

Biomechanics Core

Location: VA Medical Center 70-D-210

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Overview

Multiple specialty laboratories serve as “Biomechanics Research Core” facilities. Labs include electrohydraulic pistons and a separate bending-moment apparatus that apply simple or complex loads to biological or material specimens of various sizes. Custom-designed equipment to deliver blunt or blast brain injury to rodents and tissues are available. Additional devices include drop tower, pendulum impactor, pneumatically-driven servo-sled accelerator, and full-vehicle crash lab. High-speed video and 3D motion capture capabilities compliment over 400 channels of data acquisition equipment.

| Equipment/Software | Accessibility |
|---|---|
| 3D motion capture systems | Facility technicians use on behalf of investigators |
| A computational lab with multiple high-end computer work stations | Use is available only after training |
| Vertical Drop Tower apparatus | Facility technicians use on behalf of investigators |
| High-speed video cameras | Use is available only after training |
| High-rate data acquisition systems | Facility technicians use on behalf of investigators |
| Servo-sled accelerator to study occupant responses | Facility technicians use on behalf of investigators |
| Vehicle crashworthiness laboratory includes a 500 ft track and barriers to conduct full-scale vehicle crashes | Facility technicians use on behalf of investigators |

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|---|---|
| Crash test dummies including the Hybrid-III and EuroSID dummies | Other limited use – rental possible |
| Shock-wave tube for blast simulation on rodents | Facility technicians use on behalf of investigators |
| Shock-wave tube for blast simulation on cells and tissue | Facility technicians use on behalf of investigators |
| Behavioral laboratory, including Morris Water Maze; Elevated Plus Maze; Open Field Test; Barnes Maze; Rotarod assessments | Facility technicians use on behalf of investigators |
| 10" diameter shock tube for PMHS testing | Facility technicians use on behalf of investigators |
| Split Hopkinson Pressure Bar | Facility technicians use on behalf of investigators |
| Rotational acceleration brain injury device for rodents | Facility technicians use on behalf of investigators |
| Motion-tracking software system | Use is available only after training |
| Finite element mechanics software | Use is available only after training |

Hours: contact Christy Stadig, Laboratory Manager at (414) 384-2000 x41534 or cstadig@mcw.edu for availability and scheduling.

Common users of the facility: investigators who want to obtain mechanical or physical testing of specimens; for example, the Department of Endocrinology wrote a VA grant to mechanically test bone specimens; other basic scientists have written grants to use the brain injury equipment to evaluate potential therapeutic effects.

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