# MAKING MEDICINE FROM PARASITE PROTEINS

**Parasitic worms use specific proteins to infect us. PhD candidate Kim van Noort used tobacco plants to replicate these proteins, thereby laying the foundation for a possible medicine for type 2 diabetes.**

Van Noort studied the parasitic *Schistosoma* worm, which infects some 250 million people each year in the tropics. She identified the substances this worm excretes to infect our bodies and bypass our immune system. This characteristic could be exploited to combat inflammatory diseases such as type 2 diabetes.

The worm's proteins have specific sugar compounds that she was eager to study, but the worms secrete these proteins in very small quantities. So Van Noort decided to create the proteins using a tobacco plant. These plants naturally produce proteins with complex sugars, but not the sugars she needed. Using genetic modification, Van Noort first ensured the protein had the correct structure, after which she attached the right sugar compound to the base protein. 'It was like Lego building. By adding the correct enzymes to the tobacco plant in the correct sequence, I could replicate the sugar compounds on two of the worm's proteins.'

**WORM**

'The tobacco proteins aren't yet identical to those in the worm,' says Van Noort, 'but one of the tobacco proteins is recognized by our immune system and appears to have a beneficial effect on type 2 diabetes.' The effect of this protein is now being tested in Leiden. If the test proves successful, it could lead to a medicine for this common type of diabetes. Other possible applications are treatments for allergies, asthma and a worm disease in cows. **AS**