Morton and Silverman’s uniform boundedness conjecture for preperiodic points of rational maps, which was originally stated over number fields, has a natural analogue over function fields. I will state the function field version of the conjecture and discuss a recent proof of this conjecture for the family $f_c(z) = z^d + c$ with $d \geq 2$. The proof involves giving lower bounds on the gonalities of (the geometric components of) the associated dynamical modular curves. This is joint work with Bjorn Poonen. (Received September 22, 2017)