

School of Pharmacy

Division of Pharmacology

Toxicore Laboratory

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Goals and Principles: The Toxicore Laboratory conducts both basic and applied research.

Basic Research

- In the **basic research area** the laboratory sponsors undergraduate, graduate and postgraduate research, and a variety of research projects under federal and foundation research grants.
- These activities are considered by laboratory management in the category of preliminary feasibility research.
- The activities achieve high quality through extensive peer review, via external and internal review boards and committees. In Toxicore, the interface between basic and applied research is honored by utilization of the same steps of procedure for activities that are common, such as the use of analytical instrumentation.

Applied Research

- In the **applied research area** the laboratory contracts with businesses in the community to perform toxicology tests on their products. This activity is considered by Toxicore as a community service and is offered on a cost for sample basis.
- In many cases the external sponsor is seeking information that may be used ultimately as pre-clinical or safety documentation under FDA or EPA regulatory guidelines.
- The laboratory, therefore, operates when performing such studies in accordance with "good laboratory practices (GLP)." Associated with regulatory guidelines are the Standard Operating Procedures and Study Protocols through which the plan and all studies are conducted.

Team Members

- David M. Yourtee
- Elisabet L. Kostoryz
- James Code
- Kyram Dharmala
- Johnny Coby Utter
- Christopher Penell
- Katherine Perko

Basic Research Project Partnerships

P01DE009696-15, PI: Dr. J. David Eick, UMKC School of Dentistry
R01 DE 14379-A2-03, PI: Dr. David M. Yourtee, Co-PI: Dr. Peter Walde, ETH Zurich, Germany
R01DE014392-04; PI: Dr. Paulette Spencer, UMKC School of Dentistry

Applied Research Services

In Vitro Toxicology Tests

- Ames *Salmonella*/Microsome mutagenicity test with and without metabolism (S9 fraction)
- Cytotoxicity evaluation against mammalian fibroblast cells using the agar diffusion test
- Cytotoxicity evaluation against mammalian fibroblast cells using the MTT assay (96-Well method). Determination of the dose that kills 50% of cells (TC₅₀)
- Detection of DNA damage in fibroblast cells using the Comet assay
- Determination of chromosome aberrations and sister chromatid exchanges in CHO cells
- Analysis of DNA adduct formation between DNA and organic compounds by HPLC and NMR
- ELISA for TNF- α , IL-6, IL-1 and other cytokines and adhesion molecules
- In vitro metabolism studies

In Vivo Toxicology Tests

- Sensitization testing using the LLNA in mice
- Sub-chronic systemic toxicity testing in mice

Analytical Capabilities

- Analysis of organic compounds, pharmaceuticals, and residual leachable from biomaterials by HPLC and NMR
- Analysis of organic compounds, pharmaceuticals and biomaterials by TLC and HPTLC
- Separation of active ingredients by preparative-scale liquid chromatography

Ames *Salmonella*/Microsome mutagenicity test: agar plate method





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