Press Release

Three Finalists for the Pionierpreis 2022 have been chosen

The jury has decided: Isochronic from Denges VD, LifeMatrix Technologies from Zurich and Lumiphase from Kilchberg ZH are the finalists of the Pionierpreis 2022. The winner will be announced on May 10, 2022 at Technopark Zurich.

Zurich, April 04, 2022 – The founders and teams of all three finalists will be on stage at the Pionierpreis award ceremony on May 10, 2022. Each of the startups **Isochronic AG**, **LifeMatrix Technologies AG** and **Lumiphase AG** will be honored at the festive event at Technopark Zurich. Researchers, engineers or physicians in all three companies have developed completely new technologies and thus initiated a paradigm shift in their respective industries. Two finalists will receive a check for nearly ten thousand Swiss francs for their efforts. The winner of the Pionierpreis 2022, worth almost 100,000 Swiss francs, will be revealed when the confetti cannon goes off.

Isochronic AG (Denges VD) – Continuous sorting instead of "pick and place"

"Pick and place" is a standard operation of industrial robots in food production, the pharmaceutical industry or electronics. Conventional robots do this in serial order by picking up one object at a time. The founders of Isochronic AG, a young Swiss industrial company based in Denges VD, set out to overcome the limiting factors of current pick and place robots and developed a new system. It no longer moves parts sequentially, but in parallel, so instead of just one, it handles several at once. The new system no longer has one arm with a single pick head, but a wide main beam on which one to four pairs of rails are mounted. Several pick heads can then be active on these rails at the same time. They can travel in opposite directions without any risk of collision. In addition, the entire main carrier can also be rotated horizontally thanks to rotating suspensions. These two innovations combined enable the robot to be active at two points simultaneously.

Even a single such isochronic industrial robot is significantly more powerful than conventional robots. Since the new robots require less mass to be moved, energy and operating costs are reduced. The compact size of the systems also helps save space, so existing factory buildings can be used more efficiently.

www.isochronic.com

LifeMatrix Technologies AG (Zurich) – Implants that grow and regenerate with the body

Cardiovascular disease remains the leading cause of death worldwide. To replace malformed or diseased cardiovascular tissue, millions of implants such as artificial blood vessels and heart valves are used every year. However, the materials currently used for implants lack the basic properties of human tissue. They can neither grow with the body nor regenerate. Often, the procedure leaves patients vulnerable to infection or thrombosis. And because the implants have a limited lifetime, they often need to be replaced over time.

Over years of research, LifeMatrix Technologies AG, a spin-off of the University of Zurich, has developed a unique biomimetic tissue technology platform that enables the production of biomimetic implants of any shape and size. Biodegradable polymer scaffolds serve as the starting material. These can be manufactured in any shape and size and provide geometric structure and mechanical stability to the implants. In a bioreactor system, human donor cells are seeded onto the polymer scaffold; they

then spread and interact with each other. Over the course of about 15 days, the cells build up a new human extracellular matrix of proteins and collagen structures.

After carefully removing the originally applied human donor cells the newly formed human extracellular matrix remains as a three-dimensional, porous, collagen-based structure – the implant, or LifeMatrix. This LifeMatrix is a product that can be stored on-site in the clinic and currently has a shelf life of at least six months, although three years is likely to be realistic in the foreseeable future. The newly created, cell free tissue does not cause an immune reaction and can therefore be used in any patient – either surgically implanted or with minimally invasive procedures through the blood vessels using a catheter. After implantation, the blood flow and surrounding tissue ensure that the body's own cells infiltrate and grow into porous structure of the implant. While being fully functional upon implantation, the LifeMatrix implant now continuously transforms into living tissue with the right amount of novel tissue created in the right place. The underlying polymer scaffold continues to provide support but is completely displaced after about one year. Thus, over time, the body replaces the LifeMatrix implant with new, living and healthy tissue that regenerates and grows with the patient. This is particularly important for children with congenital heart defects: a one-time procedure with a LifeMatrix implant can potentially provide a lifelong solution.

LifeMatrix Technologies' comprehensive bioengineering platform will enable the future production of biomimetic implants in a variety of cardiovascular indications, including heart valves, vascular grafts, pediatric shunts, and cardiac patches and closures. It has the potential to revolutionize the entire field of biomimetic implants.

www.lifematrixtechnologies.com

Lumiphase AG (Kilchberg ZH) – Electro-optical processors for future generations of communications technology

The engineers at Lumiphase AG, led by company founders Stefan Abel, Lukas Czornomaz, Felix Eltes and Jean Fompeyrine, have developed a revolutionary technology for manufacturing electro-optical semiconductor chips. The young company, which today has more than 20 employees, is the world's only supplier of a new technology that will enable data transmission rates to be increased for years to come, allowing ever-larger amounts of data to be transmitted in a cost-effective and energy-efficient manner. Lumiphase's innovation includes the manufacturing process for integrating thin layers of a newly developed barium titanate crystal into established optical silicon photonics technology. What is more, it also involves novel designs of micro-meter sized optical components and complete circuits for communication chips.

Such transceiver modules are needed in large quantities in data centers, where optical transmission distances typically range from a few meters to 10 kilometers. However, significant amounts of data do not only circulate within data centers, but they also move over high-speed optical lines between different data centers. Given the explosive growth in our global data traffic, the technical challenge is to permit throughput rates required in the future.

Data transfer technology is a closed ecosystem in which component manufacturers and operators of large data centers jointly set the maximum transfer rates as the standard. The current state of the art is 400 gigabits per second (Gbps); future performance increases will always be doublings of this value. The first products of Lumiphase will be components with 800 Gbps performance, but the same technology will be capable of 1.6 Tbit/s and more in the future.

Large data center operators in particular have a colossal need for next-generation transceiver modules. Having efficient and cost-effective data links might also make it possible to open up those regions of the world where Internet access is still a luxury today. This would help those three billion people who currently have no access to the Internet.

www.lumiphase.com

The Pionierpreis is one of the most important innovation awards in Switzerland has been awarded every year since 2001 by Zurcher Kantonalbank and Technopark Zurich.

Additional Information: www.pionierpreis.ch

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