

TRANSCRIPT

Professor Gemma Stevens' Laboratory Notebook

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31/07/21

We arrived at the crash site around 5.30am. We had requisitioned an innocuous QMUL car last night, collected our gear and headed off this morning. The site was empty, but already cordoned off. Rifa and I donned our white suits and masks, took a small sample of rock from the meteorite and brought it back to the lab.

The original rock was 1.57m long, 1.47m wide and 1.4m high. It probably weighed around 24kg, but that was a guess. The meteorite is oval-shaped and a rusty orange/brown colour. The surface was rough to the touch, but with no extraneous jagged edges, probably due to passing through our atmosphere. It was still warm to the touch. There was a coating of silver and gold dust across the entire surface. We cut a small 25.4cm x 7.6cm x 10.2cm piece off the meteorite and sealed it in a vacuum-sealed glass tube.

01/08/21

This morning I used a bone drill to collect a small core sample from the rock piece we took yesterday morning. It was 5cm long and 4cm wide. Rifa will work on the larger sample. The sample was then crushed using a pestle and mortar and distilled water (150ml) was added. The sample was then spun in a centrifuge at 5000RPM to separate different materials. If my calculations are correct – and they've never been wrong yet! – this is the same as the Honduras sample and contains a simple form of alien life! Of course I was correct! I can plainly see something down the microscope at x400 magnification. It was moving. I've sketched it on the next page.

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01/08/21 contd

This is what I saw down the microscope. I've studied protozoan parasites for almost 20 years and I've never seen anything like this. I've looked in all the classification guides and nothing like this. I think it's finally what we've been looking for.

A DETAILED DRAWING OF THE PROTOZOAN PARASITE UNDER THE MICROSCOPE

There are so many questions I have about the anatomy of this alien protozoan. There are a number of morphological features that don't make sense. But that will have to wait. For now, we need to determine whether this is the parasite we've been tasked to find and if so, what's its life cycle and whether it has the power we believe it has. On the 3rd, we start the preliminary experiment and discover the life cycle using Harry the Rat.

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03/08

DAY 1 EXP 1

Today I injected a sample of distilled water containing the unknown protozoan into Rat 1 (Harry). The rat's behaviour was observed for 4 periods today, for 30mins each (10am, 12 noon, 2pm and 4pm). An ethogram was constructed and programmed into The Observer (Noldus).

04/08

DAY 2 EXP 1

Blood and stool samples were taken for analysis.
Continued behaviour observations (appeared normal).

05/08

DAY 3 EXP 1

Studying the blood samples taken from Rat 1 yesterday revealed numerous cysts. Nothing was seen in the stool sample.

Continued behaviour observations – still normal social and feeding behaviour.

DETAILED DRAWING OF PARASITIC CYST.

06/08

DAY 4 EXP 1

Stereotaxic brain biopsy targeted upon the amygdala, prefrontal cortex, basal ganglia and hypothalamus. Rat 1 was placed under general anaesthetic and a biopsy needle was injected into each region and 50 microlitres removed from each region and added to a saline solution (5ml). Each sample was viewed under the light microscope and neurons were counted against reference samples. No behavioural observations were taken as Rat 1 was recovering from the anaesthetic.

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07/08

DAY 5 EXP 1

A blood sample was taken from Rat 1 and protozoan larvae were clearly seen throughout the sample. Yesterday's brain biopsy results have all returned normal. All samples were statistically within normal expected range for rodents in each brain region.

Behaviour observations were normal.

DETAILED DRAWING OF PROTOZOAN LARVA.

08/08

DAY 6 EXP 1

Brain biopsy 2 – amygdala, PFC, hypothalamus and basal ganglia.

Behaviour (normal).

09/08

DAY 7 EXP 1

Results of brain biopsy 2.

Neuronal necrosis within the amygdala with a 75% reduction in the number of neurons compared to standard rodent sample.

Behaviour

-increased affiliation with other rats in adjacent cages.

-decreased proximity with Rat 2 in adjacent cage.

-increased sniffing through cage bars with Rat 2

DRAWING OF RAT CAGES

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10/08

DAY 8 EXP 1

Blood sample taken from Rat 1.
Increased affiliative behaviour with Rat 2
-decreased proximity
-increased sniffing through cage bars
Increased affiliative behaviour from Rat 2 directed towards Rat 1.
Rat 1 is euthanised with sodium pentobarbital (200mg/kg) intraperitoneal injection (overdose)

11/08

DAY 9 EXP 1

Results from neuroanatomical analysis of Rat 1 brain.
Bilateral lesions of the amygdala and prefrontal cortex.

DAY 9 EXP 2

Rat 2 "William" injected with blood from Rat 1.
Observe behaviour Rat 2 using same ethogram and The Observer.

12/08

DAY 10 EXP 2

Rat 2 – 1st blood sample taken
Rat 2 – 1st stool sample taken
Behaviour observation – normal
No evidence of cysts in the blood sample.
No evidence of larvae or adult specimens in the stool sample.

13/08

DAY 11 EXP 2

Rat 2 – 2nd blood sample taken
Evidence of cysts in blood sample.
William bit me! Did it when I attempted to take the blood sample from him. Was successful at the second try.

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14/08

DAY 12 EXP 2

Behavioural sampling at 4 time points (10am, 12 noon, 2pm, 4pm).
Behaviour was normal (social, feeding).

15/08

DAY 13 EXP 2

Blood sample taken from Rat 2.
Evidence of larvae, the same as observed in Rat 1.
Behavioural observations (normal).

16/08

DAY 14 EXP 2

Behavioural observations
-increased affiliative behaviour towards Rat 3
Brain biopsy results
-reduced neuronal cell counts in amygdala and PFC

17/08

DAY 15 EXP 2

Behavioural observations

-increased affiliative behaviour towards Rat 3

Rat 3 decreases proximity with Rat 2

Rat 3 increases sniffing towards Rat 2

SOMETHING WEIRD HAPPENED TODAY THAT I FEEL I SHOULD RECORD HERE. I WAS ALONE IN THE LAB AND YET I COULD HEAR WHISPERS. AN OLD MAN, THEN A LAUGHING YOUNG GIRL. PROBABLY BEEN WORKING TOO HARD.

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19/08

DAY 17 EXP 2

Introduced Rat 3 into the same cage as Rat 2.

Immediate affiliative responses from rat 2 towards Rat 3, which was reciprocated. Rat 2 immediately approached Rat 3 and groomed them, licking their fur, sniffing their anogenital region intensively. They did not exit one another's proximity throughout the period of observation.

THE VOICES ARE BACK, THE SAME AS YESTERDAY. I FEEL SO LONELY HERE. I HAVE A CRUSHING NEED TO BE WITH OTHER PEOPLE. I THINK I'LL GO HOME.

20/08

DAY 18 EXP 2

Continued behavioural observations of Rat 2 and 3; intense affiliative behaviour. This is highly unusual for 2 adult male rats, but backs up studies in male rhesus macaques (Emery et al, 2001).

WHAT WAS THAT? DISTANT VOICES COMING FROM SOMEWHERE...

WHAT IS HAPPENING TO ME?

I THOUGHT I'D MADE OBSERVATIONS OF RAT 2 AND 3 @4PM, BUT I CAN'T FIND A RECORD OF IT ANYWHERE.

21/08

DAY 19 EXP 2

Euthanised Rat 2. Removed the brain and processed from sectioning on a cryostat, then stained using Nissl.

Rat 3 was immediately aggressive to other rats when returned to its original home cage. Rat 3 became dominant after attacking and killing a subordinate.

WHAT WAS THAT? I'M ALONE.

22/08

DAY 20 EXP 2

Experiments terminated.

Rat 2 – brain sections stained – extensive bilateral damage to amygdala and PFC.

HUMAN TRIALS NEED TO START IMMEDIATELY!

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These are my preliminary conclusions on the results of brief rat experiments. The protozoan is a parasite – like none I've ever seen – it has a very rapid life cycle and makes its way quickly to the brain. See my sketch of what I think the life cycle looks like below.

Strangely, the results of the infection look rather benign, as the host and those they interact with display increases in affiliative behaviour rather than violence. This fits well with previous findings in behavioural neuroscience.

DETAILED SKETCH OF THE PRESUMED LIFE CYCLE OF THE PARASITE.

VERY RAPID!!

Changes in the host's behaviour begins between Day 5 and 7. The larvae moves from the blood to the brain and then quickly to the amygdala first – leading to an increase in affiliative behaviour – then the prefrontal cortex (anterior cingulate area in the rat).