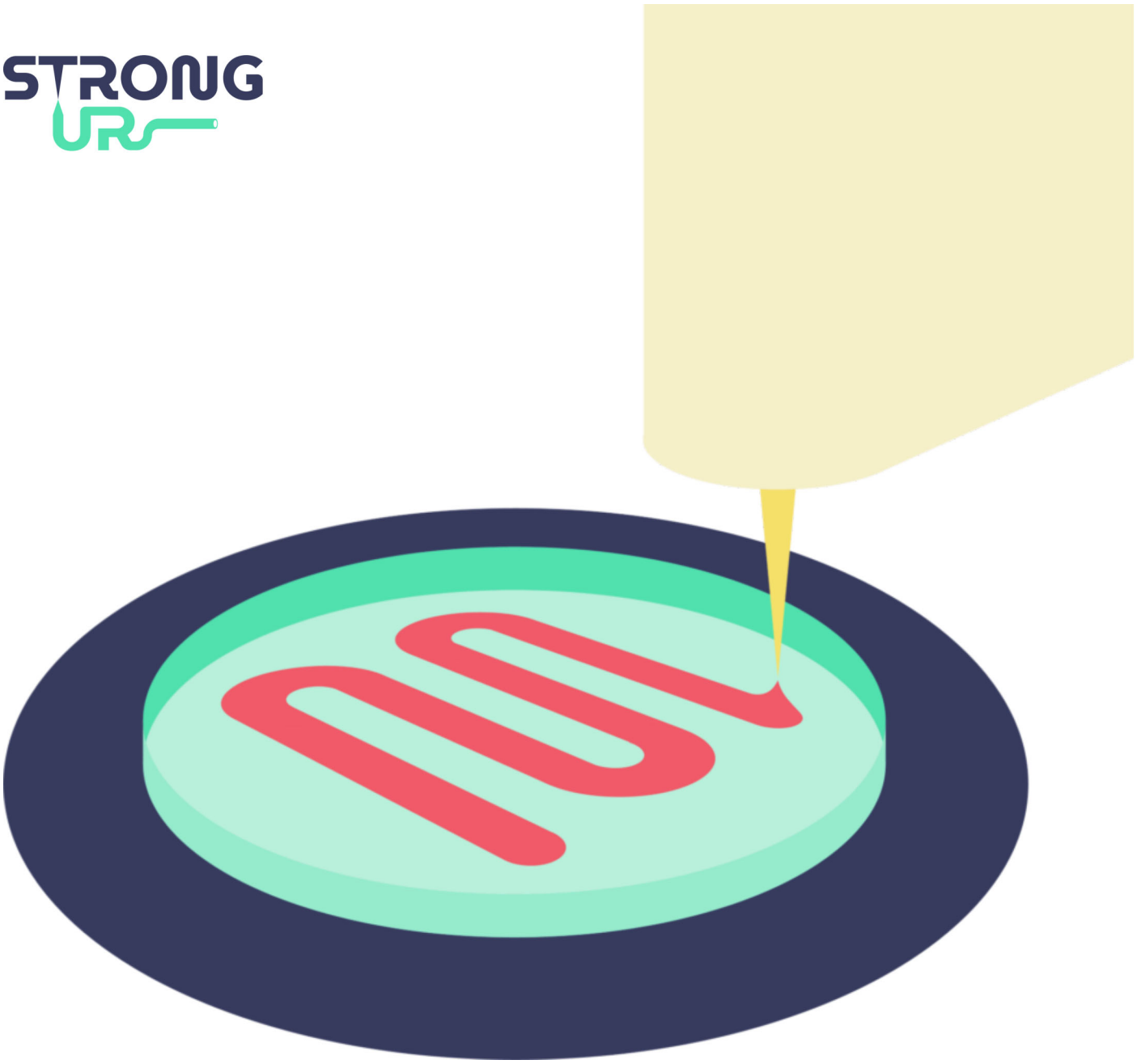
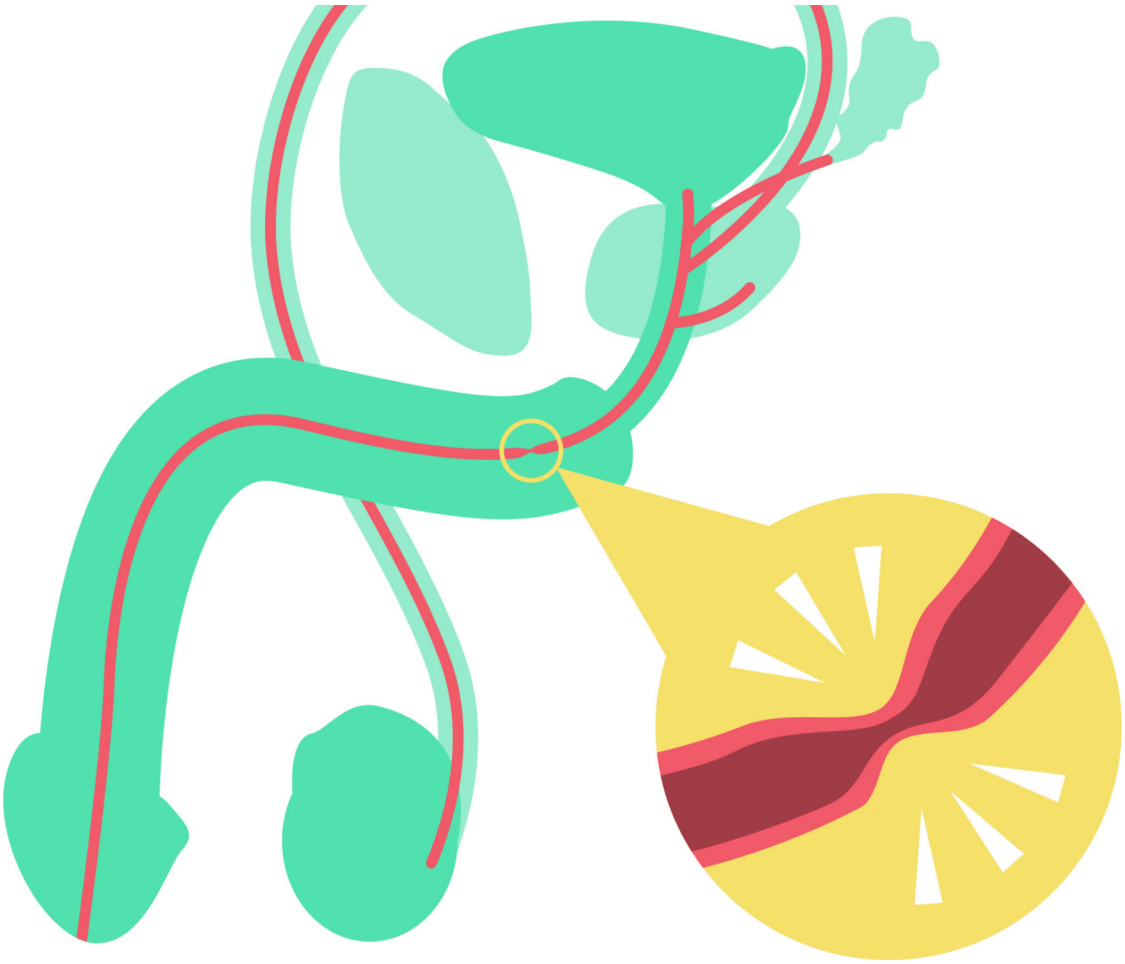


Revolutionising tissue reconstruction with bioprinting

The STRONG-UR bioprinting solution represents a unique combination of novel manufacturing technologies and biomaterials for regenerative medicine. It aims to create viable tissue constructs, particularly for the fabrication of tubular organs.



Focus on male urethra

STRONG-UR focuses on the treatment of male urethral strictures which affect a significant proportion of the male population.

With specifically designed 3D bioprinter components and biomaterials, the project seeks to make personalised, engineered tissue available for medical use.

> A stricture is a narrowing in a tube-like passage in tubular organs such the esophagus, trachea, stomach, intestine, bladder and the urethra.

A significant healthcare challenge

Approximately 0.6% of the male population experiences urethral strictures, obstructing urine flow.

This condition often leads to debilitating physical and psychological effects and, in severe cases, results in urinary retention, sexual dysfunction, bladder damage, and kidney failure.

The male urethra has a delicate and unique anatomy surrounded by highly vascularized spongious tissue. Therefore, achieving successful results in reconstructive surgery of urethral strictures continues to be challenging.

Current approaches to male urethral repair have limitations, including lack of sufficient autologous tissue (tissue taken from the patient's own body), complications at the site where the tissue is harvested, lack of standardisation, and high treatment costs.

STRONG

Bioprinting technology for medical research

This EU-funded project is pioneering advancements in medical research through cutting-edge bioprinting technology, which enables the creation of tissue constructs with precise cell composition, structure, and mechanical properties.

We are conducting a comprehensive study on the structure of the human urethra to better understand it and its functional relationships. Based on this information, we will develop bioprinting strategies to personalise the architecture and composition of the tissue structures. Afterwards, we will validate the technology with in vivo models.

Pablo Pennisi

Associate Professor at Aalborg University and Project Coordinator

A new horizon for tissue engineering

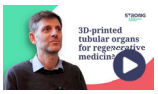
At the core of STRONG-UR's innovation lies dynamic hydrogel-based biomaterials.

These hydrogels provide unparalleled control over the mechanical and biological properties of tissue constructs.

This biomaterial combined with living cells forms bioinks which are transformed into intricate biological structures using advanced 3D techniques.

Videos

Pioneering 3D-printed tubular organs for regenerative medicine | STRONG-UR



Pioneering 3D-printed tubular organs for regenerative medicine

Innovative 3D printing solutions for urethral repair

Urethral reconstruction procedures

Revolutionising tissue engineering with gelatine-based bio-inks

Bioprinting for tissue reconstruction: processes, challenges and regulations

News & Events

An international consortium

Backed by a consortium of 12 partners from six European and one associated member state, STRONG-UR combines expertise from academic institutions, hospitals, and industry. The team includes specialists in cell biology, biomaterials, 3D printing, and urology from leading organisations across Europe.

AALBORG UNIVERSITY
(https://www.en.aau.dk/)

Tampere University
(https://www.tuni.fi/en)

GHENT UNIVERSITY
(https://www.ugent.be/en)

UNIVERSITÀ CATTOLICA del Sacro Cuore
(https://www.unicatt.it/en.html)

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