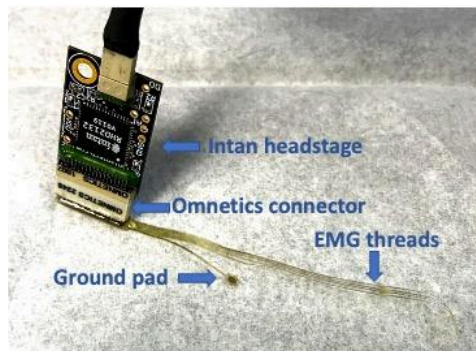


The CAMBER team works to ensure a high quality product is shipped to our users. Randomly-selected subsets of our arrays are subject to impedance testing to ensure that >90% of the array's electrode contacts have resistance less than 1 MOhm. In practice, most electrode contacts have resistances under 15 kOhm, however electrode contacts with impedances in the 10^5 Ohm range typically yield high-quality EMG recordings as well. Any inspected array that has fewer than 90% of contacts <1 MOhm is discarded. **Users are strongly encouraged to test the resistance of all Myomatrix array contacts prior to insertion into an animal**, as detailed below. Performing this measurement serves two purposes. First, it will provide a quality check for your devices - not all of which will have been subject to quality testing by CAMBER. Second, by retesting impedances immediately after insertion, you can detect whether any of the electrode traces or contacts have been broken during insertion (information you can use to improve your surgical technique).

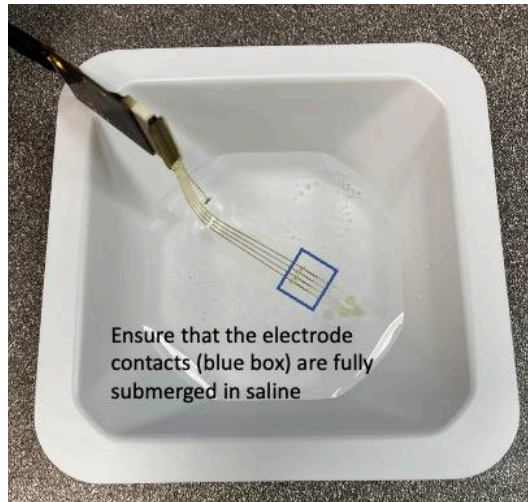
Instructions for Pre-insertion Impedance test

1. Connect the Intan headstage to the Omnetics connector, making sure that the text of the headstage faces the text on the connector. The other end of the wire from the headstage is plugged into the recording board (an example Intan recording board is shown below).

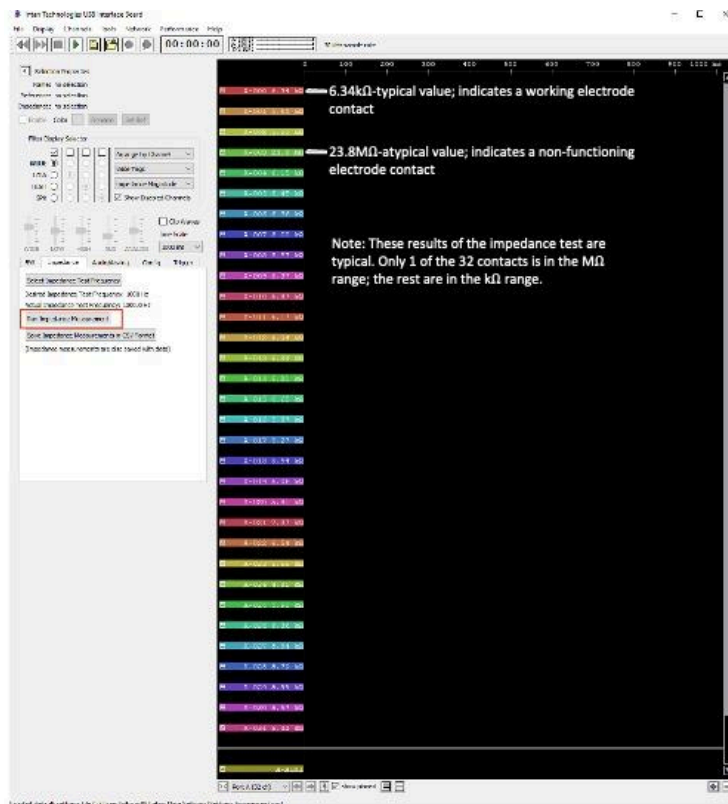


2. Fully submerge array contacts and a ground wire in saline. It is critical that the contacts are fully submerged. One can use a toothpick and wiggle the contact end of the array around a little bit in the saline to ensure that there are no air bubbles touching the contacts.

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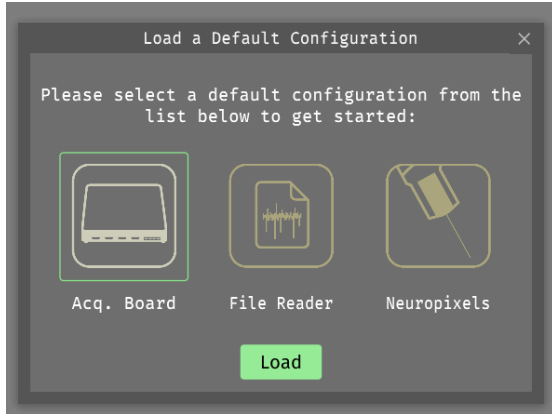


- Intan recording** - Open Intan data acquisition software and choose the “Impedance” tab. Set the impedance test frequency to 1000kHz and then RUN Impedance Measurement (red box, below). If needed, the Intan RHX Data Acquisition user manual is linked [HERE](#). **The picture below** represents typical impedance data collected using Intan set-up. Expected impedance is in the 5-20kOhm range though up to 100kOhm is generally not an issue.



- Open Ephys recording** - Open the Open Ephys GUI and load in your preferred configuration, you can also use the default “Acq. Board” configuration.

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Open the “ONI Acq Board” tab on the side and click the “Measure Impedances” button with array contacts and ground fully submerged. Normal functioning contacts are generally below 20 kOhms up to even 100 kOhms. On the Open Ephys GUI any value above 10 kOhms is reported in MOhms, if the values are saved with the “Save Impedances” button they are recorded in Ohms. Further instructions for recording impedance using OpenEphys software can be found [HERE](#).

