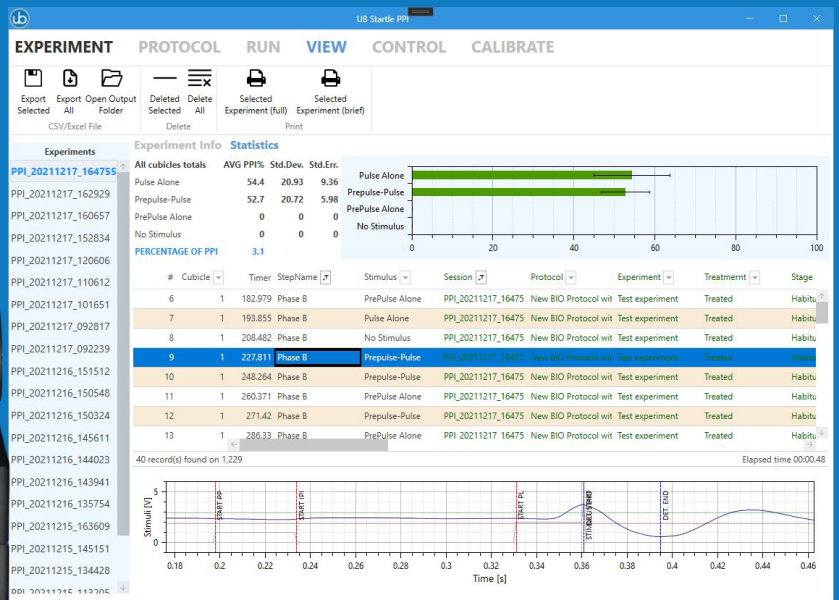


STARTLE/PPI SYSTEM

For psychosis, schizophrenia and sensorimotor studies.



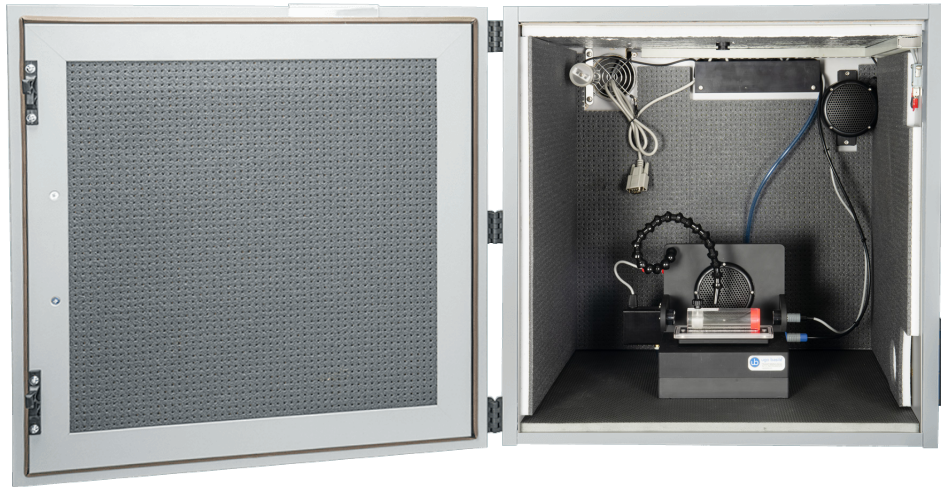
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Pre-Pulse Inhibition of Startle Reflex (PPI)

Complete set up, ready to go.



Background

- The Startle/PPI system is a valuable tool to investigate [complex human disorders, such as schizophrenia](#), which shows a dysfunction in the sensorimotor mechanism, as other forms of psychosis.
- [Sensorimotor gating](#) refers to the ability of a sensory event to suppress or decrease a motor response, in this case, a startle response.
- The pulse alone startle reflex provides an index of the animal reaction to the startle pulse in terms of maximal peak, the pre-pulse alone startle reflex provides an index of the animal reaction to the pre-pulse startle i and the %PPI indicates the inhibition of the startle reflex, due to the pre-pulse (in healthy animals).
- The %PPI is calculated as the decrease of the startle response after the pre-pulse is delivered, divided by the startle amplitude and is calculated for each of the pulse intensities).

Typical device applications

Several clinical studies have shown that a number of human disorders have impaired PPI including: [schizophrenia](#), [Huntington's disease](#), [fragile X syndrome](#), and [autism](#). Utilization of Startle PPI tests in rodents has a translational value to assess the effects of a number of treatment modalities such as putative anti-psychotics, and to explore genetic and neurobiological mechanisms underlying behaviors of relevance to psychosis.

PPI deficits have been shown also in obsessive compulsive disorder, Tourette's syndrome and post traumatic stress disorder (Braff et al. 2001).

Detrimental effects on motor and sensory gating have also been shown to be associated to synthetic cannabinoids (Corli et al. 2023), to substances like ketamine (Marti et al. 2021) and the psychoactive effect of LSD impairs the correct brain processing (PPI) (Tirri et al. 2022).

Product Description

The Ugo Basile system is [fully automated both for the preparation of the procedure and for the analysis of data](#). Main features include:

- Automatic detection of Startle Reflex in mice and rats.
- A typical system combines the following elements:
 - Dedicated Software;
 - Up to 4 Isolation Cubicles that include an infrared (I.R.) light, a loudspeaker and a silent fan (under 50 dB), all conveniently positioned inside the sound attenuating box;
- Stimulating/Recording (S/R) Platform (includes the light, speaker and detection system using a force sensor).
- Different animal holders to match animal dimension.
- Flexible testing, easy to set up. Simply define trial number, sound and light stimulus and timing of experimental sequences (all fully randomizable):
 - Pulse; Pre-pulse; Inter-Pulse Interval; Inter-Stimulus Interval.

Procedures and Data Analysis

Pulses and pre-pulses consist of white noise and frequency sounds, lights or air-puffs.

The animal is restrained in a Plexiglas tube sitting on a force sensor. The dedicated software analyses data automatically, as startle response amplitude and %PPI.

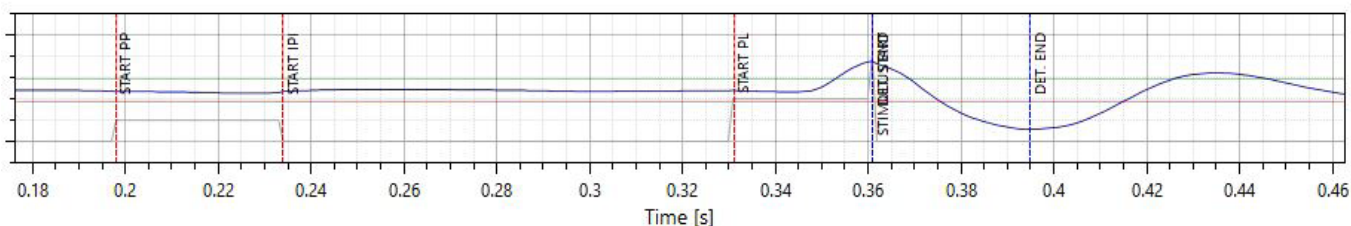
The various procedures expose the animals to "Trials" of different nature:

- **Pulse alone trial:** only the strong stimulus is presented
- **Pre-pulse alone trial:** only the weak stimulus is presented
- **Pre-pulse-pulse trial:** the strong stimulus is preceded by the weak (pre-pulse) stimulus
- **No-stim trials:** no stimulus is delivered but the response of the animal is recorded to serve as a baseline

Experimental parameters can all be adjusted, linked, spaced in time, etc., to virtually build in a seamless and user-friendly manner virtually any type of startle and startle/PPI protocols.



Results and data are shown in a very intuitive way, as a summary data in the proprietary interface and as raw data (.csv), for those who wish to use their own analysis systems



Features

User-friendly software included

Configure your own Experimental Schedules directly on your PC

Multiple stimuli

Multiple cage system

Benefits

Exceptional flexibility and intuitivity in the software protocol building

Maximum Flexibility, full event randomization

The user can decide to use pre-pulses and pulses with white noise, frequency noise, light, air puff

High throughput with up to 4 cages running at the same time

Main references

G. Corli, M. Tirri, S. Bilel, R. Arfè, T. Coccini, E. Roda, B. Marchetti, F. Vincenzi, G. Zauli, P. A. Borea, C. A. Locatelli, K. Varani, M. Marti, 2023, "MAM-2201 acute administration impairs motor, sensorimotor, prepulse inhibition, and memory functions in mice: a comparison with its analogue AM-2201", *Psychopharmacology*

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M. Marti, G. Talani, C. Miliano, S. Bilel, F. Biggio, J. Bratzu, M. Diana, M. A. De Luca, L. Fattore, 2021 "New insights into methoxetamine mechanisms of action: Focus on serotonergic 5-HT2 receptors in pharmacological and behavioral effects in the rat", *Experimental Neurology*

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STARTLE/PPI SYSTEM



The Ugo Basile Startle/PPI system is composed of:

- Isolation Cubicle (inside dimensions 39(d)x47(w)x49(h)cm) 46000-596, each with: dual visible/I.R. light 46000-325, speaker 46000-165, controller on-board 46000-105 and Stimulating/Recording Platform for mouse or rat (48006 or 48002). A 4-channel startle Box 48163-150 also included.
- The System needs to be completed with the included mouse or rat holder (select one when ordering).

Specifications - Operation

Sound Range	From 65 dB to 120 dB
Pulse/pre pulse sound range	From 65 dB to 120 dB
Sound Frequency Range	From 100 Hz to 18 KHz
IR Light	0-100% (Environment)
Flash Light	0-100% (20K Lux) S/R Platform)
Data Export	.csv, .xlsx format

Specifications - General

Power Requirements	Universal input 100-240 VAC, 50-60Hz, 60W
Background Noise (Ventilation)	from 0.1 to 3mA, in 0.1mA steps
Operating environment	10°C to 40°C; 5% to 95% RH (non-condensing)

Physical	Outer size	Internal size
Dimensions Cubicle	52(d)x62(w)x58(h)cm	39(d)x47(w)x49(h)cm

Ordering informations

48163	Startle/PPI System for Mice, 1 animal system
48263	Startle/PPI System for Mice, 2 animal system
48463	Startle/PPI System for Mice, 4 animal system
48162	Startle/PPI System for Rats, 1 animal system
48262	Startle/PPI System for Rats, 2 animal system
48462	Startle/PPI System for Rats, 4 animal system
48003-350	Startle PPI Small cylindrical mouse holder (up to 25g)
48003-340	Startle PPI Medium cylindrical mouse holder (up to 50g)
48003-330	Startle PPI Large cylindrical mouse holder (up to 75g)
48003-360	Startle PPI XXL cylindrical mouse holder (up to 100g)
48003-370	Startle PPI Standard cylindrical rat holder (up to 250g)
48003-380	Startle PPI XL cylindrical rat holder (up to 800g)

Extra warranty (standard 12 months + 12 months with product registration)

48163-UBC12	UB Care 12 Additional hardware warranty extension 12 months for Startle/PPI system 1 animal system
48163-UBC24	UB Care 24 Additional hardware warranty extension 24 months for Startle/PPI system 1 animal system
48263-UBC12	UB Care 12 Additional hardware warranty extension 12 months for Startle/PPI system 2 animal system
48263-UBC24	UB Care 24 Additional hardware warranty extension 24 months for Startle/PPI system 2 animal system
48463-UBC12	UB Care 12 Additional hardware warranty extension 12 months for Startle/PPI system 4 animal system
48463-UBC24	UB Care 24 Additional hardware warranty extension 24 months for Startle/PPI system 4 animal system

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