

Drug Safety and Metabolism

Experience – from discovery to full development: Ricerca has the know-how

Ricerca Biosciences provides drug safety and metabolism services to guide new therapies from discovery to full development support. Our discovery screening and DMPK services enable clients to select therapies with the highest potential for successful development. Our extensive profile of IND enabling pivotal studies support swift progression of your lead compounds into the clinic – streamlining your development process. We provide the resources of a highly skilled, client-focused staff with extensive academic, scientific and pharmaceutical industry experience.

Core services

Discovery support DMPK and early toxicity evaluation

- In vitro metabolite stability and profiling
- CYP inhibition & induction
- *In vitro* toxicology
- Pilot PK and metabolite identification
- Dose range finding toxicity evaluations
- Target evaluation and de-risking evaluation

IND-enabling studies

- Regulatory/general toxicity
 - Maximum tolerated dose
 - Dose range-finding – 5-14 days
 - Repeat dose GLP – 4-13 weeks
 - Rodents, dogs, NHP, minipig
 - Complete toxicokinetics/pharmacokinetics support with LC/MS/MS and ELISA
- Safety pharmacology: ICH core battery & supplemental safety pharmacology studies
 - Cardiovascular, CNS, respiratory; renal, GI
- Immunotoxicity/immunogenicity
- Full clinical and anatomic pathology, ophthalmology, ECG

Nonclinical registration

- Chronic toxicity – 6-9 months
- Investigative toxicology
- Juvenile toxicology
- Carcinogenicity studies

Ricerca Biosciences employees have one goal in mind – to meet your next milestone on time with quality

Specialties

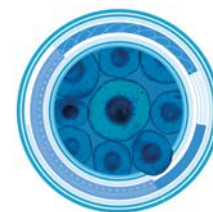
Even after 40 years, we are always on the cutting edge of the evolving preclinical safety and metabolism field. Beyond the basics, we are adept at specialized and novel approaches.

- General toxicity
- Non-human primate
- Minipig (Göttingen)
- Safety pharmacology – cardiovascular, respiratory and CNS

Core strengths

- Over 40 years of experience
- Scientific and regulatory expertise
- Direct access to scientists
- Rapid initiation and turnaround time
- Compliance with GLP regulations
- Low staff turnover
- AAALAC accreditation





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Safety pharmacology

Our safety pharmacology studies are designed to determine potential hazards and assist in the prediction of adverse effects. Because pharmacological responses may be unique, we work with you to design customized, detailed protocols for your studies.

- Safety pharmacology core battery (ICH S7A)
- CNS, cardiovascular, respiratory
- Non-invasive/external telemetry
- Functional Observational Battery (FOB) and motor activity
- Supplemental safety pharmacology studies
 - GI, Renal

Immunology and immunotoxicity

We offer methods of immune system evaluation in laboratory animals to enable you to rapidly assess the impact of possible immunological responses in different species.

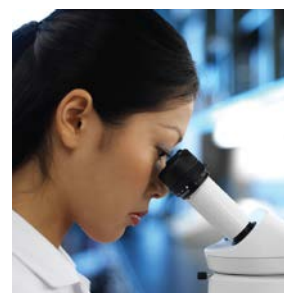
- Immunosuppression and immunostimulation
- Hypersensitivity
- Immunopharmacology
- Customized development of ELISA assays

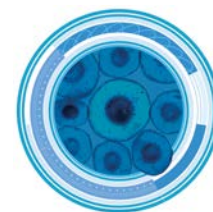
Species tested

- Cat
- Dog
- Ferret
- Guinea pig
- Hamster
- Minipig
- Mouse
- Non-human primate
- Rabbit
- Rat

Full support services

- Histology/pathology
- Quality assurance
- Analytical chemistry for dose formulation analysis





Drug Safety and Metabolism

Metabolism studies

Ricerca's Drug Metabolism and Pharmacokinetics (DMPK) specialists provide world-class expertise in selecting a testing strategy specific to your development stage and provide high-quality data necessary for intelligent decision making.

In vitro metabolism

- Protein binding
- Plasma stability
- Stability in liver microsomes
- Stability in hepatocytes
- CYP inhibition (IC50 and Ki)
- CYP induction
- CYP reaction phenotyping
- *In vitro* metabolite profiling and identification

In vivo metabolism

- Full PK/PD modeling
- Metabolite ID & profiling
- ADME mass balance, tissue distribution
- Radiochemistry synthesis support

Pharmacokinetics (PK) & Toxicokinetics (TK)

- Bioavailability
- Formulation selection
- Bioequivalence (BE)
- TK support for single and multiple dose toxicology studies

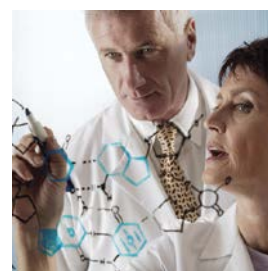
Ricerca Biosciences preclinical services

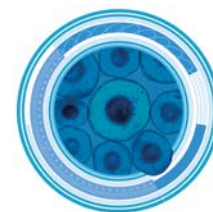
Discovery pharmacology

- Pharmacology profiling
- Discovery/development
- Discovery PK
- Bioanalytical support

Chemistry

- Process chemistry
- Process development and engineering
- Analytical chemistry
- Medicinal chemistry
- Custom synthesis
- Radiosynthesis





Drug Safety and Metabolism

Expertise with major therapeutic areas

- Cardiovascular
- CNS
- Gastrointestinal
- Immunology/inflammation
- Anti-infectives
- Metabolic/endocrine
- Oncology (cytotoxic and cytostatic)
- Pain

Proficiency in growing field of new biological entities

- Vaccines
- Growth factors
- Interleukins
- Interferons
- Monoclonal antibodies

Commitment to animal welfare

Ricerca Biosciences is committed to the enhancement of animal health and welfare. We honor an organizational commitment toward the ethical and humane use of laboratory animals, paying particular attention to the housing conditions and environmental enrichment of our animal species.

Routes of administration

- Dermal
- Dietary admixture
- Intratracheal
- Intramuscular
- Intraocular
- Intravenous (bolus, infusion)
- Oral gavage
- Rectal
- Subcutaneous
- Subdural
- Vaginal

Other Ricerca services

- Custom development and validation of analytical methods for bulk pharmaceuticals, impurities and metabolites
- Physical characterization (particle size, surface area, pore volume, tensile/compression testing, etc.)
- Stability testing
- GLP characterization of test and control articles
- Custom radiochemical synthesis