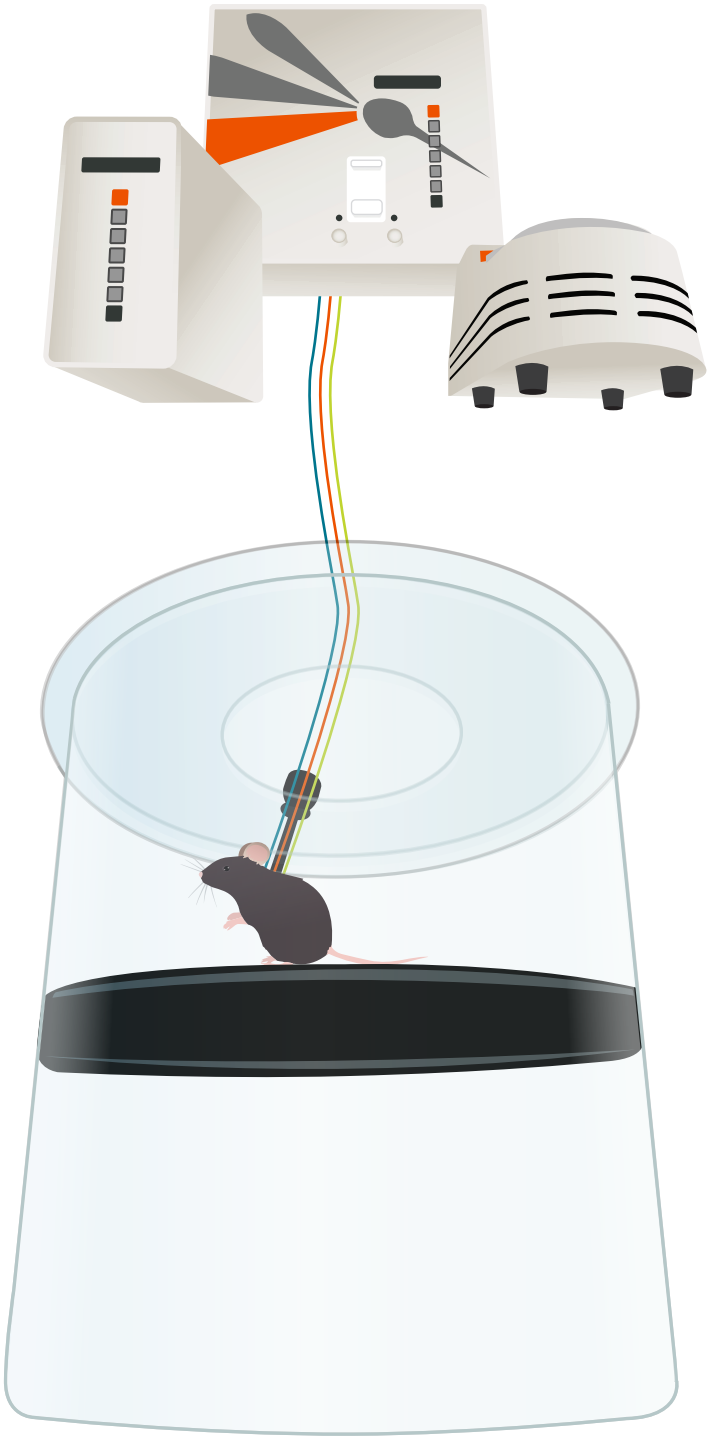
CONSIDER IMPLEMENTING AUTOMATED BLOOD SAMPLING IN RODENT TOXICOLOGY STUDIES: ESPECIALLY FOR BIOPHARMACEUTICALS AND GENE THERAPY

Automated Blood Sampling using the Culex Nxt and Raturn Movement Response Caging Systems offers a transformative opportunity for toxicology studies in rodents, including transgenic mice, offering improvements in data quality, animal welfare, and operational efficiency.

HOW AUTOMATED BLOOD SAMPLING CAN IMPROVE DATA QUALITY AND OPERATIONAL EFFICIENCY:

1. **Precise Time-Point Sampling:** Automated sampling allows for accurate, consistent blood draws, which is crucial for capturing rapid immune responses like during development of anti-drug antibodies or cytokine release in monoclonal antibody or gene therapy studies.
2. **Reduced Variability:** Minimize stress-induced data fluctuations by reducing animal handling, ensuring immune markers (e.g., IL-6, TNF-α) and metabolic markers reflect drug responses rather than handling artifacts.
3. **Continuous Sampling:** Allow for 24-hour and overnight sampling without circadian disruptions, enabling chronopharmacology evaluation and variability in toxicity based on time of dosing, and most importantly, avoid the risk of altered metabolic rates, oxidative stress, and exacerbated toxicity caused by disruption of circadian rhythms and sleep cycles in rodents.
4. **Reduced Animal Numbers:** Micro-sampling (20–50 µL) enables more time points from a single animal, reducing the need for larger cohorts and supporting frequent serial sampling without over-bleeding. Serial sampling means fewer animals are needed per study, cutting housing, feeding, and care costs, while supporting the 3Rs.
5. **Increased Study Throughput:** Automated sampling allows for the collection of samples from multiple rodents simultaneously, significantly shortening collection windows and decreasing downtime.
6. **Faster Study Timelines:** Automated sampling accelerates data collection for critical endpoints like cytokine profiling, reducing labor hours and study duration.
7. **Automated Data Capture:** Automatically generated sampling logs and data collection minimizes human error.

Investing in automated blood sampling for toxicology studies in rodents offers clear benefits: improved data accuracy, increased throughput, and enhanced animal welfare, and it represents a forward-thinking solution for modernizing toxicology research.



You can learn more about the CulexNxT system and associated products that can be used in rats, mice, and other rodents such as hamsters and Guinea pigs at https://basi-culex.com/. Our team can be reached at invivo@basinc.com, and we are eager to collaborate with you to determine if the Culex NxT Automated Blood Sampling System and associated accessories will make an impact on your rodent studies and overall drug development pipelines.