11. BIOSTATISTICS, EPIDEMIOLOGY AND RESEARCH DESIGN (BERD)

Objectives
- To collaborate with CTSC investigators to ensure use of optimal study designs and appropriate development of statistical analysis plans.
- To develop novel study designs and statistical methods for translational research.
- To educate and mentor investigators and junior BERD members in study design and statistical analysis.

Personnel

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<tr>
<th>Core leadership</th>
<th>Quick Facts</th>
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<tr>
<td>Director: Gerald Beck, PhD, Cleveland Clinic</td>
<td><img src="chart1.png" alt="Investigators Served by BERD" /></td>
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<tr>
<td>Co-Director: Denise Babineau, PhD, CWRU/ UHCMC</td>
<td>Grant Year (Yr 1 partial, Yr 6 half yr)</td>
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<td>Co-Director: Thomas Love, PhD, MHS</td>
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Additional staff with dedicated CTSC support
- Cleveland Clinic: Bo Hu, PhD; James Bena, MS; Robert Butler, MS
- CWRU/UHCMC: Sara Debanne, PhD; Stephen Ganocy, PhD; Brian Schmotzer, MS; Xuelei Wang; MS
- MHS: Douglas Gunzler, PhD; Steven Lewis, MS, MBA

Future Special Projects
- Development of a library of validated code that can be easily queried and used in future studies for data management and data analysis purposes.
- Implementation of Multimodality, Multiresource, and information Integration software for tracking and billing purposes, in collaboration with the CTSC Biomedical Research Informatics Management Core.
- Development of a themed pilot program to support novel research in epidemiology and biostatistics, in collaboration with the CTSC Pilot Clinical and Translational Grants Program.

Notable Accomplishments
- Cross-institutional biostatistical, epidemiologic and research design support for over 400 projects to date, resulting in multiple funded projects spanning departments, disciplines and institutions across the region.
- Design and development of large-scale multi-site public health partnerships, specifically Childhood Obesity Prevention and Treatment Research, Better Health Greater Cleveland, and the Ohio Brain Tumor Study.
- Development of the risk-calculator-structor.org platform for prediction model deployment.
- Development of theory and software for sparse bump hunting approaches, used to identify hidden subgroups of gene expression array signatures in liver metastatic colon cancer patients.
- Implementation of the widely used Bayesian analysis of variance for microarrays JAVA platform for gene selection in microarray data.
- Development of new R packages for de-convolution kernel methods accounting for measurement error, and nonparametric analysis of covariance for regression surfaces or functional data.
- Well-received educational activities on BERD-related methodological issues delivered to more than 500 pre- and post-doctoral clinician investigators across institutional lines.
- Development of a consulting program for medical students doing research.
- Participation in the BERD Key Function Committee annual meeting, conference calls, and workgroups (Online Resources, Evaluation, Regulatory Knowledge Study Monitoring/DSMB Affinity).