

## Organ Protectant Solution

Organ donation and preservation is often unsuccessful, due in part to injury to the vital organs that occurs during the warm phase of organ recovery. Current solutions that are used for organ preservation are designed for cold storage or cold perfusion preservation after the organs have been harvested from the patient. By this time, significant damage to organs occurs. There is no technology that prevents cell swelling in organs in conditions of warm ischemia, such as cardiac arrest periods or prolonged periods of shock.

### The technology

Inventors at Virginia Commonwealth University have developed a solution that can be used to protect ischemic organs for organ donation and transplantation. The solution contains an optimal combination of cell impermeants that can mitigate lethal cell swelling and prevent organ damage. The major advantage of this technology is that it can be used under warm ischemic conditions, before the organs are harvested from donors, thus extending the window for organ recovery. In a model of organ donation, this solution prevented cell swelling under these conditions without causing preservation injury. This solution could also be given to patients in severe hemorrhagic shock and trauma to increase the “golden hour”, essentially increasing the time where subjects could survive in a low-volume state while awaiting further treatment. Thus, this solution provides potential for preventing lethal cell swelling in both organ donation following cardiac death and in hemorrhagic shock conditions.

### Benefits

- » Prevention of organ damage
- » Chemically stable, economical and non-toxic solution
- » Extends survival window in patients with hemorrhagic shock trauma
- » Extended time to harvest organs

### Applications

- » Organ preservation and donation
- » Donation after cardiac death (DCD)
- » Hemorrhagic shock and trauma
- » Resuscitation injury
- » Military and combat care
- » Cell impermeants

### Patent status:

Patent issued: U.S. rights are available. 13/589,441  
Patent pending for foreign rights. 14/253,982

### License status:

This technology is available for licensing to industry for further development and commercialization.

### Category:

Biomedical

### VCU Tech #:

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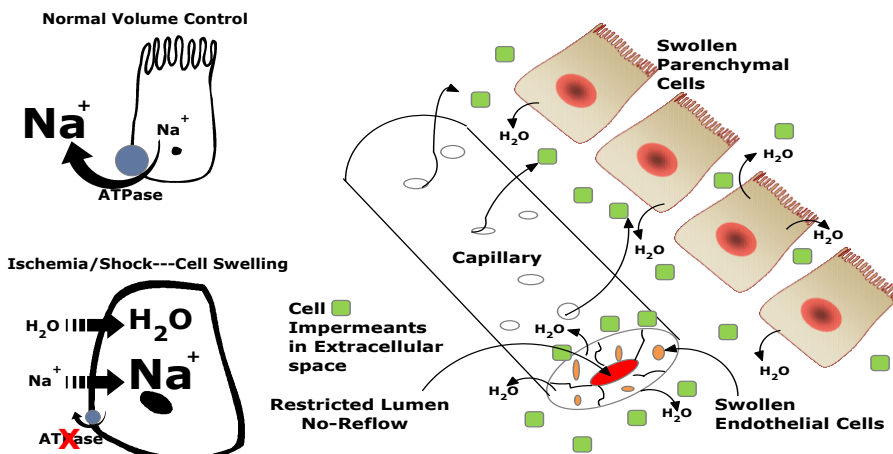


Figure 1. A schematic drawing which illustrates the mechanism of action of the organ protectant solutions.