



FIGURE 7.6 The rotarod performance test employs a rotating horizontal cylinder suspended above the cage floor. Under normal conditions, rodents placed on the rotating rod will attempt to stay on the rod for as long as possible. Neurodegenerative diseases and candidate compounds that impact balance, coordination, motor skills, and wakefulness (sedatives) will have a negative impact on the length of time a rodent is able to stay on the rod. Candidate compounds that delay the progression of neurodegenerative diseases can be studied in this model. In addition, this model has been used to identify compounds that cause sedation.

animal models of memory and cognition which can be completed in a relatively short period of time (5–7 days at most), SOD1-G93A mouse studies are long and labor intensive. Consider an experiment with a single daily dose of a novel compound and a control group of untreated mice. If there are 10 mice per group, then 20 mice will have to be cared for, treated with the test compound, and assessed for at least 19 weeks (the point at which all untreated mice would be dead) in order to demonstrate improvements in overall mortality. Ideally, the treated group would show significant improvement, possibly increasing the length of the trial even further. This highlights the importance of the non-mortality driven measurements (grip strength and body weight) that can provide an early indication as to the success or failure of the test compound. In general, it is a good idea to have early secondary indication in long-term models, as these may provide guidance as to whether or not the study should be terminated early due to lack of efficacy. Terminating a study early for this reason is not a desirable outcome, but it can preserve resources for future experiments.

The MPTP Model of Parkinson's Disease²³

In some cases, it is possible to mimic human disease by using pharmacological tools (e.g., chemicals) to create a pathology in animals that is consistent with the human condition. Parkinson's disease-type symptoms and pathology, for example, can be induced in monkeys