



NeuroNexus

ECoG Electrode Arrays

Wiring Configurations

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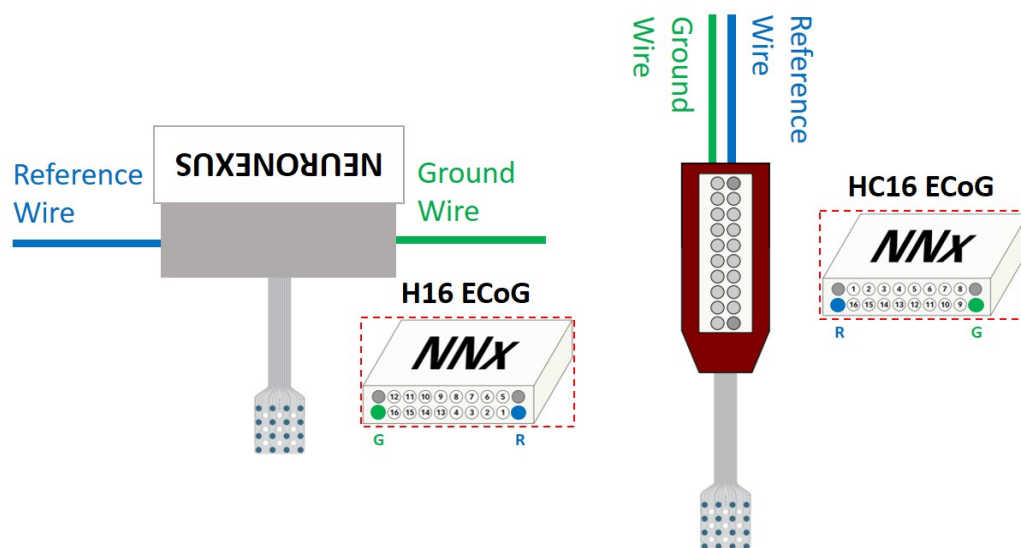
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Wiring Configuration

Proper wiring and grounding are essential for obtaining clean and usable signals, maximizing the performance of NeuroNexus probes. This protocol outlines effective strategies for referencing and grounding probes. While the theory is straightforward, practical implementation can be complex. NeuroNexus probes offer multiple wiring options for optimal flexibility. It's crucial to understand these options before placing an animal on the stereotaxic frame, allowing quick adjustments if needed. NeuroNexus has designed probe wiring to accommodate diverse experiments. This section details wiring setups for 16, 32, and 64-channel electrodes. For more information, contact us at support@NeuroNexus.com or visit our website.

ECoG16-channel Electrode

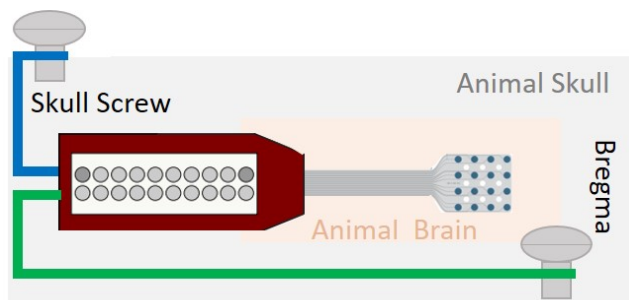


The top view displays ECoG probes with different packaging for H16 and HC16 ECoG. **It's important to note that all recording sites face upward.**

Here's an additional note: Strip a small length of insulation from the ends of the Reference and Ground Wires before implantation.

During the implantation procedure, attach the Reference and Ground Wires separately to the bone screws previously placed. The Ground Wire should be wrapped around the bone screw over the front side of the implantation site, while the Reference wire should be wrapped over the bone screws on the backside of the implantation site.

Note: In this configuration, all the sites are facing upward and are not in contact with the brain surface.

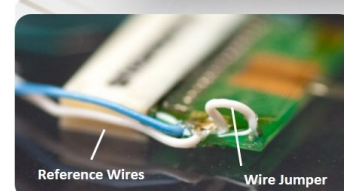
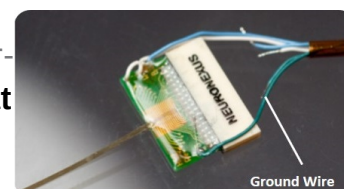
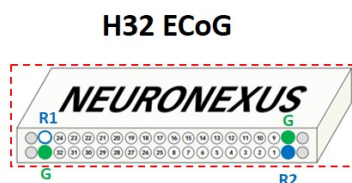
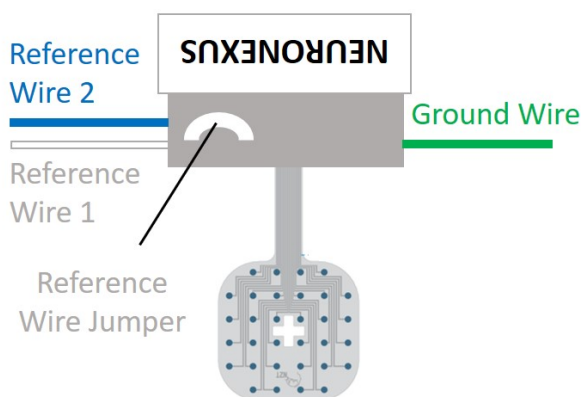


ECoG 32-channel Electrode

ECoG probes with 32 channels come with different packaging. Here, we are presenting H32 and HC32 ECoG packaging.

H32 ECoG packaging

The Reference Wire Jumper allows researchers to customize the Reference and Ground Wiring configuration for their application. **Note that all recording sites face up.**

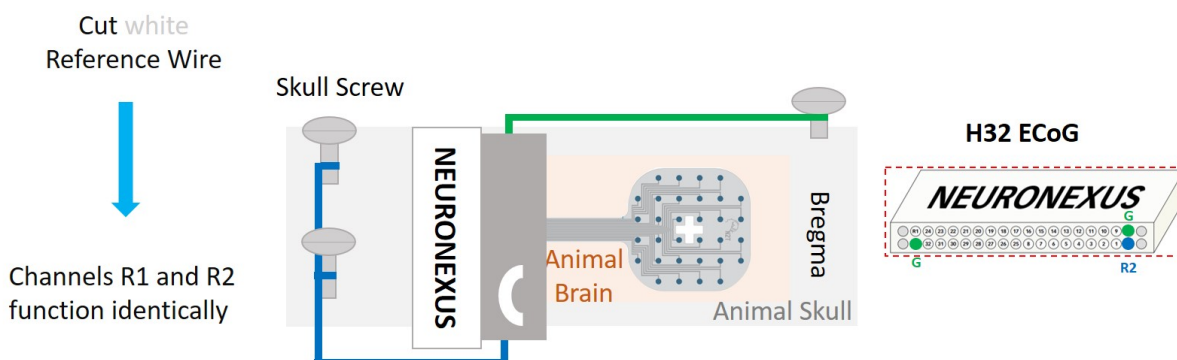


Models for H32 ECoG Probe

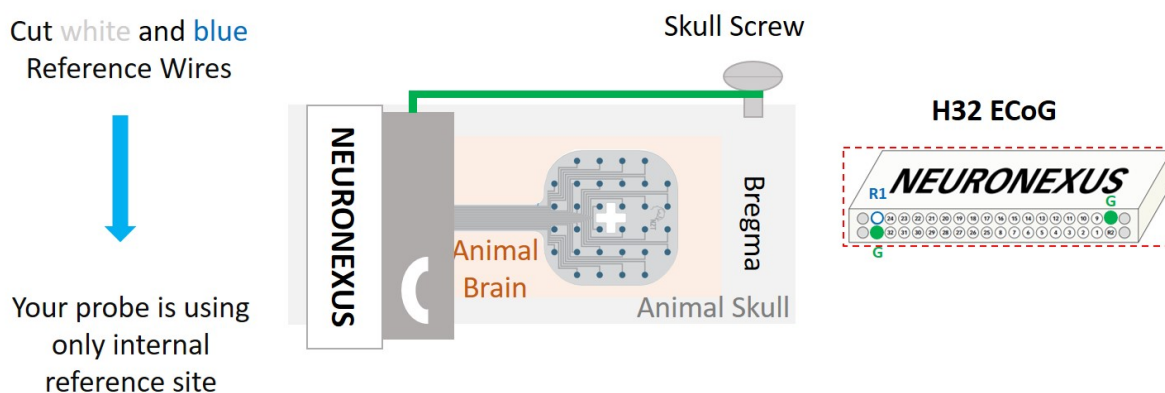
Internal reference site model

If the probe has an internal reference site and you wish to include an external reference, cut the white Reference Wire while connecting the blue wire to the back side of the implantation site.

Note: In this configuration, all the sites are facing up and are not in contact with the brain surface.

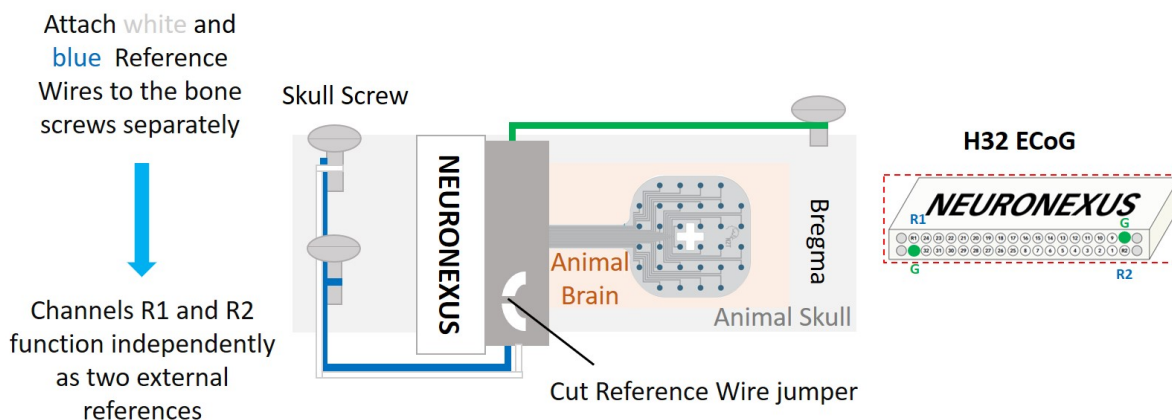


If you choose not to have an external reference, cut the blue Reference Wire while connecting the ground wire to the front side of the implantation site. **Note: In this configuration, all the sites are facing up and are not in contact with the brain surface.**



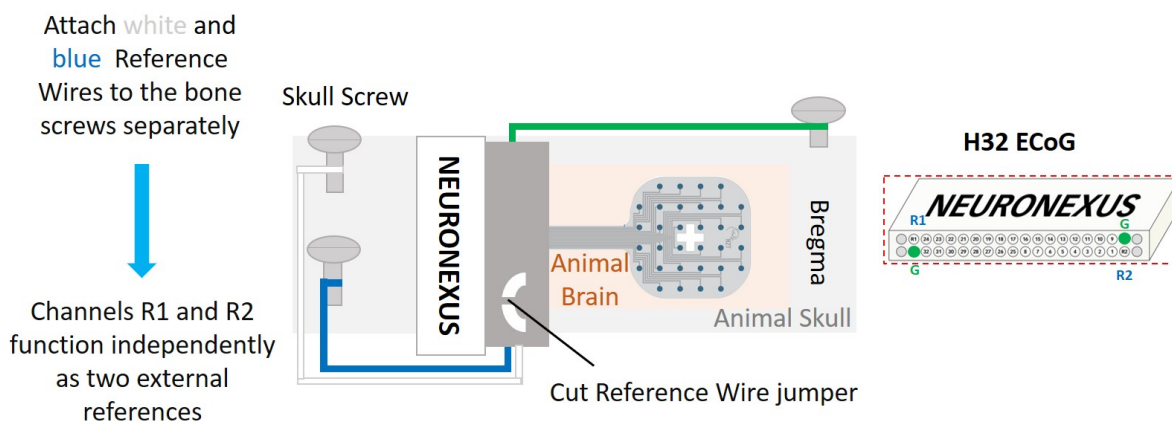
One external reference model

Cut the Wire Reference Jumper, tie both Reference Wires together, and attach them to the bone screws on the backside of the implantation site. **Note: In this configuration, all the sites are facing up and are not in contact with the brain surface.**



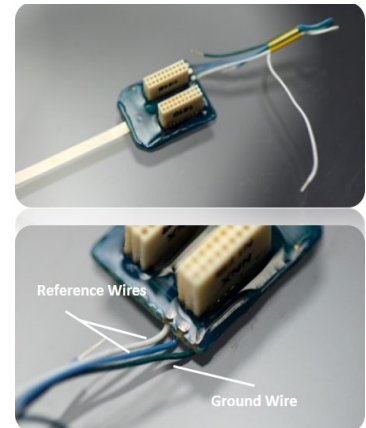
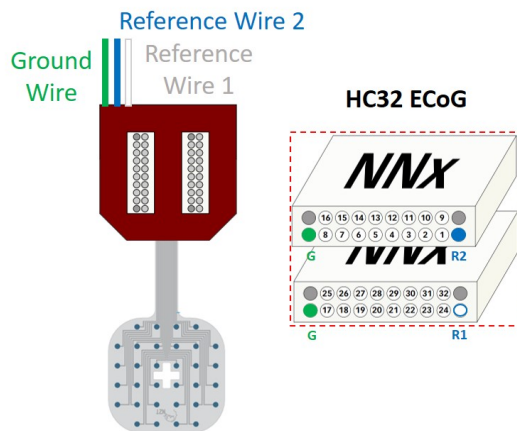
Two external references model

Cut the Wire Reference Jumper, and attach each Reference Wire to the bone screws on the back-side of the implantation site. **Note: In this configuration, all the sites are facing up and are not in contact with the brain surface.**



HC32 ECoG packaging

Below is a top view of HC32 ECoG packaging. **Note that all recording sites face up.**



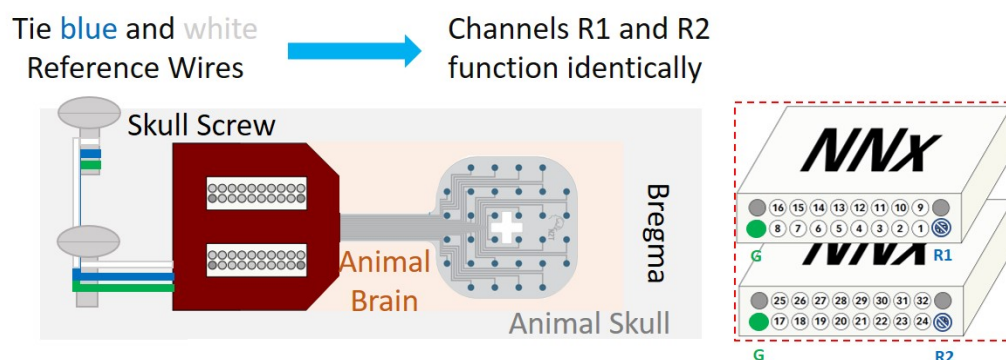
Note: Strip a small length of insulation from the ends of the Reference and Ground Wires before implantation.

Models for HC32 ECoG Probe

Some of the 32-channel electrodes come with a Reference Site on the flexible probe shank.

Simplest model

The simplest wire configuration is to tie the Ground and Reference Wires together and attach them to one bone screw on the front side of the implantation site. **Note: In this configuration, all the recording sites are facing up and not in contact with the brain surface.**

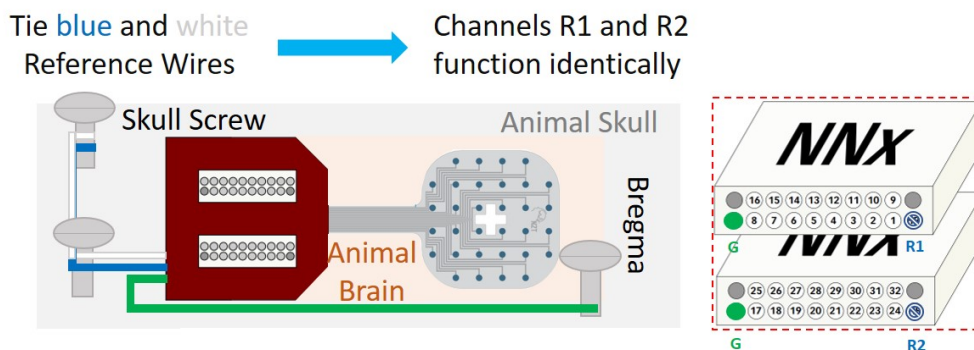


However, the following setups might be considered according to the experiment.

Internal reference site model

- Tie blue and white reference wires

If your electrode has an internal reference site, to use it, tie Reference Wires together and attach them to the bone screw on the backside of the implantation site. **Note: In this configuration, all the sites are facing up and not in contact with the brain surface.**

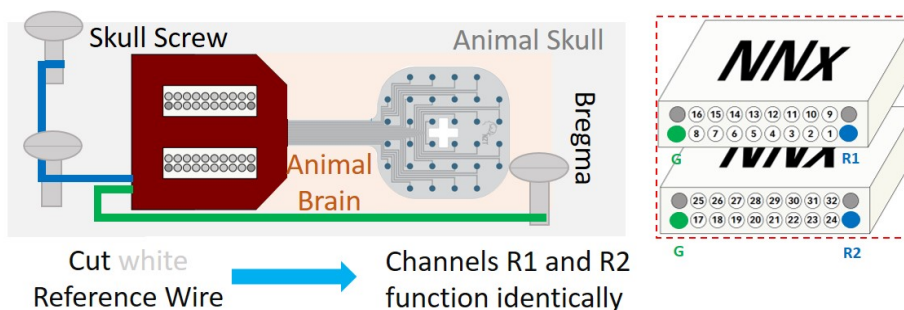


- Cut blue reference wires

Connect the white Reference Wire to the reference port on your headstage (if it has one). The probe reference now feeds into the reference channel on the headstage.

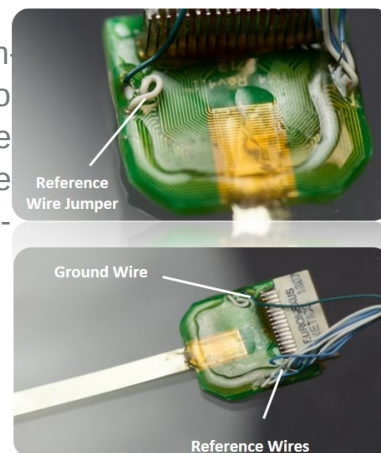
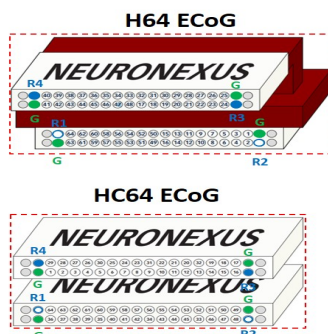
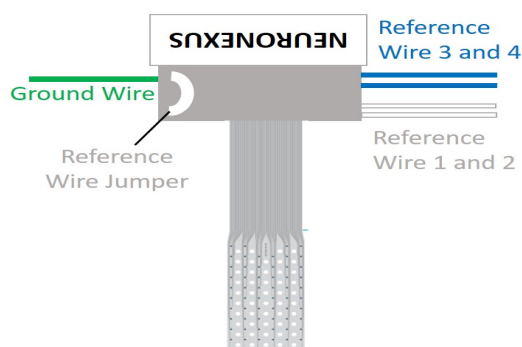
External reference model

Cut the white Reference Wire. Connect the blue Reference Wires to the bone screws on the backside of the implantation site, while the Ground Wire should be wrapped around the screw on the front side of the implantation site. **Note: In this configuration, all the sites are facing up and not in contact with the brain surface.**



ECoG 64-channel Electrode

ECoG probes with 64 channels function similarly to those with 32 channels. They come with a Reference Wire Jumper, four References (two for the electrode in white, and two for the headstage in blue), and one Ground Wire. These components allow researchers to customize the Reference and Ground Wiring configuration for their specific application. Note that all recording sites face up.



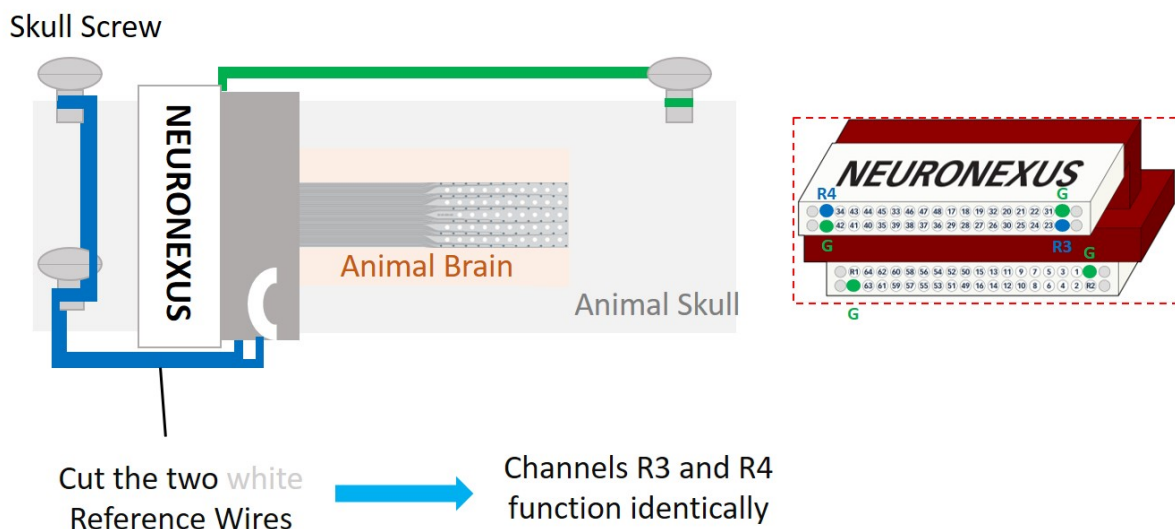
Note: Before implantation, it is important to strip a small length of insulation from the ends of the Reference and Ground Wires.

Models for 64-channel Chronic Probe

Some of the 64-channel ECoG electrodes come with an internal Reference Site.

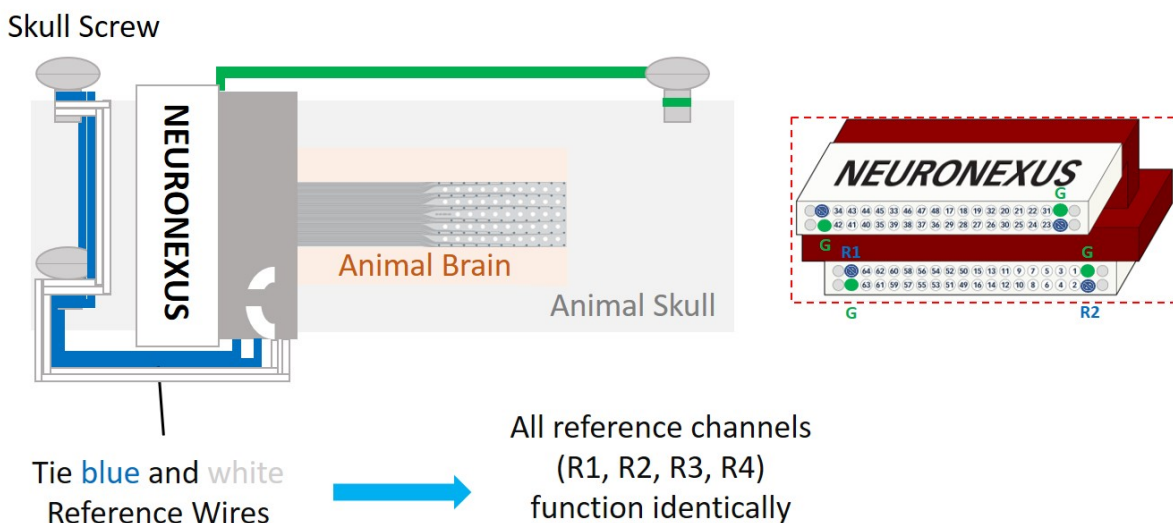
Use reference site model

To utilize the internal reference site, cut the white Reference Wire, while the blue Reference Wires are wrapped around the screws on the backside of the implantation site. **Note: In this configuration, all the sites are facing up and not in contact with the brain surface.**



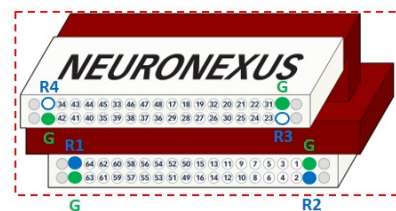
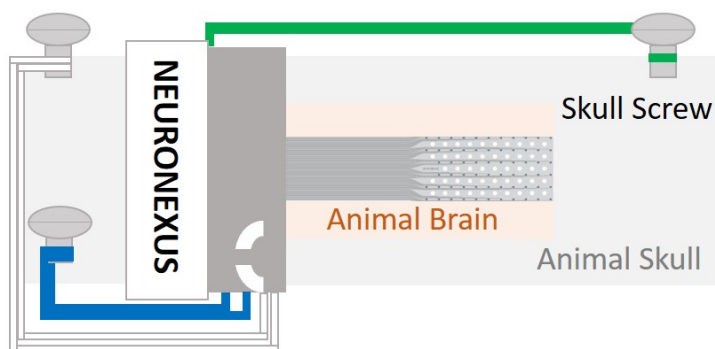
One external reference model

If you want to merge the electrode and headstage reference, cut the Reference Wire Jumper and tie the blue and white Reference Wires. Connect both to the bone screws on the backside of the implantation site, while the Ground Wire should be wrapped around the screw on the front side of the implantation site. **Note: In this configuration, all the sites are facing up and not in contact with the brain surface.**



Two external reference model

Cut the Reference Wire Jumper, and attach each Reference Wire separately to different bone screws on the backside of the implantation site, while the Ground Wire should be wrapped around the screw on the front side of the implantation site. **Note: In this configuration, all the sites are facing up and not in contact with the brain surface.**



Separate **blue** and **white** Reference Wires



R1 and R2 work separately than R3 and R4