

PhD theses **in a nutshell**

Rhythm of the dunes

Dune formation in the river beds of deltas influences the currents. The rougher the riverbed, the greater the resistance to the flow. Sjoukje de Lange studied the dynamics of the dunes. Those dynamics depend partly on the material they are made of: the fineness of the sediment determines the length and height of the dunes, and sediment that sticks together reduces dune formation. A faster current (due to rain coinciding with an ebb tide, for instance) leads to bigger variation in the height of the dunes. De Lange's findings will help improve hydraulic modelling. *The Rhythm of Rivers* Sjoukje de Lange ◀ Supervisor Ton Hoitink. RK

Yummy!

We eat too much fatty food and it makes us get fat. Is that because fatty foods smell nice? Matjaž Pirc from Slovenia proved experimentally that humans can indeed smell fat. We can even distinguish between milks with different amounts of fat. But this is only partially confirmed by brain scans: yes, the brain 'smells' fat, but it doesn't perceive differences in degrees of fattiness. Test subjects enjoy low-fat food if a fatty aroma is added to it. But in Pirc's experiments, that made no difference to eating behaviour. You cannot nudge consumers toward low-fat choices with a fatty aroma alone. *Stop and smell the fat!* Matjaž Pirc ◀ Supervisor Sanne Boesveldt. RK

Common liverwort

The growth hormone auxin is indispensable for the growth and development of plants. The protein ARF (auxin response factor, a transcription factor) plays a key role in this. The protein binds to specific parts of the DNA and switches off genes there that are important for growth. Juriaan Rienstra studied that binding in the common liverwort. Only six nucleotides (TGTCGG, letters from the genetic code of the DNA) are crucial for that binding. Mutations in the first four letters cause the ARF to stop binding, and the plant is then no longer viable. Those six letters are actually key not only for this moss, but for the entire plant kingdom.

Conservation of ARF-DNA binding during evolution. Juriaan Rienstra ◀ Supervisor Dolf Weijers. RK