U.S DEPARTMENT FOR TRANS-CONTINENTAL SCIENCE EXCHANGE

Biotic Explorers Research Group

CN-C-039-735-8003-8101

FELIS CATUS

CORE: TRIGGER

DURATION: 11 MONTHS

SUPERVISION: REED, A., BUTLER, B. (EX)

MARCH, 1980

Felis Catus

Experiment	CN-C-039-735-8003-8101
Core	Trigger
Duration	11 months
Method	Lab Experiment
Status	In progress / Frozen (Phase 1)
Supervision	Reed, A.; Butler, B. (External)
Assistance	Hanna Félin (A Group) Mefistah Tolgur (B Group) Mao Park Wong (C Group)

Abstract

The third eyelid, otherwise known as the nictitating membrane, is the norm when it comes to species as mammals and birds. The only species lacking one are humans and a fewfellow primates. We are setting up a R&D procedure in an attempt to research the possibility of stretching the human semilunar fold and inserting a biomimetical lens that will get powered by an external muscle converted into voltage.

The semilunar fold found in the human body can be described as a human vestigial feature from a evolutionary former time. This research started with observational case study on feline cadavers.

19.03.1980 | #000
The nictitating membrane unlike as the upper and lower eyelid moves horizontally across the eyeball and serves as protection and to moisten the eye while maintaining or increasing vision.

Our test subjects are two feline cadavers that passed away of natural cause named *Fluffy* and *Tigger*, as given by their previous owners and who donated them for scientific purposes after we have published a newspaper advertising under a pseudonym in The Times, The Independent and The Daily Telegraph. Our goal is to actuate the dead muscle of the nictitating membrane and insert the biomimetic lens implant that will be animated and powered by a muscle movement converted into voltage instead of radio frequency.

We applied 50V DC bursts with 0.001 mA in short 1.2 second intervals to Fluffy's membrane and 70V DC with 0.001 mA in 0.7 second bursts to Tigger's membrane. We have unfortunately, and against all of our expectations, burned 30% of Fluffy's left nictitating membrane in the first half of the research and we could no longer use it for implanting purposes.

Tigger's case has proven to be rather successful. The 0.7 sec. intervals activated the Lacrimal gland and enabled us to use the muscles as a source of energy. This energy was converted into voltage which is harvested by a chip and then used to power a charlieplexed diode matrix of light-emitting diodes, specifically *Aluminium Gallium Arsenide* (AlGaAs) red LEDs, sitting behind a perforated sheet to create an image that gets projected onto the retina. The charlieplexed circuitry was provided to us by the Research and Development team at AEG-Telefunken in Germany. Mr. Malinowski and Mr. Siegle filled us in on the details this new three-state signalling system and so far it seems far more promising and efficient than working with traditional multiplexing circuits.

26.03.1980 | #004
So far we have successfully produced voltage for 2 sec. of image projection but the light-emitting diodes didn't reach the peak emission of 620nm. Unfortunately 2 seconds is not enough to connect the electronic circuits to the Optic Nerve trough the Retina so we will use the inferior muscle instead.

According to Roland Haitz's Law, we can expect further development of a more proficient output, by at least 10%, for the LED's wavelengths within the next 6 to 12 months and thus we need to put our experiment on hold for a indefinite amount of time. We expect to pursue a second phase and create more results after technology has caught up with our expectations.

29.03.1980 | #005

V	A	Observation
50	0.7	First discovery
51	0.8	Heads into the direction of SQ02's drey
52	0.9	Enters SQ02's drey
53	SQ05	Leaves the drey. No sight of SQ02
08:44	SQ02	Returns to its drey and leaves immediately
09:02	SQ02	Encounters SQ05 in the area around SQ04's drey and they went into a fight
09:03	SQ02	Succumbs to SQ05 strength and flees the area

Two days after our conclusion to postpone anymore researches and removing all electronic connections, Fluffy's cadaver started to twitch and both nictitating membranes would open and close

This behaviour didn't occur in Tigger.

Figure 8.1: Light-emitting diodes in a charlieplexed configuration