



Battelle Toxicology

# THE ANSWERS YOU NEED ARE ALL RIGHT HERE

- Pre-Clinical Toxicology
- Industrial Toxicology
- Environmental Exposure Studies

**BATTELLE**



# PUT THE POWER OF BATTELLE TO WORK FOR YOU

Whether you're trying to get a new vaccine or therapeutic to market or quantify the exposure risks of an industrial or agricultural chemical, you can count on the Battelle Life Sciences Research team for the answers you need. No other organization brings together more experts, across more disciplines, under one roof.



## TEAM APPROACH

At Battelle, we believe that building trust through collaboration is critical to your project's success. We work hand-in-hand with your internal research department to understand your needs and find the best approach to meet your goals.



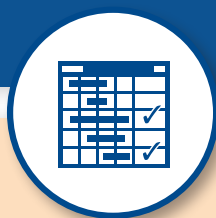
## COMPREHENSIVE SERVICES

We are a total toxicology solution. From clinical pathology to device engineering, everything you need is all right here.



## EXTENSIVE EXPERIENCE

For decades, government agencies and commercial clients have come to Battelle for accurate, objective and reliable toxicology data. Our project portfolio includes extensive work with small molecule and biologic pharmaceuticals, vaccines, agrochemicals, hazardous chemicals, chemical and biological warfare agents and nanoparticles.



## PROJECT PLANNING

When you contract with Battelle, you get more than a scientific team. You get a dedicated project manager whose sole role is to ensure the success of your project.



## PROBLEM SOLVING

We do more than run the standard battery of toxicology tests. We can help you find novel solutions to tough toxicology problems, whether that means developing new surgical techniques, engineering novel delivery devices, performing intricate statistical analysis or finding innovative aerosolization methods.





# OUR SERVICES

We offer a comprehensive suite of toxicology services backed by decades of experience in pre-clinical research, industrial toxicology and environmental exposure studies. Our toxicology team brings together world-class analysts, bioanalysts and statisticians with board-certified pathologists, toxicologists and ecotoxicologists for an integrated approach to toxicology.



## General Toxicology

Battelle provides industry-leading general toxicology services for the pharmaceutical, biotechnology, medical device, industrial chemical and agrochemical industries and government agencies. Whether you need routine or non-traditional toxicology services, we can design or customize a study to meet your unique needs.

Our experience includes small molecules and biologics as well as complex mixtures, radiolabeled compounds, HHS and USDA select agents and toxins, and environmental contaminants. We conduct studies with all laboratory species using a range of delivery mechanisms, including oral gavage, dose water, dose feed, dermal, subdermal, intravenous, subcutaneous, intramuscular and inhalation.



## Inhalation Toxicology

Battelle offers a comprehensive suite of standard inhalation toxicology studies as well as custom solutions to address unique problems. Our experts can design, test and characterize novel inhalation delivery systems, develop new methods of aerosolizing compounds, and determine precise dosing concentrations for your study requirements.

We conduct both nose/head-only and whole-body exposure inhalation studies for all laboratory species in highly controlled, GLP-compliant facilities. With BSL-2 and BSL-3 laboratory certification and extensive experience with hazardous chemicals, we can test all kinds of substances, including pharmaceuticals, agrochemicals, industrial chemicals and biological and chemical warfare agents. Our teams include in-house pathology and chemistry staff and laboratories for end-to-end service, including pharmacokinetic and pharmacodynamic studies.





## Developmental and Reproductive Toxicology (DART)

Battelle conducts developmental and reproductive toxicology studies for product registration and safety evaluation. We are currently expanding the capabilities of our DART lab; by the end of 2016, we will offer a full battery of tests including fertility, developmental toxicity (teratology), juvenile studies (canine and rodent) and multigenerational reproductive studies.

Our DART capabilities include small molecules, biologics, vaccines, industrial chemicals, agrochemicals, and hazardous chemical and biological agents. All of our studies are conducted under strict EPA, OECD and international guidelines to ensure accurate, reliable and defensible results.

## Neurotoxicology

We offer a complete package of central nervous system (CNS) testing for safety pharmacology, drug development and environmental toxicology, including Tier I (Functional Observational Battery), Tier II (behavioral testing) and Tier III (EEG monitoring and neurohistopathological analysis).



Our state-of-the-art facilities at the Battelle Neurobehavioral Laboratory are equipped for high-throughput neurobehavioral testing for multiple species. By using sophisticated analysis of objective, quantitative data, we are able to discover subtle neurobehavioral effects that standard testing services may miss.

## Cardiovascular and Pulmonary Toxicology and Safety Pharmacology

Our cardiovascular services include state-of-the-art telemetry, anesthetized preparations, and isolated (ex vivo) heart assays. We offer a comprehensive package of cardiovascular and pulmonary studies under GLP conditions to meet your safety pharmacology and product safety testing needs.

Our facilities accommodate both home cage and isolation box trials for a range of laboratory species, and utilize state-of-the-art equipment and methods for accurate, reliable detection of even subtle effects. In addition, we can fully integrate your required cardiovascular, pulmonary and CNS testing to streamline product registration and safety testing.



Battelle has state-of-the-art life sciences research facilities for all of your toxicology needs. With locations in Columbus, Ohio, West Jefferson, Ohio, and Aberdeen, Maryland, our facilities feature:

# OUR LIFE SCIENCES RESEARCH FACILITIES

- Over 400,000 square feet of dedicated in vitro and in vivo lab space suitable for a wide range of studies
- Facilities for all common laboratory species, including rodents, rabbits, ferrets, guinea pigs, canines, swine (miniature and full size), and non-human primates
- Highly controlled, GLP-compliant facilities
- High-throughput testing capabilities
- Automated and semi-automated systems for data acquisition and control available for studies needing a high degree of precision
- BSL-2 and BSL-3 high-containment testing facilities for highly infectious pathogens and high-hazard chemical agents
- In-house pathology, analytical and bioanalytical chemistry and statistical analysis staff and laboratories for end-to-end service, including pharmacokinetic and pharmacodynamic studies

**Battelle Life Sciences Research Center**



**Battelle Biomedical Research Center**



**Battelle Eastern Science & Technology Center**







# WHY BATTELLE?

When you come to Battelle, you're getting more than a contract research organization. You're getting the power of the largest not-for-profit research and development organization in the world, with experience ranging from medical device engineering to safety assessment and countermeasures. That means we don't just conduct studies—we solve problems.

Our expertise goes far beyond toxicology and life sciences research. We can bring in the right science and engineering talent to help you develop and validate new methods, design novel delivery mechanisms, and troubleshoot your most difficult study challenges. For decades, both commercial companies and government agencies have relied on Battelle to provide all of the experts they need under one roof.

## What can we solve for you today?

Contact us to find out how we can help with your toxicology needs.

**[solutions@battelle.org](mailto:solutions@battelle.org)**

**[www.battelle.org/LSR](http://www.battelle.org/LSR)**

### ABOUT BATTELLE

Every day, the people of Battelle apply science and technology to solving what matters most. At major technology centers and national laboratories around the world, Battelle conducts research and development, designs and manufactures products, and delivers critical services for government and commercial customers. Headquartered in Columbus, Ohio since its founding in 1929, Battelle serves the national security, health and life science, and energy and environmental industries.

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It can be done