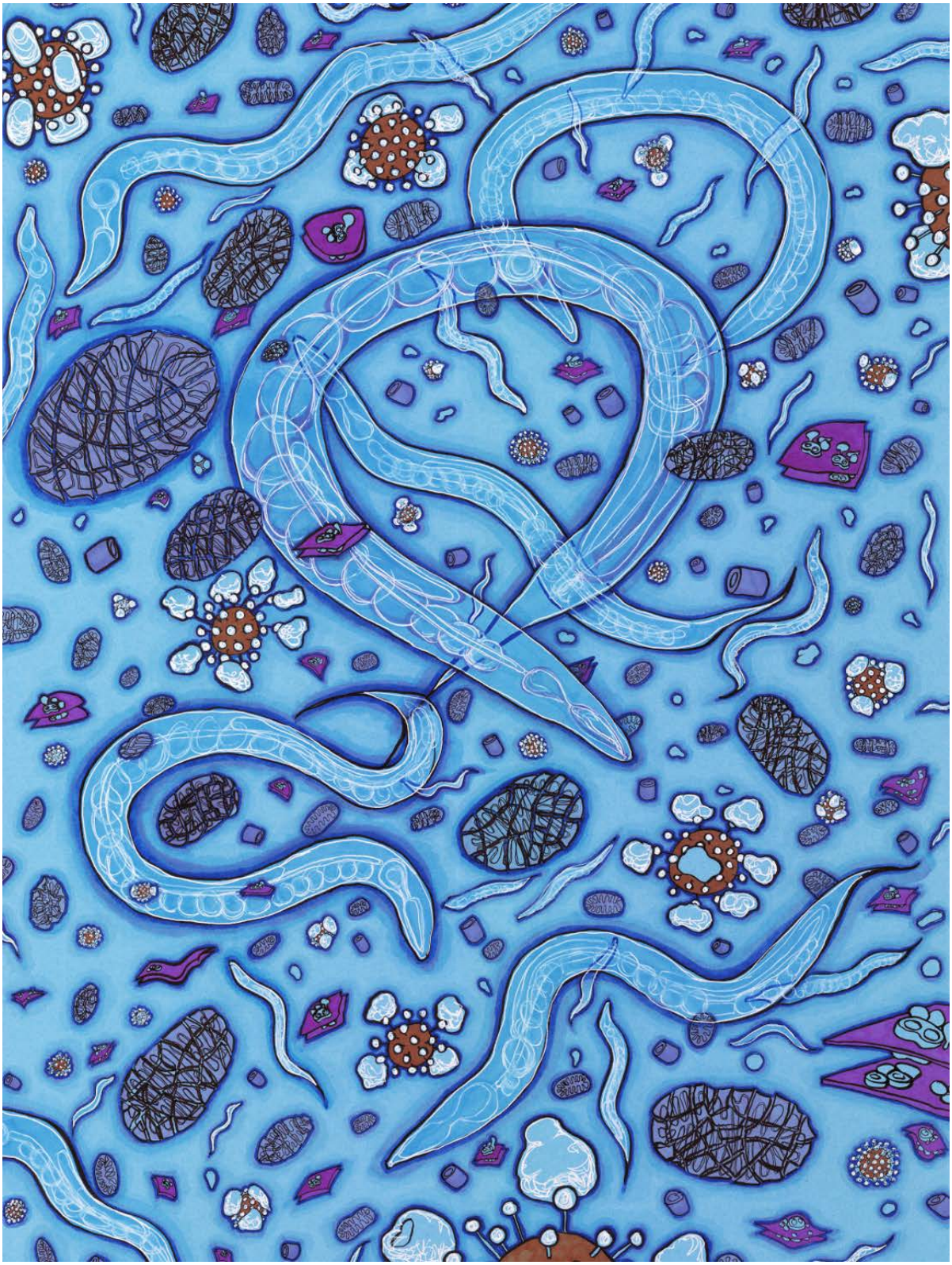


Synthetic Blood
Ink on paper, 42 x 60 cm

Red blood cells are the only cells in the human body that do not have a nucleus. They develop from stem cells in the bone marrow and eject their nucleus once they reach maturity. Any genetic editing of red blood cells must be done at the stem cell stage. Red blood cells contain surface proteins that determine blood groups and can lead to cells being rejected by the immune system. Removing these proteins could create universally accepted blood. This piece was created for SynBioExpo in collaboration with Joe Hawksworth from the Toye Lab.

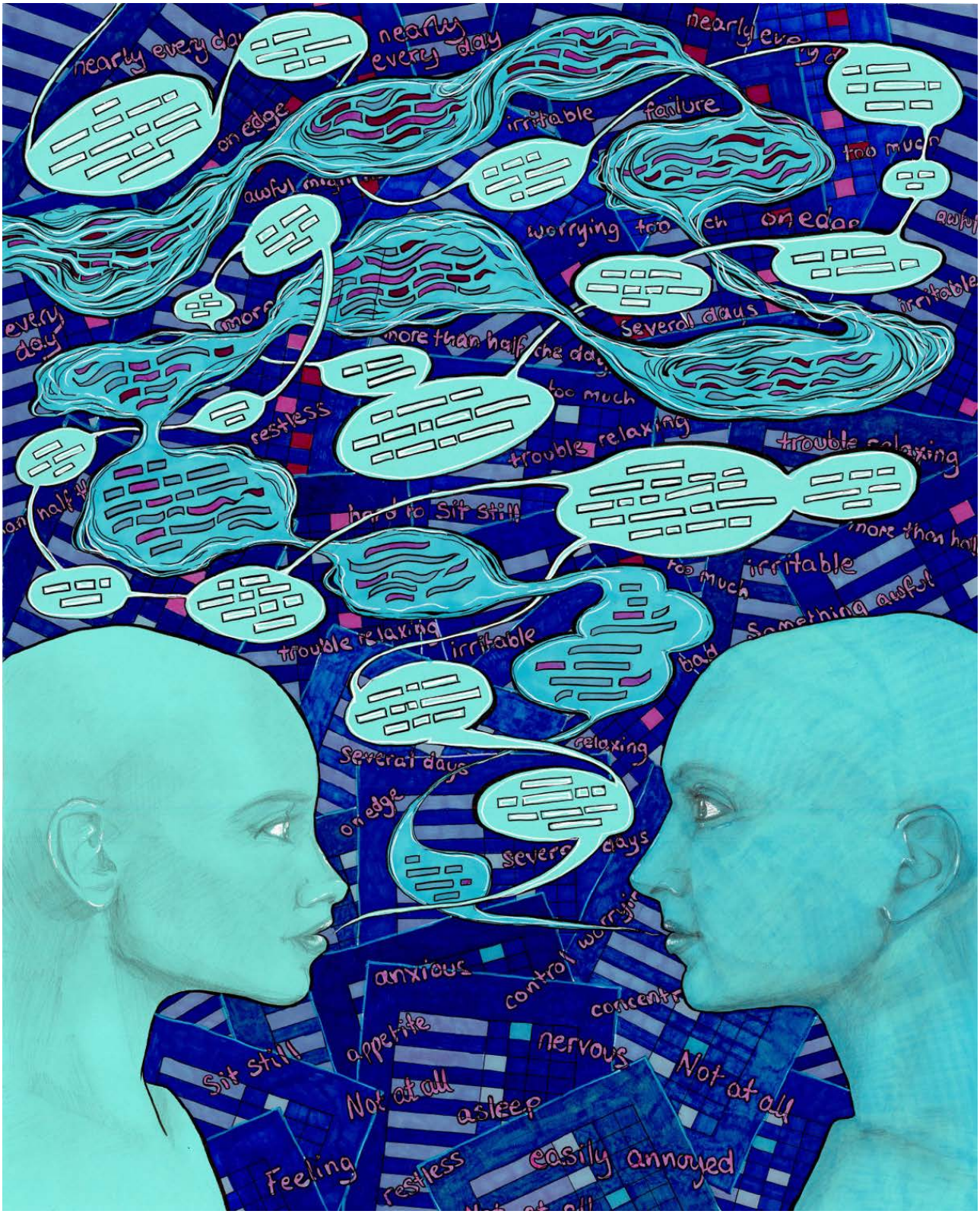
Mitochondrial chromosomes
Ink on Paper, 62 x 42 cm

Mitochondria are the organelles that generate energy in most complex organisms. According to endosymbiotic theory they were originally cells similar to bacteria that were swallowed by larger cells. Like chloroplasts they have their own DNA, which codes for many of their proteins. Mitochondria contain multiple copies of each chromosome, making it harder to correct errors. This piece was created for SynBioExpo in collaboration with Grace Mullally from the Szczelkun Lab.



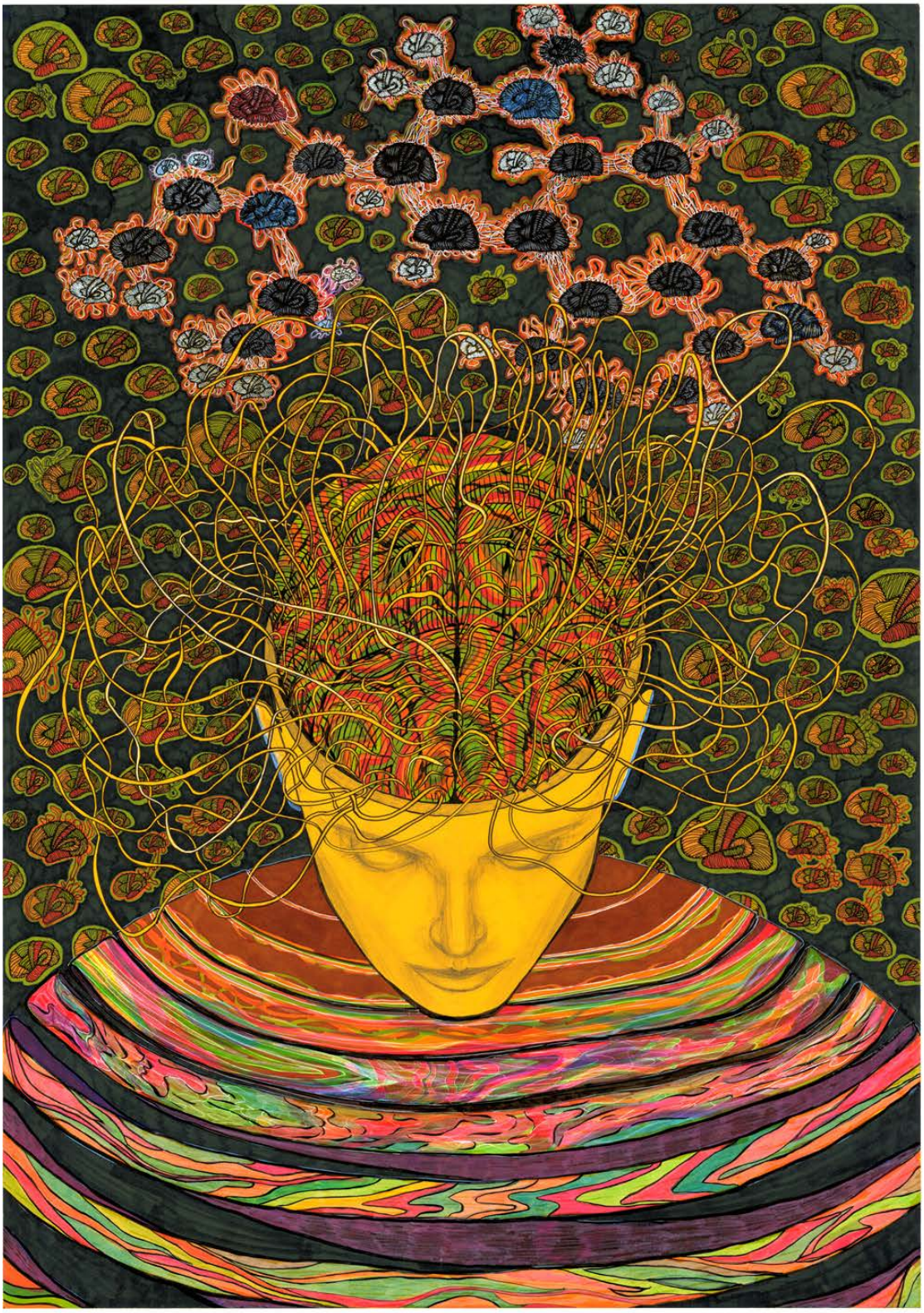
Deconstructing C elegans
60 cm x 42 cm ink on paper

C elegans is a nematode worm frequently used in biological research. It has many similarities to more complex organisms at the cellular level, such as mitochondria which generate energy for cells. Proteins involved in mitochondria can be investigated by breaking them and isolating fragments using beads tagged with antibodies. This piece was created for SynBioExpo in collaboration with Amber Knapp-Wilson from the Kuwabara and Collinson Labs.



ESCAPE dialogues
40cm x 50cm ink on paper

This artwork was created in collaboration with Dr Gemma Taylor, an epidemiologist and behavioural scientist, for Creative Reactions. Her main areas of interest include understanding the association between smoking and mental health, identifying therapeutic targets that utilise epidemiological methods, and applying these to addiction interventions used in NHS psychological services. Her research identified that stopping smoking interventions were more successful when combined with talking therapies.



Unravelling Brains
84 cm x 60 cm ink on paper

The piece focuses on finding that cortical activity become less predictable under the influence of LSD. If the brain can be thought of as fixed modular processing centres with well-trodden thought pathways, LSD increases cross-talk between these centres and increases the flexibility of thought. In the piece this is represented as the individual functional brain areas being tightly wound balls of string. Under the influence of LSD these balls of string are picked apart and entangle with those from other areas. The loosening also represents the breakdown of rigid thinking. This artwork was created as an art/science collaboration with Professor David Nutt for Creative Reactions.

Progression of colorectal cancer
60 cm x 60 cm ink on paper

This artwork was created for Creative Reactions in collaboration with Professor Ann Williams, Professor of Experimental Oncology at the School of Cellular and Molecular Medicine at the University of Bristol. She specialises in colorectal tumour cell survival mechanisms and identifying novel targets for chemoprevention. The artwork aranges the villi of the small intestine in a spiral to create a timeline of the progression of cancer, with the cancer slowly 'spiralling out of control' as the spiral reaches the edges of the page. Following the spiral as it moves from the centre of the page to the edge, you can see deformations in the tissue structure as chemicals cause damage to chromatin and activate oncogenes.

Selection of musician sketches
Ink on paper, approximately 16 x 12 cm each

Observational sketches created during an orchestra rehearsal.




Selection of clothing with scientific patterns
Dresses and shirts with direct-to-garment sublimation printing

The patterns on these items of clothing were created from drawings that were compiled together to create repeating patterns. These were sent to garment printers who applied them to fabric and created items of clothing.