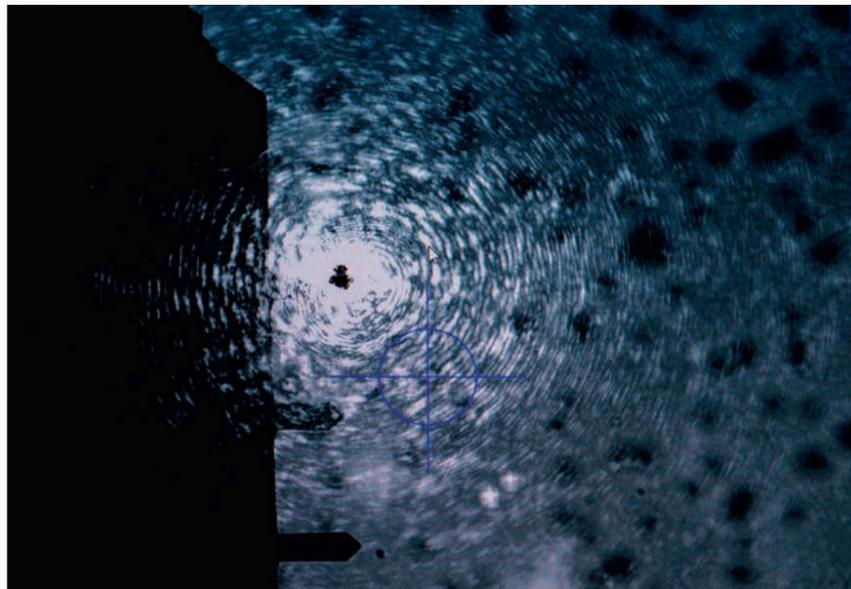


Should we engineer life?

★ Advances in gene- and cell-based therapies could help improve the diagnosis and treatment of disease, but is the public comfortable with the idea of molecular factories that could effectively engineer life? We spoke to **Dr Ralf Stutzki** about his work in helping to stimulate debate about molecular factories through art.

The development of molecular and cellular systems for clinical applications promises to help improve public health, yet the rapid pace of progress also raises important ethical questions. While techniques such as gene- and cell-based therapies are the subject of a lot of interest in research, and in some cases are approaching the point where they could be applied clinically, this is not just a matter of technical development but also public acceptance. "Do we want that kind of medicine in the future? What kind of effect will it have on concepts such as the human personality?" asks Dr Ralf Stutzki, Head Ethics of the NCCR Molecular Systems Engineering at the University of Basel/ETH Zurich. This is a complex subject, and it can be difficult to convey biomedical research findings to the wider public. "This is where ethics comes in. We need to leave our scientific ivory towers and start to bridge the ever growing communication gaps," continues Dr Stutzki.



Like a Universe. © Michel Comte

EL & Us

This issue is at the heart of the Engineering Life (EL) & Us project, which is part of the wider Art of Molecule ethical initiative at the National Centre of Competence in Research Molecular Systems Engineering (NCCR MSE). Not everybody has the technical expertise to interpret scientific research, so a common language is required to bring new findings to a wider audience. "We try to find essentially a new language, which allows us all to go out and talk about what we are doing and get the interested public involved," says Dr Stutzki. The intention with the EL & Us project is to help inform the public about the nature and scope of molecular systems engineering through art, and spark a wider debate. "We need to discuss whether what we are doing is good, in the moral sense, whether society wants it," outlines Dr Stutzki.

The aim in the EL & Us project is to explore these questions through art, with Dr Stutzki and his colleagues collaborating with the internationally acclaimed Swiss artist Michel Comte. Dr Stutzki says researchers have opened their doors to Comte in a spirit of

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adventure and curiosity. "If he wants to raise questions, he can do that, if he wants to criticise, he can do that too. He is a most welcome intruder, who by his mere presence mirrors our work and challenges our moral alignment," he says. The concept of engineering life is pretty general, covering many different areas of medicine. "It could be about diabetes for example, it could be about curing certain forms of blindness," continues Dr Stutzki. "The prospect of precisely engineering molecular factories and cellular systems is moving closer, and that is the big issue for us from an ethical point of view. How far can we go? Should there be a limit?"

A high degree of artistic freedom will help Comte get to the heart of the issues that really matter to the general public and stimulate debate, which is one of Dr Stutzki's major

hopes for the project. Comte is currently developing an art installation, drawing inspiration from his time spent in different research laboratories. "He's producing a multi-media art-science project," outlines Dr Stutzki. This includes a 3-D mapping projection derived from research data, in which Comte will interpret new technologies through art, which is a challenging task. "A research laboratory is a completely different world for an artist," acknowledges Dr Stutzki. "In a broad sense we are trying to expose artists to scientific concepts, but we're not looking to train them in science. We rather want the artist to bring the spirit of his art into the lab."

The main focus of Comte's work is visual representations, but the art installation will also include audio excerpts from interviews and scientific talks. The initial plan is to exhibit

the work in fairly conventional locations like major art galleries, but eventually Dr Stutzki hopes to take it on the road and bring the art to as broad an audience as possible. "Once the projection is finished we hope to hold a premiere in Rome, during our ethics conference in the Vatican in November 2022," he says. Beyond that, the plan is to take the art to the general public. "We plan to take this projection to places like schools and hospitals. We will show this piece and invite Michel whenever we can, along with some scientists, especially young scientists," continues Dr Stutzki. "We can use this to provoke debate and discussion among the general public."

This represents an effort to bring together scientists and artists, who are often thought of as inhabiting two different worlds. Dr Stutzki has long experience of these types of cross-disciplinary projects, including work at the Locarno Film Festival, and he says it can have a positive impact on both parties. "We see that both groups profit. For young scientists, it's outside their everyday lab experience, and they start to think about the importance of science communication," he outlines. Life science research can be quite narrowly focused, and collaborating with someone from a different discipline can encourage researchers to take a step back. "We use the concept of the so-called dialogical philosophy, which emphasises the importance of dialogue to self-understanding and self-becoming," says Dr Stutzki.

Stimulating debate

The principle here is that tax-payers should be kept informed about the research they are ultimately funding, and also have the opportunity to criticise and challenge it. One of the major priorities in the project is to spark debate, and Dr Stutzki says this will not be limited to specialists. "We will invite all groups representing society at large to participate in discussions about our research goals. It is an overriding task of the scientific community to encourage people to enter into ethical discourse," he says. Molecular systems engineering research is being conducted against the backdrop of ongoing Covid-19 pandemic, and with many of us still living under significant restrictions, the desire to regain personal freedoms may lead to a change in our ethical outlook. "It may well lead to a less critical approach towards what sciences are doing," acknowledges Dr Stutzki.

An individual's perspective on these types of issues may of course be affected by their own personal experience and circumstances. In the course of his research, Dr Stutzki has worked with people suffering from Amyotrophic Lateral Sclerosis (ALS), and has had some difficult discussions. "We talk about end-of-life issues and assisted suicide. When your own family is involved, this can lead to a change in perspective," he says. The aim for Dr Stutzki and his colleagues is not necessarily to reach a settled viewpoint, but rather to open up the debate and make sure different voices are heard. "As long as we can reach the point that the discussion starts, that's what we want," he stresses.



Art and science, how everything comes together. © Michel Comte

EL & US

An Art of Molecule project by Michel Comte and NCCR Molecular Systems Engineering

Project Objectives

Can Engineering Life (EL) lead us into a better future? This question takes centre stage in EL & Us, Michel Comte's upcoming art installation and public art-science project in collaboration with the National Centre of Competence in Research Molecular Systems Engineering (NCCR MSE) in Basel.

In EL & Us Michel Comte re-interprets EL technologies into a captivating new form of artistic expression. The installation includes 3D mappings derived from extensive data sets as well as imagery from molecular and cellular systems.

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Contact Details

Dr. Ralf Stutzki
Head of Ethics
University of Basel
NCCR Molecular Systems Engineering
Mattenstrasse 24 A, Building 1095
4052 Basel, Switzerland
T: +41 61 207 19 88
E: ralf.stutzki@unibas.ch
W: www.nccr-mse.ch
W: www.iceel.info
W: www.artofmolecule.com

Dr Ralf Stutzki



Dr Ralf Stutzki is Head of Ethics at the National Centre of Competence in Research Molecular Systems Engineering (NCCR-MSE), part of the University of Basel. His responsibilities include work with the ethics think tank on engineering life, which involves collaborating with the Pontifical Academy for Life at the Vatican.

