Saal: Simulacron-3 | 11:15 | 00:30 | Day: 2 | Track: Science | nA

Title: **Real Vegan Cheese**

Subtitle: Engineering yeast to produce casein

Speaker: **Benjamin Rupert**

Short: *I will present the story and science behind this project, which is aimed at producing milk proteins in yeast. If we succeed we will be able to make vegan cheese which is indistinguishable from animal derived cheese. This project is run out of two hacker spaces in the SF bay area.*

Long: Production of milk is an incredibly energy, water and land intensive industry. Couple that with spawning of antibiotic resistant bacteria caused by modern farming practices, along with the suffering of the animals themselves, and it's a full blown disaster. At the same time, cheese is often cited by people as the reason they could never go vegan. Vegan cheese substitutes have been increasing in quality, but still are not satisfying for many people. In the modern age of genetic engineering, however, animals should not be needed to produce cheese. It is a single protein complex, casein, which is responsible for most of cheese's properties such as melting and stretching. The genes responsible for producing casein are sequenced for many animals, and so it should be possible to engineer other organisms, such as yeast, to make casein as well. This is the goal of the Real Vegan Cheese project. This project started in the spring of 2014 as a collaboration between Biocurious in Sunnyvale, CA and Counter Culture Labs in Oakland, CA. Beyond the goal of producing a real cheese in a vegan process, we also formed to enter the international genetically engineered machines competition and show that community labs could compete with academic labs (tl;dr we won), and to provide alternative educational pathways for people interested in learning genetic engineering. I will give an overview of the progress on these different aspects of our project including details of the science behind the project and current and future challenges.