The non-perturbative nature of quantum chromodynamics (QCD) has historically left a gap in our understanding of the connection between the fundamental theory of the strong interactions and the rich structure of experimentally observed phenomena. For the simplest properties of stable hadrons, this is now circumvented by using lattice QCD. In this talk I discuss a path that will allow us to access a variety of previously unexplored sectors of QCD. As a proof of principle, I will focus my attention to the isoscalar mesonic sector of QCD. Carrying the quantum numbers of the vacuum, this is perhaps one the most interesting channels in hadronic physics.