charles river
accelerating drug development. exactly.

Phenotyping: Metabolic Syndrome Panel

Charles River Discovery Services provides a variety of phenotyping panels based on therapeutic area to assist with characterizing your unique models.

Our Metabolic Syndrome Panel includes:

Basic Characterization

- *PhenoFirst® Panel*

PhenoFirst® includes *in vivo* evaluation, basic pathology, and basic clinical pathology. This panel targets organs of white and brown adipose tissue, pancreas, adrenal glands, thyroid, heart, aorta, kidneys, liver, pituitary, and brain. Sample size is determined in consultation between the customer and Charles River professional staff. Age- and sex-matched animals of appropriate genotype and background are recommended

Additional Characterization

- *Age of Onset and Characterization*

A breeding colony is set up at Charles River. Beginning at 3 weeks of age, body weights are collected on offspring weekly. Also at 4 weeks of age, the lipid profile, blood glucose, and systolic blood pressure are monitored bi-weekly. Body composition is assessed via a whole body DEXA Scan beginning at 8 weeks of age. Transthoracic echocardiography is also performed to assess cardiovascular function and to screen for atherosclerotic lesions. DEXA Scan and echocardiography are repeated on a monthly basis. One week prior to the end of study, a glucose tolerance test is performed. At the termination of study, hematology, standard clinical chemistry, urinalysis, and rodent multi-analyte profile analyses are performed. A complete necropsy is conducted with histologic assessment by a board-certified veterinary pathologist. The resulting data is used to determine the age of onset and progression of obesity, hyperglycemia, hypertension, and hypercholesterolemia.

- *Diet Challenge and Characterization*

Animals are placed on one or more special diets to evaluate acceleration of the disease process. Diets to consider include atherogenic diet (i.e. Paigen or Western) or supplemental sodium administration. The study protocol for the above study is repeated with evaluation of the same parameters.

- *Food Consumption and Growth Curve*

A breeding colony is set up at Charles River to monitor offspring body weight and food consumption. Body weights are collected twice weekly beginning at 4 days of age until weaning. Weekly body weights and food consumption measurements are assessed thereafter. The resulting data is used to generate a growth curve and food consumption analysis.

- *Body Composition Assessment*

A DEXA Scan is performed to determine percent total body fat, total bone mineral density, and total bone mineral composition.

- *Rodent Multi-Analyte Profile*

Each animal is screened for 60 plasma biomarker levels, including insulin.

- *Glucose Tolerance Test*

Animals are fasted overnight and baseline blood glucose levels are recorded. A glucose challenge is delivered orally, and blood glucose levels are screened at 0, 15, 30, 45, 60, 90, 120, 150, and 180 minutes post-challenge.

- *Ultrasound and Echocardiography*

Transthoracic echocardiography is performed on anesthetized mice using the VisualSonics Vevo 770 High-Resolution *in vivo* Imaging System. Cardiac function is evaluated and atherosclerotic plaque screening is performed at specified time points.

technical sheet

• *Indirect Calorimetry Energy Expenditure*
Using the OxyMax Equal Flow system, noninvasive ventilatory and metabolism parameters are evaluated, including tidal volume, respiratory quotient, O_2 consumption, CO_2 production, and metabolic rate.

• *Metabolism Cage Monitoring*
Food and water consumption are monitored for 24-hour periods in conjunction with fecal and urine output.

Customized Characterization

We recognize that research goals vary. Our team of laboratory animal professionals is available to customize a model characterization plan that meets individual needs and helps you achieve your goals more efficiently.

Available Panels

In addition to the Metabolic Syndrome Panel, Discovery Services provides targeted phenotyping to characterize obesity, diabetes, metabolism, hypertension, oncology, osteoporosis, reproduction issues, respiratory function, embryonic lethality, Huntington's disease, neurodegenerative disease, and atherosclerosis in your unique model.

For more information, please call 1.877.CRIVER.1 or e-mail askcharlesriver@crl.com.