

Contract Concept Review for Statistical Support

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Purpose of the Contract

To provide statistical and mathematical support for DNTP (67%) and DIR (33%) studies

- Study design advice, including power and sample size calculations
- Descriptive analyses, e.g., to identify outliers, distributional properties
- Data analyses, ranging from simple to complex
- Mathematical modeling, when needed
- Interpretation of data analyses
- Planning for future studies



Rodent bioassays

- “Traditional” 14-day, 90-day, 2-year rodent bioassays
 - Analyze specific endpoints such as organ weights, hematology, clinical chemistry, sperm motility and vaginal cytology, tissue concentrations, enzyme activity assays, etc.
 - Conduct custom analyses, e.g., special pooling of tumor types, step-section data
- Multigenerational and modified one-generation studies
 - Incorporate litter effects into analyses
 - Analyze effects across generations, across multiple litters per pair
 - Analyze immunotoxicity and neurotoxicity endpoints

Must follow GLP guidelines



Expected Numbers of Bioassay Analyses Per Year

Types of Studies	Numbers of Studies
Rodent Bioassay Endpoints	30 - 40
Special Tumor Analyses	15
Multigenerational and Modified One-Generation Studies	5 - 8
Immunotoxicity/Neurotoxicity Studies	3 - 5
Toxicokinetic/PBPK Models	5
Historical Control Reports	1/design



Recent Examples of Support for DNTP

- Develop mathematical models for *C. elegans* growth through its larval stages and compare growth parameters across exposure groups
- Conduct simulation studies evaluating different methods of analyzing quantitative high throughput screening data
- Estimate PBPK model parameters for use in *in vitro* assay prediction of *in vivo* response
- Customize computer programs for researchers wanting to analyze their own rodent behavior data
- Create a Bayesian network model for predicting skin sensitization
- Estimate PBPK model parameters for DNTP's human BPA studies in the Clinical Research Unit



Recent Examples of Support for DIR

- Compare the circadian patterns of running wheel activity in rats among groups
- Mathematically model theta and gamma brain waves in rats and compare their phase synchrony between groups
- Analyze data from a large national study of myositis, which includes NHANES data (complex sampling)



Proposed Changes to the Current Contract

- Requesting 1 base year with 9 option years, totaling 10 years
- Removing bioinformatics support, which is expected to be covered by other contracts



The BSC members are asked to review the concept for overall value and scientific relevance, as well as for fulfilling the program goal of protecting public health.

Specific areas for consideration:

1. scientific, technical, or program significance of the proposed activity
2. availability of the technology and other resources necessary to achieve required goals
3. extent to which there are identified, practical, scientific, or clinical uses for the anticipated results.
4. where pertinent, adequacy of the methodology to be used in performing the activity

The NTP seeks approval from the BSC to continue this type of activity using a contract mechanism.