## 3. Laboratory Studies Establish That Nicotine Produces Pharmacological Effects Similar to Those of Other Addictive Substances

Evidence gathered in the last two decades demonstrates, in both laboratory animals and humans, that nicotine is a psychoactive drug that produces pharmacological effects similar to those of other addictive substances. Many of the advances in the understanding of the psychopharmacological and addictive aspects of nicotine have come from recent laboratory studies using both animals and human volunteers.

Animal studies have the advantage of being able to assess the pharmacological actions of a potentially addictive substance, independent of such factors as the taste of the substance, the personality of the user, or social factors such as peer pressure. Studies using human volunteers have the advantage of allowing the subject to directly inform the researcher of the subjective effects of the drug being studied.

Two kinds of studies are used to determine whether a substance may be an addictive drug: "drug discrimination" studies and "self-administration" studies. There is a strong correlation between the results of these studies in animals and humans. Substances that animals identify as similar to known psychoactive drugs in drug discrimination studies and substances that animals self-administer in self-administration studies are highly likely to be addictive in humans. With very few exceptions, substances that are addictive in humans are self-administered by animals.<sup>88</sup>

<sup>&</sup>lt;sup>88</sup> Gardner EL. Brain Reward Mechanism. In: Substance Abuse, A Comprehensive Textbook. 2nd ed. Baltimore, MD: Williams and Wilkins; 1992:70.