



Mark Papich



Comparative Models of Clinical Pharmacology

Research emphasis:

Dr. Papich's research emphasis is on the disposition of medications in animals. This focus includes anti-infective agents (antibiotics, antifungals, antiprotozoal drugs), analgesic drugs (opiates, nonsteroidal anti-inflammatory drugs) and several other drug classes. His laboratory has successfully identified interspecies differences that are considered factors that distinguish the pharmacologic differences among species, and between species of animals. They study the full range of animals from domestic species (dogs, cats, horses, cattle, pigs) to exotic animals that range from small birds and turtles to elephants and whales. Assessments include blood and tissue distribution and pharmacokinetic-pharmacodynamic (PK-PD) factors that contribute to identifying a therapeutic dose.

Application:

- Pharmacokinetics- Pharmacodynamics
- Interspecies differences
- Antibiotic drugs
- Analgesic drugs

Collaboration potential:

- Development of new drugs
- Using animal species (eg. Dogs) to predict disposition of new drugs for humans
- Predicting drug response from pharmacokinetic modeling
- Identifying factors and sources of pharmacokinetic variability with population pharmacokinetics

Selected publications:

Papich MG & Martinez MN. Applying Biopharmaceutical Classification System (BCS) Criteria to Predict Oral Absorption of Drugs in Dogs: Challenges and Pitfalls. (accepted for publication in the AAPS Journal).

Maaland MG, Guardabassi L, & Papich MG. Minocycline pharmacokinetics and pharmacodynamics in dogs: dosage recommendations for treatment of meticillin-resistant *Staphylococcus pseudintermedius* infections. *Vet Dermatol.* 2014 Jun;25(3):182-90, e46-7. doi: 10.1111/vde.12130. PMID: 24840325

Papich MG. Pharmacokinetic-pharmacodynamic (PK-PD) modeling and the rational selection of dosage regimes for the prudent use of antimicrobial drugs. *Veterinary Microbiology* 2014 Jul 16;171(3-4):480-6. doi: 10.1016/j.vetmic.2013.12.021. Epub 2014 Jan 9. PMID: 24513278

Martinez MN, Papich MG, Drusano GL. Dosing Regimen Matters: The Importance of Early Intervention and Rapid Attainment of the PK/PD Target. *Antimicrobial Agents and Chemotherapy.* Jun;56(6):2795-805, 2012. doi: 10.1128/AAC.05360-11.PMID: 22371890 .

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