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Multistationarity in molecular systems underlies switch-like responses in cellular decision making. Determining whether and when a system displays multistationarity is in general a difficult problem. In joint works with Elisenda Feliu, Timo de Wolff, and Oguzhan Yürük we completely determine the set of kinetic parameters that enable multistationarity in a ubiquitous motif involved in cell signaling, namely a dual phosphorylation cycle. We also address the same question in general for multisite phosphorylation networks. We employ a suite of techniques from (real) algebraic geometry, which in particular concerns the study of the signs of a multivariate polynomial over the positive orthant and sums of nonnegative circuit polynomials. (Received January 14, 2021)