

## Baseline CLAMS.v1

This is a protocol for using Columbus Instruments' Comprehensive Lab Animal Monitoring System (CLAMS) for simultaneous measurement of metabolic parameters of oxygen consumption (VO<sub>2</sub>), carbon dioxide production (VCO<sub>2</sub>), respiratory exchange ratio (RER) using the Oxymax system in Pinn Hall B-043.

### Procedures

1. **Request use of CLAMS** by emailing Dr. Stephen Abbot at [sba6t@virginia.edu](mailto:sba6t@virginia.edu) and giving him the information about duration and number of mice.
2. **Request transfer of mice** to Pinn Hall B-043.
3. **Check Drierite** (Sigma 238-988-2.3kg) in the column and make sure it is blue. If it turns pink, replace with blue Drierite. The Drierite can be reactivated by baking at 425°F (220°C) for 1 to 1.5 hours.
4. **Turn on the computer and the system** at least 16 hours before use.
5. **Use EchoMRI** for assessment of body composition following the "EchoMRI body composition measurement protocol".
6. **Set up animal boxes**. Make sure no dust gets on the sides of the box and the base is level to ensure complete insulation. The lock should not be too tight. It will break.
7. **Open Oxymax software** by double clicking the Oxymax icon and click "Yes" when prompted for confirming the configuration.
8. Click "Experiment" in task bar and "File open" and select "Mice".
9. Connect the GREEN gas line to the calibration gas tank. Turn the master valve and pressure should be between 5 and 10 psi.
10. Click "Experiment" in task bar and "calibrate"
11. **Click calibrate CO<sub>2</sub>** and wait until the CO<sub>2</sub> gauge of 0.5% on the computer turns green and click "finish".
12. **Click calibrate O<sub>2</sub>**. Oxygen is from room air so we don't need to connect to O<sub>2</sub> tank, regulate the oxygen sensor through coarse gain and fine gain to turn green of 20.5% on the computer and click "finish".
13. **Click "Experiment"** and the "set up". For file name, browse and go to data folders to name file and enter subject IDs (e.g. ID=Test1, weight (lean mass of mouse)=30, label=genotyping), for lean mass measurement,
14. **Click "Experiment" and "RUN"**.
15. **Stop experiment** after experiment by clicking "Experiment" and "STOP EXPERIMENT".
16. **Click "File" and export file** in CSV format.
17. **Go to desktop and open your folder and copy your files** to a USB drive
18. **Clean cages** with soap and water.
19. **Analyze data** (every 30 seconds a data coming out for 1 channel, if 8 channels are connected, 12 minutes interval for each channel).