Let \( E/Q \) is an elliptic curve of conductor \( N \) over the rationals. We now know that \( E \) is modular, and hence there exists a map \( \pi : X_0(N) \to E \). We can pick the unique \( \pi \) of minimal degree, and let \( m_E = \deg(\pi) \) be the modular degree of \( E \). Cremona, Watkins, and Stein have calculated \( m_E \) for \( N < 25,000 \). Using this data, Stein and Watkins conjecture that for any elliptic curve \( E \) with odd modular degree

- the rank of \( E \) is zero,
- \( E \) has conductor \( p^r, 2p, 4p, \) or \( pq \) for \( p \) and \( q \) prime, and some integer \( r \).

Following the work of Calegari and Emerton, we will prove this conjecture in many cases. This is joint work with Ken Ribet.