



UNC CHARLOTTE

Research and Economic Development

# Laboratory Animal Resources

## I. General Information - UNC Charlotte Laboratory Animal Resources

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| Address:       | The University of North Carolina at Charlotte<br>9201 University City Blvd.<br>Charlotte, NC 28223 |
| Contact:       | Chandra Williams   |
| Phone:         | (704) 687-5017   |
| Fax:           | (704) 687-1484   |
| Email:         | cwill297@uncc.edu  |
| Website:       | research.uncc.edu  |
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## II. Capability Statement

The University of North Carolina at Charlotte (UNC Charlotte) is North Carolina's urban research institution. A large, public university, more than 29,000 students call UNC Charlotte's 1,000-acre campus their home away from home. Located in the state's largest city, UNC Charlotte offers more than 170 undergraduate, graduate and professional programs as well as focused community engagement initiatives.

All faculty are encouraged to become involved in research-related activities and to seek external support for these activities. The University's Office of Research and Economic Development (ORED) provides research support services for both human and animal subjects and the University's Laboratory Animal Resources program (hereafter referred to as the Vivarium) is an integral part of the ORED. Collaboration with technology companies, governmental agencies, the private sector, and across disciplines, both within UNC Charlotte and with other universities, is growing. Biomedical research and graduate studies are inherently interlinked and mutually supportive. The research conducted at this University benefits people with immunosuppression, cancer and other diseases. Research is both applied and basic.

Notable Aspects and Capabilities of the UNC Charlotte Vivarium include:

- **AAALACi Accreditation**

UNC Charlotte's program of research animal care and use has been fully accredited by the Association for Assessment and Accreditation of Laboratory Animal Care, International since 2007.



- **USDA Registered Research Facility**

UNC Charlotte is registered as a Research Facility with the US Department of Agriculture (Certificate 55-R-007).

- **OLAW Animal Welfare Assurance**

UNC Charlotte maintains a Letter of Assurance D16-00363 (A3600-01) with the Public Health Service's Office of Laboratory Animal Welfare.

- **Environmental Monitoring/Alarm System Monitored 24/7/365**

The Vivarium's environmental monitoring, control and alarm systems integrate and coordinate the use of set of temperature, humidity, air flow, amperage draw and related sensors to provide timely and comprehensive data regarding room and mechanical condition. Key environment components monitored include:

- Room temperature
- Power failure
- Room humidity
- Air handler operation
- Cooling system capacity utilization
- Outside temperature and humidity
- Air flow rates in cubic feet per minute
- Room pressurization
- Status of room lighting
- Status of key mechanical components (e.g., chillers, boilers, pumps)

These are all monitored both on- and off-campus by UNC Charlotte Facilities Management. System diagnoses and adjustments can be made from any Web-capable device.

Animal room temperatures may be set individually, as can key environmental alarm set points.

- **Caliper IVIS Spectrum**

The IVIS Spectrum is an optical imager used to facilitate non-invasive longitudinal monitoring of disease progression, cell trafficking and gene expression patterns in living animals. Filters and spectral un-mixing algorithms let the researcher take full advantage of bioluminescent and fluorescent reporters across the blue to near infrared wavelength region. It also offers single-view 3D tomography for both fluorescent and bioluminescent reporters that can be analyzed in an anatomical context using a Digital Mouse Atlas.

For advanced fluorescence imaging, the IVIS Spectrum has the capability to use either trans-illumination (from the bottom) or epi-illumination (from the top) to illuminate in vivo fluorescent sources. 3D diffuse fluorescence tomography can be performed to determine source localization and concentration using the combination of structured light and trans-illumination fluorescent images. The instrument is equipped with 10 narrow band excitation filters (30nm bandwidth) and 18 narrow band emission filters (20nm bandwidth) that assist in significantly reducing autofluorescence by the spectral scanning of filters and the use of spectral unmixing algorithms. In addition, the spectral unmixing tools allow the researcher to separate signals from multiple fluorescent reporters within the same



animal. More information may be found at: <http://www.perkinelmer.com/Catalog/Product/ID/IVISSP>. UNC Charlotte's IVIS Spectrum is located within the secure research animal facility in Woodward Hall.

- **Faxitron CP160 Irradiation System**

A smaller, simpler, safer alternative to radioisotope irradiators, the Faxitron CP160 is ideal for a variety of irradiation applications, from animal and cell studies to electronics components testing. The CP160 comes with a dual focal spot x-ray tube – one spot for irradiation and a smaller spot that's suitable for imaging. A 2 RPM electrically operated turntable helps ensure uniform dosing. Controls are user friendly, allowing operation by persons with no previous x-ray training. Additional technical information pertaining to UNC Charlotte's Faxitron CP160 may be found at <http://www.faxitron.com/products/cp-160.html>.

- **LabRepCo BSC-II Biosafety Cabinets/Animal Transfer Stations**

The Vivarium is equipped with four (4) stationary LabRepCo BSC-II biosafety cabinets, as well as two mobile Allentown Caging Equipment animal transfer stations.

- **IsoTech/SurgiVet Isoflurane Vaporizers (8)**

UNC Charlotte's eight (8) SurgiVet isoflurane vaporizers are serviced annually by an external service provider.

- **Microisolator and IVC-Rodent Caging Available**

Allentown Caging Equipment Model PNC75JU140SP ventilated mouse racks are in use in the Vivarium. Test data provided by the manufacturer show typical cage air exchange rates of 58 to 60 changes per hour, airflows of 0.20 cubic feet per minute and a nominal air velocity (in the cage) of 69 linear feet per minute. These racks are configured to draw supply air from the animal room, and exhaust directly to the Vivarium's exhaust air intakes. No recycling of air takes place.

- **Antibody Production, Rodent Breeding, ADME, Acute and Subacute Toxicology Experience**

- **Veterinarian, ACLAM Diplomate, over 20 years experience**