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Supporting life when bio is failing

CYBERNETICS NOW

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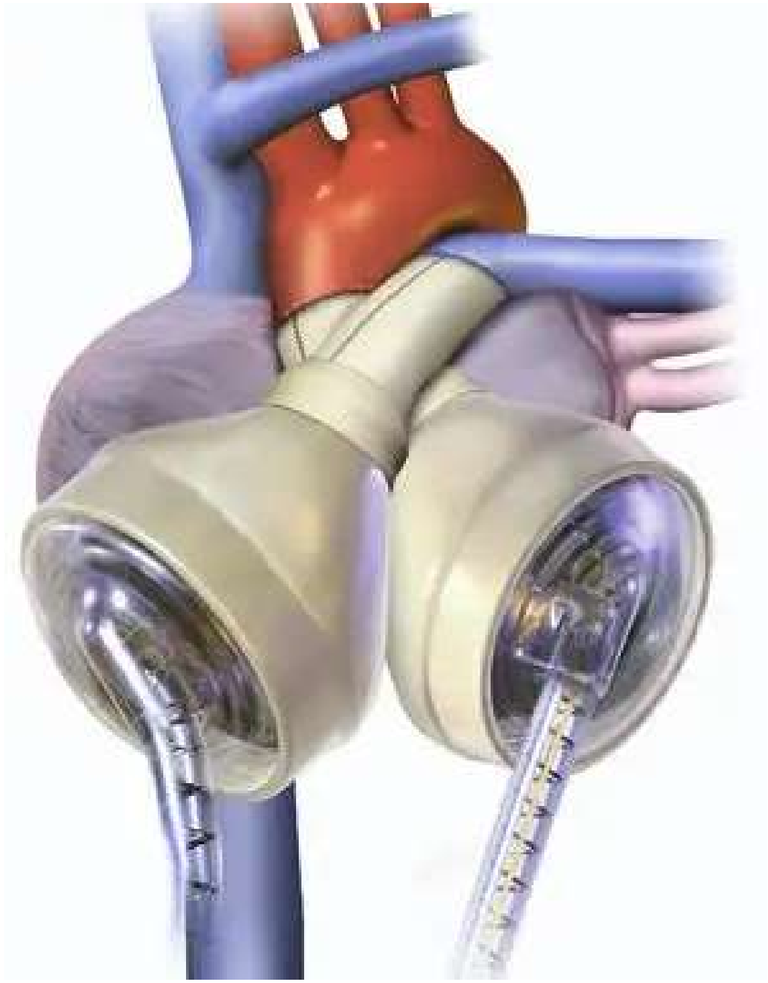
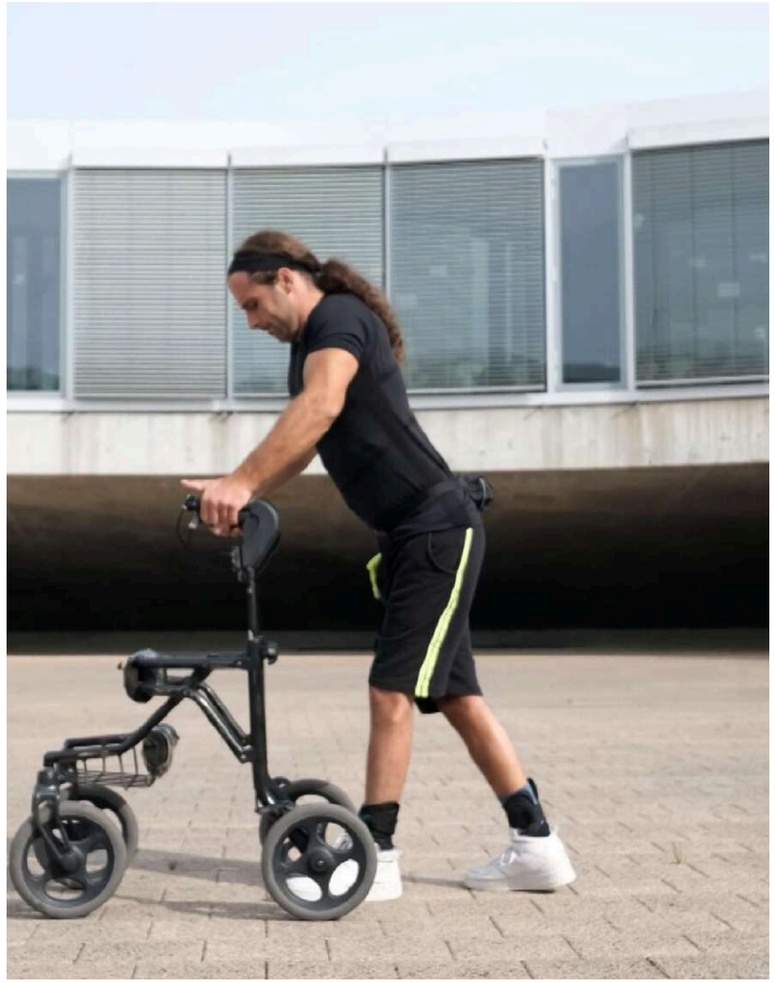
Artificial Organs

Artificial heart can last years



Brain Computer Interfaces

Paralized man walked



Ex Vivo Organ Perfusion

Human lung kept ex vivo for hours

CYBERNETICS FUTURE

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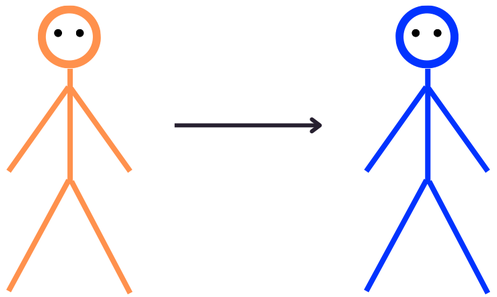
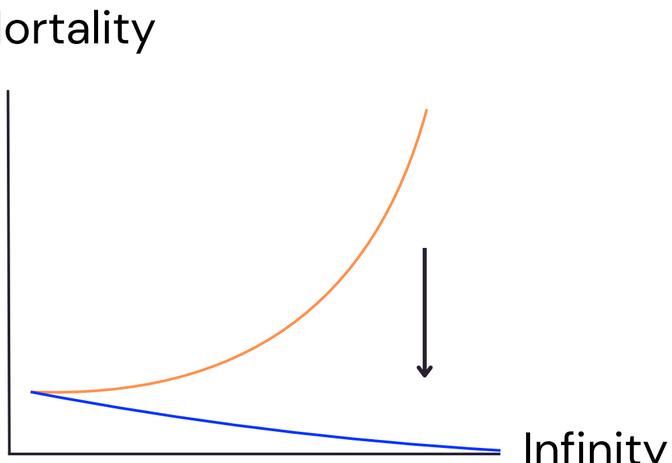
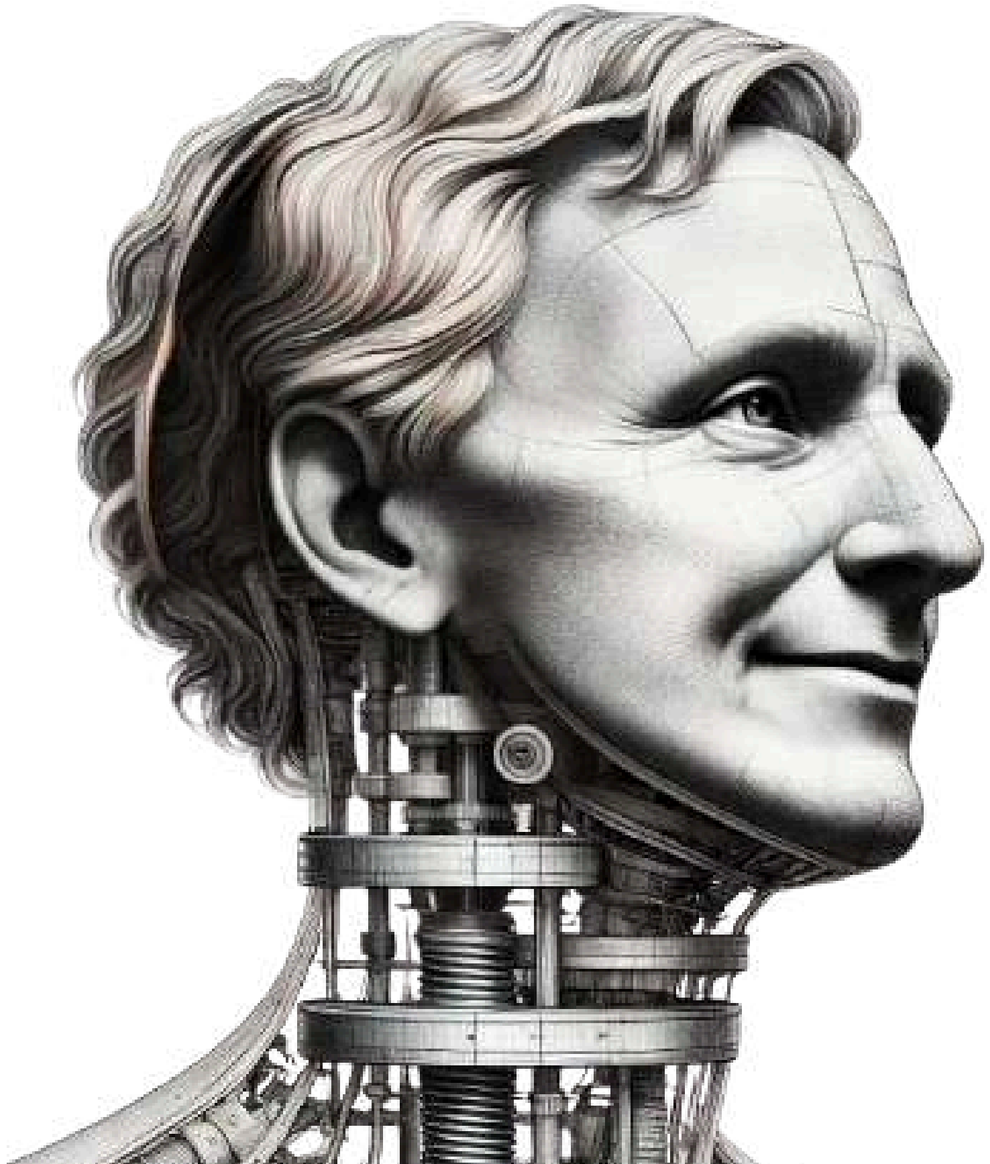
Cyborgization will provide an alternative path to radical lifespan extension, outpacing drugs

- Organs are already kept alive on machines for days
- Isolating the head on a perfusion system could prevent 90% of mortality causes — effectively bypassing organ failure
- This alone could extend average human lifespan by a decade







HEAD PERFUSION: HISTORICAL CONTEXT

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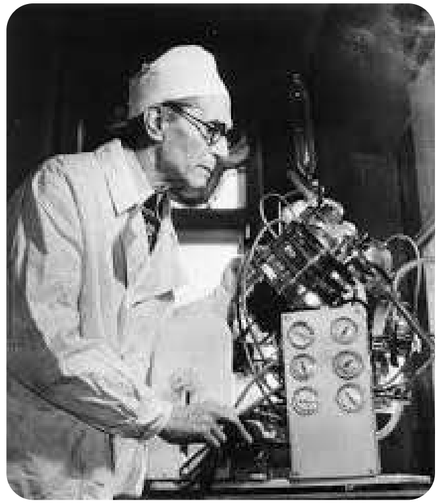
First experiments in keeping the alive head on the blood circulation system was done in USSR 1928 by Sergei Brukhonenko

- Mechanical blood pump
  (early heart-lung machine prototype)
- Manual lung ventilation (bellows)
- Circulating autologous blood

3.5 hours



HEAD/BRAIN PERFUSION: TODAY

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> Several academic studies demonstrated brain perfusion

> At least 2 commercial companies researching brain perfusion

> No one has attempted **live** head perfuion since 1928!

nature

Article | Published: 17 April 2019

Restoration of brain circulation and cellular functions hours post-mortem

Zvonimir Vrselja, Stefano G. Daniele, John Silbereis, Francesca Talpo, Yury M. Morozov, André M. M. Sousa, Brian S. Tanaka, Mario Skarica, Mihovil Pletikos, Navjot Kaur, Zhen W. Zhuang, Zhao Liu, Rafeed Alkawadri, Albert J. Sinusas, Stephen R. Latham, Stephen G. Waxman & Nenad Sestan

Nature **568**, 336–343 (2019) | Cite this article

Chinese Journal of Traumatology

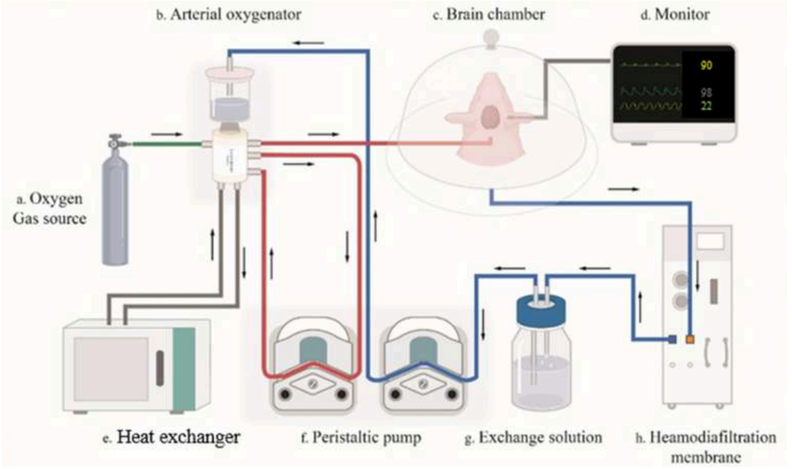
Available online 22 December 2024

In Press, Corrected Proof | What's this?

Original Article

Protective effect of sub-hypothermic mechanical perfusion combined with membrane lung oxygenation on a yorkshire model of brain injury after traumatic blood loss

Xiang-Yu Song [a 1], Yang-Hui Dong [b 1], Zhi-Bo Jia [c 1], Lei-Jia Chen [b c], Meng-Yi Cui [c], Yan-Jun Guan [c d], Bo-Yao Yang [c d], Si-Ce Wang [c d], Sheng-Feng Chen [e], Peng-Kai Li [c d], Heng Chen [c], Hao-Chen Zuo [c], Zhan-Cheng Yang [c], Wen-Jing Xu [e] ✉, Ya-Qun Zhao [f] ✉, Jiang Peng [c] ✉



LONG-TERM SCALABLE HEAD PERFUSION

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Done | Someone is doing | Our todo

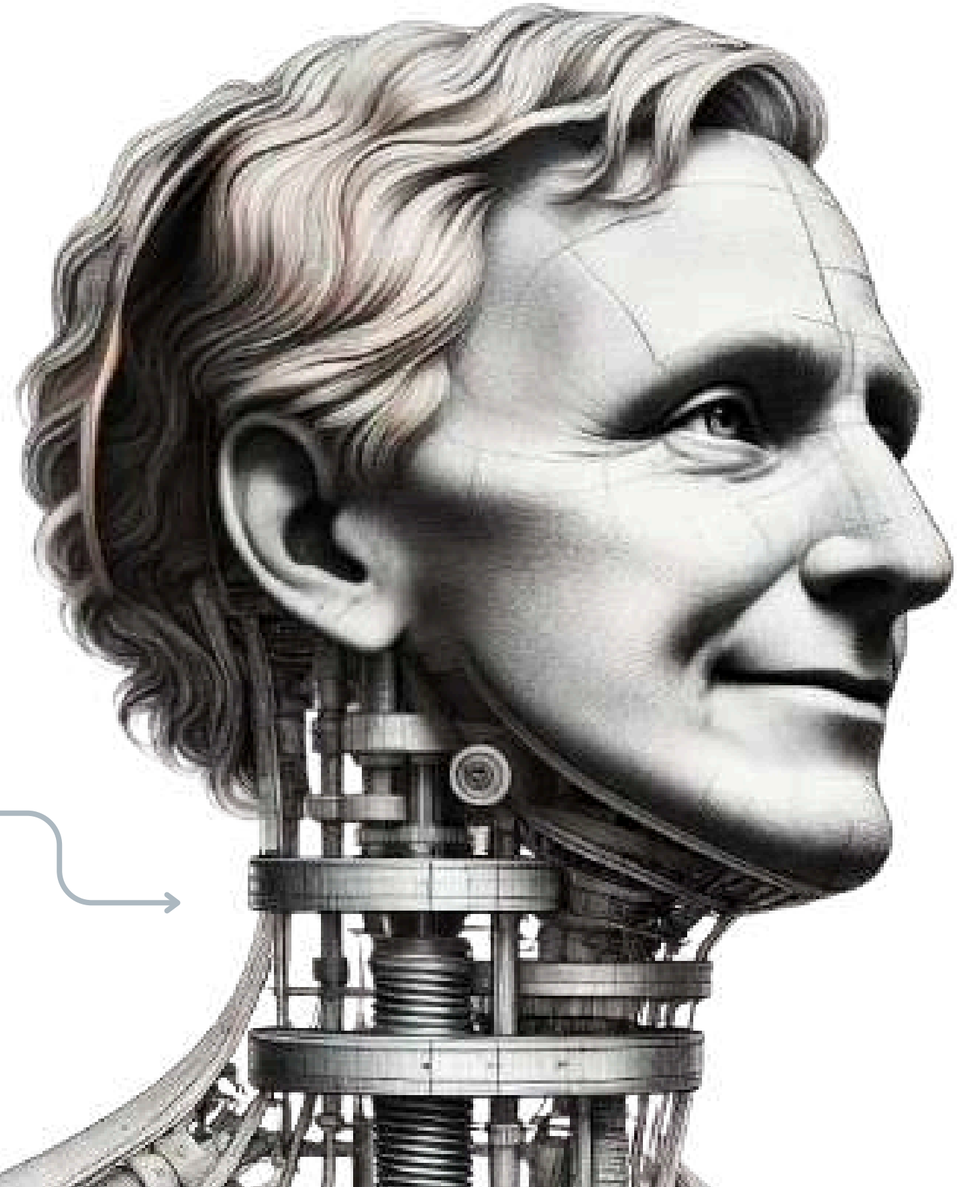
- Nutrients
- Buffers
- Hormonal signaling factors
- Metabolic factors
- Oxygen Carriers
- Immune system componnts
- Coagulation agents

Blood substitute/ bioproduction

- HeartLung function
- Kidney function
- Liver detox function

Homeostasis device
Sensor-guided feedback control
Real-time monitoring

Spinal Cord Termination Interface



LIVER PERFUSION AS ENTRYPOINT

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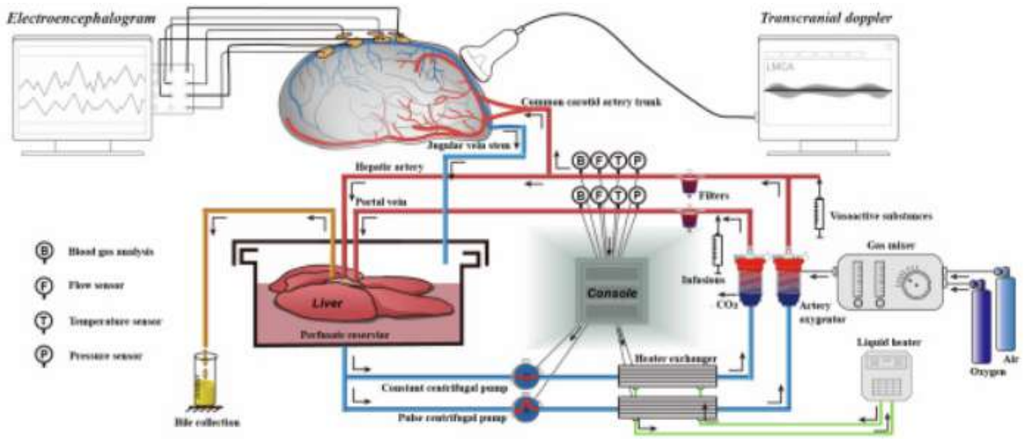
4 reasons to start with liver:

1. Head survival is gated by liver viability
2. Technical stepping stone to head perfusion
3. No artificial liver exists currently
4. Discarded livers = scalable testing platform for the entire device
5. Liver perfusion market growing at 18% CAGR — a sustainable commercial path while developing the full solution



Liver protects neuron viability and electrocortical activity in post-cardiac arrest brain injury

Brain injury is the leading cause of death after cardiac arrest, and liver dysfunction worsens neurological outcomes. Experimental models show that liver function directly influences brain injury, recovery, and neural activity.

EMBO Molecular Medicine — Understanding disease — Open Access

LIVE ORGAN PRESERVATION MARKET

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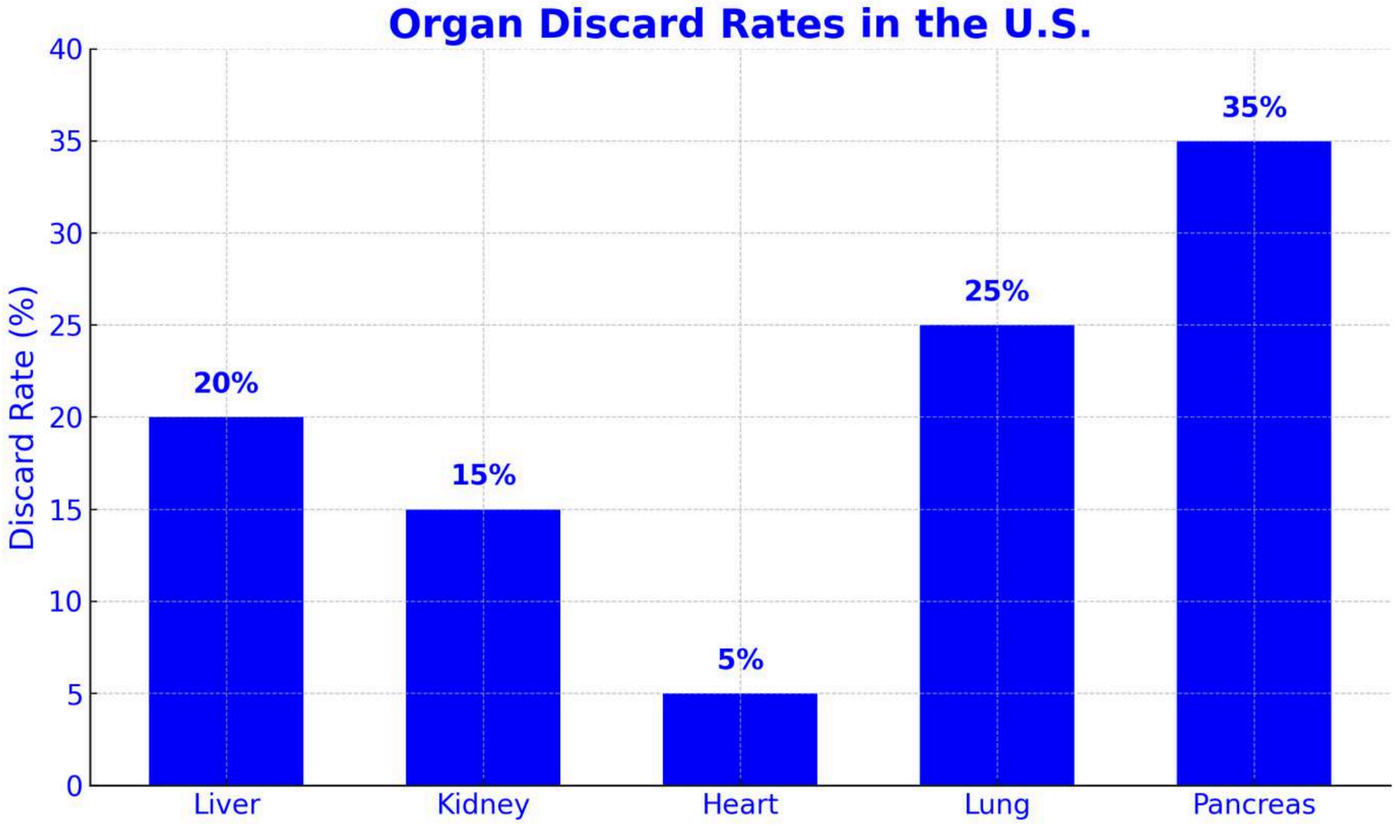
100k on transplant list, 17 deaths / day

50k transplants in the US in 2024

OrganOX - 24 hours



1 extra day of liver perfusion could save 10,000 lives / year (chatGPT 4o)

TEAM

SCIBORG

ANDREI PANFEROV

Chief Executive Officer

Serial Tech Entrepreneur.

TalentRiver - HRTech AI, Stockholm, hit breakeven, raised seed, scaling now.

Dowell Bio - Made breakthrough in spinal cord fusion (a century problem, preparing clinical trials for 2025).

Stockholm School of Economics

TOMER LANDSBERGER

Chief Scientific Officer

Scientist and entrepreneur.

PhD Computational Immunology from Weizmann Institute of Sceince, MSc Theoretical Physics, MA Philosophy.

Founder of Day8. Desci researcher. Ex VitaDAO, Gero, Michael Levin lab. Science communicator.

Weizmann Institute of Science

MICHELE DIANA, MD

Chief Medical Officer

MedTech entrepreneur.

Chief Innovation Officer of Department of Surgery of the University Hospital of Geneva.

Founder & CMO of Astranice.

Professor at University of Strasbourg and University of Geneva.

Université de Genève

ALEXEY TOPTUN

Chief Technical Officer

Lead Design engineer.

Previously worked with submarine engines, high-precision lasers, robotics, chemical production and electronics.

Experienced in full cycle from concepts to mass production and maintenance in point-of-use.

VNIITF ROSATOM

ERIC FELLI

Expert in Hepatology

Performed the first recellularization of an entire human liver.

PhD thesis in assessment of liver viability using hyper-spectral imaging, deep-learning driven organs valuation.

Universität Bern

What do we say to god of death? Not today!

OUR STUDIES

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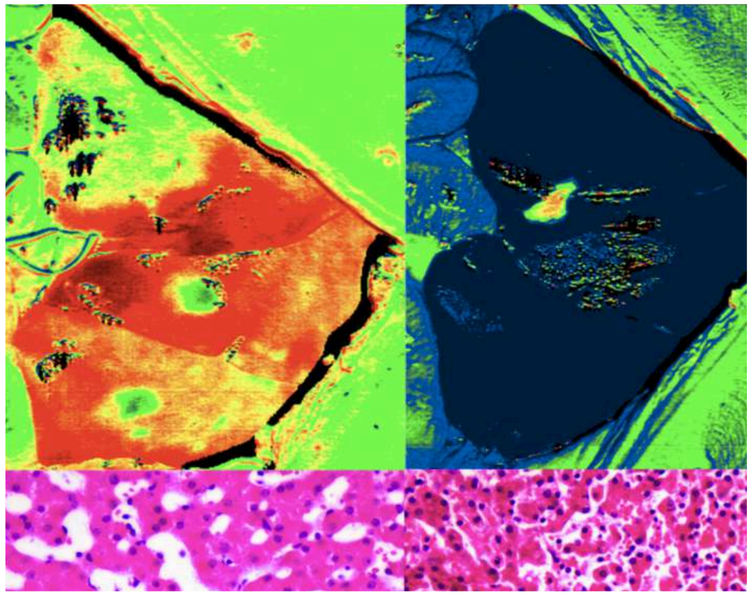
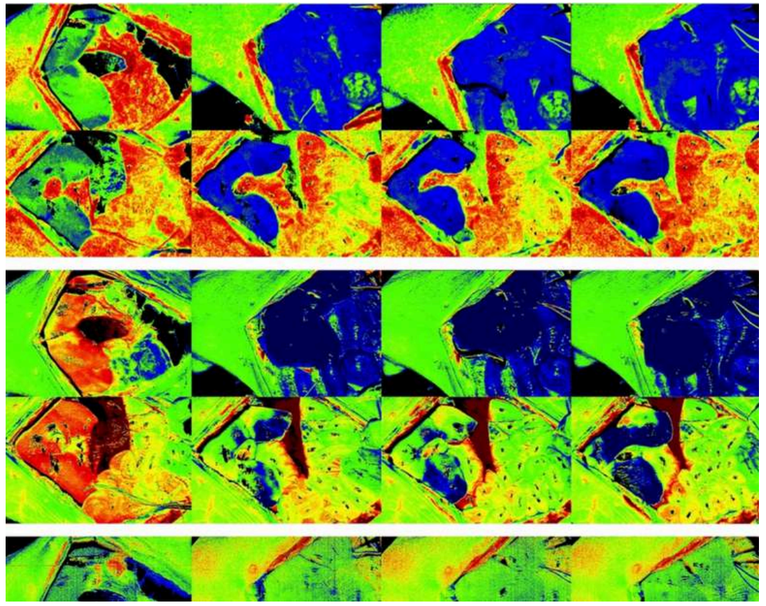
Incorporating real-time assesment of organ quality during perfusion



Hyperspectral Viability Scoring

Deep-learning analysis of HSI images predicts graft viability during perfusion—enables objective, real-time assessment of organ quality

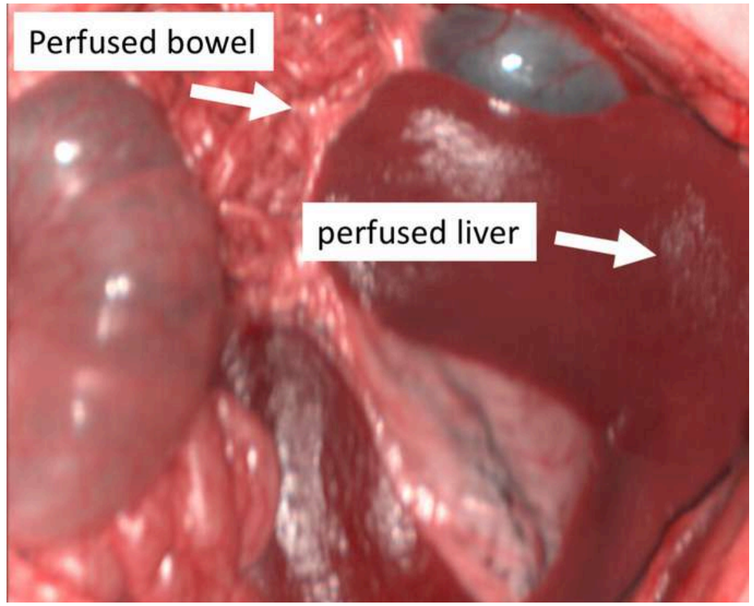
MDPI



HSI Oxygenation Mapping

Real-time, non-invasive quantification of liver oxygenation distinguishes ischemia types—guides optimization of perfusion parameters

scientific reports



Porcine IRI Model Protocol

Standardized pig liver ischemia/reperfusion protocol—provides reproducible platform to test and refine ex vivo perfusion strategies

protocols.io

ORGAN PRESERVATION MACHINE

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Real-time organ and blood monitoring & infusions

Pulsatile heart-lung machine

Organ massage

Long-term safer oxygenation

Sterilization in ambient air, featuring full contour-following temperature management

50% smaller footprint

COMPETATIVE ANALYSIS

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	OrganOx Metra	TransMedics OCS Liver	Sciborg ExMachina
Temperature Control	**± 0.5 °C**	**± 0.5 °C**	**± 0.1 °C**
Blood traumatisation	**High** *membrane, roller pump*	**Medium** *membrane, pilsatile pump*	**Lower** *no membrane, pulsatile pump*
Oxygen source	**Cylinder**	**Cylinder**	**Sterilized atmospheric air**
Feedback loops	*Limited by usual monitoring*	*Limited by usual monitoring*	**Celluar-level monitoring, AI feedback loop**
Sterility	Lack of sterility control	Lack of sterility control	**Self-cleaning Space-tech grade sterility**
Mechanical stimulation	**None**	**None**	**Organ massage & lymph drainage**
Consumables cost	**£7 210**	**$40 000**	**£2 500**
Viable Preservation Duration	**Up to 24 h**	**Up to 24 h**	**72+h**

OUR FUTURE APPLICATIONS

We need to reshape to all these devices. They are outdated.

Blood purification & infusions

Apheresis, infusion pumps, renal therapy, precision infusion

$ 3.9 bln by 2030

Blood circulation & oxygenation

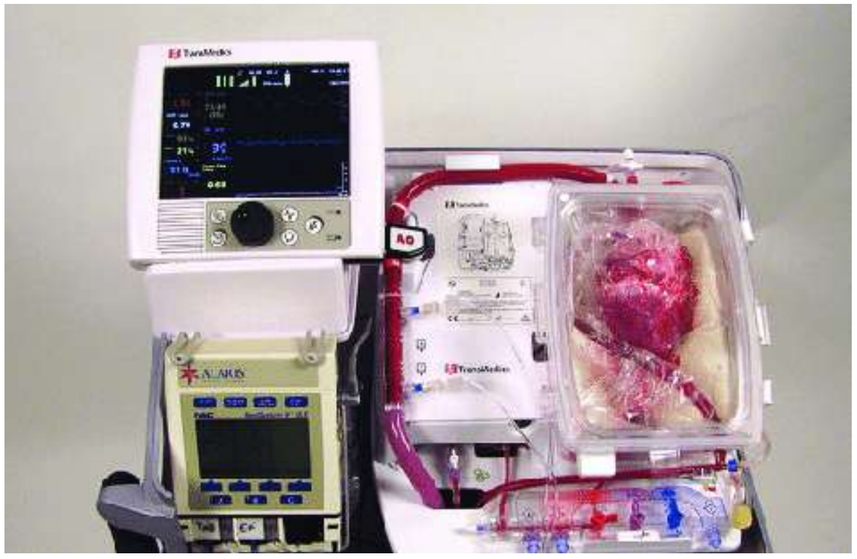
ECMO, Heart-Lung, Autotransfusion

$ 5 bln by 2030

Organs preservation & restoration

Heart, liver, kidney, lung, bone marrow

$ 9 bln by 2030



ROADMAP

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> Right now, we're close to prototyping the initial platform, which is required for iterating on the whole blood perfusion cycle at the same time

> We're looking for a bridge support to prepare the legal infrastructure in Switzerland

> After we formulate a company, we'll file IP and get support from the Swiss scientific infrastructure for 2 yrs of pre-clinical iterations in University of Geneva's Hospital

OFFER

SCIBORG

OPEN ROUND

€ 200.000 at valuation of **€ 5.000.000**
in **Sciborg AG** (Switzerland)

MINIMAL TICKET

€ 20.000

EXPECTED GROWTH

4x in 2 yrs, after we pass scientific research incubation at the University of Geneva and raise the first VC round for clinical trials

CONTACT US

Let’s build critical care,
that the world deserves

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andrei@sciborg.xyz

Book a call:
calendar.app.google/RYR9DpPpcUZWCpc96