Wyss Zurich
Translating
Science into Life

Wyss Zurich welcomes two new projects

Two new projects will benefit from funding and state-of-the-art infrastructure at Wyss Zurich Translational Center to accelerate the development of their solutions and the time-to-market.

The Wyss Zurich Translational Center – Wyss Zurich – is a unique accelerator, embedded within ETH Zurich and the University of Zurich. The $220 million donations from the Swiss entrepreneur and philanthropist Hansjörg Wyss provides the backbone to support startups from the fields of regenerative medicine, robotics, and medical devices/bionics. With state-of-the-art infrastructure and two exceptionally well-equipped technology platforms for regenerative medicine and bionics/biomedical engineering and with highly specialized expertise, Wyss Zurich provides outstanding opportunities for young entrepreneurs to accelerate the transformation of their discoveries into practical applications.

Before projects are funded at Wyss Zurich, they undergo a rigorous four-stage approval process during which they are carefully scrutinized by leading scientists in the fields of regenerative medicine and robotics as well as by a panel of independent experts from industry and academia. This ensures that the projects achieve the highest possible success rate on their paths to entrepreneurship. To date, twelve projects have phased out of the program and are successfully continuing to grow, launching their solution to the market or progressing their clinical translation.

In addition to seven projects and one outreach project currently at Wyss Zurich, two new projects – MYNERVA and Tethys – have just embarked on their journey. The full list of projects can be found on the Wyss Zurich website.

MYNERVA: Wearable neuro-robotic technology for diabetic neuropathy

One of the most common complications of diabetes is peripheral neuropathy (DPN), a form of damage to the peripheral nerves, which leads to the loss of tactile sensations. This loss of sensation significantly impacts gait biomechanics, creates balance difficulties, and raises the risk of falls. These effects cause approx. a fivefold increase in the probability of injury and hospitalization, thereby negatively impacting the patients' quality of life and often leading to comorbidities like depression and anxiety. Moreover, the damaged nerves cause chronic pain, further worsening this vicious cycle. Unfortunately, there are no commercially available solutions to restore sensory feedback from DPN, and the standard of care for pain involves opioids, which are highly addictive and carry severe side effects.

In response to this pressing issue, MYNERVA is developing a groundbreaking device that addresses these challenges. The innovative solution involves force sensors capturing information from the foot-ground interaction and converting it into electrical impulses delivered to a healthy portion of the nerves on the ankle. Years of dedicated research have resulted in an optimally designed placement and shape for the electrodes that are complemented by AI-based algorithms to restore sensation and reduce neuropathic pain.

This technology not only has the potential to transform the lives of patients with DPN but also holds immense promise for a multitude of other conditions like amputations, stroke, and spinal cord injuries.

Tethys: Enable barrier-free underwater work

Today, human divers play a crucial role in various underwater operations to conduct inspections and interventions despite facing serious or lethal risks, especially in rough waters. While robotic solutions exist, they either lack robustness in relevant metrics required for rough waters or require cost-intensive, polluting vessels and infrastructure.

In response to this challenging need, Tethys is developing the world’s only compact underwater drone capable of autonomous mapping and survey even in strong water flows and poor visibility, finally enabling robotic automation in all waters. With their complex but highly modular underwater drone, they can offer autonomous inspections and produce high resolution 3D models of submerged infrastructure. In addition, the underwater drone supports physical interactions with the environment.

The novel ability to deploy compact robotic systems that perform far beyond today's capabilities in poor marine environments makes it possible to streamline inspections and predictive maintenance of critical infrastructures, to reduce costs and personnel demands, and, most importantly, to protect divers in life-threatening situations.