

SUPPLEMENTAL MATERIAL

Supplemental Table 1: Rabbit neurological deficit grading scale (from ref ²³)

		Maximum score
<u>Level of consciousness</u>		
Normal	0	
Clouded	5	
Stuporous	10	
Comatose	25	25
<u>Respiration</u>		
Normal	0	
Abnormal	5	5
<u>Cranial nerves</u>		
Vision	1	
Light reflex	1	
Oculocephalic	1	
Corneal	1	
Facial sensation	1	
Auditory	1	
Gag reflex	1	7
<u>Motor and sensory function</u>		
Flexor response to pain (Front)	2	
Flexor response to pain (Rear)	2	
Righting reflex	10	14
<u>Gait</u>		
Normal	0	
Minimal ataxia	5	
Moderate ataxia	10	
Able to stand	15	
Unable to stand	20	
No purposeful movement	25	25
<u>Behavior</u>		
Grooming	4	
Eating/drinking	10	
Exploring	10	24
Total		100

Supplemental Table 2: Histological cerebral lesion severity grading scale (from ref ²³)

	Score
<u>Neocortex</u>	
Normal	0
Rare ischemic neurons (<10%)	1
Frequent ischemic neurons (10-50%)	2
Majority of neurons ischemic (>50%)	3
<u>Hippocampus</u>	
Normal	0
Rare ischemic pyramidal or granule cells	1
Focal ischemic damage	2
Severe, diffuse ischemic damage	3
<u>Cerebellum</u>	
Normal	0
Rare ischemic Purkinje cells	1
10-50% ischemic Purkinje cells	2
>50% ischemic Purkinje cells	3

Supplemental Table 3: Histological lesion severity grading scale for the kidney, liver, heart and lung. For this last organ, we assessed two separate scores for the cardiogenic lesions and the infectious complication, respectively.

	Score
<i><u>Kidney</u></i>	
Normal	0
Dilated regenerative proximal tubule	1
Focal scar fibrosis	2
Extensive scar fibrosis	3
<i><u>Liver</u></i>	
Normal	0
Limited clarification of hepatocytes	1
Moderate clarification of hepatocytes	2
Extensive clarification of hepatocytes	3
<i><u>Heart</u></i>	
Normal	0
Very rare foci of cardiomyocyte necrosis	1
Rare foci of cardiomyocyte necrosis	2
Frequent foci of cardiomyocyte necrosis	3
<i><u>Lung (cardiogenic lesion)</u></i>	
Normal	0
Limited congestion and/or serous edema	1
Moderate congestion and/or serous edema	2
Extended congestion and/or serous edema	3
<i><u>Lung (infection)</u></i>	
Normal	0
Limited foci of bronchopneumia	1
Moderate foci of bronchopneumia	2
Extended foci of bronchopneumia	3

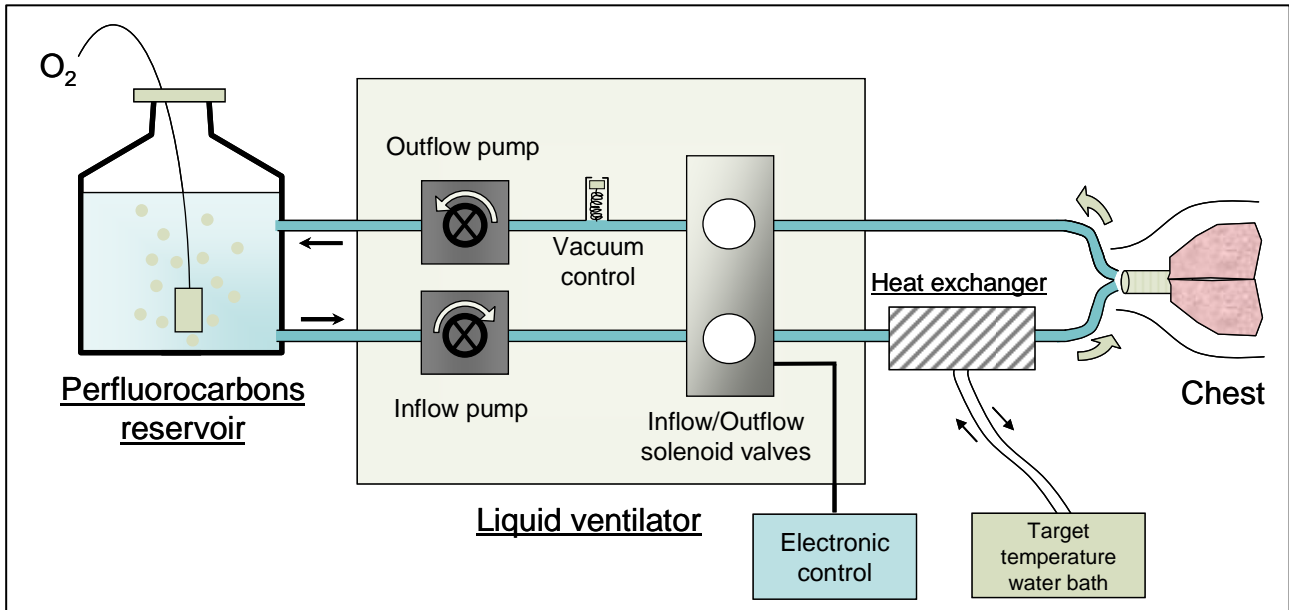
Supplemental Table 4: Hemodynamic parameters in surviving rabbits after 7 days following cardiac arrest.

	<i>n</i>	Conscious state	Anesthesia
<u>Heart rate (beat/min)</u>			
Sham	5	254±19	282±9
Control 5'	5	219±14	261±17
H-TLV 5'	9	258±18	261±18
Control 10'	0	-	-
H-TLV 10'	7	230±14	273±34
Saline 10'	2	247±2	246±20
N-TLV 10'	1	302	*
<u>Mean arterial pressure (mmHg)</u>			
Sham	5	81±8	82±4
Control 5'	5	98±11	83±5
H-TLV 5'	9	100±2	93±7
Control 10'	0	-	-
H-TLV 10'	7	94±6	94±10
Saline 10'	2	89±11	81±15
N-TLV 10'	1	90	*
<u>End diastolic left ventricular pressure (mmHg)</u>			
Sham	5	-	3.6±0.6
Control 5'	5	-	3.3±0.8
H-TLV 5'	9	-	3.8±1.1
Control 10'	0	-	-
H-TLV 10'	7	-	2.7±0.5
Saline 10'	2	-	6.0±1.6
N-TLV 10'	1	-	*
<u>dP/dt max (mmHg/s)</u>			
Sham	5	-	7182±1313
Control 5'	5	-	7455±927
H-TLV 5'	9	-	7132±1157
Control 10'	0	-	-
H-TLV 10'	7	-	6518±1958
Saline 10'	2	-	4810±1169
N-TLV 10'	1	-	*
<u>dP/dt min (mmHg/s)</u>			
Sham	5	-	-5364±914
Control 5'	5	-	-6156±1251
H-TLV 5'	9	-	-6107±758
Control 10'	0	-	-
H-TLV 10'	7	-	-6323±1426
Saline 10'	2	-	-4939±2772
N-TLV 10'	1	-	*

TLV, total liquid ventilation; H-TLV, hypothermic TLV; N-TLV, normothermic TLV; Saline, hypothermia induced by intravenous administration of cold saline combined to external cooling; dP/dt max, maximal positive left ventricular rate of pressure development; dP/dt min, maximal negative left

*ventricular rate of pressure development, *; data not available since the animal died during anesthesia.*

Supplemental Figure 1: Schematic representation of the prototype of liquid ventilator.



Supplemental Figure 2: Troponin I blood levels (left panel) and myocardial caspase 3 activity (right panel) in rabbits submitted to 10 min of cardiac arrest under control conditions or with hypothermic liquid ventilation after resumption of spontaneous circulation (Control_{10'} and H-TLV_{10'}, respectively). Caspase 3 activity assays were performed in myocardial samples withdrawn 60 min after the cardiac arrest episode.

* $p < 0.05$ vs corresponding control; $n = 8$ in each experimental group; H-TLV, hypothermic total liquid ventilation.

