

Amy Kimzey, Ph.D., DABT

MANAGING SCIENTIST

CONTACT INFORMATION

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PROFESSIONAL PROFILE

Dr. Amy Kimzey is a Managing Scientist with ToxStrategies, Inc., and is located in Massachusetts. She is a board-certified toxicologist with 17 years of toxicology and drug discovery experience in the pharmaceutical industry, with both large pharmaceutical companies and small start-ups. She has experience as a project-team liaison on multidisciplinary discovery and development project teams, with accountability for designing discovery and development toxicology screening and testing paradigms appropriate to the project stage, therapeutic area, and disease setting.

Dr. Kimzey also specializes in writing regulatory submissions (pre-INDs, INDs, IBs, briefing books, carcinogenicity risk assessments, reproductive toxicity assessments and NDAs), due diligence evaluations, and toxicology monographs for drug impurities and excipients; conducting drug target safety evaluations and both early- and late-stage toxicology risk evaluations; interpreting *in vitro* and *in vivo* assay results; and designing toxicology programs to maximize value with minimum investment. With a background in biochemistry, Dr. Kimzey understands target pathways, underlying biological mechanisms of disease states, and the biological mechanisms of toxicity.

Dr. Kimzey also has toxicology expertise with oncology, immune-oncology, severe hematologic disease and rare disease products, the design and monitoring of non-GLP and GLP toxicology studies, managing infusion reactions on nonclinical studies, and summarizing the chemical contributions (e.g., aromatic amines, chelating groups) and biological contributions (e.g., target, near-neighbor) of small-molecule and large-molecule candidates for toxicology risk profiles.

Prior to joining ToxStrategies, Dr. Kimzey worked as a toxicologist in the pharmaceutical industry, and prior to that, she was a biochemist/cell biologist for a start-up company.

EDUCATION AND DEGREES EARNED

1993–1999	University of Colorado, Boulder Chemistry Department Ph.D., Chemistry, with a specialization in Biochemistry
1989–1993	Oregon State University, Corvallis Department of Biochemistry and Biophysics B.S., Biochemistry

CERTIFICATIONS

2011–present	Diplomate, American Board of Toxicology
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PROFESSIONAL ASSOCIATIONS

2008–present	Society of Toxicology
2017–present	American College of Toxicology
2009–present	Boston Area Pharmaceutical Toxicology Group
1999–present	American Society for Biochemistry and Molecular Biology
1993–present	American Chemical Society

SELECTED PROFESSIONAL EXPERIENCE

Pharmaceutical Toxicology

Served as the lead toxicology representative on cross-functional drug development program teams, with responsibility for the design and execution of scoping and regulatory toxicology programs for monoclonal antibodies and other biologics, as well as small molecules, with responsibilities including:

- The design, placement, and monitoring of nonclinical studies outsourced to CROs, including reviewing, editing, finalizing, and incorporating reports into regulatory submissions.
- Management of multiple toxicity concerns that arose during the conduct of the studies, including but not limited to infusion reactions and other causes of animal distress/premature mortality.
- Reporting of study findings and associated benefit-risk evaluations of potential drug safety signals and trends to the study teams and to management.
- Responsible for overseeing multiple projects simultaneously, accruing substantial experience in prioritizing work and successfully meeting deadlines.

In addition, performed evaluations of the nonclinical toxicology risks of potential in-licensing candidates.

Regulatory Submissions

Primary or contributing author on multiple regulatory submissions, including pre-INDs, INDs, Investigator Brochures, Type C meeting briefing books, carcinogenicity risk assessment waivers, reproductive risk assessment waivers, carcinogenicity SPAs, and NDAs/BLAs. Responsible for interpreting and summarizing toxicology data, as

well as executing any needed literature evaluations required to put the data into the appropriate toxicology context. Responsible for writing product-specific white papers to address regulatory concerns.

Scientific Literature Analysis & Risk Evaluation

Responsible for evaluating the chemical risks of potential and actual small-molecule chemical series in close collaboration with project chemists; produced dozens of chemical risk evaluations, including comprehensive evaluations for chemical series with high-risk functional groups.

Primary scientist responsible for developing risk evaluations on the impact of inhibiting potentially druggable target genes and biological pathways, based on analysis of existing medical literature and/or databases and other publicly available information.

Responsible for writing and editing dozens of toxicology risk assessments/monographs of excipients and impurities in the context of the specific clinical route of administration, including non-standard routes such as ocular and intrathecal.

Provided species-specific risk assessments and permissible daily exposure calculations of potential excipients in non-clinical formulations.

Drug Discovery Toxicology

Successfully represented the preclinical drug safety organization as a liaison on cross-disciplinary discovery project teams, responsible for designing early safety strategies to advance lead compounds through the selection process and into formal GLP development.

- Solved multiple toxicity problems, including but not limited to cardiovascular toxicity, genetic toxicity, and target specificity during the pre-candidate nomination phase of development.
- Oversaw the design and execution of discovery *in vitro* and *in vivo* toxicology studies, which enabled the prioritization of candidate(s) with the highest probability of success in collaboration with project-team biologists and pharmacologists, study managers, pharmacokinetics experts, and pathologists.

Responsible for both oral presentations and written summary reports of candidate(s) toxicology profiles, including risk/benefit analysis based on currently available data at critical development transitions.

Biochemistry & Cell Biology

Defined a component of the regulatory mechanism of HTLV-I (Human T-Cell Leukemia Virus Type I) protein transcription by examining the complex interactions between the multiprotein HTLV-I Tax / CREB complex and its DNA site, utilizing classical biochemical and molecular biology techniques.

Developed multiple biochemistry and cell biology assays appropriate for a fast-paced, small biotechnology company.

BOOK CHAPTER

Kimzey AL, Piche M-S, Wood M, Weir AB, Lansita J. 2018. 11.19 - Immunophenotyping in drug development. In: *Comprehensive Toxicology*, 3rd Ed. Vol 11:399–427, Elsevier Science.

Kimzey A, Mease K, Mounho-Zamora B, Wood M. 2021. 13. Biosimilar Products—A Review of Past and Current Regulatory Approval Standards for Preclinical Safety Studies. (in press).

SELECTED PUBLICATIONS

Basarab GS, Doig P, Eyermann CJ, Galullo V, Kern G, **Kimzey A**, Kutschke A, Morningstar M, Schuck V, Vishwanathan K, Zhou F, Gowravaram M, Hauck S. 2020. Antibacterial spiropyrimidinetrienes with N-linked azole substituents on a benzisoxazole scaffold targeting DNA gyrase. *J Med Chem* 63(20):11882–11901.

Sibley K, Chen J, Koetzner L, Mendes O, **Kimzey A**, Lansita J, Boulos RA. 2019. A 14-day repeat dose oral gavage range-finding study of a first-in-class CDI investigational antibiotic, in rats. *Sci Rep* 9(1):158.

Mease K, **Kimzey A**, Lansita J. 2017. Biomarkers for nonclinical infusion reactions in marketed biotherapeutics and considerations for study design. *Curr Opin Toxicol* 4:1–15

Basarab GS, Doig P, Galullo V, Kern G, **Kimzey A**, Kutschke A, Newman JP, Morningstar M, Mueller J, Otterson L, Vishwanathan K, Zhou F, Gowravaram M. 2015. Discovery of novel DNA gyrase inhibiting spiropyrimidinetrienes: Benzisoxazole fusion with n-linked oxazolidinone substituents leading to a clinical candidate (ETX0914). *J Med Chem* 58(15):6264–6282.

Basarab GS, Kern GH, McNulty J, Mueller JP, Lawrence K, Vishwanathan K, Alm RA, Barvian K, Doig P, Galullo V, Gardner H, Gowravaram M, Huband M, **Kimzey A**, Morningstar M, Kutschke A, Lahiri SD, Perros M, Singh R, Schuck VJ, Tommasi R, Walkup G, Newman JV. 2015. Responding to the challenge of untreatable gonorrhea: ETX0914, a first-in-class agent with a distinct mechanism-of-action against bacterial Type II topoisomerases. *Sci Rep* 5:11827.

Bao L, **Kimzey AL**, Sauter G, Sowadski JM, Lu KP, Wang DG. 2004. Prevalent overexpression of prolyl isomerase pin1 in human cancers. *Am J Path* 164(5):1727–1737.

Kimzey AL, Weitz KK, Guengerich FP, Zangar RC. 2003. Hydroperoxy-10,12-octadecadienoic acid stimulates cytochrome P450 3A protein aggregation by a mechanism that is inhibited by substrate. *Biochem* 42(43):12691–12699.

Zangar RC, **Kimzey AL**, Okita JR, Wunschel DS, Edwards RJ, Kim H, Okita RT. 2002. Cytochrome P450 3A conjugation to ubiquitin in a process distinct from classical ubiquitination pathway. *Molec Pharmacol* 61(4):892–904.

Kimzey AL, Dynan WS. 1999. Identification of a human T-cell leukemia virus Type I tax peptide in contact with DNA. *J Biol Chem* 274(48):34226–34232.

Kimzey AL, Dynan WS. 1998. Specific regions of contact between human T-cell leukemia virus Type I tax protein and DNA identified by photocross-linking. *J Biol Chem* 273(23):13768–13775.

SELECTED POSTER PRESENTATIONS

Kimzey A.L., Welsh B.T., Chesney A.R., Fonck C., O'Neill C., Wood M.L. 2020. Derivation of a health-based exposure limit for cesium using non-clinical and clinical data. American College of Toxicology, Virtual Annual Meeting.

Chesney A, Welsh B, **Kimzey A**, Lansita J. 2020. The process and challenges of deriving exposure-based limits for toxicological risk assessment for components and impurities present in cell therapy products with case studies. Poster for Society of Toxicology, Virtual Annual Meeting.

<https://eventpilotadmin.com/web/page.php?page=Session&project=SOT20&id=P3130>.

Welsh BT, **Kimzey AL**, Lansita J. 2017. The process and challenges of deriving exposure-based limits for components and impurities present in pharmaceutical drug products with case studies for an excipient, a potential genotoxic impurity, an immunomodulator, and a pediatric drug. American College of Toxicology Annual Meeting, Palm Springs, CA.

Mease KM, **Kimzey AL**, Lansita JA. 2017. Managing immune mediated infusion reactions in nonclinical studies. ACT, Palm Springs, CA.

Mease K, **Kimzey A**, Lansita J. 2017. Failed dose formulation analysis during a GLP study — Now what? Poster presented at Society of Toxicology Annual Meeting, Baltimore, MD.

Scott C, Ehmann D, **Kimzey A**, Dragan Y. 2012. Assessing selectivity of covalent irreversible β -lactams and β -lactamase inhibitors using activity-based protein profiling. SOT poster #1137, San Francisco.

Prior H, Noakes J, Slater I, Kelly S, Smith M, Marks L, **Kimzey A**, Roberts R, Valentin JP. 2012. Inclusion of microchip transponder body temperature measurements in rat toxicology studies. SOT poster #2263, San Francisco.

SELECTED CONTINUING EDUCATION

- 2020 New Approaches for an Integrated Nonclinical-Clinical QT/Proarrhythmic Risk Assessment, Educational webinar sponsored by the FDA.
- 2019 How to Choose the Starting Dose for FIH Clinical Trials: Principles and Current Use of MABEL, Educational Webinar sponsored by Biotechnology Specialty Section of the Society of Toxicology
- 2018 Safety Assessment of Monoclonal Antibodies for Immunosuppressants and Anti-Inflammatory Agents, Educational Webinar sponsored by American College of Toxicology
- 2018 Preparing for Regulatory Interactions: How Much is Enough? Educational Webinar sponsored by American College of Toxicology
- 2017 Navigating Drug-Induced Vascular Injury in Preclinical and Clinical Development of Novel Therapeutics, continuing education sponsored by SOT
- 2017 Exploring microsampling, Educational webinar sponsored by Bioanalysis Zone
- 2017 Common Challenges in Evaluating the Reproductive System in Nonclinical General Toxicology Studies, Educational webinar sponsored by MPI Research.
- 2016 Nonclinical Study Design Approaches for CAR T-Cell Therapies, Educational webinar sponsored by Charles River Laboratories.
- 2016 Adversity in Nonclinical Reporting: Myths, Legends, and Reality, Educational webinar sponsored by American College of Toxicology.