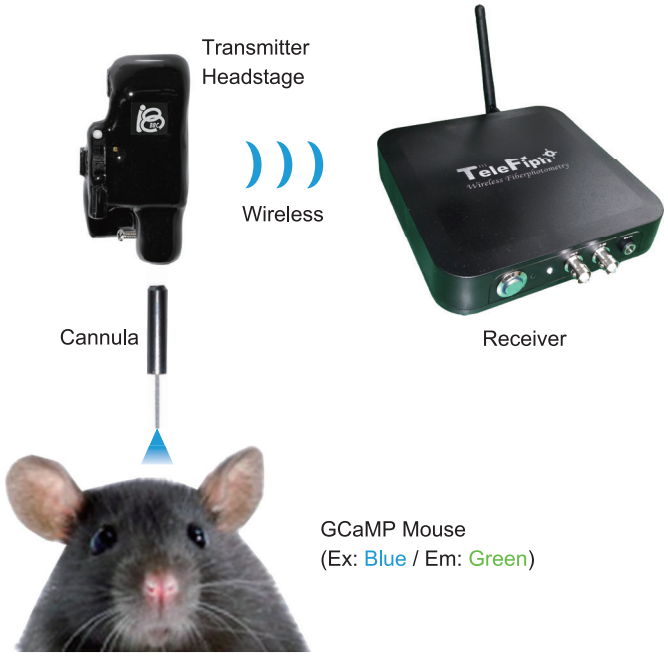
TeleFiph

Wireless Fiberphotometry



Fiber photometry is a powerful technique to detect calcium signal from specific neuron in awake animals using calcium indicator protein represented by GCaMP. In freely moving condition, the long optic fiber attached to the head of the animal can interfere with experimental setup, therefore can be a limitation factor of your project.

Our innovative new product, TeleFipho, includes all required components for fiber photometry - optic fiber, filter cube, light source, photo detector - and also wireless transmission circuit, in the very smal 3g body. TeleFipho definitely will not block free behavior of your animals, enabling novel experimental approach using f iber photometry.

Features

- World first commercial wireless fiber photometry
- Small headstage / good for mice, rats, marmosets, etc.
- Standard 2.5mm ferrule cannula
- Rechargeable by a dedicated charger
- Adjustable excitation LED power
- Adjustable signal offset
- For GCaMP or GFP-like indicators
  e.g. dLight, GRAB-DA, GRAB-5HT, etc.

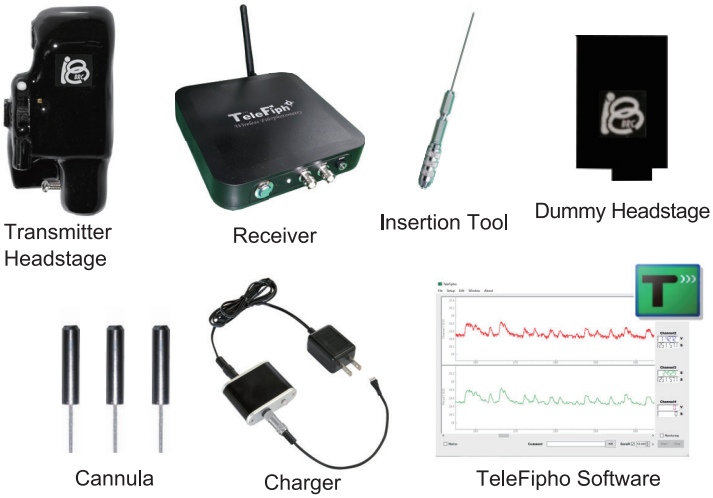
Specification	
Headstage weight	3g
Headstage size	12 x 12 x 22 mm
Excitation wavelength	LED peak 470nm, Filter band 445～490nm
Emission wavelength	Filter band 500～550nm
Excitation power	10～300μW@Fiber end (Adjustable)
Sampling rate	100Hz
AD resolution	16bit
Photo sensor	Photo diode
Gain	10^{10} V/A
Battery life	2hours@Excitation power 30μW
Transmission band	2.4GHz
Transmission distance	2m
Power	Battery powered, rechargeable
Receiver I/O	1x Photometry analog out, 1x Geneal purpose analog In (0~5V)
PC Interface	USB / TeleFipho software (for Windows10)
Cannula	core: 400μm/NA0.39, Cladding: 425μm, Ferrule: 2.5mm core: 200μm/NA0.39, Cladding: 225μm, Ferrule: 2.5mm core: 600μm/NA0.39, Cladding: 630μm, Ferrule: 2.5mm

TeleFipho Standard Set

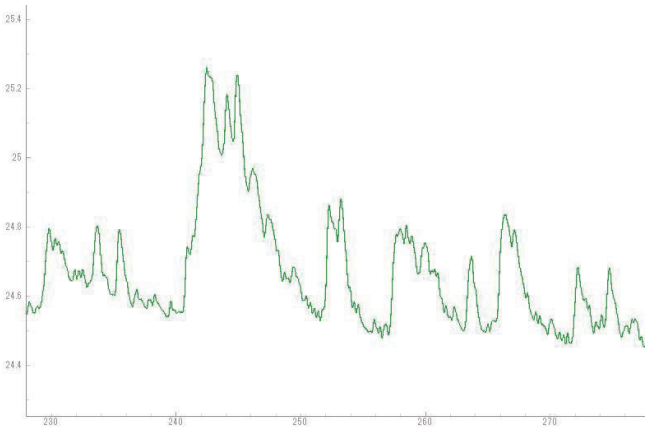
TeleFipho-set consists of the following items:

TeleFiT	1x TeleFipho Transmitter Headstage
TeleFiR	1x TeleFipho Receiver
TeleFiCharger	1x TeleFipho Charger
TeleFiC-l-d (※)	3x TeleFipho Cannula
TeleFiTool	1x Insertion Tool for TeleFipho
TeleFiDummy	1x Dummy Headstage
	1x TeleFipho Software Installer

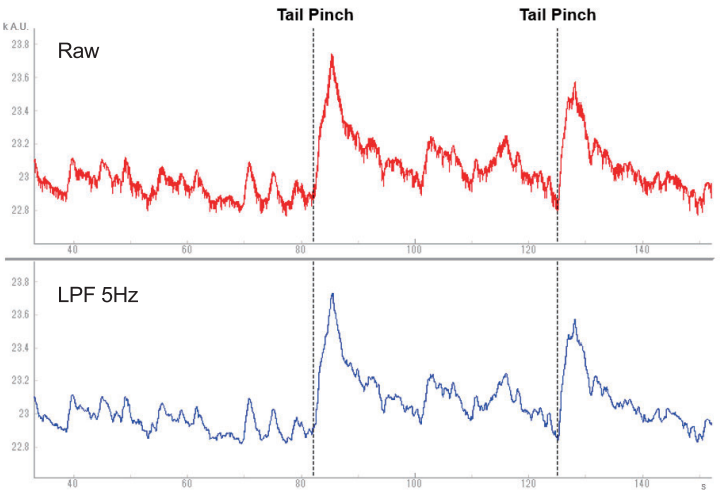
(※) Please specify cannula length.
5mm length and 400μm cannula will come without specifying.
e.g. Length 3.5mm, dia. 400μm: TeleFiC–3.5–400 (in mm, resolution 0.1mm)



Data



Activity synchronized GCaMP signal in mouse dorsal striatum.
By courtesy of Dr. Keitaro Yoshida in Kenji Tanaka Lab, Keio Univeristy.

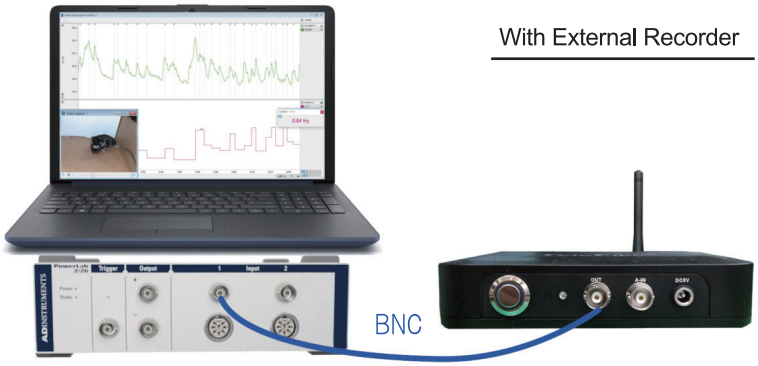


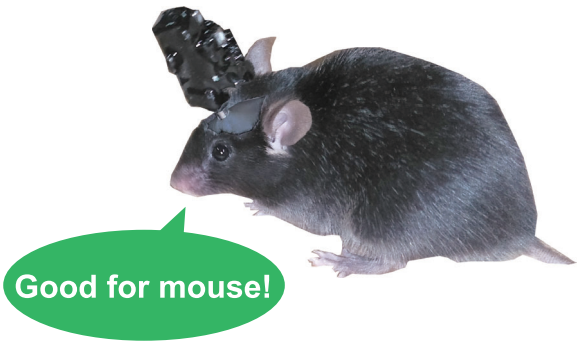
Stress induced GCaMP signal from orexin neuron in mouse hypothalamus.
By courtesy of Dr. Daisuke Ono in Akihiro Yamanaka Lab, Nagoya University.

Stand Alone / External Recorder

TeleFipho receiver can be directly connected to PC via USB for fiber photometry data recording in TeleFipho software. TeleFipho software is good enough for simple raw data / low pass filtered data recording. Data can be directly read from Matlab / Octave, or can be exported to ASCII format directly readble by pMAT, open source analysis software for fiber photometry.

For more complicated online analysis and / or parallel recording of other physiological data, you can access photometry data as analog signal via BNC on the front panel of TeleFipho receiver so that you can connect external data recording system (e.g. PowerLab from ADI).





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TeleFiC-l-d	TeleFipho Cannula
TeleFiTool	Insertion Tool for TeleFipho
TeleFiDummy	TeleFipho Dummy Headstage

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