HISTORY

Developed by Dr. Gustafson in 1999 with
Dr. Hansen joining in fall of 2006

In 2007, relocated to Flint Animal Cancer Center at CSU
- Excellent example of “value added” of the Cancer Center consortium arrangement

Dr. Wittenburg, DVM (CSU), PhD (CSU), joined the lab in 2007 during his residency

In 2009, Paul Lunghofer, MS joined the core as analyst
1) Provide **specific** and **sensitive** analysis to determined small molecule/drug concentrations in biological tissues and fluids.

- A majority of drug analyses within the laboratory are conducted via selective and sensitive LC/MS/MS validated assays.
MISSION

2) Provide consultation with regards to planning, performing and/or analyzing pharmacokinetic studies in both a preclinical and clinical setting.

- Important to PK study design is determining the correct sampling procedures and sample collection times in attempts to provide the most useful and relevant drug concentrations to yield high quality PK data.
3) Develop and apply assays and panels to expand understanding of pharmacologic processes

- Investigating direct quantitation of ATP-binding cassette (ABC) transporter proteins that often lead to drug resistance in tumors.
  - Multiplex protein/peptide quantitation of 14 drug transporters

<table>
<thead>
<tr>
<th>Transporter</th>
<th>Signature Peptide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mdr2/Mrp3isoform3</td>
<td>IATEAIENIR</td>
</tr>
<tr>
<td>Bsep/Abcb11</td>
<td>STALQHIQR</td>
</tr>
<tr>
<td>Mrp1/Abcc1</td>
<td>NATFTWAR</td>
</tr>
<tr>
<td>Mrp2/Abcc2</td>
<td>SSLTNGLFR</td>
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<tr>
<td>Mrp3/Abcc3</td>
<td>ASGALIQEEK</td>
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<tr>
<td>Mrp4/Abcc4</td>
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<td>Mrp5/Abcc5</td>
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<td>Mrp7/Abcc10</td>
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<td>Abcg8</td>
<td>ASLLDVITGR</td>
</tr>
<tr>
<td>MDR1/AbcB1</td>
<td>LANDAAQVK</td>
</tr>
</tbody>
</table>

![Graph showing relative abundance vs time](image)
PharmSR provides a mechanism by which researchers can plan and carry out PK studies in consultation with experienced investigators.

**High Quality Data – Help you prepare your manuscripts**
Analyses are conducted using validated assays developed in accordance with FDA’s Guidance for Industry on Bioanalytical Method Validation.

**Experience**
Past 5 years the PharmSR has been or is currently involved with:
- 42 cancer related compounds investigated preclinically
- 6 compounds being investigated in the clinic

**Impact – moving from preclinical to the clinic**
Preclinical compounds (SuviCa-112) on track for IND
Novel combinations (AZD6244 plus CsA) into the clinic
Phase I compound, ENMD-2076, moving on to Phase II
Support numerous ongoing Clinical Trials in Companion Animals
SERVICES

Analyte Quantitation (LC/MS/MS and HPLC)

Compound or Metabolite Identification (Method Development)

Animal Study Support (PK/Efficacy)

Data Analysis and Modeling
- Pharmacokinetic and Pharmacodynamic Modeling
- Physiological Based Pharmacokinetic Modeling
- Population Pharmacokinetic Modeling

Metabolism Studies

Drug Transporter Studies
EQUIPMENT

Mass Spectrometers with linear trap capabilities
- 6500 and two 3200 QTRAP

HPLC with UV/Vis and fluorescence detection

Phoenix® WinNonlin® software

Surgery Suite, tissue culture hoods and incubators, metabolic animal cages, -80°C freezer,
Rotary evaporator, SPE manifold,

IncuCyte ZOOM – *Real-time quantitative live-cell analysis*
CONTACT US

BEFORE YOU SUBMIT YOUR GRANT
- We can help you plan and provide relevant portions!

Ryan.Hansen@colostate.edu #7-4057

Researchers can contact either Co-Director / Dr. Wittenburg for CCTSI to discuss needs and to gather details for planned experiments

- In person, email or phone

Rates for services (reviewed annually by SR and CSU) are posted on the PharmSR page of the CU Cancer Center website

- University of CO Cancer Center Members and CCSTI Members Rates are adjusted by support from each institution

http://www.ucdenver.edu/academics/colleges/medicalschool/centers/cancercenter/Research/sharedresources/pharmacology/Pages/pharmacology.aspx
Samples analyzed for users at approximately $\frac{3}{4} - \frac{1}{2}$ the cost they would be charged by outside, private analytical laboratories.

Further, many of these laboratories have exorbitant method development costs that would prohibit many pre-clinical pharmacology studies.
PharmSR is also the pharmacology core laboratory for the following institutes:

- Colorado Clinical and Translational Science Institute (CCTSI)
- Colorado Center for Drug Discovery (C2D2)
- Comparative Oncology Trials Consortium (COTC)