



## **Independent Cryonics Educators Program**

### **2.10: Whole body and neuro cryopreservation**

There are numerous choices that individuals must make in order to complete their cryopreservation arrangement. Probably the most fundamental choice is between neuropreservation (“neuro”) and whole body preservation (“whole body”). The Alcor Life Extension Foundation makes no recommendation regarding this choice. Members need to educate themselves about these factors involved and make a choice based on their own personal considerations and judgment.

Whole body cryopreservation is ideally the cryoprotective perfusion of the whole body with cryoprotectant chemicals, followed by cooling of the whole body to liquid nitrogen temperature for long-term preservation. Alcor performs cryoprotective perfusion of the whole body by surgically accessing major blood vessels in the chest.

Neuropreservation is ideally cryopreservation of the brain within the head, based on the premise that brain is the seat of personal identity and that all other parts of the body can theoretically be regrown around the brain, or head and brain, with sufficiently advanced medical repair technology. Neuropreservation is usually performed by surgically separating the head from the body at deep hypothermic temperatures and performing cryoprotectant perfusion through the carotid and vertebral arteries, followed by cooling of the head to liquid nitrogen temperature for long-term storage.

At the end of 2021, 65% of patients were neuro, and 35% whole body. Among the membership, 53% have whole body arrangements, and 47% neuro arrangements.

The following are some factors members may want to take into consideration in making their decision:

- Those favoring neuro propose that it results in greater or complete vitrification of brain cells, i.e., less or no ice crystal formation which damages cells, because perfusion procedures are more focused on the brain. Under ideal conditions this would appear to be true, however, whole body advocates counter that there is no way to know in advance whether any Alcor patient will be cryopreserved under conditions that permit vitrification. Even many neuro patients aren't successfully vitrified and have some ice formation to varying extents. Both “sides” acknowledge that under ideal conditions the degree of vitrification may be only slightly better under neuro than under whole body (perhaps 10% better according to one highly regarded Alcor technical expert).

- Whole body advocates question whether there might be difficulty reconstituting complex acquired motor skills from brain information alone. Neuro advocates assert that the information contained in the brain would be sufficient for reconstruction of the complete nervous system with skill retention through the use of technologies such as molecular nanotechnology and computational inference.
- Whole body advocates question whether revival from neuro might be more difficult, expensive, or require waiting longer for more advanced technology. Neuro advocates reply that cryopreserved bodies require highly complex and specialized cell repairs and rejuvenation and that regrowth of a new body might be the preferred treatment for all cryonics patients or anyone else who is severely injured in the future. Whole body advocates counter that improvements in cryopreservation technology should eventually reach a point where the remaining repairs necessary for a body will be easier than regrowing a body and that being cryopreserved as a whole body at that time will, therefore, be advantageous compared to neuro.
- Neuro is certainly financially advantageous in that it is less expensive. It also appears that neuro costs may even get lower in the future as a percentage of whole body costs. Cost considerations alone are the reasons that some members choose neuro. Some of these, including technically oriented members, have expressed publicly that they would choose whole body if they could afford to but cannot.

[Updated 07/30/22]

## References

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

What is neuropreservation? (YouTube videos):  
<https://www.youtube.com/watch?v=p7h828TWtSk>

<https://alcor.org/Library/index.html#neuro>

**Next: 3.1: Standby**

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## ICE Program

Part I: ICE: Why is it important.

Part 2: Introduction to cryonics

Part 3: Procedural aspects

Part 4: Technical aspects

Part 5: Science

Part 6: Membership

Part 7: Concerns about cryonics

Part 8: Philosophical and ethical issues

Part 9: Cultural, religious, and social issues

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