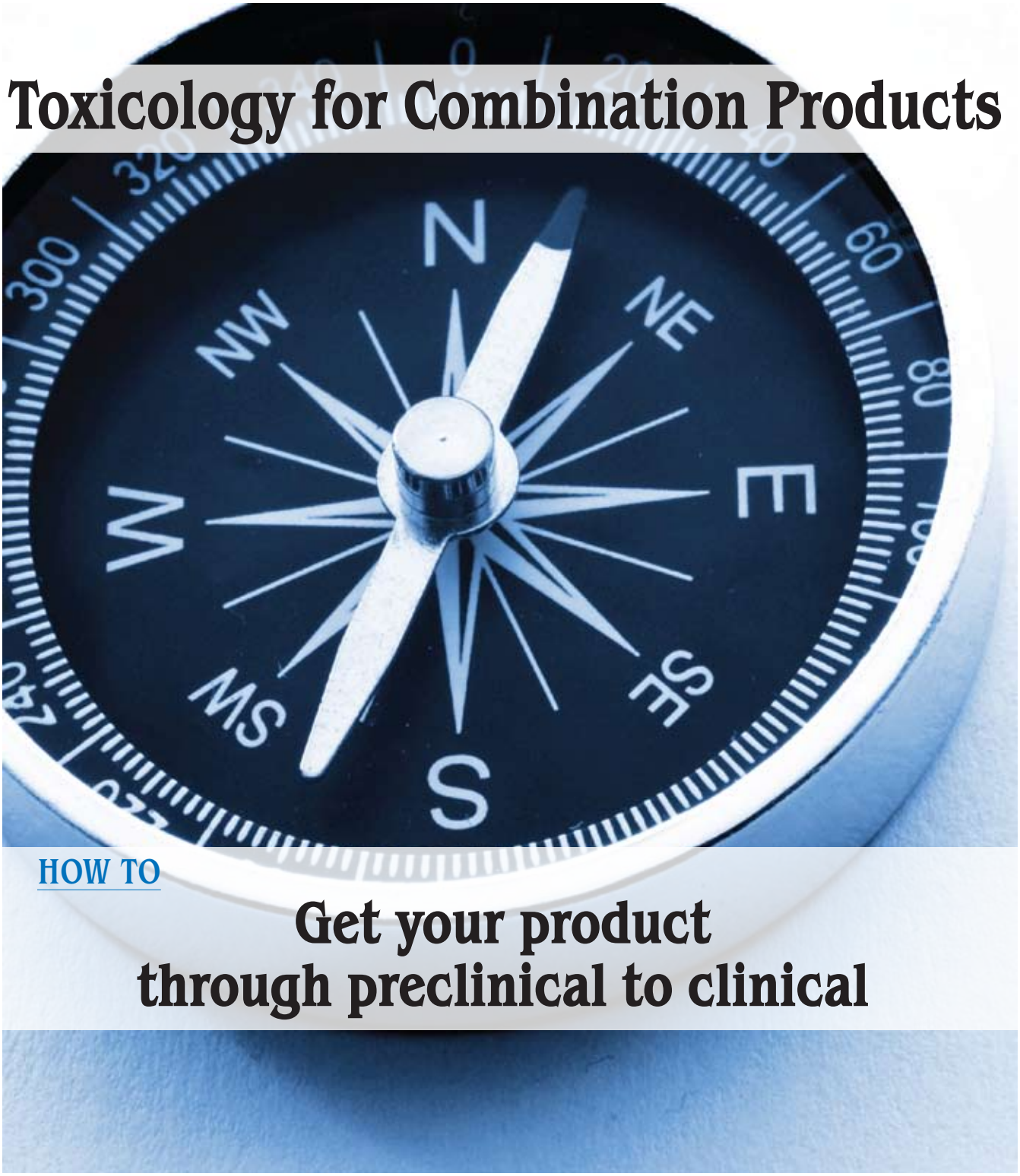
Toxicology for Combination Products



HOW TO

Get your product through preclinical to clinical

WuXi AppTec

The Leader in Combination Product Services

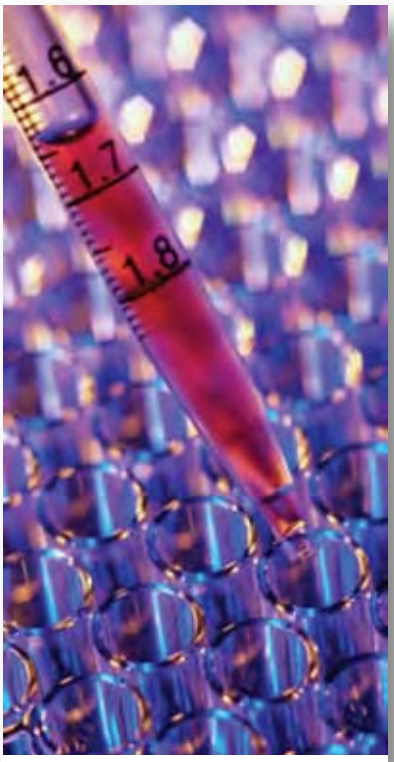
Bio / Pharma | Combo Products | Medical Devices

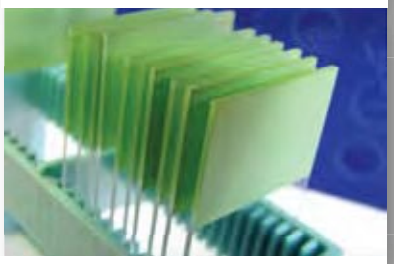
Toxicology for Combination Products

Expert guidance in choosing the right toxicology programs to support your preclinical regulatory submissions

WuXi AppTec's toxicology program has been designed to address the unique challenges specific to evaluating safety for a combination product. As the leader in combination product services, we recognize that a safety evaluation is more complicated than simply the sum of its parts.

With our many years of experience, we stand apart with a toxicology program that is built on a strong foundation in both medical device biocompatibility and drug safety evaluations. And our toxicology team includes Ph.D. toxicologists and material specialists, as well as highly experienced surgeons and pathologists, with the specific expertise required to address the special requirements of combination product studies.





TOXICOLOGY SERVICES

- **Acute Toxicity *(in vivo)***
  - Range Finding
  - Fixed Dose
  - Local Tolerance
- **Repeat Exposure *(in vivo)***
  - Range Finding
  - Subacute
  - Subchronic
- **Implant Toxicology**
- **pK / tK**
  - Blood and Tissue Sampling
- **Genotoxicity *(in vitro and in vivo)***
  - *In Vitro* Bacterial Mutagenicity
  - *In Vitro* Mouse Lymphoma
  - *In Vitro* Chromosomal Aberrations
  - *In Vivo* Mouse Micronucleus

ANIMAL MODELS

Mouse
Dog
Rat
Pig
Guinea Pig
Goat
Rabbit
Sheep

ROUTES OF ADMINISTRATION

Dermal
Intracardiac
Intracranial
Intradermal
Intramuscular
Intravenous (continuous infusion)
Intraperitoneal
Intraocular
Oral
Subcutaneous
Intravenous (bolus)

SUPPORTING SERVICES

Serum Chemistry
Hematology
Coagulation
Urinalysis
Histology / Histopathology

Choosing the right path…

Designing a toxicology assessment program for combination products can be challenging. WuXi AppTec experts start the process of designing a testing program with you by understanding all of the constituent parts of your combination product as well as the final product itself.

To help you reach the ultimate goal of moving the product through the preclinical phase, the design of the program will take into account the diverse nature of each of the regulatory body guidelines. Next, we guide you through the process of evaluating the assay designs to help tailor the studies to best test your product. Finally, our experienced team performs the assays and delivers the reports to help you complete your important regulatory submissions.

Representative Sample Case Study

Drug-Coated Catheter

While every product offers a unique set of challenges, the following "case study" demonstrates how WuXi AppTec has developed and performed successful testing programs in support of pre-clinical regulatory submissions.

Development/Screening Phase

- Maximum Tolerated Dose
- Local Tolerance

Regulatory Preparation Phase

- Endotoxin
- Biocompatibility
  - Cytotoxicity
  - Acute Systemic Toxicity
  - Intracutaneous Irritation
  - Sensitization
  - Genotoxicity
- Drug Elution Rate
- Pharmacokinetics
- Leachables/extractables
- Drug Stability
- Toxicology/Implant Assay
- Repeated Exposure Toxicity

Toxicology for Combination Products

WuXi AppTec's established, clinically relevant testing models are designed to evaluate new routes of administration and exposure, new drugs, new materials, and altered material + drug performance.

EXPERIENCE

- Over a decade of experience performing both toxicology and biocompatibility studies in support of combination product submissions to the FDA and other regulatory agencies.
- More than two dozen different companies have contracted with WuXi AppTec for combination product toxicology studies.
- Multiple products have already received regulatory approval.
- Product experience includes:
  - Catheters
  - Stents
  - Orthopedic devices
  - Orthopedic devices with cells
  - Resorbable devices
  - Resorbable devices with cells
  - HA gels
  - Drug collagen products

PROGRAM FEATURES

- Testing is custom designed with sponsor to take into account device + drug implications.
- Program results can meet ISO/FDA requirements and have been internationally accepted.
- Senior staff have extensive experience in medical device tissue responses and toxicology.
- Toxicology team includes Ph. D. toxicologists, board-certified pathologists and Ph.D. materials scientists.
- Drug/Device models include: Acute, Repeat, pK/tK and Toxicology Implant studies.
- Regulatory and consulting services available to support sponsors.

WuXi AppTec

The Leader in Combination Product Services

Bio / Pharma | Combo Products | Medical Devices

SS865-10–03.24.11

Contact WuXi AppTec for your combination product toxicology studies:

(1) 651-675-2000 / 888-794-0077 • www.wuxiapptec.com • www.comboproducts.com