1. Computerized System for measuring cardiovascular parameters from small animal.

Technical Specification:

The system should contain following parts with features

A) Hardware Specification:
- Input channels should be two analog channels for transducer and also for biopotentials.
- Hardware should be USB powered with sample rate of 4lac KHz/channel.
- A/D sampling resolution should be 16 bit with signal noise ratio of 75 dB min.
- Hardware should come with software & accessories.
- Basic hardware unit should consists of accessories for measuring ECG, EMG, EEG, EOG, EEG from human also

B) Software Specification:
- Software should have the facility to use for teaching as well as research purpose.
- It should provide number of different display modes including Chart, Scope and X/y mode.
- Analysis functions should include FFT, Histogram, and Digital Filters, Template Analysis, Integral, Derivatives, Smoothing, Power spectral density, detect & classify heart beats, Peak detection, event marking and series of Rate Options.
- It should have automatic, user adjustable, programmable digital and analog filtering.
- Should be able to measure &analyses electrocardiogram, respiration (respiration graph & rate), noninvasive blood pressure from small animals, and tissue bath study.

C) Accessories:
- Two channel Hardware, Software, Laboratory manual, electrodes lead set (2X), disposable electrodes (100 pcs), headphones, electrode abrading pack (10 pcs).
- Accessories for Electrocardiogram, Respiration for small animal.Complete set of noninvasive blood pressure system & tissue bath system with required accessories.

Features of Noninvasive Blood Pressure System-

1) The system should able to measure non- invasive blood pressure of rodents by using tail cuff sensor along with a separate amplifier using IR sensor to detect the pulse.
2) It should be supplied with a suitable rat restrainer.
3) Measuring &Cut-off pressure range should be from 100mmg to 300mmg.
4) Simultaneous recordings of pulse & pressure should be displayed in two different channels..
5) The tail sensor should detect pulse intensity is increased or decreased, depending on flow ratio.
6) The NIBP should be able to measure Systole, diastole and Mena Pressure with additional parameters such as pulse rate.

2. Computerized Behavior Tracking System with accessories for Neuroscience Lab

Specifications:

Computerized video tracking system is essential for study of different conditions like anxiety, mental, depression in small animal in experimental condition. It can also be used for memory learning behavior assessment and evaluate pharmacological response.

The system should have the following features like

1) System should be flexible and can be used to track the behavior of rodent in any types of mazes.

2) Software should have the capability to upgrade and add as many as sixteen apparatus simultaneously.

3) It should support an array of cameras like USB digital cameras, fire wire cameras, DV cam coder, and CCTV camera, or analog pre-recorded video.

4) System will come with one usb cimos camera with lens, mounting bracket & usb cable.

5) A hardware interface module should come with the system for functional of infrared array in multi-configuration base.

6) Hardware interface module should have four analog inputs, four independent speaker play, sixteen general purpose port & remote control for automatic start/end of test.

7) System should automatically scores over 100 different parameters like distance, speed, mobility, immobility, no of zone entries, and time in zones, latencies in events, event counts, event frequencies etc.

8) System should be able to perform statistical analysis of the test and view results in text, graph or spread sheet formats.

9) Data can be easily transferred to other programs such as excel, spss etc for further analysis.

10) System should have the facility to use keys to score behaviors that can not be scored automatically.

11) System should come with multi-configuration base with photo beam cells, parallel rod floor, light/dark box, hole board, conditioned place preference inserts along with forced swim & tail suspension test apparatus having features below-

a) Multi-configuration Base Platform-
   i)   It should include camera & infrared array.
   ii) It should have the grooved provision to set light/dark, hole board, conditioned place preference insert box.
   iii) Infrared array should be connected to interface module.

b) Parallel Rod Floor-
   i)   It should be useful for the measurement of ataxia & locomotors activity.
   ii) Floor base should consist of many parallel rods.
   iii) Horizontal distance travelled & no of foot falls can be measured with the help of software

c) Light/dark box insert-
   i)   Should be compatible & can be set in multi-configuration base.
   ii) Minimum box overall width & height should be 40cm & 35cm.

d) Hole-Board insert-
   i)   Should be compatible & can be set in multi-configuration base.
   ii) Minimum test chamber dimension &hole diameter should be 40x40cm & 3cm

e) Conditioned Place Preference insert-
   i)   Should be compatible & can be set in multi-configuration base.
   ii) Minimum test chamber dimension & start box diameter should be 18x20cm & 10x20cm

f) Forced Swim Apparatus-
   i)   Should be compatible with behavior recording & analysis software.
   ii) Should be with center drain, valve for water level adjustment & handle.

iii) Minimum diameter & depth of the chamber should be 20cm & 45cm

g) **Tail-Suspension Apparatus-**

    i)   Should be compatible with behavior recording & analysis software.

    ii) Should be with removable walls for easy cleaning.

    iii) Minimum test chamber height & station width should be 54cm &19cm

3. Analytical Balance

Specifications:

- Capacity: 5 gm

- Readability: 1µg/0.001mg

- Repeatability: 1µg/0.001mg

- Linearity: 3µg

- Pan Size: (mm/inch) 60mm

- Response Time: 10 sec.

- Calibration: Automatic Internal

- Units of Measure: G, mg, ct, GN, mo, oz, dwt

- Tare Range: Full

- Operating Temp.: 5 to 40 deg

- Power Supply: A/C Adapter 230V or 115V +/- 20%50-60 Hz

- Weighing Chamber: 90X90mm

4. Digital Plethysmometer

Specifications:

- The control unit with output signal in ml (with resolution of 0.01ml and accuracy of ±0.01ml) with communication port to PC
- Power Supply: 220V 50HZ AC
- Display: Digital Display Monochrome graphical LCD 128X64
- Resolution: 3 Digits, 0.01
- with communication port to PC
- Pedal switch
- Calibrators- 0.5ml, 1ml, 2ml
- Two separate retort stands
- Cables and Connectors
- Surfactant solution bottle
- Microlitre syringe
- Digital pocket conductivity meter
- Dust protection cover for control unit

5. Complete tissue bath system

Specifications:-

1) The tissue bath station should be completely modular, which enables to perform in multiples of one unit.

2) It should allow lowering of the tissue bath away from the tissue holder so that mounting of the tissue preparation should be very easy.

3) Should contain reservoir, reservoir holder, transducer holder, coil holder, warming coil, bath holder, tissue holder and tissue clip.

4) Should also contain tissue bath (20ml), oxygen filter, micrometer assembly, mounting accessories kit, base station with supporting rod & force transducer.

(Prof. Ch. Arun Kumar Singh)
Director
Regional Institute of Medical Sciences,
Imphal.