

Global Pathogens Laboratory (GPL)

The laboratory focuses upon research and training regarding emerging infectious diseases, particularly those which are zoonotic. The laboratory has a national reputation for excellence in respiratory virus work. It is well-suited to support complex epidemiological studies of emerging pathogens including large cohort studies, evaluation of diagnostic tests, and clinical trials. It's Emerging Pathogens Laboratory is a modern 3000 sq-ft collection of BSL2 and BSL3 laboratory spaces and offices. This includes 1300+ sq-ft of BSL2 laboratory space for work with human pathogens, 1200+ sq-ft of BSL2 (USDA Ag-enhanced) laboratory space with HEPA-filtered exhaust for work with USDA BSL2 pathogens, two procedure rooms (~200 sq-ft each) in a BSL3+ suite, 330 sq-ft for 3 offices, and desk space for 11 students in a area adjacent to the laboratory, in addition to 1885 sq-ft of shared spaces and storage.

Laboratory personnel are adept in viral and bacterial culture, molecular identification, serotyping, genotyping, and serological studies. The GPL is divided into three sections: virology, serology, and molecular studies. Laboratory staff use 5 desk top computers and 3 printers, with access to a shared network printer/scanner/fax. The BSL2 laboratory space is equipped with two certified class II biological safety cabinets with vacuum. The laboratories also have multiple large -80°C upright freezers, laboratory refrigerators, CO₂ water-jacketed incubators, a rocking egg incubator, microcentrifuges, a tabletop refrigerated centrifuge, a Metler analytical balance, an Acculab digital balance, 3 inverted microscopes (one with digital camera display, two BioRad sub-cell GT agarose gel electrophoresis platforms, a BioRad Protean II SDS-PAGE and western blot platform, a NanoDrop spectrophotometer, a microarray scanner, BioRad iCycler with iQ5 real-time PCR platform and Thermo KingFisher nucleic acid purification instrument. Adjacent shared equipment include a fluorescence capable microtiter plate reader, a BioRad Chemi-Doc digital gel-documentation system, an ultracentrifuge, a lab-dishwasher, two autoclaves, a Millipore water purification system, an ice machine, a U/V fluorescent microscope, shaking incubators, a walk-in refrigerator and an AKTA-FPLC. BSL2 USDA-enhanced space consists of three procedure rooms each equipped with fully exhausting biological safety cabinets and humidified CO₂ incubators with a benchtop refrigerated centrifuge located in the common corridor and a -80 freezer. The BSL3+ features procedure rooms equipped with fully exhausting biological safety cabinets and humidified CO₂ incubators a secure -80 freezer, a refrigerated bench-top centrifuge, refrigerated micro-centrifuges and shower out capabilities. Both the BSL2 USDA enhanced and BSL3+ also feature pass-through autoclaved and decontamination chambers to facilitate the removal of large equipment from the laboratories.

The laboratory's focus areas include adenovirus, influenza, human metapneumovirus, avian pneumovirus, and *Brucella canis*, The laboratory holds permits (USDA/APHIS and CDC) to work with animal adenovirus, avian pneumovirus type C, Porcine Reproductive & Respiratory Syndrome Virus (PRRSV), Porcine Circovirus type 2 (PCV2), *Streptococcus suis*, *Streptococcus agalactiae*, *Streptococcus pyogenes*, and all influenza viruses, including highly pathogenic avian influenza viruses. Unique laboratory capabilities include: adenovirus culture, identification,

serotyping, and genotyping; human metapneumovirus culture, identification, and genotyping; zoonotic influenza culture (embronated eggs or MDCK tissue culture), identification, serotyping, and genotyping.