vivolta

Guiding the body to heal itself

NXT GEN HIGHTECH

BioNano-Session:

Micro and nano-scaled membranes for artificial organs

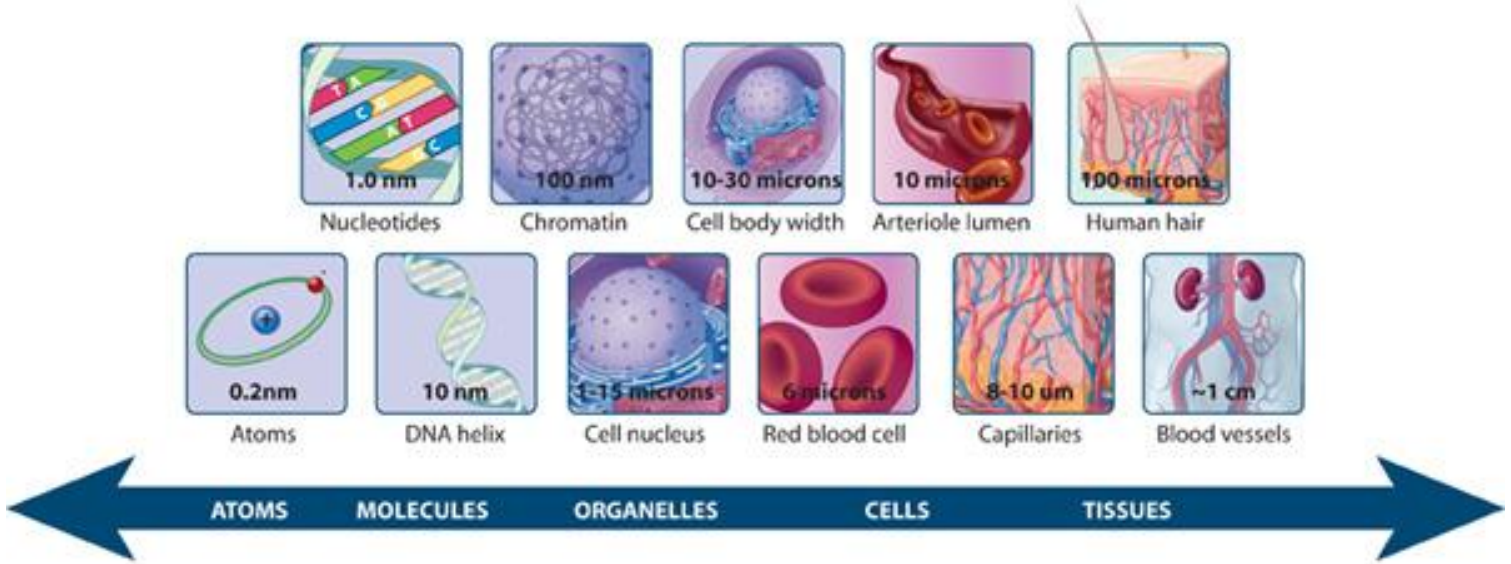
NXTGEN Conference, 2025 – Amersfoort

Bastiaan Terhaard, Application Development Project Manager

Micro and nano-scaled membranes for artificial organs

Biomed-04: creating the building blocks for kidney replacement therapies (and other artificial organs)

Critical life processes happen at various scales



Technologies to fabricate novel membranes for filtration and transport of blood-components

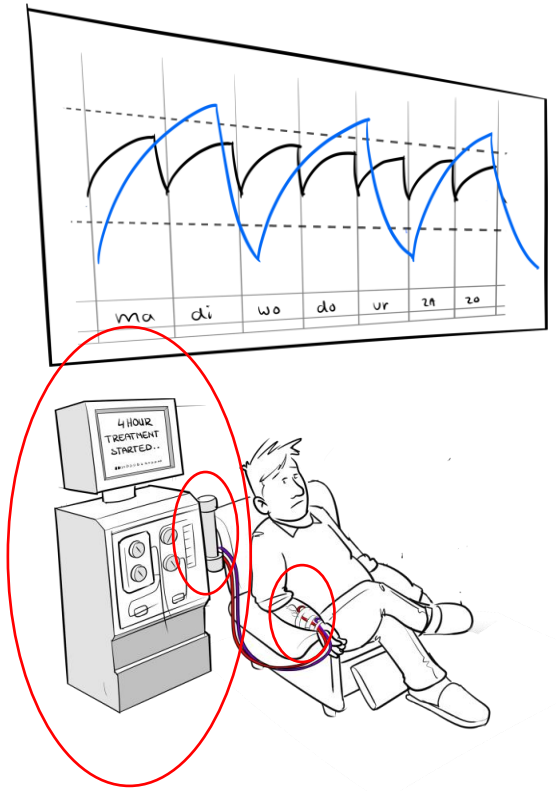
Silicon Chips

Mixed Matrix Membrane

Electrospinning Technology

Micro and nano-scaled membranes for artificial organs

Biomed-04: creating the building blocks for kidney replacement therapies (and other artificial organs)



Micro and nano-scaled membranes for artificial organs

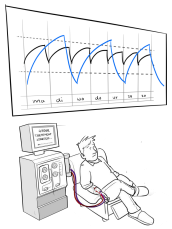
Biomed-04: creating the building blocks for kidney replacement therapies (and other artificial organs)

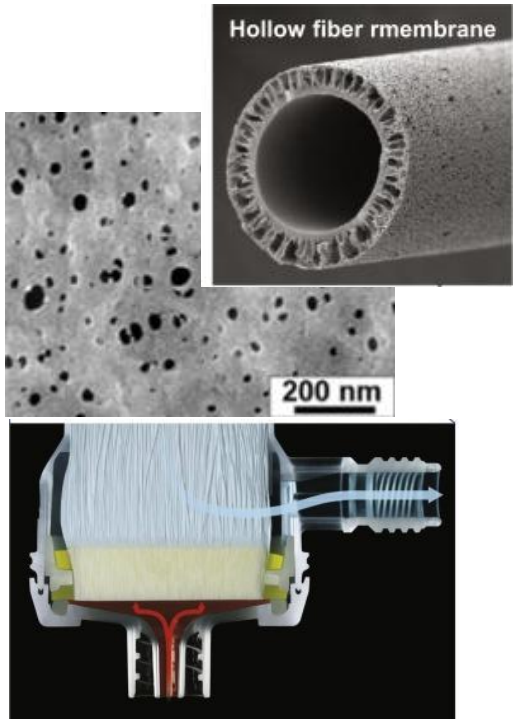
NXT GEN HIGHTECH

Mixed Matrix Membranes

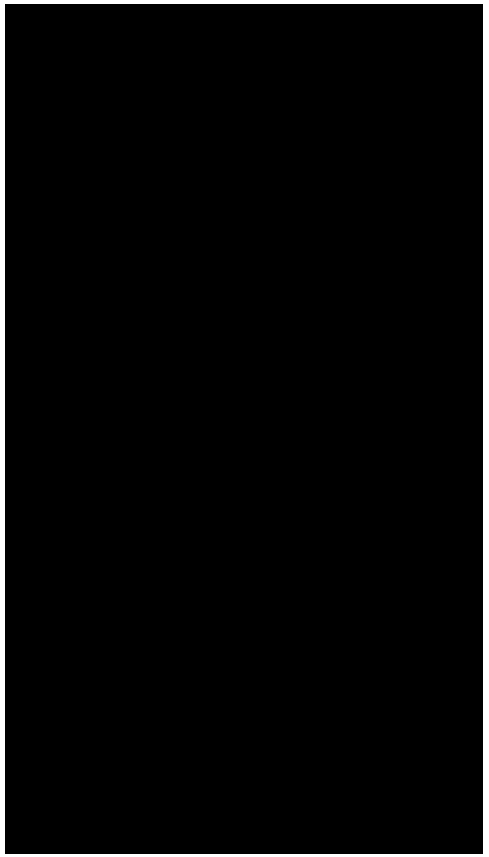
M3Nephron
Mixed Matrix Membranes

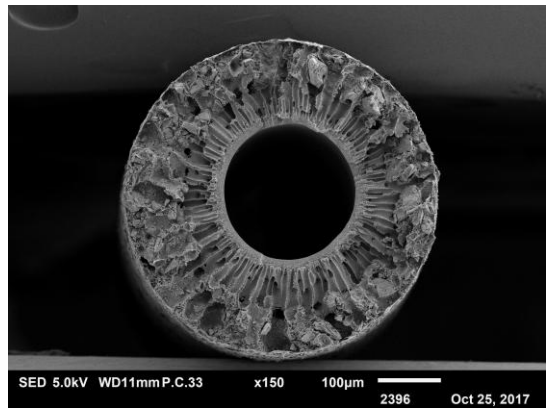
UNIVERSITY OF TWENTE.

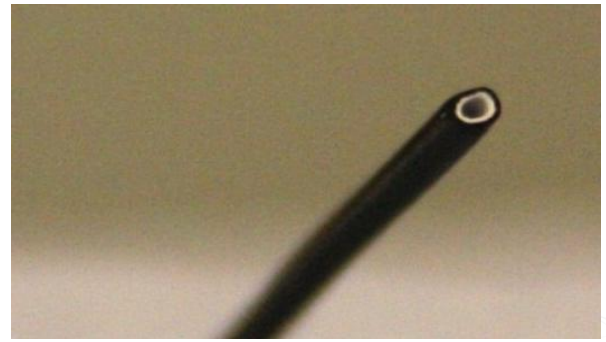




Current Dialyzer





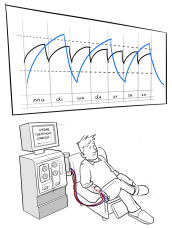


New Material for better filtration

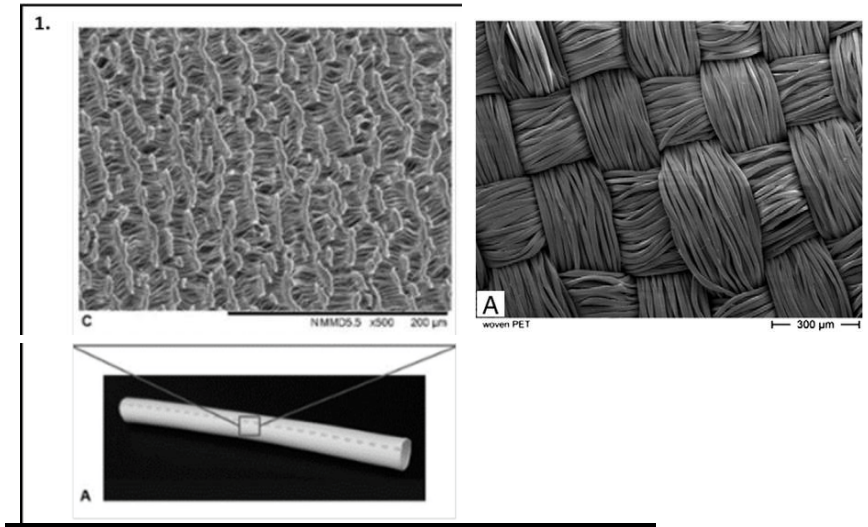
vivolta

Micro and nano-scaled membranes for artificial organs

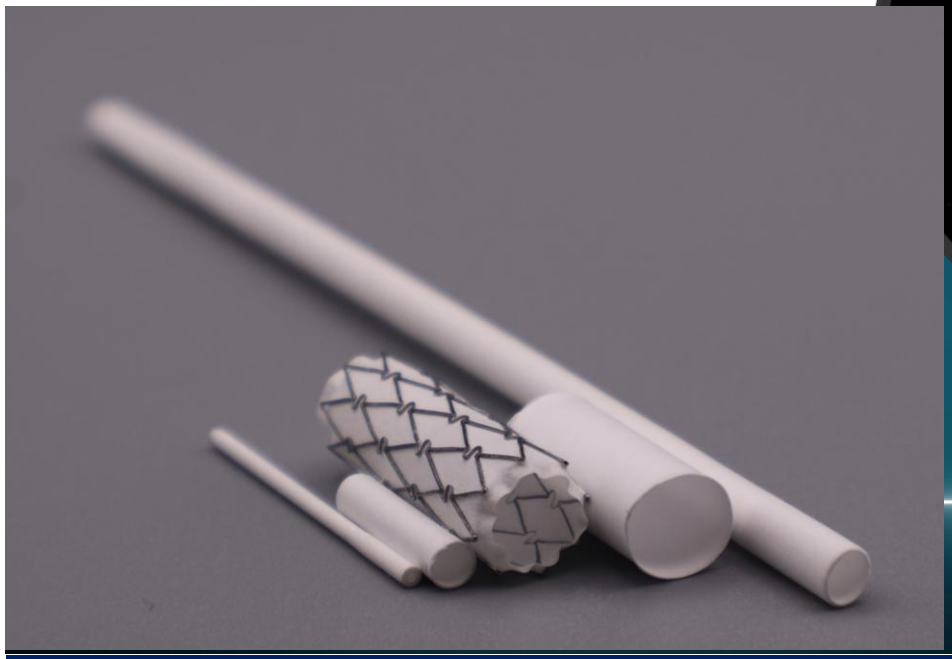
Biomed-04: creating the building blocks for kidney replacement therapies (and other artificial organs)

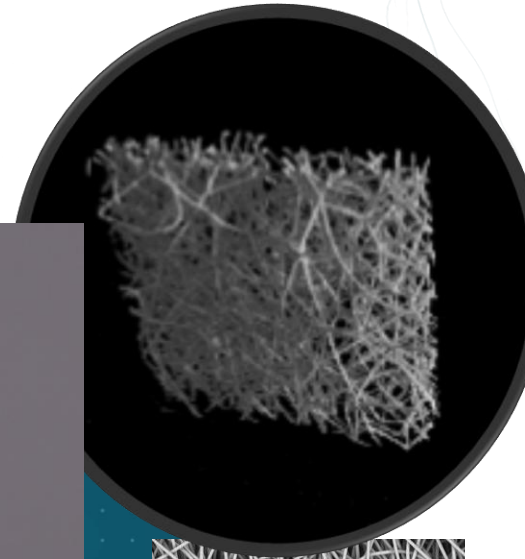


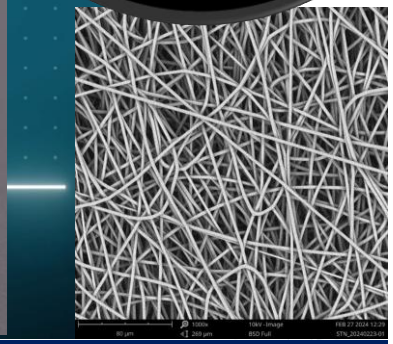
Electrospun Resorbable Grafts



Current Grafts



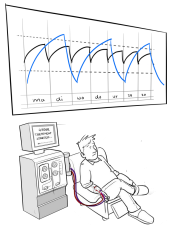




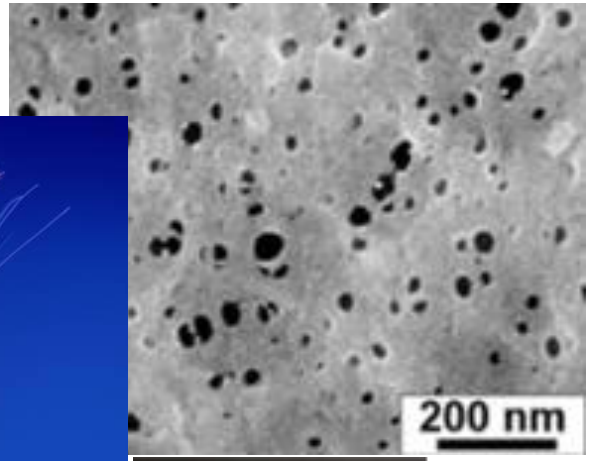
New Material for better blood response and integration

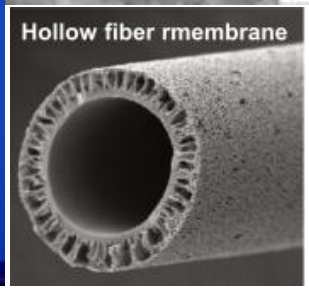
Micro and nano-scaled membranes for artificial organs

Biomed-04: creating the building blocks for kidney replacement therapies (and other artificial organs)

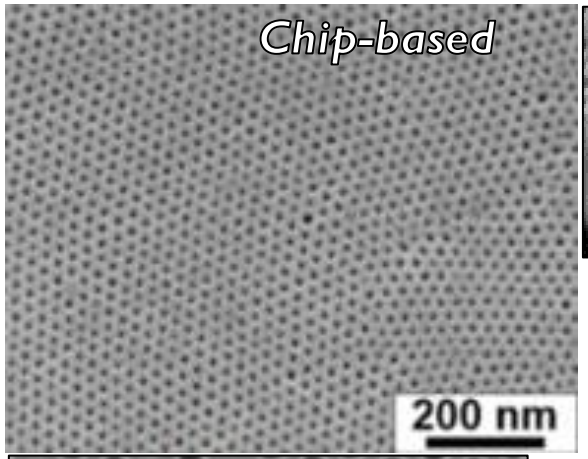


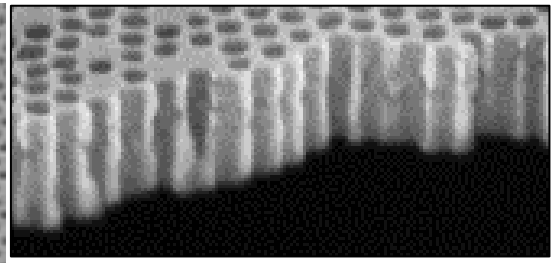
Nano-Silicon Chip-based filters for more efficient filtration

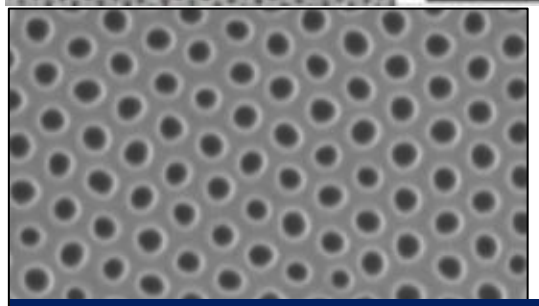


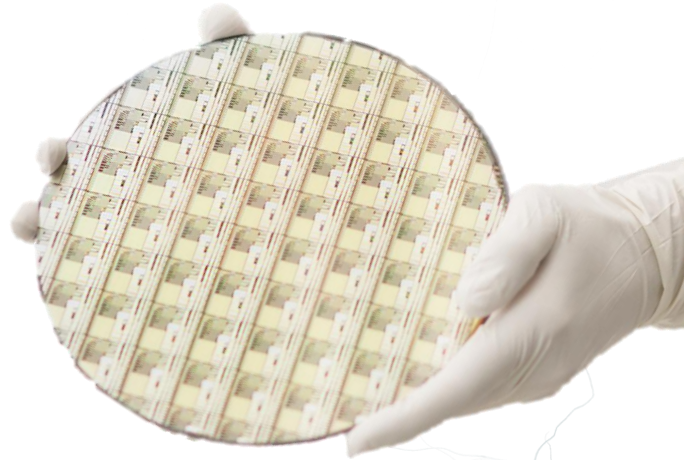


Current Filters

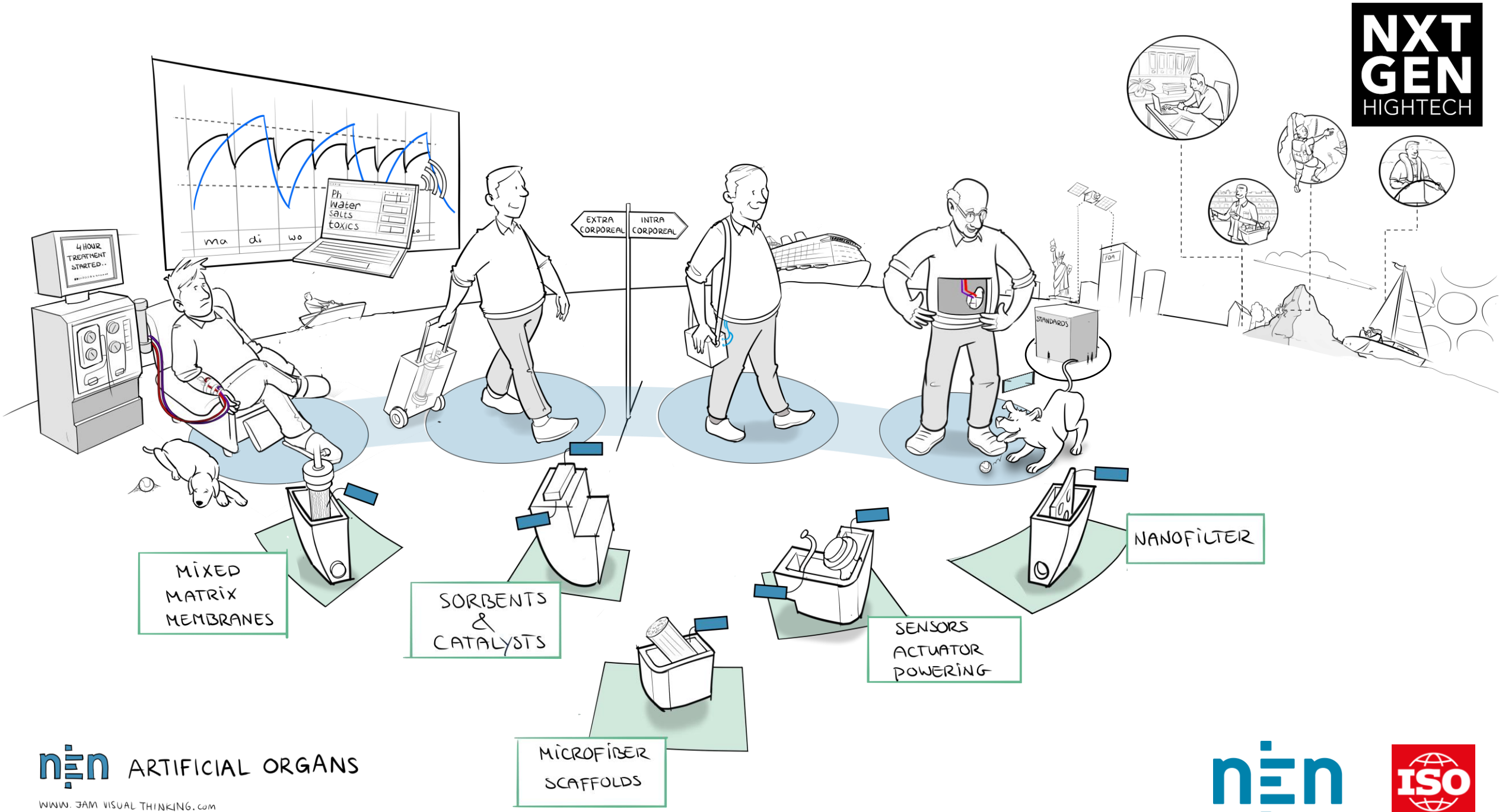








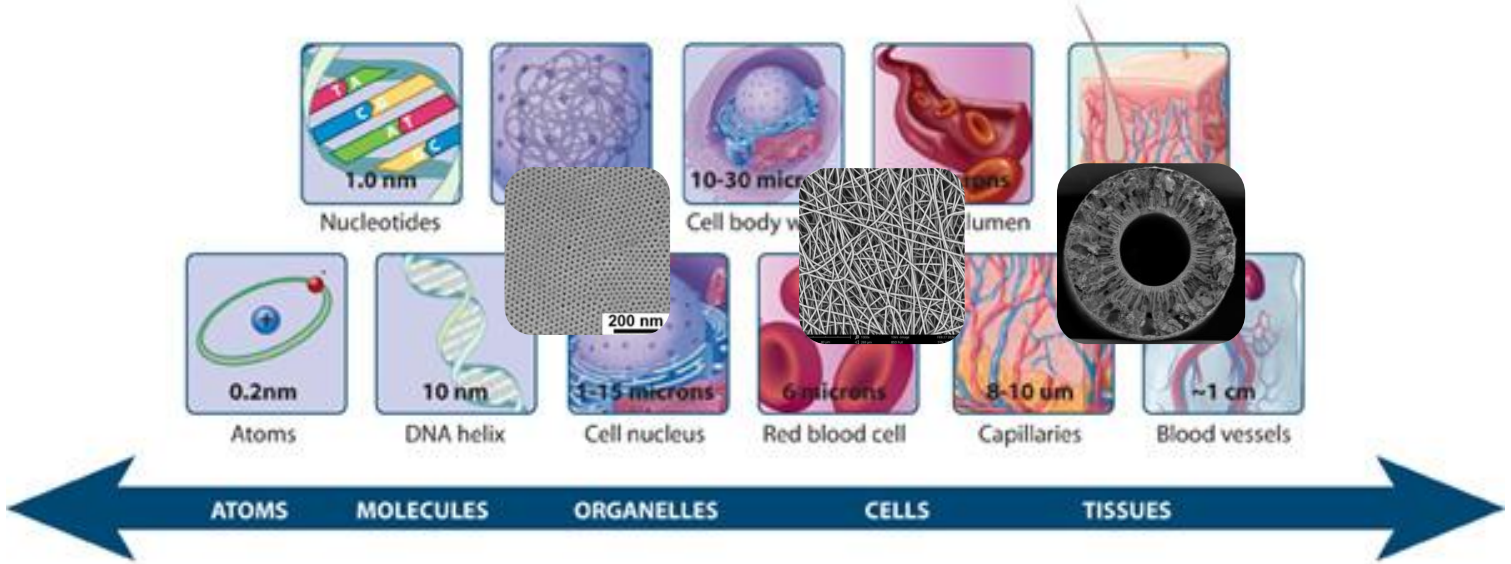
Nano-Silicon to allow for enormous filter-size reduction


NXT GEN HIGHTECH
4 HOUR TREATMENT STARTED..
Ph
water
salts
toxics
ma
di
wo
EXTRA CORPOREAL
INTRA CORPOREAL
STANDARDS
FDA
MIXED MATRIX MEMBRANES
SORBENTS & CATALYSTS
MICROFIBER SCAFFOLDS
SENSORS ACTUATOR POWERING
NANOFILTER
nen ARTIFICIAL ORGANS
WWW.JAM VISUAL THINKING.com
nen
ISO

Micro and nano-scaled membranes for artificial organs

Biomed-04: creating the building blocks for kidney replacement therapies (and other artificial organs)

Critical life processes happen at various scales



Technologies to fabricate membranes for filtration and transport of blood-components

Silicon Chips

imec

Mixed Matrix Membrane

M3Nephron Mixed Matrix Membranes

UNIVERSITY OF TWENTE. | TECHMED CENTRE

Electrospinning Technology

vivolta

vivolta

Guiding the body to heal itself

Thank you for your attention

Bastiaan.terhaard@vivolta.com
www.vivolta.com