Meat Science & Animal Biologics Discovery
UNIVERSITY OF WISCONSIN–MADISON

Meat & Poultry Processing Plant
Features and Capabilities

The Meat Science & Animal Biologics Discovery (MSABD) Meat & Poultry Processing Plant (MPPP) offers facility use, fee-for-service, and sponsored research options to corporate, governmental, non-governmental, and academic organizations. Facility use refers to a project conducted by the client company with company employees in MSABD space with MSABD- or client-supplied equipment. Fee-for-service refers to a client-supplied project or analytical request that is completed by MSABD staff using MSABD- or client-supplied equipment. Hybrids of these two options are available. Sponsored research refers to a client-funded project that involves intellectual input by UW-Madison faculty and/or staff. MSABD scientific and technical expertise is available in the areas of muscle/tissue biology, meat chemistry/biochemistry, meat/poultry processing (harvest through ready-to-eat (RTE)) for University teaching, research, and outreach initiatives and off-campus R&D, and economic initiatives.

The MSABD-MPPP facility can accommodate all meat processing (harvest through RTE) functions within a single building with processing spaces that feature building designs and equipment that mimic or exceed current industry practices and standards. A fully functional chemistry/analytical lab is available to support the activities in the MSABD-MPPP facility and is equipped with instrumentation for conducting an array of product quality analyses including: rapid proximate composition, nitrate/nitrite, fat/lipid oxidation, color shelf-life (fresh and frozen) and color/pigment determination, to name a few.

The MSABD-MPPP, which operates under USDA-FSIS inspection and is constructed with the most current sanitary design principles, provides close relevance to industry practices and operational procedures. Small scale/pilot plant work can occur that is relevant and scalable to small, medium, and large scale commercial systems.

Core functions and features of the facility include:

- Red meat (beef, pork, and lamb) harvest: continuous “on-rail” harvest processing; stunning via CO2, electrical shock or captive bolt; carcass wash cabinet; access for tissue collection supported by integrated, adjacent research lab; ultra-chill (-40F) room; spray-chill room with fully programmable chilling sequences; and holding/aging cooler.
- Poultry harvest: semi-continuous system representing all harvest and evisceration steps. Small-scale simulation of water or air chilling available.
- Further processing – fresh and processed meats: fabrication and meat processing rooms equipped with modern equipment including band saws, injectors, tumblers, grinders, bowl chopper, double clipper, etc. to allow the manufacture, according to common industry practices, of nearly any whole muscle or comminuted processed meat product desired.

- Thermal processing: Four single-truck (pass-thru) ovens equipped with fermenting, smoking (dust, chip, friction, and liquid smoke), cooking, and drying capabilities. A separate and dedicated room to simulate “kitchen” cooking with a 40-foot commercial hood (1/3 having open flame capacity) an array of electrical connections. Kettle, impingement, BBQ, and combi-oven (convection/steam) cooking is available with ability to change-out as needed.
- Post-thermal processing: Segregated RTE space with intensive chilling chamber, coolers, freezer, and packaging equipment (including a thermal form filler equipped with modified atmosphere packaging, and foreign material detection (X-ray and metal detection).

Special Features of the MSABD-MPPP are:

- Facility designed and equipped to support off-campus stakeholder work with special accommodations including:
    - Loading docks (stand truck height or grade) and fork lift for accepting commercial meat/food processing equipment from straight and semi-trailer trucks.
    - Rooms sized with footprint space and height clearance for equipment installation.
    - Utilities available for installation of commercial equipment include electricity (120V, 230V, and 480V/200A), RO water, culinary steam, CO_2 liqueur and gas, compressed air, and wire/wireless networking.
- Sensory support via a 7-booth sensory room for consumer and trained sensory (visual, olfactory and/or oral) testing of samples generated.
- Product shelf-life display cooler and freezer with full spectrum RGBW LED lighting; flexibility for configuring other lighting systems for fresh and RTE product shelf-life testing.
- Two ambient classrooms with theater-viewing of refrigerated displays: Each classroom has an integrated demonstration cooler (USDA inspected; viewing through a 35 by 12 foot glass pane; audio and camera-digital display connectivity between instructor and audience); accessibility of students to demo cooler via garb-up ante room.
- Full A/V integration between processing and classrooms (including off-campus feed) via A/V cart with two-way interaction technology.
- Collaboration room is available for clients and guests who need to have transitory office space for the purpose of continual, extended, or frequent engagement with MSABD expertise, facility use, and/or campus resources.

Research laboratory includes:

- Fully equipped analytical/chemistry lab equipment includes: Rapid proximate composition equipment, nitrate/nitrite analyzer, colorimeters, HPLCs, salt analyzer, water activity meter, pH meters, scales, etc.
- -20 C and -80 C sample freezers.