PhD theses in a nutshell

Stable mayonnaise

Like all foodstuffs, emulsions such as mayonnaise eventually deteriorate. One reason for this is oxidation of the fats in the emulsion. PhD candidate Suyeon Yang investigated various microscopic techniques for analysing the oxidation of fat droplets in water (essentially an emulsion) in detail. Yang's work shows the proteins that are added to the emulsion as stabilizers play a key role. The stabilizers can both speed up and slow down the oxidation. According to Yang, oxidation depends in part on the size of the fat droplets and how the proteins that are added accumulate on the surface.

Spatiotemporal mapping of lipid and protein oxidation in food emulsions. **Suyeon Yang ◀ Supervisors: John van Duynhoven, Johannes Hohlbein**

Swimming in medicines

Antidepressants and antibiotics are getting into the environment via treated sewage. But it is difficult to determine how much damage they cause to aquatic life. Effective standardized tests are lacking. Lara Schuijt developed a test based on the swimming behaviour of the river shrimp *Gammarus pulex*. Does that behaviour change when fluoxetine (an antidepressant) is added to the water? Not noticeably, it turns out. But effects can be seen in a model ecosystem. Not on the *Gammarus pulex* population, but on other organisms and the performance of the ecosystem as a whole. That means the swimming test is not sufficient to determine the effects of medicines on aquatic life.

Aquatic life on drugs. **Lara Schuijt ◀ Supervisor: Paul van den Brink**

Better farms

The average Dutch dairy farm could halve its nitrogen emissions and still increase profits by a third. That is one of the conclusions from research by Melina Lamkowsky. All that is needed is to manage the farm better. She based her conclusion on a comparison between average farms and the 'best in class'. Lamkowsky also looked at whether farmers can get loans from banks for investments in reducing nitrogen emissions. A third of farmers can't borrow more than 50,000 euros. Only 40 per cent of farmers are eligible for the more expensive investments. She says that means help in the form of grants is essential, as is offering a future for Dutch dairy farming.

Is lack of finance a barrier for the sustainability of Dutch dairy farms? **Melina Lamkowsky ◀ Supervisor: Miranda Meuwissen**