Stanford



Teri Klein

Professor (Research) of Biomedical Data Science, of Medicine (Computational Medicine) and, by courtesy, of Genetics

Department of Biomedical Data Science

CONTACT INFORMATION

- **Alternate Contact**

  Tiffany Murray

  Email tiffany.murray@stanford.edu

  Tel 650-725-0659

Bio

CURRENT ROLE AT STANFORD

Principal Investigator, PharmGKB

Principal Investigator, CPIC

Principal Investigator, PharmCAT

Principal Investigator, ClinGen

ACADEMIC APPOINTMENTS

- Professor-Research, Department of Biomedical Data Science
- Professor-Research, Computational Medicine
- Professor-Research (By courtesy), Genetics
- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- Luminary Award, PMWC (2024)
- Fellow, American Association for the Advancement of Science (2021)
- Fellow, American College of Medical Genetics and Genomics (2015)
- Fellow, American College of Medical Informatics (2001)

PROFESSIONAL EDUCATION

- B.A., UC Santa Cruz , Chemistry/Biology (1980)
- Ph.D., UC San Francisco , Medical Information Sciences (1987)

COMMUNITY AND INTERNATIONAL WORK

- PharmGKB PI
- Co-founder, Pacific Symposium on Biocomputing

LINKS

- NIH Biosketch in SciENcv: https://www.ncbi.nlm.nih.gov/myncbi/teri.klein.1/cv/608454/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research interests extend over the broad spectrum of pharmacogenomics, personalized medicine, computational biology and bioinformatics. Applications include the development of a pharmcogenomics knowledge base, clinical dosing guidelines for pharmacogenomics, annotation of human genome, de novo modeling and the structural basis of disease.

My current research areas involve the studies of the following:

* development of an integrated knowledge base about how variation in human genetics leads to variation in our response to drugs

* the stability of the collagen triple helix

* the relationship and prediction of lethal mutations for the genetic collagenous disease Osteogenesis imperfecta

Teaching

COURSES

2026-27

- Translating Biomedical Algorithms into Regulated Clinical Tools: BMDS 282 (Win)

2025-26

- Translating Biomedical Algorithms into Regulated Clinical Tools: BMDS 282 (Win)

2024-25

- Best practices for developing data science software for clinical and healthcare applications: BIODS 235 (Win)
- Software Engineering For Scientists: BIODS 253 (Win)

2023-24

- Best practices for developing data science software for clinical and healthcare applications: BIODS 235 (Win)
- Software Engineering For Scientists: BIODS 253 (Win)

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biomedical Data Science (Masters Program)
- Biomedical Data Science (PhD Program)
- Genetics (PhD Program)

Publications

PUBLICATIONS

- **Towards an integrated resource for pharmacogenomics (PGx): Survey findings from the genomic medicine communities.** *Genetics in medicine : official journal of the American College of Medical Genetics*
  Klein, C. J., Gong, L., Caudle, K. E., Naik, H., Empey, P. E., Hoffman, J. M., Scherer, S., Iwuchukwu, O. F., Gregornik, D., Monte, A. A., Swen, J. J., Scott, S. A., Whirl-Carrillo, et al
  2025: 101529

- **CLINPGX: A COMPREHENSIVE PHARMACOGENOMICS RE-SOURCE WITH TOOLS FOR ACCESSING CLINICAL GUIDANCE BY GENOTYPE**
  Whirl-Carrillo, M., Sangkuhl, K., Gong, L., Whaley, R., Woon, M., Thorn, C., Keseler, I., Klein, C., Tsermpini, E., Caudle, K., Ritchie, M., Klein, T.
  WILEY.2025

- **Integrating Pharmacogenomics into the Broader Construct of Genomic Medicine: Efforts by the ClinGen Pharmacogenomics Working Group (PGxWG).** *Clinical chemistry*
  Gong, L., Klein, C. J., Caudle, K. E., Moyer, A. M., Scott, S. A., Whirl-Carrillo, M., Klein, T. E.
  2025; 71 (1): 36-44

- **The Value of Clinical Pharmacogenomic Guidelines That Recommend Standard of Care Over Genotype-Based Prescribing.** *Clinical pharmacology and therapeutics*
  Donnelly, R. S., Whirl-Carrillo, M., Klein, T. E., Caudle, K. E.
  2024

- **Curating Genetic Associations with Rheumatologic Autoimmune Diseases to Improve Patient Outcomes.** *Arthritis & rheumatology (Hoboken, N.J.)*
  Bridges, S. L., Shapira, R., Aksentijevich, I., Mack, S. J., Merriman, T. R., Klein, C. J., Bowen, B. M., Klein, T. E.
  2024

- **Frequencies of pharmacogenomic alleles across biogeographic groups in a large-scale biobank.** *American journal of human genetics*
  Li, B., Sangkuhl, K., Whaley, R., Woon, M., Keat, K., Whirl-Carrillo, M., Ritchie, M. D., Klein, T. E.
  2023

- **PharmVar Tutorial on CYP2D6 Structural Variation Testing and Recommendations on Reporting.** *Clinical pharmacology and therapeutics*
  Turner, A. J., Nofziger, C., Ramey, B. E., Ly, R. C., Bousman, C. A., Agúndez, J. A., Sangkuhl, K., Whirl-Carrillo, M., Vanoni, S., Dunnenberger, H. M., Ruano, G., Kennedy, M. A., Phillips, et al
  2023

- **How to Run the Pharmacogenomics Clinical Annotation Tool (PharmCAT).** *Clinical pharmacology and therapeutics*
  Li, B., Sangkuhl, K., Keat, K., Whaley, R. M., Woon, M., Verma, S., Dudek, S., Tuteja, S., Verma, A., Whirl-Carrillo, M., Ritchie, M. D., Klein, T. E.
  2022

- **PharmGKB, an Integrated Resource of Pharmacogenomic Knowledge.** *Current protocols*
  Gong, L., Whirl-Carrillo, M., Klein, T. E.
  2021; 1 (8): e226

- **An evidence-based framework for evaluating pharmacogenomics knowledge for personalized medicine.** *Clinical pharmacology and therapeutics*
  Whirl-Carrillo, M., Huddart, R., Gong, L., Sangkuhl, K., Thorn, C. F., Whaley, R., Klein, T. E.
  2021

- **ACMG SF v3.0 list for reporting of secondary findings in clinical exome and genome sequencing: a policy statement of the American College of Medical Genetics and Genomics (ACMG).** *Genetics in medicine : official journal of the American College of Medical Genetics*
  Miller, D. T., Lee, K., Chung, W. K., Gordon, A. S., Herman, G. E., Klein, T. E., Stewart, D. R., Amendola, L. M., Adelman, K., Bale, S. J., Gollob, M. H., Harrison, S. M., Hershberger, et al
  2021

- **Recommendations for reporting of secondary findings in clinical exome and genome sequencing, 2021 update: a policy statement of the American College of Medical Genetics and Genomics (ACMG).** *Genetics in medicine : official journal of the American College of Medical Genetics*
  Miller, D. T., Lee, K., Gordon, A. S., Amendola, L. M., Adelman, K., Bale, S. J., Chung, W. K., Gollob, M. H., Harrison, S. M., Herman, G. E., Hershberger, R. E., Klein, T. E., McKelvey, et al
  2021

- **Expanding evidence leads to new pharmacogenomics payer coverage.** *Genetics in medicine : official journal of the American College of Medical Genetics*
  Empey, P. E., Pratt, V. M., Hoffman, J. M., Caudle, K. E., Klein, T. E.
  2021

- **PharmGKB tutorial for pharmacogenomics of drugs potentially used in the context of COVID-19.** *Clinical pharmacology and therapeutics*
  Huddart, R., Whirl-Carrillo, M., Altman, R. B., Klein, T. E.

2020

- **Clinical Pharmacogenetics Implementation Consortium (CPIC) Guideline for CYP2C9 and Nonsteroidal Anti-inflammatory Drugs.** *Clinical pharmacology and therapeutics*
  Theken, K. N., Lee, C. R., Gong, L., Caudle, K. E., Formea, C. M., Gaedigk, A., Klein, T. E., Agundez, J. A., Grosser, T.
  2020

- **PGxMine: Text mining for curation of PharmGKB.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
  Lever, J. n., Barbarino, J. M., Gong, L. n., Huddart, R. n., Sangkuhl, K. n., Whaley, R. n., Whirl-Carrillo, M. n., Woon, M. n., Klein, T. E., Altman, R. B.
  2020; 25: 611–22

- **A Call for Clear and Consistent Communications Regarding the Role of Pharmacogenetics in Antidepressant Pharmacotherapy.** *Clinical pharmacology and therapeutics*
  Hicks, J. K., Bishop, J. R., Gammal, R. S., Sangkuhl, K., Bousman, C. A., Leeder, J. S., Llerena, A., Mueller, D. J., Ramsey, L. B., Scott, S. A., Skaar, T. C., Caudle, K. E., Klein, et al
  2019

- **PharmVar GeneReview: CYP2D6.** *Clinical pharmacology and therapeutics*
  Nofziger, C., Turner, A. J., Sangkuhl, K., Whirl-Carrillo, M., Agundez, J. A., Black, J. L., Dunnenberger, H. M., Ruano, G., Kennedy, M. A., Phillips, M. S., Hachad, H., Klein, T. E., Gaedigk, et al
  2019

- **Are Randomized Controlled Trials Necessary to Establish the Value of Implementing Pharmacogenomics in the Clinic?** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
  Huddart, R., Sangkuhl, K., Whirl-Carrillo, M., Klein, T. E.
  2019; 106 (2): 284–86

- **Pharmacogenomics Clinical Annotation Tool (PharmCAT).** *Clinical pharmacology and therapeutics*
  Sangkuhl, K., Whirl-Carrillo, M., Whaley, R. M., Woon, M., Lavertu, A., Altman, R. B., Carter, L., Verma, A., Ritchie, M. D., Klein, T. E.
  2019

- **Standardized Biogeographic Grouping System for Annotating Populations in Pharmacogenetic Research** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
  Huddart, R., Fohner, A. E., Whirl-Carrillo, M., Wojcik, G. L., Gignoux, C. R., Popejoy, A. B., Bustamante, C. D., Altman, R. B., Klein, T. E.
  2019; 105 (5): 1256–62

- **Are Randomized Controlled Trials Necessary to Establish the Value of Implementing Pharmacogenomics in the Clinic?** *Clinical pharmacology and therapeutics*
  Huddart, R., Sangkuhl, K., Whirl-Carrillo, M., Klein, T. E.
  2019

- **The Clinical Pharmacogenetics Implementation Consortium: 10 Years Later.** *Clinical pharmacology and therapeutics*
  Relling, M. V., Klein, T. E., Gammal, R. S., Whirl-Carrillo, M. n., Hoffman, J. M., Caudle, K. E.
  2019

- **Standardized biogeographic grouping system for annotating populations in pharmacogenetic research.** *Clinical pharmacology and therapeutics*
  Huddart, R., Fohner, A. E., Whirl-Carrillo, M., Wojcik, G. L., Gignoux, C. R., Popejoy, A. B., Bustamante, C. D., Altman, R. B., Klein, T. E.
  2018

- **The Case for Pharmacogenetics-Guided Prescribing of Codeine in Children.** *Clinical pharmacology and therapeutics*
  Gammal, R. S., Caudle, K. E., Quinn, C. T., Wang, W. C., Gaedigk, A., Prows, C. A., Haidar, C. E., Taylor, A. K., Klein, T. E., Sangkuhl, K., Hankins, J. S., Crews, K. R.
  2018

- **PharmCAT: A Pharmacogenomics Clinical Annotation Tool** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
  Klein, T. E., Ritchie, M. D.
  2018; 104 (1): 19–22

- **Clinical Pharmacogenetics Implementation Consortium (CPIC) Guideline for CYP2D6 and Tamoxifen Therapy** *CLINICAL PHARMACOLOGY & THERAPEUTICS*

Goetz, M. P., Sangkuhl, K., Guchelaar, H., Schwab, M., Province, M., Whirl-Carrillo, M., Symmans, W., McLeod, H. L., Ratain, M. J., Zembutsu, H., Gaedigk, A., van Schaik, R. H., Ingle, et al
2018; 103 (5): 770–77

- **PharmGKB: A worldwide resource for pharmacogenomic information.** *Wiley interdisciplinary reviews. Systems biology and medicine*
  Barbarino, J. M., Whirl-Carrillo, M., Altman, R. B., Klein, T. E.
  2018

- **PharmCAT: A Pharmacogenomics Clinical Annotation Tool.** *Clinical pharmacology and therapeutics*
  Klein, T. E., Ritchie, M. D.
  2017

- **Recommendations for reporting of secondary findings in clinical exome and genome sequencing, 2016 update (ACMG SF v2.0): a policy statement of the American College of Medical Genetics and Genomics** *GENETICS IN MEDICINE*
  Kalia, S. S., Adelman, K., Bale, S. J., Chung, W. K., Eng, C., Evans, J. P., Herman, G. E., Hufnagel, S. B., Klein, T. E., Korf, B. R., McKelvey, K. D., Ormond, K. E., Richards, et al
  2017; 19 (2): 249-255

- **Standardizing terms for clinical pharmacogenetic test results: consensus terms from the Clinical Pharmacogenetics Implementation Consortium (CPIC).** *Genetics in medicine*
  Caudle, K. E., Dunnenberger, H. M., Freimuth, R. R., Peterson, J. F., Burlison, J. D., Whirl-Carrillo, M., Scott, S. A., Rehm, H. L., Williams, M. S., Klein, T. E., Relling, M. V., Hoffman, J. M.
  2016

- **Prediction of CYP2D6 phenotype from genotype across world populations.** *Genetics in medicine*
  Gaedigk, A., Sangkuhl, K., Whirl-Carrillo, M., Klein, T., Leeder, J. S.
  2016

- **Genetic variant in folate homeostasis is associated with lower warfarin dose in African Americans** *BLOOD*
  Daneshjou, R., Gamazon, E. R., Burkley, B., Cavallari, L. H., Johnson, J. A., Klein, T. E., Limdi, N., Hillenmeyer, S., Percha, B., Karczewski, K. J., Langaee, T., Patel, S. R., Bustamante, et al
  2014; 124 (14): 2298-2305

- **CYP2D6 Genotype and Adjuvant Tamoxifen: Meta-Analysis of Heterogeneous Study Populations** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
  Province, M. A., Goetz, M. P., Brauch, H., Flockhare, D. A., Hebert, J. M., Whaley, R., Suman, V. J., Schroth, W., Winter, S., Zembutsu, H., Mushiroda, T., Newman, W. G., Lee, et al
  2014; 95 (2): 216-227

- **Clinical Implementation of Pharmacogenetics: More Than One Gene at a Time** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
  Johnson, J. A., Klein, T. E., RELLING, M. V.
  2013; 93 (5): 384-385

- **Pharmacogenomics Knowledge for Personalized Medicine** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
  Whirl-Carrillo, M., MCDONAGH, E. M., Hebert, J. M., Gong, L., Sangkuhl, K., Thorn, C. F., Altman, R. B., Klein, T. E.
  2012; 92 (4): 414-417

- **Clopidogrel: A Case for Indication-Specific Pharmacogenetics** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
  Johnson, J. A., Roden, D. M., Lesko, L. J., Ashley, E., Klein, T. E., Shuldiner, A. R.
  2012; 91 (5): 774-776

- **Clinical Pharmacogenetics Implementation Consortium (CPIC) Guidelines for Codeine Therapy in the Context of Cytochrome P450 2D6 (CYP2D6) Genotype** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
  Crews, K. R., Gaedigk, A., Dunnenberger, H. M., Klein, T. E., Shen, D. D., Callaghan, J. T., Kharasch, E. D., Skaar, T. C.
  2012; 91 (2): 321-326

- **CPIC: Clinical Pharmacogenetics Implementation Consortium of the Pharmacogenomics Research Network** *CLINICAL PHARMACOLOGY & THERAPEUTICS*
  Relling, M. V., Klein, T. E.
  2011; 89 (3): 464-467

- **Clinical assessment incorporating a personal genome** *LANCET*
  Ashley, E. A., Butte, A. J., Wheeler, M. T., Chen, R., Klein, T. E., Dewey, F. E., Dudley, J. T., Ormond, K. E., Pavlovic, A., Morgan, A. A., Pushkarev, D., Neff, N. F., Hudgins, et al
  2010; 375 (9725): 1525-1535

- **Estimation of the Warfarin Dose with Clinical and Pharmacogenetic Data** *NEW ENGLAND JOURNAL OF MEDICINE*
  Klein, T. E., Altman, R. B., Eriksson, N., Gage, B. F., Kimmel, S. E., Lee, M. M., Limdi, N. A., Page, D., Roden, D. M., Wagner, M. J., Caldwell, M. D., Johnson, J. A., Chen, et al
  2009; 360 (8): 753-764

- **Mutation and polymorphism spectrum in osteogenesis imperfecta type II: implications for genotype-phenotype relationships** *HUMAN MOLECULAR GENETICS*
  Bodian, D. L., Chan, T., Poon, A., Schwarze, U., Yang, K., Byers, P. H., Kwok, P., Klein, T. E.
  2009; 18 (3): 463-471

- **PREDICTING CLOPIDOGREL RESPONSE IN AFRICAN AMERICANS USING A XGBOOST RISK PREDICTION MODEL INCORPORATING PLATELET TRANSCRIPTOMIC AND GENOMIC DATA**
  Singh, A., Mishra, M., Yang, G., Alarcon, C., Yanek, L., Becker, L., Faraday, N., O'Brien, T., Tuck, M., Gong, L., Klein, T., Meltzer, D., Johnson, et al
  WILEY.2026: S11

- **Knowledge and Attitudes on Germline Pharmacogenomic Testing Among Clinical Oncologists.** *JCO precision oncology*
  Monroe, M., Naik, H., Ford, J. M., Whirl-Carrillo, M., Klein, T. E., Hertz, D. L., Scott, S. A.
  2026; 10 (8): e2600353

- **Knowledge and perspectives on pharmacogenomic-guided antidepressant treatment among psychiatrists and primary care practitioners.** *Pharmacogenetics and genomics*
  Schmidt, K. T., Naik, H., Nguyen, T. P., Bishop, J. R., Bousman, C. A., Singh, A. B., Klein, T. E., Scott, S. A.
  2026

- **PharmVar GeneFocus: CYP1A2-Clinical Impact, Genetic Variation, and Updated Nomenclature.** *Clinical pharmacology and therapeutics*
  Monostory, K., Villapalos Garcia, G., Koller, D., Adams, S., Bousman, C. A., Tsermpini, E. E., Whirl-Carrillo, M., Turner, A. J., Lauschke, V. M., Nagy, M., Boone, E. C., Klein, T. E., Zubiaur, et al
  2026

- **Clinical Pharmacogenetics Implementation Consortium (CPIC) Guideline for CYP2D6 Genotype and Use of 5-HT3Receptor Antagonists: 2026 Update.** *Clinical pharmacology and therapeutics*
  Moore, C., Bourque, M. S., Halman, A., Agundez, J. A., Prows, C. A., Hikino, K., Schwab, M., Oxencis, C. J., Chauhan, D., Diekstra, M. H., Long, S. E., Bell, G. C., Gaedigk, et al
  2026

- **ClinGen API platform for classification of human genetic variants.** *Cell genomics*
  Shah, N., Farris, T., Zuniga, A. A., Jackson, A. R., Arce, J., Riehle, K., Preston, C. G., Mandell, M. E., Wulf, B., Cheung, G., Yu, K., Ritter, D. I., Jevtic, et al
  2026; 6 (4): 101211

- **Clinical Pharmacogenetics Implementation Consortium (CPIC) Guideline for Thiopurine Dosing Based on TPMT and NUDT15 Genotypes: 2025 Update.** *Clinical pharmacology and therapeutics*
  Maillard, M., Schwab, M., Whirl-Carrillo, M., Moyer, A. M., Suarez-Kurtz, G., Pui, C., Stein, C. M., Klein, T. E., Spahn, C., Kwon, S., Hartono, J. L., de Boer, N. K., Ahmad, et al
  2026

- **PharmVar GeneFocus: NAT2-Genetic Variation and Updated Nomenclature.** *Clinical pharmacology and therapeutics*
  Papanikolaou, G., Poloni, E. S., Agúndez, J. A., Teixeira, R. L., Boone, E. C., Rezende Santos, A., Whirl-Carrillo, M., Sangkuhl, K., Klein, T. E., Habil, M. R., Fakis, G., Minchin, R. F., Hein, et al
  2025

- **A Comprehensive Bibliometric Analysis: Celebrating the Thirtieth Anniversary of the Pacific Symposium on Biocomputing.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
  Kumar, R., Venkatesh, R., Zhang, D. Y., Klein, T. E., Ritchie, M. D.
  2025; 30: 1-15

- **PGxQA: A Resource for Evaluating LLM Performance for Pharmacogenomic QA Tasks.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
  Keat, K., Venkatesh, R., Huang, Y., Kumar, R., Tuteja, S., Sangkuhl, K., Li, B., Gong, L., Whirl-Carrillo, M., Klein, T. E., Ritchie, M. D., Kim, D.
  2025; 30: 229-246
- **The Clinical Pharmacogenetics Implementation Consortium's consensus-based framework for assigning allele function.** *American journal of human genetics*
  Tibben, B. M., Gaedigk, A., Gong, L., Sangkuhl, K., Whirl-Carrillo, M., Relling, M. V., Donnelly, R. S., Klein, T. E., Caudle, K. E.
  2025
- **Local ancestry-informed GWAS of warfarin dose requirement in African Americans identifies a CYP2C19 splicing QTL.** *American journal of human genetics*
  Singh, A., Alarcon, C., Nutescu, E. A., O'Brien, T. J., Tuck, M., Gong, L., Klein, T. E., Meltzer, D. O., Johnson, J. A., Cavallari, L. H., Perera, M. A.
  2025
- **Clinical Pharmacogenetics Implementation Consortium Guideline for NAT2 Genotype and Hydralazine Therapy.** *Clinical pharmacology and therapeutics*
  Eadon, M. T., Hein, D. W., Andersen, M. A., Chapman, A. B., Cooper-DeHoff, R. M., Desta, Z., Duarte, J. D., Elchynski, A. L., Gaedigk, A., Karol, S. E., Limdi, N. A., Lteif, C., Sosinski, et al
  2025
- **Advancing Clinical Pharmacogenomics Worldwide Through the Clinical Pharmacogenetics Implementation Consortium (CPIC).** *Clinical pharmacology and therapeutics*
  Caudle, K. E., Whirl-Carrillo, M., Relling, M. V., Hoffman, J. M., Donnelly, R. S., Haidar, C. E., Bourque, M. S., Frear, S., Gong, L., Sangkuhl, K., Whaley, R., Klein, T. E.
  2025
- **PGxQA: A Resource for Evaluating LLM Performance for Pharmacogenomic QA Tasks.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
  Keat, K., Venkatesh, R., Huang, Y., Kumar, R., Tuteja, S., Sangkuhl, K., Li, B., Gong, L., Whirl-Carrillo, M., Klein, T. E., Ritchie, M. D., Kim, D.
  2025; 30: 229-246
- **A Comprehensive Bibliometric Analysis: Celebrating the Thirtieth Anniversary of the Pacific Symposium on Biocomputing.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
  Kumar, R., Venkatesh, R., Zhang, D. Y., Klein, T. E., Ritchie, M. D.
  2025; 30: 1-15
- **Local ancestry informed GWAS of warfarin dose requirement in African Americans identifies a novel CYP2C19 splice QTL.** *medRxiv : the preprint server for health sciences*
  Singh, A., Alarcon, C., Nutescu, E. A., O'Brien, T. J., Tuck, M., Gong, L., Klein, T. E., Meltzer, D. O., Johnson, J. A., Cavallari, L. H., Perera, M. A.
  2025
- **Investigation of Genomic and Transcriptomic Risk Factors of Clopidogrel Response in African Americans.** *Clinical pharmacology and therapeutics*
  Yang, G., Alarcon, C., Chanfreau, C., Lee, N. H., Friedman, P., Nutescu, E., Tuck, M., O'Brien, T., Gong, L., Klein, T. E., Chang, K. M., Tsao, P. S., Meltzer, et al
  2025
- **Design and implementation of an action plan for justice, equity, diversity, and inclusion within the Clinical Genome Resource.** *American journal of human genetics*
  Popejoy, A. B., Ritter, D. I., Azzariti, D., Berg, J. S., Bulkley, J. E., Cho, M., Gonzaga-Jauregui, C., Klein, T. E., Martschenko, D. O., Oni-Orisan, A., Ramos, E. M., Rehm, H. L., Riggs, et al
  2025
- **PharmVar NAT2 Gene Expert Panel: NAT2 Allele Nomenclature Update and Transition to PharmVar**
  Boukouvala, S., Papanikolaou, G., Fakis, G., Poloni, E. S., Teixeira, R. L. F., Santos, A., Agundez, J. A. G., Habil, M., Hein, D. W., Minchin, R. F., Symons, A., Sangkuhl, K., Whirl-Carrillo, et al
  LIPPINCOTT WILLIAMS & WILKINS.2025: 15
- **A Comprehensive Bibliometric Analysis: Celebrating the Thirtieth Anniversary of the Pacific Symposium on Biocomputing**
  Kumar, R., Venkatesh, R., Zhang, D. Y., Klein, T. E., Ritchie, M. D.

edited by Altman, R. B., Hunter, L., Ritchie, M. D., Murray, T., Klein, T. E.
WORLD SCIENTIFIC PUBL CO PTE LTD.2025: 1-15

- **PGxQA: A Resource for Evaluating LLM Performance for Pharmacogenomic QA Tasks**
  Keat, K., Venkatesh, R., Huang, Y., Kumar, R., Tuteja, S., Sangkuhl, K., Li, B., Gong, L., Whirl-Carrillo, M., Klein, T. E., Ritchie, M. D., Kim, D.
  edited by Altman, R. B., Hunter, L., Ritchie, M. D., Murray, T., Klein, T. E.
  WORLD SCIENTIFIC PUBL CO PTE LTD.2025: 229-246

- **PharmVar GeneFocus: CYP4F2.** *Clinical pharmacology and therapeutics*
  Zubiaur, P., Rodríguez-Antona, C., Boone, E. C., Daly, A. K., Tsermpini, E. E., Khasawneh, L. Q., Sangkuhl, K., Duconge, J., Botton, M. R., Savieo, J., Nofziger, C., Whirl-Carrillo, M., Klein, et al
  2024

- **PharmVar GeneFocus: CYP2A6.** *Clinical pharmacology and therapeutics*
  Langlois, A. W., Chenoweth, M. J., Twesigomwe, D., Scantamburlo, G., Whirl-Carrillo, M., Sangkuhl, K., Klein, T. E., Nofziger, C., Tyndale, R. F., Gaedigk, A.
  2024

- **Clinical Pharmacogenetics Implementation Consortium Guideline (CPIC)for CYP2D6, ADRB1, ADRB2, ADRA2C, GRK4, and GRK5 Genotypes and Beta-Blocker Therapy.** *Clinical pharmacology and therapeutics*
  Duarte, J. D., Thomas, C. D., Lee, C. R., Huddart, R., Agundez, J. A., Baye, J. F., Gaedigk, A., Klein, T. E., Lanfear, D. E., Monte, A. A., Nagy, M., Schwab, M., Stein, et al
  2024

- **Clinical Pharmacogenetics Implementation Consortium Guideline for CYP2B6 Genotype and Methadone Therapy.** *Clinical pharmacology and therapeutics*
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