# A maze of new microbes discovered in maize

Several microorganisms have been recently discovered in maize, one of the ancestors to domesticated corn. A locally adapted variety of maize from the Sierra Mixe area of Mexico, *Zea mays* ssp. *mexicana*, was discovered to harbor nitrogen-fixing bacteria in its aerial root-associated mucilage. These bacteria fix up to 80% of the plant's nitrogen requirements from the atmosphere, a discovery that may have significant applications for maize crop productivity. The discovery was made by first author Allen Van Deynze and senior author Alan Bennett and published in *PLOS Biology*. Bennett and first author Tania Pozzo then characterized novel glycosyl hydrolase enzymes found within the microbial community of the mucilage, demonstrating that newly discovered microbes can provide a wide variety of enzymatic tools for biotech applications. A separate discovery was made in ancient maize cobs and published in the *Journal of Virology*. First author Mahtab Peyambari and senior author Marilyn Roossinck extracted a double-stranded RNA virus, which they called *Zea mays* chrysovirus 1 (ZMCV1), from an approximately 1,000 year-old maize cob. ZMCV1 showed surprising conservation to modern *Zea mays* chrysoviruses, having undergone only about 3% divergence from modern viruses. Reports on both this oldest RNA virus and the nitrogen-fixing mucilage bacteria demonstrate maize to be an a-maize-ing source of microbial discovery.


*Van Deynze A et al. Nitrogen Fixation in a Landrace of Maize is Supported by a Mucilage-Associated Diazotrophic Microbiota. PLOS Biology. August 7 2018. https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.2006352*

*Pozzo T et al. Characterization of novel glycosyl hydrolases discovered by cell wall glycan directed monoclonal antibody screening and metagenome analysis of maize aerial root mucilage. PLoS One. September 26 2018. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0204525*

*Peyambari M et al. A 1000 year-old RNA virus. Journal of Virology. ePub ahead of print October 10 2018. https://jvi.asm.org/content/early/2018/10/08/JVI.01188-18*