Cigarette smoking and other forms of tobacco use are associated with over 400,000 deaths per year in the U.S. Despite the availability of interventions for smoking cessation, their efficacy is limited and better interventions are needed. This presentation will discuss the fundamentals of modeling smoking behavior in nonhumans for the purpose of evaluating behavioral and pharmacological interventions for smoking cessation. Findings from preclinical studies in rats that examine the effects of alternative non-drug reinforcement, vaccines and nicotine-specific antibodies, and tobacco control policies being considered by the Food and Drug Administration will be discussed.