



## Independent Cryonics Educators Program

### 4.5: Neuro-cryopreservation

About half of Alcor members have chosen to preserve just their brain (housed within the skull) rather than their whole body. This makes it important to understand the neuro-cryopreservation or “neuro” option.

The critical part of a person to preserve is their brain since this is where memory and personality reside. In practice, the brain is preserved within the skull. There are two reasons for this: The skull provides a natural protective enclosure, and it is difficult to extract the brain from the skull without risking injury.

**The procedure for neuro-cryopreservation** is mostly the same as for whole body, starting with the same standby and stabilization. Transport may be faster because no transit permit is required to cross state lines, a factor that sometimes introduces a delay in whole body cases.

Neuroseparation means that the body is surgically removed where the neck meets the shoulders. It is technically incorrect to say the head is removed, since it is the head that is being retained. This procedure may be performed either in the field (near the place of clinical death) or in the operating room at Alcor. The brain is then perfused similarly to a whole body patient. Perfusion of a neuro patient requires a slightly thinner cryoprotectant that may allow cryoprotection to proceed a little faster.

**The rationale for neuro-cryopreservation** is based on two main points. First, all parts of your body can be replaced without loss of personal identity (memories, personality, etc.), the single exception being the brain. ease or aging causes damage to the body which would require repair or replacement upon revival. Proponents see no point in going to the expense and trouble of taking all that along with them.

Second, we will need advanced medical technology capable of repairing tens of billions of damaged neurons and reversing the aging process along with whatever disease and damage were present. Technology that advanced should easily be able to regrow a body to house the repaired brain. Already in 2022, scientists are growing mini organs from stem cells. It is no longer considered science fiction to foresee in the relatively near future the ability to grow new organs and body parts. Research is active in the fields of tissue repair and organogenesis.

How will a brain be reconnected to a body? On hearing about the neuro option, many

people assume that the body would be cloned. We can imagine cloning a body from the person's DNA, presumably programming growth to avoid growing anything more than a brainstem, and then connecting brain and body.

This scenario is unlikely. As regenerative medicine advances, we will discover the programs (perhaps still dormant in our genes) or write new programs to spur and direct tissue growth. The brain could be supported in a fluid environment while a body is grown around it. If this seems fantastic, consider that your body developed from a *single cell* through an evolved process.

Your regenerated body would be genetically identical to the one you had before being cryopreserved. It would be made from your own genetic code. It may be that replacing a body is easier than repairing one. (Robert Freitas attempts to estimate relative costs in terms of energy in [Cryostasis Revival](#)).

At some point in the future cryopreservation may advance far enough to avoid imposing more than minimal additional damage. Then it will become easier to repair than replace. At that point, whole body would have an advantage in this respect. This is a major reason that Alcor recommends members provide enough funding for whole body even if they are signing up with the neuro option.

Whole body members should be aware that they are agreeing to the “Emergency Conversion to Neurosuspension” clause in the Cryonic Suspension Agreement. This would be invoked only if conversion to neuro were the only alternative to destruction.

The purpose of this Explainer is to explain the reasons for neuro-cryopreservation, not to argue in favor or against it. For a discussion of the pros and cons as seen by advocates of both sides, see the document “[Neuropreservation and Whole-Body Preservation Options](#)” in the References below.

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## References & Sources

[Neuropreservation and Whole-Body Preservation Options](#)

<https://www.alcor.org/docs/Neuro-and-Whole-Body-Options.pdf>

[The Neuropreservation Option](#)

<https://www.alcor.org/library/the-neuropreservation-option/>

[Neuropreservation FAQ](#)

<https://www.alcor.org/library/neuropreservation-faq>

*Cryostasis Revival: The Recovery of Cryonics Patients Through Nanomedicine*, by Robert A. Freitas. [Free online version](#): <https://www.alcor.org/cryostasis-revival/>

**Next: 5.1: The evidence supporting cryonics**



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