

PhD theses **in a nutshell**

Smart spraying

Spray drying is a method much used in the food industry to turn a solution into a powder. A mist of droplets is heated until the liquid evaporates, leaving a powder. But not all powders are the same. The powder form varies depending on the temperature and additions to the solution, for instance. Anneloes van Boven revealed how these variables affect the powder and drew up guidelines for getting a powder in the required form. Complex material. ^{RK}

From mist to matter Anneloes P. van Boven. ◀ Supervisors Maarten Schutyser and Reinhard Kohlus (University of Hohenheim, Germany)

Super-yeasts

Yeasts can offer a sustainable alternative to producing oils and fatty acids from palm oil. That helps save tropical forests. Zeynep Efsun Duman-Özdamar from Turkey investigated how to get *Cutaneotrichosporon oleaginosus* to maximize its production of the required oil. The yeast naturally makes oil that is similar to palm oil. With the right food, optimum temperatures and some genetic manipulation, she was able to push up the production to levels high enough for the microbial cell factory to put the palm tree to shame. Which is good news. ^{RK}

Engineering oleaginous yeasts for a bio-based future. Zeynep Efsun Duman-Özdamar ◀ Supervisors Vitor Martins dos Santos, María Suárez Diez and Jeroen Hugenholtz (University of Amsterdam)

Vaccine wonderland

The vaccine development scene has become more diverse than ever since Covid. Jorge Armero Giménez (from Spain) is adding a new method to that wonderland. He developed a new way of creating virus-like particles that can be administered as a vaccine to trigger an immune response. He uses cells from the tobacco plant as mini-factories to make the virus-like particles. Not the whole cell, just the protein-producing machinery. The method is called ALiCE (Almost Living Cell-free Expression) in a nod to Lewis Carroll's book. Some ingenious chemistry allows antigens from any given pathogen to be attached to the virus-like particle. According to Giménez, that makes ALiCE a promising platform for taking rapid action when the next pandemic comes along. ^{RK}

ALiCE's adventures in Vaccinialand Jorge Armero Giménez ◀ Supervisor Geert Smant