

Dewpal



Dewpal's design was conceived for the annual iGEM – international Genetically Engineered Machine – competition in Boston, during which synthetic biologists aim to create new living organisms, and put them to function in a way that hasn't been done before. You'll see a lot of pretty crazy ideas over there, such as robot wars with yeasts, or a Snow White re-enactment with bacteria. We worked on the project with a 14-strong team, and after some hours of brainstorming we decided we absolutely wanted to do something with a practical goal and an environmental approach. A recent discovery, the *Pseudomonas syringae* bacteria that's able to freeze cold water, also carries a specific protein. This protein is found in clouds, and is now believed to have a core role in the creation of precipitation. We wanted to see if we could coat this protein to a 3D-printed structure, in order to condense water from the air. It took some trial and error, but inspired by one of our professors, who gives a 3D-printing workshop to middle school students and teaches them how to print a bird feeder – basically an upside down bottle – we concluded that Dewpal should have the shape of a bottle cap. While it seems like a perfect way to help battle water scarcity around the world, the design unfortunately doesn't allow to be mass produced. Which doesn't mean that the development of coating bacteria and proteins to bioplastic forms should be underestimated, as it could be applied to the medical world, where bacteria-coated strips have the possibility to detect cancer in someone's urine, for example. It's a link between the chemical and the tangible, that sparked further research worldwide. Most of us are now working either on our studies or on our PhDs, but I'm happy to conclude that we were able to create Dewpal through an efficient collaboration between researchers from different academic disciplines, which I also believe is the success behind the development of many new ideas. Never underestimate a good brainstorm, because shared knowledge moves mountains.

↙ MICHIEL STOCK (1989) is a teaching assistant at Ghent University's faculty of bioscience engineering, currently writing his PhD on mathematical modelling. He still gets together with his fellow researchers to play Dungeons and Dragons every two weeks and Tweets at @michielstock.