CURRICULUM VITAE

Russ Biagio Altman, MD, PhD

BIRTHPLACE: Brooklyn, New York
ETHNICITY: White
NATIONALITY: U.S.A.

LICENSURE:

1991	California State Medical Board, License G072413

EDUCATION:

1983 A.B.	Biochemistry and Molecular Biology, Harvard College; Cambridge, Massachusetts
1989 Ph.D.	Medical Information Sciences, Stanford University; Stanford, California
1990 M.D.	Stanford University; Stanford, California

POSTDOCTORAL TRAINING:

1990 - 91	Internship, Internal Medicine, Stanford University Medical School; Stanford, California
1991 - 92	Residency, Internal Medicine, Stanford University Medical School; Stanford, California

BOARD ELIGIBILITY:

1992	Diplomate, American Board of Internal Medicine, Certificate #142388. Certified 1992, Recertified 2002, 2012.
2014	Diplomate, American Board of Preventive Medicine, Clinical Informatics. Certified 2014.

NON-ACADEMIC APPOINTMENTS:

1982	Undergraduate Research Assistant, Professor William N. Lipscomb (Nobel Laureate), Department of Chemistry, Harvard University; Cambridge, Massachusetts
1982–1983	Undergraduate Research Assistant, Professor Stephen C. Harrison, Department of Biochemistry and Molecular Biology, Harvard University; Cambridge, Massachusetts
1984–1989	Doctoral Research, Preceptors: Professor Bruce G. Buchanan, Stanford Departments of Computer Science and Medicine; and Professor Oleg Jardetzky, Stanford Magnetic Resonance Laboratory; Stanford, California
1992	Research Assistant, Post-Doctoral, Professor Oleg Jardetzky, Stanford Magnetic Resonance Laboratory; Stanford, California
1993–1996	Assistant Director, Stanford Medical Scientist Training Program, Stanford University; Stanford, California

1996–2000	Associate Director, Stanford Medical Scientist Training Program, Stanford University; Stanford, California
2000–2018	Director, Stanford Biomedical Informatics Training Program
2018-2021	Executive Committee, Stanford Biomedical Informatics Training Program
2004-	Chair, Biomedical Computation Undergraduate Committee
2014-	Faculty Director, 100 Year Study of Artificial Intelligence (AI100)
2015-2021	Director, Stanford Predictives and Diagnostics Accelerator (SPADA)
2015-2022	Acting Chief, Systems Medicine Division, Department of Pediatrics
2018-	Attending, Pharmacogenomics Clinical Consult Service
2019-	Associate Director, Stanford Institute for Human-Centered AI (HAI)
2020-	Co-Chair, UCB-Stanford Digital Health Research Collaborative

ACADEMIC APPOINTMENTS:

9/1/92–4/30/99	Assistant Professor of Medicine (General Internal Medicine), Stanford University School of Medicine, Stanford, CA
1/1/93–4/30/99	Assistant Professor of Computer Science (by courtesy), Stanford University, Stanford, CA.
5/1/99–8/31/01	Associate Professor of Medicine (Medical Informatics, General Internal Medicine) with tenure
5/1/99 – 9/30/05	Associate Professor of Computer Science (by courtesy)
9/1/01–10/31/04	Associate Professor of Genetics and Medicine (Medical Informatics, General Internal Medicine), Stanford University School of Medicine, Stanford, CA
11/1/04–12/21/06	Professor of Genetics, Bioengineering, and Medicine (Medical Informatics, General Internal Medicine), and Computer Science, by courtesy, Stanford University School of Medicine, Stanford, CA
1/1/07–6/30/12	Professor & Chair, Department of Bioengineering. Professor, Departments of Genetics, Medicine (Biomedical Informatics, General Internal Medicine), and (by courtesy) Computer Science. Schools of Engineering & Medicine, Stanford University, CA
7/1/12-present	Professor, Departments of Bioengineering, Genetics, Medicine (Biomedical Informatics, General Internal Medicine), and (by courtesy) Computer Science. Schools of Engineering & Medicine, Stanford University, CA
7/1/13-present	Kenneth Fong Professor
9/1/23-8/31/26	Senior Fellow at the Stanford Institute for Human-Centered Artificial Intelligence (HAI)

HONORS AND AWARDS:

1979	Awards for General Excellence, Regis High School; NY, NY.

1979	Award for Excellence in Classical Greek Translation, Regis High School; New York, NY
1983	Phi Beta Kappa, Harvard College Chapter; Boston, MA
1983	Summa Cum Laude, Harvard College; Boston, MA
1983	Medical Scientist Training Program, NIH Predoctoral Fellowship
1987	Medical Information Sciences, Ph.D. oral exam passed *with distinction*
1991	Howard Hughes Institute Post-Doctoral Fellowship
1992	Finalist, Stanford Hospital Medical Resident Teaching Award
1993	Charles E. Culpeper Foundation Medical Scholar
1994	Nominated, Albert Gores University Teaching Award
1996	National Science Foundation CAREER Award
1997	Presidential Early Career Award for Scientists and Engineers
1998	Stanford School of Medicine Hume Faculty Scholar
1998	Western Society for Clinical Investigation, Young Investigator Award
1998	Fellow, American College of Physicians
1998	Fellow, American College of Medical Informatics
2000	Stanford Graduate Teaching Award (first time awarded)
2005	General Internal Medicine, Honorable Mention for Clinical Teaching
2009	Fellow, American Institute of Medical and Biological Engineering
2009	Member, Institute of Medicine (IOM) of the National Academies
2010	Fellow, International Society for Computational Biology
2014	Stanford Medical School Mentorship Award
2014	Fellow, American Association for the Advancement of Science
2014	Patient Service Award, Center for Pharmacogenomics & Individualized Therapy, University of North Carolina
2020	Stanford Biosciences Excellence in Graduate Teaching Award
2020	Tau Beta Pi Teaching Honor Roll
2023	Arthur Kornberg and Paul Berg Lifetime Achievement Award in Biomedical Sciences

MEMBERSHIPS:

1987-	American Association for Artificial Intelligence (AAAI)
1991- 1993	Biomatrix Society
1992- 2000	American Federation for Clinical Research (AFCR)
1992-	American Medical Informatics Association (AMIA)
1992-	American Association for the Advancement of Science (AAAS)
1992-	American College of Physicians
1993-	Protein Society
1993-	Physicians for a National Health Program
1993-	California Physician's Alliance
1994-	Association for Computing Machinery
1995- 1996	American Educational Research Association
1995-2010	RNA Society

1996-	Institute of Electrical and Electronic Engineers (IEEE)
1997-	International Society for Computational Biology (ISCB)
1997-2001	Society for General Internal Medicine (SGIM)
2003-	American Society for Clinical Pharmacology and Therapeutics (ASCPT)
2007	American Institute for Medical and Biological Engineering
2022-	National Academies of Science, Engineering, Medicine (NASEM) Committee for the Development of Reference Manual on Scientific Evidence, 4th Ed.

RESEARCH INTERESTS:

Bioinformatics
Biomedical Informatics
Pharmacogenomics
Physics-based simulation
Functional genomics
Structural genomics
Probabilistic representations of molecular structure
Analysis of the biomedical literature
High performance computing

COMMITTEES, BOARDS, AND CONSULTANTSHIPS:

1991	Committee for Residency Training and Clinical Service
1991-1992	Physicians Advisory Committee to Stanford Hospital Information Systems
1991-	Admissions Committee, Stanford Medical Information Sciences Training Program (now Biomedical Informatics Training Program)
1992-1998	Consultant, Medicus Venture Partners; Menlo Park, California
1992-2001	Admissions Committee, Stanford Medical Scientist Training Program
1993-1997	Stanford University Department of Medicine Credentials Committee
1993-1997	Steering Committee, San Diego Supercomputer Center
1993-1994	Organizing Committee, International Symposium on NMR (in honor of Oleg Jardetzky)
1993-1994	Organizing Committee, Second International Conference on Intelligent Systems for Molecular Biology; Stanford CA
1994-1995	Organizing Committee, Third International Conference on Intelligent Systems for Molecular Biology; Cambridge, England
1995-1997	Executive Committee, San Diego Supercomputer Center
1995-1997	University Senate Committee on Computing and Academic Information Systems
1995-1997	Advisory Committee to Chairman of Department of Medicine
1995-1997	Steering Committee, Intelligent Systems for Molecular Biology
1995-1998	Faculty Senate Committee on Academic Information Systems (C-ACIS)

1995-1997	President's Commission on Technology in Teaching and Learning, Stanford University
1996-	Organizing Committee, Pacific Symposium on Biocomputing
1996	LCME Accreditation Project, Library and Computer Resources Subcommittee & Graduate Education Subcommittee
1997	Organizer, RNA Society Workshop on Online Resources for RNA Science
1997	Dean's Task Force on Alumni, Stanford Medical School
1997	Dean's Task Force on the Future of PhD Education, Stanford Medical School
1997- 2005	Board of Directors, International Society for Computational Biology
1997-2000	Chairman, Publications Committee, International Society for Computational Biology
1997-1998	Program Committee, AMIA Fall Symposium, 1998
1998-	Editorial Board, Journal of American Medical Informatics Association
1998-	Editorial Board, Bioinformatics
1998-2002	Thrust Leader, Molecular Sciences, NSF NPACI grant to San Diego Supercomputer Center
1999-2000	Member, National Research Council panel on Internet & Health
2000-2005	Associate Editor, Bioinformatics
2000-2002	President, International Society for Computational Biology
2000-2010	Steering Committee member and Coordinating Committee member, NIH Pharmacogenetics Research Network.
2000	Review panel, Burroughs Wellcome Functional Genomics Initiative
2000-2001	Advisor, Cambridge HealthTech Inc. Professional Meetings.
2001-	Editorial Board, Pharmacogenetics & Genomics
2003-	Associate Editor, Briefings in Bioinformatics
2003-2010	Associate Editor, Genomics
2005-2007	Chair, Stanford Digital Repository Faculty Advisory Committee
2006-	Editor, Journal of Biomedical Informatics
2007-2011	Advisor, 23andme, Inc.
2007-2013	Scientific Advisor, Chicago Biomedical Consortium
2008-2015	Editorial Board, BMC Medical Genomics
2008-	Editorial Board, Genome Medicine
2008-	Associate Editor, PLoS Computational Biology
2008-2016	Member, MIT Biological Engineering Visiting Committee
2009	Ad hoc Advisor, Novartis Pharmaceuticals
2009-2011	Steering Committee, IEEE/ACM Transactions on Computational Biology and Bioinformatics
2011	Editorial Board, Clinical Pharmacology & Therapeutics
2012	Co-Founder and Scientific Advisor, Personalis Inc.
2012	President-elect, American Society for Clinical Pharmacology and Therapeutics

2013-2018	Review panel, Burroughs Wellcome Foundation Careers at the Scientific Interface (CASI) Program
2013-2014	President, American Society for Clinical Pharmacology and Therapeutics
2013-2014	Chair, Science Board to the Food and Drug Administration Commissioner
2012-2017	Advisory Committee to NIH Director (ACD), Francis Collins
2014-	Vanderbilt University, Biomedical Science Advisory Board
2015-2018	Co-Chair, Drug Forum of Institute of Medicine
2016-	International Advisory Board, UK Biobank
2016-	Founding Co-Editor-in-Chief (with M. Levitt), Annual Review of Biomedical Data Science
2016-2018	Co-Chair, Institute of Medicine Drug Forum
2016-2018	Co-Chair, Burroughs Wellcome Foundation Careers at the Scientific Interface (CASI) Program
2016-2021	Member & Advisor, Chan-Zuckerberg Biohub
2017-	Host, "The Future of Everything" SiriusXM & Stanford University, satellite radio and iTunes freely available
2017-	Chair & Advisor, International Advisory Board, Swiss Personalized Health Network
2021-	Advisor, NIH All of Us Precision Medicine Initiative
2021-	Advisor, Danish National Genome Center
2021-	Member, BioE JEDI Committee
2019-	Advisory Board, Center for Artificial Intelligence in Medicine and Imaging
2022-	Committee on Reference Manual for Scientific Evidence for Federal Judges, National Academy of Science

BIBLIOGRAPHY

PEER REVIEWED JOURNAL PUBLICATIONS:

1. **Altman, R.**, Ladner, J., Lipscomb, W. (1982). Quartenary Structural Changes in Aspartat Carbamoyltransferase of E. Coli at pH 8.3 and pH 5.8. *Biochemical and Biophysical Research Communications*, 108(2), 592–596.
2. **Altman, R.** and Jardetzky, O. (1986). New Strategies for the Determination of Macromolecular Structure in Solution. *Journal of Biochemistry*, 100, 1403–1423.
3. Duncan, B., Buchanan, B., Hayes-Roth, B., Lichtarge, O., **Altman, R.**, Brinkley, J., Hewett, M., Cornelius, C., Jardetzky, O. (1986). PROTEAN: A New Method of Deriving Solution Structures of Proteins. *Bulletin of Magnetic Resonance,* 8, 111–119.
4. Brinkley, J., **Altman, R.**, Duncan, B., Buchanan, B., Jardetzky, O. (1988). The Heuristic Refinement Method for the Derivation of Protein Solution Structures: Validation on Cytochrome-b562. *Journal of Chemical Info. & Computer Sciences*, 28(4), 194–210.

5. Jardetzky, O., **Altman, R.**, Madrid, M. (1989). NMR and Protein Structure. *Biofizika*, 34(5), 763–771.
6. Carrara, E., Brinkley, J., Cornelius, C., **Altman, R.**, Brugge, J., Pachter, R., Buchanan, B., Jardetzky, O. (1990). PROTEAN - Part I: Generating Ensembles of Stylized Molecular Fragments using Uncertain Constraints. *Quantative Computer Program Exchange Bulletin*, 10(4), Program 596.
7. **Altman, R.**, Pachter, R., Carrara, E., Jardetzky, O. (1990). PROTEAN - Part II: Molecular Structure Determination from Uncertain Data. *Quantitative Computer Program Exchange Bulletin,* 10(4), Program 596.
8. Arrowsmith, C., Pachter, R., **Altman, R.**, Iyer, S., Jardetzky, O. (1990). Sequence Specific 1H-NMR Assignments and Secondary Structure of E. Coli trp Repressor. *Biochemistry*, 29, 6332–6341.
9. Pachter, R., **Altman, R.**, Jardetzky, O. (1990). The Dependence of a Protein Solution Structure on the Quality of the Input NMR data. Application of the Double-Iterated Kalman Filter Technique to Oxytocin. *Journal of Magnetic Resonance*, 89, 578–584.
10. Pachter, R., **Altman, R.**, Czaplicki, J., Jardetzky, O. (1991). Comparison of the NMR Solution Structure of Cyclosporin A Determined by Different Techniques. *Journal of Magnetic Resonance*, 92, 468–479.
11. Arrowsmith, C., Pachter, R., **Altman, R.**, Jardetzky, O. (1991). The Solution Structures of E. Coli trp Repressor and trp Aporepressor at an Intermediate Resolution. *European Journal of Biochemistry*, 202(2), 53–66.
12. Liu, Y., Zhao, D., **Altman, R.**, Jardetzky, O. (1992). A Systematic Comparison of Three Structure Determination Methods from NMR Data: Dependence upon Quality and Quantity of Data. *Journal of Biomolecular NMR*, 2, 373–388.
13. **Altman, R.**, Pachter, R., Jardetzky, O. (1993). Structural Uncertainty of Proteins in Solution by NMR. A Re-evaluation of the Structure of the Lac Repressor Headpiece, *Journal of Applied Magnetic Resonance*, 4, 441–460.
14. **Altman, R.**, Hughes, C., Jardetzky, O. (1994). Compositional Characteristics of Disordered Regions in Proteins. *Protein and Peptide Letters*, 1(2), 120–127.
15. **Altman, R.**, Hughes, C., and Gerstein, M. (1995). Methods for Displaying Macromolecular Structural Uncertainty: Application to the Globins. *Journal of Molecular Graphics*, 13, 142–152.
16. **Altman, R.** (1995). A Probabilistic Approach to Determining Biological Structure: Integrating Uncertain Data Sources. *International Journal of Human Computer Studies*, 42, 593–616.
17. Bagley, S. and **Altman, R.** (1995). Characterizing the Microenvironment Surrounding Protein Sites. *Protein Science*, 4, 622–635.
18. Gerstein, M. and **Altman, R.** (1995). Average Core Structures and Variability Measures for Protein Families: Application Immunoglobulins. *Journal of Molecular Biology*, 251, 161–175.
19. Gerstein, M. and **Altman, R.** (1995). Using a Measure of Structural Variation to Define a Core for the Globins. *CABIOS Computer Applications in the Biosciences*, 11, 633–644.
20. **Altman, R.** and Merino, J. (1996). Images in clinical medicine. Knotted umbilical cord.. *New England Journal of Medicine,* 334(9), 573.

21. Chen, C., Chen, R., **Altman, R.** (1996). Constraining Volume by Matching Moments of a Distance Distribution. *Computer Applications in the Biosciences,* 12(4), 319–326.
22. Fink, D., Chen, R., Noller, H., **Altman, R.** (1996). Computational Methods for Defining the Allowed Conformational Space of 16S rRNA Based on Chemical Footprinting Data. *RNA* 2(9), 851–866. PMCID: PMC1369421.
23. Bagley, S. and **Altman, R.** (1996). Conserved Features in the Active Site of Nonhomologous Serine Proteases. *Folding & Design*, 1(5), 371–379.
24. Felciano, R. and **Altman, R.** (1996). LAMPREY: Tracking Users on the World Wide Web. In: Proceedings of the 1996 AMIA Fall Symposium (pp. 757-761). Philadelphia: Hanley & Belfus Publishers. PMCID: PMC2233185.
25. Wei, L., **Altman, R.**, Chang, J. (1997). Using the Radial Distribution of Physical Features to Compare Amino Acid Environments. In: R. Altman, K. Dunker, L. Hunter, T. Klein (eds.), Pacific Symposium on Biocomputing 1997 (pp. 465–476). Singapore: World Scientific Publishing Co.
26. **Altman, R.**, Abernethy, N., Chen, R. (1997), Standardized Representations of the Literature: Combining Diverse Sources of Ribosomal Data. In: Proceedings of the Fifth International Conference on Intelligent Systems in Molecular Biology (pp. 15-24). Menlo Park: AAAI Press.
27. Chen, R., Felciano, R., **Altman, R.** (1997). RiboWeb: Linking Structural Computations to a Knowledge Base of Published Experimental Data. In: Proceedings of the Fifth International Conference on Intelligent Systems in Molecular Biology (pp. 84-87). Menlo Park: AAAI Press.
28. Schmidt, R., Gerstein, M., **Altman, R.** (1997). LPFC: An Internet Library of Protein Family Core Structures. *Protein Science,* 6, 246–248. PMCID: PMC2143520.
29. **Altman, R.** (1997). Informatics in the Care of Patients: Ten Notable Challenges. *Western Journal of Medicine* 166(2), 118–122. PMCID: PMC1304028
30. Felciano, R., Chen, R., **Altman, R.** (1997). RNA Secondary Structure as a Reusable Interface to Biological Information Resources, *Gene* 190, 59–70.
31. Chen, C., Singh, J., **Altman, R.** (1998). The Hierarchical Organization of Molecular Structure Computations. *Journal of Computational Biology,* 5(3), 409–422.
32. Gennari, J., Cheng, H., **Altman, R.**, Musen M. (1998). Reuse, CORBA, and Knowledge-Based Systems, *International Journal of Human-Computer Studies,* 49(4), 523–546.
33. **Altman, R.** (1998). A Curriculum for Bioinformatics: The Time is Ripe. *Bioinformatics,* 14(7), 549–550.
34. Wei, L. and **Altman, R.** (1998). Recognizing Protein Binding Sites Using Statistical Descriptions of Their 3D Environments. In: R. Altman, K. Dunker, L. Hunter, T. Klein (eds.), Pacific Symposium on Biocomputing 1998 (pp. 497–508). Singapore, World Scientific Publishing Co.
35. Felciano, R. and **Altman, R.** (1998). Graphical Style Sheets: Towards Reusable Representations of Biomedical Graphics. In: Computer-Human Interactions (CHI) Conference (pp. 48–49). New York: ACM Press.

36. Chen, C., Singh, J., **Altman, R.** (1998). The Hierarchical Organization of Molecular Structure Computation. In: RECOMB-98 (pp. 51–59). New York: ACM Press.
37. Schmidt, J., Chen, C., Cooper, J., **Altman, R.** (1998). A Surface Measure for Probabilistic Structural Computations. In: ISMB 98 (pp. 148-156). Menlo Park: AAAI Press.
38. Liu, X. and **Altman, R.** (1998). Updated Bibliography Using the RELATED ARTICLES Function within PubMed. In: 1998 AMIA Fall Symposium (pp. 750-754). Philadelphia: Hanley & Belfus Publishers.PMCID: PMC2232162
39. Hon, L., Abernethy, N., Brusic, V., Chai, J., **Altman, R.** (1998). MHCWeb: Converting a WWW Database into a Knowledge-based Collaborative Environment. In: 1998 AMIA Fall Symposium (pp. 947-951). Philadelphia: Hanley & Belfus Publishers. PMCID: PMC2232088.
40. Abernethy, N. and **Altman, R.** (1998). SOPHIA: Providing Basic Knowledge Services with a Common DBMS. In: A. Borgida, V. Chaudhri, M. Staudt (eds.), KRDB-98 Conference (pp. 1-6).
41. **Altman, R.** (1998). Bioinformatics in Support of Molecular Medicine. In: 1998 AMIA Fall Symposium (pp. 53–61). Philadelphia: Hanley & Belfus Publishers.
42. Wei, L., Chang, J., **Altman, R.** (1998). Probabilistic and Statistical Descriptions of Protein Structure. In: S. Salzberg, D. Searls, and S. Kasif (eds.), Computational Biology: Pattern Analysis and Machine Learning Methods (pp. 207-225). London, UK: Elsevier Science.
43. Chen, C., Singh, J., **Altman, R.** (1999). Using Imperfect Secondary Structure Predictions to Improve Molecular Structure Computations, *Bioinformatics*, 15(1), 53-65.
44. **Altman, R.**, Chen, R., Abernethy, N., Bada, M. (1999). RiboWeb: An Ontology-Based System for Collaborative Molecular Biology. *IEEE Intelligent Systems and Their Application,* 14(5), 68-76.
45. Abernethy, N. and **Altman, R.** (1999). SOPHIA: A Flexible, Web-Based Knowledge Server. *IEEE Intelligent Systems and Their Applications,* 14(4), 79-85.
46. Chen, R. and **Altman, R.** (1999). Automated Diagnosis of Data-Model Conflicts Using Metadata. *J Am Med Inform Assoc*, 6(5), 374-392. PMCID: PMC61381.
47. Wei, L., Huang, E., **Altman, R.** (1999). Are Predicted Structures Good Enough to Preserve Functional sites? *Structure (with Folding & Design),* 7(6), 643-650.
48. **Altman, R.** (1999). AI in medicine: The spectrum of challenges from managed care to molecular medicine. *AI Magazine*, 20(3), 67-77.
49. Bada, M. and **Altman, R.** (2000). Computational Modeling of Structured Experimental Data. *Methods in Enzymology*, 317, 470-491.
50. Joseph, S., Carrillo, M., Kondo, H., Noller, H., **Altman, R.** (2000). Calculation of the relative geometry of tRNAs in the ribosome from directed hydroxyl-radical probing data. *RNA* 6, 220-232. PMCID: PMC1369908.
51. **Altman, R.** (2000). The interactions between clinical informatics and bioinformatics: a case study. *J Am Med Inform Assoc.,* 7(5), 439-443. PMCID: PMC79038.

52. Raychaudhuri, S., Sutphin, P., Chang, J., **Altman, R.** (2001). Basic microarray analysis: grouping and feature reduction. *Trends in Biotechnology,* 19(5), 189-193.
53. **Altman, R.** (2000). Biomedical computation at Stanford University: A larger umbrella for the future. *MD Comput*., 17(6), 35-37.
54. Raychaudhuri, S., Stuart, J., Liu, X., Small, P., & **Altman, R.** (2000). Pattern recognition of genomic features with microarrays: Site typing of Mycobacterium tuberculosis strains. In: ISMB 2000 (pp. 286-295). Menlo Park: AAAI Press. PMCID: PMC2865887.
55. Raychuaduri, S., Stuart, J. & **Altman, R.** (2000). Principal components analysis to summarize microarray experiments: application to sporulation time series. In: R. Altman, K. Dunker, L. Hunter, K. Lauderdale, T. Klein (eds.), Pacific Symposium on Biocomputing 2000 (pp. 455-466). Singapore: World Scientific Publishing, Co. PMCID: PMC2669932.
56. Pulavarthi, P., Chiang, R., & **Altman, R.** (2000). Generating interactive molecular documentaries using a library of graphical actions. In: R. Altman, K. Dunker, L. Hunter, K. Lauderdale, T. Klein (eds.), Pacific Symposium on Biocomputing 2000 (pp. 266-277). Singapore: World Scientific Publishing, Co.
57. **Altman, R.** (2000). Bioinformatics. In: T. Shortliffe, G. Wiederhold, and L. Fagan (eds.), Medical Informatics: Computer Applications in Health Care (pp. 638-660), Heidelberg: Springer-Verlag.
58. Troyanskaya, O., Cantor, M., Sherlock G., Brown P., Hastie, T., Tibshirani, R., Botstein, D., **Altman, R.** (2001). Missing value estimation methods for DNA microarrays. *Bioinformatics,* 17(0), 1-6.
59. **Altman, R.**, Raychaudhuri, S. (2001). Whole-genome expression analysis: challenges beyond clustering. *Curr Opin Struct Biol*., 11(3), 340-347.
60. Williams, G., Dugan, J., **Altman, R.** (2001). Constrained global optimization for estimating molecular structure from atomic distances. *J Comput Biol*., 8(5), 523-547.
61. Garber, M., Troyanskaya, O., Schluens, K., Petersen, S., Thaesler, Z., Pacyna-Gengelbach, M., van de Rijn, M., Rosen, G., Perou, C., Whyte, R., **Altman, R.**, Brown, P., Botstein, D., Petersen, I. (2001). Diversity of gene expression in adenocarcinoma of the lung. *Proc Natl Acad Sci USA*, 98(24), 13784-13789. PMCID: PMC61119.
62. Klein, T., Chang, J., Cho, M., Easton, K., Fergerson, R., Hewett, M., Lin, Z., Liu, Y., Liu, S., Oliver, D., Rubin, D., Shafa, F., Stuart, J., **Altman, R.** (2001). Integrating genotype and phenotype information: an overview of the PharmGKB project. *Pharmacogenomics J.,* 1(3), 167-170.
63. **Altman, R.** (2001). Challenges for intelligent systems in biology. *IEEE Intelligent Systems*, 16(6), 14-18.
64. Banatao, D., Huang, C., Babbitt, P., **Altman, R.** & Klein, T. (2001). ViewFeature: Integrated Feature analysis and Visualization. In: R. Altman, K. Dunker, L. Hunter, K. Lauderdale, T. Klein (eds.), Pacific Symposium on Biocomputing 2001 (pp. 240-250). Singapore: World Scientific Publishing, Co.
65. Waugh, A., Williams, G., Wei, L. & **Altman, R.** (2001). Using metacomputing tools to facilitate large scale analyses of biological databases. In: R. Altman, K.

Dunker, L. Hunter, K. Lauderdale, T. Klein (eds.), Pacific Symposium on Biocomputing 2001 (pp. 360-371). Singapore: World Scientific Publishing, Co.

66. Chang, J., Raychaudhuri, S. & **Altman, R.** (2001). Including biological literature improves homology search. In: R. Altman, K. Dunker, L. Hunter, K. Lauderdale, T. Klein (eds.), Pacific Symposium on Biocomputing 2001 (pp. 374-383). Singapore: World Scientific Publishing, Co. PMCID: PMC2671075.
67. Hewett, M., Oliver, D., Rubin, D., Easton, K., Stuart, J., **Altman, R.**, Klein, T. PharmGKB: the Pharmacogenetics Knowledge Base. *Nucleic Acids Res*., 30(1), 163-165. PMCID: PMC99138.
68. Raychaudhuri, S., Chang, J., Sutphin, P., **Altman, R.** (2002). Associating genes with gene ontology codes using a maximum entropy analysis of biomedical literature. *Genome Res*., 12(1), 203-214. PMCID: PMC155261.
69. **Altman, R.**, Klein, T. (2002). Challenges for biomedical informatics and pharmacogenomics. *Annu Rev Pharmacol Toxicol*., 42, 113-133.
70. Rubin, D., Shafa, F., Oliver, D., Hewett, M., **Altman, R.** (2002). Representing genetic sequence data for pharmacogenomics: an evolutionary approach using ontological and relational models. *Bioinformatics*, 18 Suppl 1, S207-S215.
71. Waugh, A., Gendron, P., **Altman, R.**, Brown, J., Case, D., Gautheret, D., Harvey, S., Leontis, N., Westbrook, J., Westhof, E., Zuker, M., Major, F. (2002). RNAML: a standard syntax for exchanging RNA information. *RNA*, 8(6), 707-717. PMCID: PMC1370290.
72. Peleg, M., Yeh, I., **Altman, R.** (2002). Modeling biological processes using workflow and Petri Net models. *Bioinformatics*, 18(6), 825-837.
73. Kivi, M., Liu, X., Raychaudhuri, S., **Altman, R.**, Small, P. (2002). Determining the genomic locations of repetitive DNA sequences with a whole-genome microarray: IS6110 in Mycobacterium tuberculosis. *J Clin Microbiol*., 40(6), 2192-2198. PMCID: PMC130717.
74. Whirl-Carrillo, M., Gabashvili, I., Bada, M., Banatao, D., **Altman, R.** (2002). Mining biochemical information: lessons taught by the ribosome. *RNA*, 8(3), 279-289. PMCID: PMC1370250.
75. Han, J., **Altman, R.**, Kumar, V., Mannila, H., Pregibon, D. (2002). Emerging Scientific Applications in Data Mining. *Communications of the ACM*, 45(8), 54-58.
76. Chang, J., Schuetze, H., **Altman, R.** (2002). Creating an Online Dictionary of Abbreviations from MEDLINE. *J Am Med Inform Assoc.*, Nov-Dec;9(6), 612-620. PMCID: PMC349378.
77. Troyanskaya, O., Garber, M., Brown, P., Botstein, D., **Altman, R.** (2002). Nonparametric Methods for Identifying Differentially Expressed Genes in Microarray Data. *Bioinformatics*, 18(11), 1454-1461.
78. Yeh, I., Karp, P., Noy, N., **Altman, R.** (2002). Knowledge Acquisition, Consistency Checking and Concurrency Control for Gene Ontology. *Bioinformatics*, 19(2), 241-248.
79. Chang, J., **Altman, R.** (2002). Promises of text processing: natural language processing meets AI. *Drug Discov Today*, 7(19), 992-993.

80. Raychaudhuri, S., Schuetze, H., **Altman, R.** (2002). Using text analysis to identify functionally coherent gene groups. *Genome Research*, 12(10), 1582-1590. PMCID: PMC187532.
81. Rubin, D., Hewett, M., Oliver, D., Klein, T., **Altman, R.** (2002). Automating data acquisition into ontologies from pharmacogenetics relational data sources using declarative object definitions and XML. In: R. Altman, K. Dunker, L. Hunter, K. Lauderdale, T. Klein (eds.), Pacific Symposium on Biocomputing 2002 (pp. 88-99). Singapore: World Scientific Publishing, Co.
82. Oliver, D., Rubin, D., Stuart, J., Hewett, M., Klein, T., **Altman, R.** (2002). Ontology development for a pharmacogenetics knowledge base. In: R. Altman, K. Dunker, L. Hunter, K. Lauderdale, T. Klein (eds.), Pacific Symposium on Biocomputing 2002 (pp. 65-76). Singapore: World Scientific Publishing, Co.
83. Lin, Z., Hewett, M., **Altman, R.** (2002). Using Binning to Maintain Confidentiality of Medical Data. In: 2002 AMIA Fall Symposium (pp. 454-458). Philadelphia: Hanley & Belfus Publishers. PMCID: PMC2244360.
84. Peleg, M., Gabashvili, I.S., **Altman, R.**, (2002). Qualitative models of molecular function: linking genetic polymorphisms of tRNA to their functional sequelae. Proceeding of the IEEE. Special Issue on Bioinformatics, M. Akay, ed. Vol. 90, No. 12. December (pp. 1875-1886).
85. **Altman, R.**, Preface. In Kohane, I., Kho, A., Butte, A. (2002). *Microarrays For An Integrative Genomics.* Mar 2002, xii-xv.
86. Mooney, S., Klein, T., **Altman, R.**, Trifiro, M., Gottlieb, B. (2003). A functional analysis of disease-associated mutations in the androgen receptor gene. *Nucleic Acids Res*., 31(8), e42. PMCID: PMC153754.
87. **Altman, R.**, Dugan, J. (2003). Defining bioinformatics and structural bioinformatics. *Methods Biochem Anal.* 44, 3-14.
88. Raychaudhuri, S., **Altman, R.** (2003). A literature-based method for assessing the functional coherence of a gene group. *Bioinformatics*, 19(3), 396-401. PMCID: PMC2669934.
89. **Altman, R.**, Flockhart, D., Sherry, S., Oliver, D., Rubin, D., Klein, T. (2003). Indexing pharmacogenetic knowledge on the World Wide Web. *Pharmacogenetics,* 13(1), 3-5.
90. Wei, L., **Altman, R.** (2003). Recognizing Complex, Asymmetric Functional Sites in Protein Structures Using a Bayesian Scoring Function. *Journal of Bioinformatics and Computational Biology*, 1(1) 119-138.
91. Liang, M., Banatao, D., Klein, T., Brutlag, D., **Altman, R.** (2003). WebFEATURE: An interactive Web tool for identifying and visualizing functional sites on macromolecular structures. *Nucleic Acids Research*, 31(13), 3324-3327. PMCID: PMC168960.
92. Raychaudhuri, S., Schutze, H., **Altman, R.** (2003). Inclusion of Textual Documentation in the Analysis of Multidimensional Data Sets: Application to Gene Expression Data. *Machine Learning,* 52, 119-145. PMCID: PMC169898.

93. Banatao, D., **Altman, R.**, Klein, T. (2003). Microenvironment analysis and identification of magnesium binding sites in RNA. *Nucleic Acids Research*, 31(15), 4450-4460. PMCID: PMC169872.
94. Liu, S., **Altman, R.** (2003). Large scale study of protein domain distribution in the context of alternative splicing. *Nucleic Acids Research*, 31(16), 4828-4835. PMCID: PMC169920
95. Raychaudhuri, S., Chang, J., Imam, F., **Altman, R.** (2003). The computational analysis of scientific literature to define and recognize gene expression clusters. *Nucleic Acids Reseach*, 31(15), 4450-60.
96. Gabashvili, I., Whirl-Carrillo, M., Bada, , Banatao, D., **Altman, R.** (2003). Ribosomal dynamics inferred from variations in experimental measurements. *RNA*. Nov 2003, 9(11), 1301-7. PMCID: PMC1287051.
97. Mooney, S., **Altman, R.** (2003). MutDB: annotating human variation with functionally relevant data. *Bioinformatics*. Sep 22, 2003, 19(14), 1858-60.
98. Denko, N., Fontana, L., Hudson, K., Sutphin, P., Raychaudhuri, S., **Altman, R.**, Giaccia A. (2003) Investigating hypoxic tumor physiology through gene expression patterns. *Oncogene*. Sep 1, 2003, 22(37), 5907-14.
99. Troyanskaya, O., Dolinski, K., Owen, A., **Altman, R.**, Botstein, D. (2003) A Bayesian framework for combining heterogeneous data sources for gene function prediction (in Saccharomyces cerevisiae). *Proc Natl Acad Sci U S A*. Jul 8, 2003, 100(14), 8348-53. PMCID: PMC166232.
100. Khambata-Ford, S., Liu, Y., Gleason, C., Dickson, M., **Altman, R.**, Batzoglou, S., Myers, R. (2003). Identification of promoter regions in the human genome by using a retroviral plasmid library-based functional reporter gene assay. *Genome Res*. Jul 2003, 13(7), 1765-74. PMCID: PMC403750.
101. **Altman, R.** (2003). The expanding scope of bioinformatics: sequence analysis and beyond. *Heredity*, 90(5), 345.
102. **Altman, R.** (2003). Genetic sequence data for pharmacogenomics. *Curr Opin Drug Discov Devel*. May 2003, 6(3), 297-303.
103. **Altman, R.** (2003). Complexities of managing biomedical information. *OMICS*. Spring 2003, 7(1), 127-9.
104. Liang, M., Brutlag, D., **Altman, R.** (2003). Automated construction of structural motifs for predicting functional sites on protein structures. In: R. Altman, K. Dunker, L. Hunter, T. Jung, T. Klein (eds.), Pacific Symposium on Biocomputing 2003 (pp. 204-215). Singapore: World Scientific Publishing, Co.
105. Liu, S., Lin, S., Woon, M., Klein, T., **Altman, R.** A Personalized and Automated dbSNP Surveillance System. Proc IEEE Comput Soc Bioinform Conf. 2003;2:132-6.
106. **Altman, R.**, Dugan, J. (2003). Defining Bioinformatics and Structural Bioinformatics. In: H. Weissig & P. Bourne (eds.). Structural Bioinformatics (pp. 3-14). Hoboken: Wiley-Liss, Inc.
107. **Altman, R.**, Preface. In Pevsner, J. (2003). *Bioinformatics and Functional Genomics.* Oct 2003
108. Dugan, J., **Altman, R.** (2004). Using surface envelopes for discrimination of molecular models. *Protein Sci*., Jan 2004, 13(1), 15-24. PMCID: PMC2286533.
109. Chang, J., Schutze, H., **Altman, R.** (2004). GAPSCORE: finding gene and protein

names one word at a time. *Bioinformatics* 2004 Jan 22;20(2):216-25.

110. Liu, Y., Liu, X., Wei, L., **Altman, R**, Batzoglou S. (2004). Eukaryotic regulatory element conservation analysis and identification using comparative genomics.*Genome Res.* 2004 Mar;14(3):451-8. PMCID: PMC353232.
111. Yeh, I., Hanekamp, T., Tsoka, S, Karp, P., **Altman, R.** (2004). Computational Analysis of Plasmodium falciparum Metabolism: Organizing Genomic Information to Facilitate Drug Discovery. *Genome Res*. 2004 Apr 12. PMCID: PMC479120.
112. Friedman, C., **Altman, R.,** Kohane, I., McCormick, K., Miller, P., Ozbolt, J., Shortliffe, E., Stormo, G., Szczepaniak, M., Tuck, D., Williamson, J. (2004). Training the Next Generation of Informaticians: The Impact of "BISTI" and Bioinformatics--A Report from the American College of Medical Informatics. *J Am Med Inform Assoc.* 2004 May-Jun;11(3):167-72. PMCID:PMC400513.
113. **Altman, R.** Building successful biological databases. *Brief Bioinform*. 2004 Mar;5(1):4-5.
114. Lin, Z., Owen, A., **Altman, R.** Genetics. Genomic research and human subject privacy. *Science*. 2004 Jul 9;305(5681):183.
115. Rubin, D., Carrillo, M., Woon, M., Conroy, J., Klein, T., **Altman, R.** A resource to acquire and summarize pharmacogenetics knowledge in the literature. *Medinfo*. 2004;11(Pt 2):793-7. PMCID: PMC15360921.
116. Lin, Z., **Altman, R.** Finding haplotype tagging SNPs by use of principal components analysis. *Am J Hum Genet*. 2004 Nov;75(5):850-61. PMCID: PMC1182114.
117. Liang, M.P., Troyanskaya, O.G., Laederach, A., Brutlag, D.L., **Altman, R.B.** Computational functional genomics Signal Processing Magazine, IEEE Nov. 2004;21(6):62-69.
118. Oliver, D., Bhalotia, G., Schwartz, A., **Altman, R.**, Hearst, M. Tools for loading MEDLINE into a local relational database. *BMC Bioinformatics*. 2004 Oct 7;5:146. PMCID: PMC524480.
119. Chang, J., **Altman, R.** Extracting and characterizing gene-drug relationships from the literature. *Pharmacogenetics*. 2004 Sep;14(9):577-86.
120. Rubin, D., Thorn, C., Klein, T., **Altman, R.** A statistical approach to scanning the biomedical literature for pharmcogenetics knowledge. J Am Med Inform Assoc. 2005 Mar-Apr;12(2):121-9. Erratum in: *J Am Med Inform Assoc*. 2005 May-Jun;12(3):364. PMCID: PMC551544.
121. Das, R., Laederach, A., Pearlman, S., Herschlag, D., **Altman, R.** SAFA: semi-automated footprinting analysis software for high-throughput quantification of nucleic acid footprinting experiments. *RNA*. 2005 Mar;11(3):344-54. PMCID: PMC1262685.
122. Peleg M, Daniel R, **Altman RB**. Using Petri Net Tools to Study Properties and Dynamics of Biological Systems. *JAMIA*. March-April 2005; 2(2):181-199.
123. Yeh, I., **Altman, R.** Drug Targets for Plasmodium falciparum: a post-genomic review/survey. *Mini Rev Med Chem*. 2006 Feb;6(2):177-202.
124. Kohane, I., **Altman, R.** Health-information altruists--a potentially critical resource. *N Engl J Med*. 2005 Nov 10;353(19):2074-7.
125. Mooney, S., Liang, M., DeConde, R., **Altman, R.** Structural characterization of

proteins using residue environments. *Proteins*. 2005 Dec 1;61(4):741-7. PMCID: PMC2483305.

126. Thorn, C., Klein, T., **Altman, R.** PharmGKB: the pharmacogenetics and pharmacogenomics knowledge base. *Methods Mol Biol*. 2005;311:179-91.
127. Phuong, T., Lin, Z., **Altman, R.** Choosing SNPs Using Feature Selection. *Proc IEEE Comput Syst Bioinform Conf*. 2005;:301-9.
128. Thorn, C., Klein, T., **Altman, R.** (2005). *PharmGKB: The Pharmacogenetics and Pharmacogenomics Knowledge Base*. In Innocenti, F (ed.). Pharmacogenomics: Methods and Applications (pp. 177-192). Totowa: Humana Press.
129. Kohane, I., Masys, D., **Altman, R.** The incidentalome: a threat to genomic medicine. *JAMA*. 2006 Jul 12;296(2):212-5. Erratum in: *JAMA*. 2006 Sep 27;296(12):1466.
130. Cannata, N., Merelli, E., **Altman, R.** Time to organize the bioinformatics resourceome. *PLoS Comput Biol*. 2005 Dec;1(7):e76. Erratum in: *PLoS Comput Biol*. 2006 Feb;2(2):e20. PMCID: PMC1323464.
131. Hernandez-Boussard, T., Klein, T., **Altman, R.** Pharmacogenomics: The relevance of emerging genotyping technologies. *MLO Med Lab Obs.* 2006 Mar;38(3):24, 26-30.
132. Laederach, A., Shcherbakova, I., Liang, M., Brenowitz, M., **Altman, R.** Local kinetic measures of macromolecular structure reveal partitioning among multiple parallel pathways from the earliest steps in the folding of a large RNA molecule. *J Mol Biol*. 2006 May 12;358(4):1179-90. PMCID: PMC2621361.
133. **Altman, R.**, Klein, T. Biomedical informatics training at Stanford in the 21st century. J *Biomed Inform*. 2007 Feb;40(1):55-8.
134. Kohane, I., Masys, D., **Altman, R.** The incidentalome: a threat to genomic medicine. *JAMA*. 2006 Jul 12;296(2):212-5. Erratum in: *JAMA*. 2006 Sep 27;296(12):1466.
135. D.M. Roden, **R.B. Altman**, N.L. Benowitz, D.A. Flockhart, K.M. Giacomini, J.A. Johnson, R.M. Krauss, H.L. McLeod, M.J. Ratain, M.V. Relling, H.Z. Ring, A.R. Shuldiner, R.M. Weinshilboum, S.T. Weiss, for the Pharmacogenetics Research Network. Pharmacogenomics: Challenges and Opportunities. *Ann Intern Med* November 21, 2006 145:749-757.
136. Hernandez-Boussard, T., Woon, M., Klein, T., **Altman, R.** Integrating large-scale genotype and phenotype data. *OMICS*. 2006 Winter;10(4):545-54. PMCID: PMC17233563.
137. Hodge, A., **Altman, R.**, Klein, T. PharmGKB: integration, aggregation, and annotation of pharmacogenomic data and knowledge. *Clin Pharmacol Ther*. 2007 Jan;81(1):21-4.
138. KM Giacomini, CM Brett, **RB Altman**, NL Benowitz, ME Dolan, DA Flockhart, JA Johnson, DF Hayes, T Klein, RM Krauss, DL Kroetz, HL McLeod, AT Nguyen, MJ Ratain, MV Relling, V Reus, DM Roden, CA Schaefer, AR Shuldiner, T Skaar, K Tantisira, RF Tyndale, L Wang, RM Weinshilboum, ST WeissandI Zineh for the Pharmacogenetics Research Network. The Pharmacogenetics Research Network: From SNP Discovery to Clinical Drug Response. *Clinical Pharmacology & Therapeutics*. 2007 March;81, 328–345.

139. Laederach, A., Chan, J., Schwartzman, A., Willgohs, E., **Altman, R.** Coplanar and coaxial orientations of RNA bases and helices. *RNA*. 2007 May;13(5):643-50. PMCID: PMC1852812.
140. Laederach, A., Shcherbakova, I., Jonikas, M., **Altman, R.**, Brenowitz, M. Distinct contribution of electrostatics, initial conformational ensemble, and macromolecular stability in RNA folding. *Proc Natl Acad Sci U S A*. 2007 Apr 24;104(17):7045-50. PMCID: PMC1855354.
141. **Altman, R.**, Benowitz, N., Gurwitz, D., Lunshof, J., Relling, M., Lamba, J., Wieben, E., Mooney, S., Giacomini, K., Weiss, S., Johnson, J., McLeod, H., Flockhart, D., Weinshilboum, R., Shuldiner, A., Roden, D., Krauss, R., Ratain, M. Genetic nondiscrimination legislation: a critical prerequisite for pharmacogenomics data sharing. *Pharmacogenomics*. 2007 May;8(5):519.
142. Dugan, J., **Altman, R.** Using surface envelopes to constrain molecular modeling. *Protein Sci*. 2007 Jul;16(7):1266-73. PMCID: PMC2206696.
143. Yoon, S., Ebert, J., Chung, E., De Micheli, G., **Altman, R.** Clustering protein environments for function prediction: finding PROSITE motifs in 3D. *BMC Bioinformatics*. 2007 May 22;8 Suppl 4:S10. PMCID: PMC1892080.
144. Owen, R., Klein, T., **Altman, R.** The education potential of the pharmacogenetics and pharmacogenomics knowledge base (PharmGKB). *Clin Pharmacol Ther*. 2007 Oct;82(4):472-5.
145. **Altman, R.** Current progress in bioinformatics 2007. *Brief Bioinform*. 2007 Sep;8(5):277-8.
146. Tang, S., Liao, J., Dunn, A., **Altman, R.**, Spudich JA, Schmidt JP. Predicting allosteric communication in myosin via a pathway of conserved residues. *J Mol Biol*. 2007 Nov 9;373(5):1361-73. PMCID: PMC2128046.
147. Xu, R., Garten, Y., Supekar, K., Das, A., **Altman, R.**, Garber, A.. Extracting subject demographic information from abstracts of randomized clinical trial reports. *Stud Health Technol Inform*. 2007;129(Pt 1):550-4.
148. Whirl-Carrillo, M., Woon, M., Thorn, C., Klein, T., **Altman, R.** An XML-based interchange format for genotype-phenotype data. *Hum Mutat*. 2008 Feb;29(2):212-9.
149. Hernandez-Boussard, T., Whirl-Carrillo, M., Hebert, J., Gong, L., Owen, R., Gong, M., Gor, W., Liu, F., Truong, C., Whaley, R., Woon, M., Zhou, T., **Altman, R.**, Klein, T. The pharmacogenetics and pharmacogenomics knowledge base: accentuating the knowledge. *Nucleic Acids Res*. 2008 Jan;36(Database issue):D913-8. PMCID: PMC223887.
150. Ebert, J., **Altman, R.** Robust recognition of zinc binding sites in proteins. *Protein Sci*. 2008 Jan;17(1):54-65. PMCID: PMC2144590.
151. Wu, S., Liang, M., **Altman, R.** The SeqFEATURE library of 3D functional site models: comparison to existing methods and applications to protein function annotation. *Genome Biol*. 2008 Jan 16;9(1):R8. PMCID: PMC2395245.
152. Glazer, D., Radmer, R., **Altman, R.** Combining molecular dynamics and machine learning to improve protein function recognition In: R. Altman, K. Dunker, L. Hunter, T. Murray, T. Klein (eds.), Pacific Symposium on Biocomputing 2008 (pp. 332-43). Singapore: World Scientific Publishing, Co. PMCID: PM2459243.

153. Poulter, G., Rubin, D., **Altman, R.**, Seoighe, C. MScanner: a classifier for retrieving Medline citations. *BMC Bioinformatics*. 2008 Feb 19;9:108. PMCID: PMC2263023.
154. Das, R., Kudaravalli, M., Jonikas, M., Laederach,, A., Fong, R., Schwans, J., Baker, D., Piccirilli, J., **Altman, R.**, Herschlag, D. Structural inference of native and partially folded RNA by high-throughput contact mapping. *Proc Natl Acad Sci U S A*. 2008 Mar 18;105(11):4144-9. PMCID: PMC2393762.
155. Owen, R., **Altman, R.**, Klein, T. PharmGKB and the International Warfarin Pharmacogenetics Consortium: the changing role for pharmacogenomic databases and single-drug pharmacogenetics. *Hum Mutat.* 2008 Apr;29(4):456-60.
156. Hillenmeyer, M., Fung, E., Wildenhain, J., Pierce, S., Hoon, S., Lee, W., Proctor, M., St Onge, R., Tyers, M., Koller, D., **Altman, R.**, Davis, R., Nislow, C., Giaever, G. The chemical genomic portrait of yeast: uncovering a phenotype for all genes. *Science*. 2008 Apr 18;320(5874):362-5. PMCID: PMC2794835
157. Daigle, B. Jr, **Altman, R.** M-BISON: microarray-based integration of data sources using networks. *BMC Bioinformatics*. 2008 Apr 25;9:214. PMCID: PMC2396182.
158. Dinov, I., Rubin, D., Lorensen, W., Dugan, J., Ma, J., Murphy, S., Kirschner, B., Bug, W., Sherman, M., Floratos, A., Kennedy, D., Jagadish, H., Schmidt, J., Athey, B., Califano, A,, Musen, M., **Altman, R.**, Kikinis, R., Kohane, I., Delp, S., Parker, D., Toga, A. iTools: a framework for classification, categorization and integration of computational biology resources. *PLoS ONE*. 2008 May 28;3(5):e2265. PMCID: PMC2386255.
159. Lee, S., Mountain, J., Koenig, B., **Altman R**., Brown, M., Camarillo, A., Cavalli-Sforza, L., Cho. M,, Eberhardt, J., Feldman, M., Ford, R., Greely, H., King, R., Markus, H., Satz, D., Snipp, M., Steele, C., Underhill, P. The ethics of characterizing difference: guiding principles on using racial categories in human genetics. *Genome Biol*. 2008 Jul 15;9(7):404.
160. **Altman, R.**, Balling, R., Brinkley, J., Coiera. E., Consorti, F., Dhansay, M., Geissbuhler, A., Hersh, W., Kwankam, S., Lorenzi, N., Martin-Sanchez, F., Mihalas, G., Shahar, Y., Takabayashi, K., Wiederhold, G. Commentaries on "informatics and medicine: from molecules to populations." *Methods Inf Med*. 2008;47(4):296-317. PMCID: PMC2724390.
161. Yao, P., Dhanik, A., Marz, N., Propper, R., Kou, C., Liu, G., van den Bedem, H., Latombe, J., Halperin-Landsberg, I., **Altman, RB**. Efficient algorithms to explore conformation spaces of flexible protein loops. *IEEE/ACM Trans Comput Biol Bioinform*. 2008 Oct-Dec;5(4):534-45. PMCID: PMC2794838.
162. Sangkuhl, K., Berlin, D., **Altman, R.**, Klein, T. PharmGKB: understanding the effects of individual genetic variants. *Drug Metab Rev*. 2008;40(4):539-51. PMCID: PMC2677552.
163. Halperin, I., Glazer, D., Wu, S., **Altman, R**. The FEATURE framework for protein function annotation: modeling new functions, improving performance, and extending to novel applications. *BMC Genomics*. 2008 Sep 16;9 Suppl 2:S2. PMCID: PMC2559884.

164. Gong, L., Owen, R., Gor, W., **Altman, R.**, Klein, T. PharmGKB: an integrated resource of pharmacogenomic data and knowledge. *Curr Protoc Bioinformatics.* 2008 Sep;Chapter 14:Unit14.7.
165. Shen-Orr, S., Goldberger, O., Garten, Y., Rosenberg-Hasson, Y., Lovelace, P., Hirschberg, D., **Altman, R**., Davis, M., Butte, A. Towards a Cytokine-Cell Interaction Knowledgebase of the Adaptive Immune System. In: R. Altman, K. Dunker, L. Hunter, T. Murray, T. Klein (eds.), Pacific Symposium on Biocomputing 2009 (pp. 439-450). Singapore: World Scientific Publishing, Co. PMCID: PMC2709757.
166. Jonikas, M., Radmer, R., Laederach, A., Das, R., Pearlman, S., Herschlag, D., **Altman, R**. Coarse-grained modeling of large RNA molecules with knowledge-based potentials and structural filters. *RNA*. 2009 Feb;15(2):189-99. PMCID: PMC2648710.
167. The International Warfarin Pharmacogenetics Consortium. Warfarin Dosing Using Clinical and Pharmacogenetic Data. *New England Journal of Medicine*. 2009 Feb 19;360(8):753-64.
168. Garten Y, **Altman RB**. Pharmspresso: a text mining tool for extraction of pharmacogenomic concepts and relationships from full text. *BMC Bioinformatics*. 2009 Feb 5;10 Suppl 2:S6. PMCID: PMC2646239.
169. Hildebrandt M, Adjei A, Weinshilboum R, Johnson JA, Berlin DS, Klein TE, **Altman RB**. Very important pharmacogene summary: sulfotransferase 1A1. *Pharmacogenet Genomics*. 2009 Jun;19(6):404-6.
170. Eichelbaum M, **Altman RB**, Ratain M, Klein TE. New feature: pathways and important genes from PharmGKB. *Pharmacogenet Genomics*. 2009 Jun;19(6):403.
171. Thorn CF, Klein TE, **Altman RB**. Codeine and morphine pathway. *Pharmacogenet Genomics*. 2009 Jul;19(7):556-8.
172. Owen RP, Sangkuhl K, Klein TE, **Altman RB**. Cytochrome P450 2D6. *Pharmacogenet Genomics.* 2009 Jul;19(7):559-62.
173. **Altman RB.** Direct-to-consumer genetic testing: failure is not an option. *Clin Pharmacol Ther*. 2009 Jul;86(1):15-7. PMCID: PMC3086846.
174. Glazer DS, Radmer RJ, **Altman RB**. Improving structure-based function prediction using molecular dynamics. *Structure*. 2009 Jul 15;17(7):919-29. PMCID: PMC2748254.
175. Tatonetti NP, Liu T, **Altman RB**. Predicting drug side-effects by chemical systems biology. *Genome Biol*. 2009;10(9):238. PMCID: PMC27668971.
176. Sangkuhl K, Klein TE, **Altman RB**. Selective serotonin reuptake inhibitors pathway. *Pharmacogenet Genomics*. 2009 Sep 8. PMCID: PMC2896866.
177. Jonikas MA, Radmer RJ, **Altman RB**. Knowledge-Based Instantiation of Full Atomic Detail into Coarse Grain RNA 3D Structural Models. *Bioinformatics*. 2009 Oct 7. PMCID: PMC2788923.
178. Thorn CF, Klein TE, **Altman RB**. PharmGKB summary: very important pharmacogene information for angiotensin-converting enzyme. *Pharmacogenet Genomics*. 2009 Nov 5. PMCID: PMC3098760

179. Blumenfeld YJ, Reynolds-May MF, **Altman RB**, El-Sayed YY. Maternal-fetal and neonatal pharmacogenomics: a review of current literature. *J Perinatol*. 2009 Nov 19.
180. Litonjua AA, Gong L, Duan QL, Shin J, Moore MJ, Weiss ST, Johnson JA, Klein TE, **Altman RB**. Very important pharmacogene summary ADRB2. *Pharmacogenet Genomics.* 2009 Nov 18.
181. Coulet A, Shah N, Hunter L, Barral C, **Altman RB**. Extraction of genotype-phenotype-drug relationships from text: from entity recognition to bioinformatics application. In Altman, R., Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.), Proceedings of Pacific Symposium on Biocomputing 2010 (pp. 485-7). Singapore: World Scientific Publishing, Co.
182. Flores SC, Wan Y, Russell R, **Altman RB**. Predicting RNA structure by multiple template homology modeling. In Altman, R., Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.), Proceedings of Pacific Symposium on Biocomputing 2010 (pp. 216-27). Singapore: World Scientific Publishing, Co. PMCID: PMC2872935.
183. Garten Y, Tatonetti NP, **Altman RB**. Improving the prediction of pharmacogenes using text-derived drug-gene relationships. In Altman, R., Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.), Proceedings of Pacific Symposium on Biocomputing 2010 (pp. 305-14). Singapore: World Scientific Publishing, Co. PMCID: PMC3092476.
184. Blumenfeld YJ, Reynolds-May MF, **Altman RB**, El-Sayed YY. Maternal-fetal and neonatal pharmacogenomics: a review of current literature. *J Perinatol*. 2009 Nov 19. PMCID: PMC3098749
185. Owen RP, Gong L, Sagrieya H, Klein TE, **Altman RB**. VKORC1 Pharmacogenomics Summary. *Pharmacogenet Genomics*. 2009 Nov 24. PMCID: PMC3086043.
186. Zaza G, Cheok M, Krynetskaia N, Thorn C, Stocco G, Hebert JM, McLeod H, Weinshilboum RM, Relling MV, Evans WE, Klein TE, **Altman RB**. Thiopurine pathway. *Pharmacogenet Genomics.* 2009 Nov 27.
187. Liu T, **Altman RB**. Prediction of calcium-binding sites by combining loop-modeling with machine learning. BMC Struct Biol. 2009 Dec 11;9:72. PMCID: PMC2808310.
188. Gong L, **Altman RB**, Klein TE. Bisphosphonates pathway. *Pharmacogenet Genomics*. 2009 Dec 16. PMCID: PMC3086066.
189. Medina MW, Sangkuhl K, Klein TE, **Altman RB**. PharmGKB: very important pharmacogene - HMGCR. *Pharmacogenet Genomics*. 2010 Jan 15.
190. **Altman RB**. Editorial: Current progress in Bioinformatics 2010. *Brief Bioinform*. 2010 Jan;11(1):1-2.
191. Maitland ML, Lou XJ, Ramirez J, Desai AA, Berlin DS, McLeod HL, Weichselbaum RR, Ratain MJ, **Altman RB**, Klein TE. Vascular endothelial growth factor pathway. *Pharmacogenet Genomics*. 2010 Jan 29.
192. Oshiro C, Thorn CF, Roden DM, Klein TE, **Altman RB**. KCNH2 pharmacogenomics summary. *Pharmacogenet Genomics*. 2010 Feb 10. PMCID: PMC3086352.

193. Wang L, Pelleymounter L, Weinshilboum R, Johnson JA, Hebert JM, **Altman RB**, Klein TE. Very important pharmacogene summary: thiopurine S-methyltransferase. *Pharmacogenet Genomics*. 2010 Feb 11.
194. Thorn CF, Klein TE, **Altman RB**. PharmGKB summary: very important pharmacogene information for angiotensin-converting enzyme. *Pharmacogenet Genomics*. 2010 Feb;20(2):143-6.
195. Wu S, Liu T, **Altman RB**. Identification of recurring protein structure microenvironments and discovery of novel functional sites around CYS residues. *BMC Structural Biology.* 2010 Feb, 10:4.
196. Hodges LM, Markova SM, Chinn LW, Gow JM, Kroetz DL, Klein TE, **Altman RB.** Very important pharmacogene summary: ABCB1 (MDR1, P-glycoprotein). *Pharmacogenet Genomics*. 2010 Mar 5. PMCID: PMC3098758.
197. Daigle BJ Jr, Deng A, McLaughlin T, Cushman SW, Cam MC, Reaven G, Tsao PS, **Altman RB**. Using pre-existing microarray datasets to increase experimental power: application to insulin resistance. *PLoS Comput Biol*. 2010 Mar 26;6(3):e1000718. PMCID: PMC2845644.
198. Oshiro C, Mangravite L, Klein T, **Altman RB.** PharmGKB very important pharmacogene: SLCO1B1. *Pharmacogenet Genomics*. 2010 Mar;20(3):211-6. PMCID: PMC3086841.
199. Van Booven D, Marsh S, McLeod H, Carrillo MW, Sangkuhl K, Klein TE, **Altman RB.** Cytochrome P450 2C9-CYP2C9. *Pharmacogenet Genomics*. 2010 Apr;20(4):277-81.
200. Berlin DS, Person MG, Mittal A, Oppezzo MA, Chin DB, Starr B, Klein TE, Schwartz DL, **Altman RB**. DNATwist: A Web-Based Tool for Teaching Middle and High School Students About Pharmacogenomics. *Clin Pharmacol Ther*. 2010 Apr;87(4):393-5. PMCID: zPMC3098756
201. Thorn CF, Klein TE, **Altman RB**. Pharmacogenomics and bioinformatics: PharmGKB. *Pharmacogenomics*. 2010 Apr; 11(4):501-5. PMCID: PMC3098752
202. Sagreiya H, **Altman RB**. The utility of general purpose versus specialty clinical databases for research: Warfarin dose estimation from extracted clinical variables. *J Biomed Inform*. 2010 Apr 2. PMCID: PMC2928873.
203. Ormond KE, Wheeler MT, Hudgins L, Klein TE, Butte AJ, **Altman RB**, Ashley EA, Greely HT. Challenges in the clinical application of whole-genome sequencing. *Lancet*. 2010 Apr 29.
204. Ashley EA, Butte AJ, Wheeler MT, Chen R, Klein TE, Dewey FE, Dudley JT, Ormond KE, Pavlovic A, Morgan AA, Pushkarev D, Neff NF, Hudgins L, Gong L, Hodges LM, Berlin DS, Thorn CF, Sangkuhl K, Hebert JM, Woon M, Sagreiya H, Whaley R, Knowles JW, Chou MF, Thakuria JV, Rosenbaum AM, Zaranek AW, Church GM, Greely HT, Quake SR, **Altman RB**. Clinical assessment incorporating a personal genome. *Lancet*. 2010 May 1;375(9725):1525-35. PMCID: PMC2937184.
205. Sangkuhl K, Klein TE, **Altman RB**. Clopidogrel pathway. *Pharmacogenet Genomics.* 2010 Jul;20(7):463-5. PMCID: PMC3086847.
206. Sagreiya H, Berube C, Wen A, Ramakrishnan R, Mir A, Hamilton A, **Altman RB**. Extending and evaluating a warfarin dosing algorithm that includes CYP4F2 andpooled rare variants of CYP2C9. *Pharmacogenet Genomics*. 2010 Jul;

20(7):407-13. Erratum in: Pharmacogenet Genomics. 2010 Oct;20(10):645. Sagrieya, Hersh[corrected to Sagreiya, Hersh]. PMCID: PMC3098751.

207. Thorn CF, Marsh S, Carrillo MW, McLeod HL, Klein TE, **Altman RB**. PharmGKB summary: fluoropyrimidine pathways. *Pharmacogenet Genomics*. 2010 Jul 1. PMCID: PMC3098754.
208. Engreitz JM, Daigle BJ Jr, Marshall JJ, **Altman RB**. Independent component analysis: mining microarray data for fundamental human gene expression modules. *J Biomed Inform*. 2010 Dec;43(6):932-44. Epub 2010 Jul 7. PMCID: PMC2991480.
209. Thorn CF, Lamba JK, Lamba V, Klein TE, **Altman RB**. PharmGKB summary: very important pharmacogene information for CYP2B6. *Pharmacogenet Genomics*. 2010 Aug;20(8):520-3. PMCID: PMC3086041.
210. Flores SC, **Altman RB**. Turning limited experimental information into 3D models of RNA. *RNA*. 2010 Sep;16(9):1769-78. Epub 2010 Jul 22. PMCID: PMC2924536.
211. Coulet A, Shah NH, Garten Y, Musen M, **Altman RB**. Using text to build semantic networks for pharmacogenomics. *J Biomed Inform*. 2010 Dec;43(6):1009-19. Epub 2010 Aug 17. PMCID: PMC2991587.
212. Mi H, Thomas PD, Ring HZ, Jiang R, Sangkuhl K, Klein TE, **Altman RB**. PharmGKB summary: dopamine receptor D2. *Pharmacogenet Genomics*. 2010 Aug 23.
213. Berlin DS, Sangkuhl K, Klein TE, **Altman RB**. PharmGKB summary: cytochrome P450, family 2, subfamily J, polypeptide 2: CYP2J2. *Pharmacogenet Genomics*. 2010 Aug 25. PMCID: PMC3086341.
214. Sangkuhl K, Shuldiner AR, Klein TE, **Altman RB**. Platelet aggregation pathway. *Pharmacogenet Genomics*. 2010 Oct 8. PMCID: PMC3134593.
215. Garten Y, Coulet A, **Altman RB**. Recent progress in automatically extracting information from the pharmacogenomic literature. *Pharmacogenomics*. 2010 Oct;11(10):1467-89. PMCID: PMC3035632.
216. Thorn CF, Oshiro C, Marsh S, Hernandez-Boussard T, McLeod H, Klein TE, **Altman RB**. Doxorubicin pathways: pharmacodynamics and adverse effects. *Pharmacogenet Genomics*. 2010 Nov 2. PMCID: PMC3116111.
217. Tatonetti NP, Dudley JT, Sagreiya H, Butte AJ, **Altman RB**. An integrative method for scoring candidate genes from association studies: application to warfarin dosing. *BMC Bioinformatics*. 2010 Oct 28;11 Suppl 9:S9. PMCID: PMC2967750.
218. Thorn CF, Grosser T, Klein TE, **Altman RB**. PharmGKB summary: very important pharmacogene information for PTGS2. *Pharmacogenet Genomics*. 2010 Nov 6. PMCID: PMC3141084.
219. **Altman RB**, Kroemer HK, McCarty CA, Ratain MJ, Roden D. Pharmacogenomics: will the promise be fulfilled? *Nat Rev Genet*. 2011 Jan;12(1):69-73. Epub 2010 Nov 30. PMCID: PMC3098748.
220. Flores SC, **Altman RB.** Structural insights into pre-translocation ribosome motions. *Pac Symp Biocomput*. 2011:205-11.
221. Oshiro C, Marsh S, McLeod H, Carrillo M, Klein T, **Altman RB**. Taxane Pathway. *Pharmacogenet Genomics.* 2009 Dec;19(12):979-983. PMCID: PMC2998989

222. Engreitz JM, Morgan AA, Dudley JT, Chen R, Thathoo R, **Altman RB**, Butte AJ. Content-based microarray search using differential expression profiles. *BMC Bioinformatics*. 2010 Dec 21;11:603. PMCID: PMC3022631.
223. Mikkelsen TS, Thorn CF, Yang JJ, Ulrich CM, French D, Zaza G, Dunnenberger HM, Marsh S, McLeod HL, Giacomini K, Becker ML, Gaedigk R, Leeder JS, Kager L, Relling MV, Evans W, Klein TE, **Altman RB**. PharmGKB summary: methotrexate pathway. *Pharmacogenet Genomics*. 2011 Feb 11.
224. **Altman RB**. Pharmacogenomics: "noninferiority" is sufficient for initial implementation. *Clin Pharmacol Ther*. 2011 Mar; 89(3):348-50.
225. Tang GW, **Altman RB**. Remote thioredoxin recognition using evolutionary conservation and structural dynamics. *Structure*. 2011 Apr 13;19(4):461-70. PMCID: PMC3075543.
226. Fernald GH, Capriotti E, Daneshjou R, Karczewski KJ, **Altman RB**. Bioinformatics Challenges for Personalized Medicine. *Bioinformatics*. Epub 2011 May 19. PMCID: PMC3117361
227. Sangkuhl K, Klein TE, **Altman RB**. PharmGKB summary: citalopram pharmacokinetics pathway. *Pharmacogenet Genomics*. 2011 May 4.
228. Tatonetti NP, Denny JC, Murphy SN, Fernald GH, Krishnan G, Castro V, Yue P,Tsau PS, Kohane I, Roden DM, **Altman RB.** Detecting Drug Interactions From Adverse-Event Reports: Interaction Between Paroxetine and Pravastatin Increases Blood Glucose Levels. *Clin Pharmacol Ther*. 2011 Jul;90(1):133-42.Epub 2011 May 25. PMCID: PMC3216673
229. Coulet A, Garten Y, Dumontier M, **Altman RB**, Musen M, Shah NH. Integration and publication of heterogeneous text-mined relationships on the Semantic Web. *Journal of Biomedical Semantics*. 2011 May; 2, S2 S10.
230. **Altman RB**, Miller KS. Perspective: 2010 Translational bioinformatics year in review. *JAMIA*. 2011 July;18 (4):358-366. PMCID: PMC3128418.
231. Tatonetti NP, Fernald GH, **Altman RB**. A novel signal detection algorithm for identifying hidden drug-drug interactions in adverse event reports. *J Am Med Inform Assoc.* 2012 Jan-Feb;19(1):79-85. Epub 2011 Jun 14. PMCID: PMC3240755.
232. Kohlhoff KJ, Sosnick MH, Hsu WT, Pande VS, **Altman RB**. CAMPAIGN: an open-source library of GPU-accelerated data clustering algorithms. *Bioinformatics.* 2011 Aug 15;27(16):2322-3. Epub 2011 Jun 27. PMCID: PMC3150041.
233. Thorn CF, Leckband SG, Kelsoe J, Leeder JS, Müller, DJ, Klein TE, **Altman RB,** PharmGKB summary: carbamazepine pathway. *Pharmacogenet Genomics*. 2011 Dec; 21(12):906-10.
234. Capriotti E, **Altman RB**. A new disease-specific machine learning approach for the prediction of cancer-causing missense variants. *Genomics.* 2011 Oct;98(4):310-7. Epub 2011 Jul 7.
235. Karczewski KJ, Tatonetti NP, Landt SG, Yang X, Slifer T, **Altman RB**, Snyder M. Cooperative transcription factor associations discovered using regulatory variation. *Proc Natl Acad Sci U S A.* 2011 Aug 9;108(32):13353-8. PMCID: PMC3156166.

236. Dewey FE, Chen R, Cordero SP, Ormond KE, Caleshu C, Karczewski KJ, Whirl-Carillo M, Wheeler MT, Dudley JT, Byrnes JK, Cornejo OE, Knowles JW, Woon M, Sangkuhl K, Gong L, Thorn CF, Hebert JM, Capriotti E, David SP, Pavlovic A, West A, Thakuria JV, Ball MP, Zaranek AW, Rehm HL, Church GM, West JS, Bustamante CD, Snyder M, **Altman RB**, Klein TE, Butte AJ, Ashley EA. Phased whole-genome genetic risk in a family quartet using a major allele reference sequence. *PLoS Genet.* 2011 Sep;7(9):e1002280 Epub 2011 Sep 15. PMCID: PMC3174201.
237. Thorn CF, Aklillu E, Klein, TE, **Altman RB**, PharmGKB summary: very important pharmacogene information for CYP1A2. *Pharmacogenet Genomics.* 2012 Jan;22(1):73-7.
238. Capriotti E, **Altman RB.** Improving the prediction of disease-related variants using protein three-dimensional structure. *BMC Bioinformatics*. 2011;12 Suppl4:S3. Epub 2011 Jul 5. PMCID PMC3194195.
239. Delp SL, Ku JP, Pande VS, Sherman MA, **Altman RB**. Simbios: an NIH national center for physics-based simulation of biological structures. *J Am Med Inform Assoc.* 2012 Mar-Apr;19(2):186-9. Epub 2011 Nov 10. PMCID: PMC3277621.
240. McDonagh EM, Whirl-Carrillo M, Garten Y, **Altman RB**, Klein TE. From pharmacogenomics knowledge acquisition to clinical applications: the PharmGKB as a clinical pharmacogenomics biomarker resource. *Biomark Med.* 2011 Dec;5(6):795-806.
241. Karczewski KJ, Tirrell RP, Cordero P, Tatonetti NP, Dudley JT, Salari K, Snyder M, **Altman RB,** Kim SK. Interpretome: a freely available, modular, and secure personal genome interpretation engine. Pacific Symposium on Biocomputing 2012 :339-50.
242. Percha B. Garten Y, **Altman RB**. Discovery and explanation of drug-drug interations via text mining. Pacific Symposium on Biocomputing 2012:410-21.
243. Liu T, **Altman RB**. Using multiple microenvironments to find similar ligand-binding sites: application to kinase inhibitor binding. *PLoS Comput Biol.* 2011 Dec;7(12):e1002326. Epub 2011 Dec 29. PMCID: PMC3248393.
244. McDonagh EM,Thorn CF, Bautista JM, Youngster I, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for G6PD. *Pharmacogenet Genomics.* 2012 Mar;22(3):219-28.
245. Thorn CF, Aklillu E, McDonagh EM, Klein TE, **Altman RB**. PharmGKB summary: caffeine pathway. *Pharmacogenet Genomics.* 2012 Jan 29.
246. Gong L, Thorn CF, Bertagnolli MM, Grosser T, **Altman RB**, Klein TE. Celecoxib pathways: pharmacokinetics and pharmacodynamics. *Pharmacogenet Genomics*. 2012 Apr:22(4):310-8. PMCID: PMC3303994.
247. Lamba J, Hebert JM, Schuetz EG, Klein TE, **Altman RB**. PharmGKB summary: very important pharmacogene information for CYP3A5. 2012 Mar.
248. Tatonetti NP, Ye PP, Daneshjou R, **Altman RB**. Data-driven prediction of drug effects and interactions. *Sci Transl Med.* 2012 Mar 14;4(125):125ra31.
249. Chen R, Mias GI, Li-Pook-Than J, Jiang L, Lam HY, Chen R, Miriami E, Karczewski KJ, Hariharan M, Dewey FE, Cheng Y, Clark MJ, Im H. Habegger L, Balasubramanian S, O'Huallachain M, Dudley JT, Hillenmeyer S, Haraksingh R,

Sharon D, Euskirchen G, Lacroute P, Bettinger K, Boyle AP, Kasowski M, Grubert F, Seki S, Garcia M, Whirl-Carrillo M, Gallardo M, Blasco MA Greenberg PL, Snyder M, Klein TE, **Altman RB**, Butte AJ, Ashley EA, Gerstein M, Nadeau KC, Tang H, Snyder M. Personal omics profiling reveals dynamic molecular and medical phenotypes. *Cell.* 2012 Mar 16;148(6):1293-307.

250. Lahti JL, Tang GW, Capriotti E, Liu T, **Altman RB**. Bioinformatics and variability in drug response: a protein structural perspective. *J R Soc Interface*. 2012 Jul 7;9(72):1409-37. Epub 2012 May 2. PMCID: PMC3367825.
251. Whirl-Carrillo M, McDonagh EM, Hebert JM, Gong L, Sangkuhl K, Thorn CF, **Altman RB**, Klein TE. Pharmacogenomics knowledge for personalized medicine. *Clin Pharmacol Ther.* 2012 Oct;92(4):414-7. doi: 10.1038/clpt.2012.96.
252. Ghodke Y, Anderson PL, Sangkuhl K, Lamba J, **Altman RB**, Klein TE. PharmGKB summary: zidovudine pathway. *Pharmacogenet Genomics.* 2012 Sep 6. [Epub ahead of print]
253. **Altman RB**. Editorial: current progress in Bioinformatics 2012. *Brief Bioinform*. 2012 Jul;13(4):393-4.
254. Gong L, Goswami S, Giacomini KM, **Altman RB**, Klein TE. Metformin pathways: pharmacokinetics and pharmacodynamics. *Pharmacogenet Genomics*. 2012 Jun 20. [Epub ahead of print] Nov;22(11):820-7.
255. Thorn CF, Ji Y, Weinshilboum RM, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for GSTT1. *Pharmacogenet Genomics*. 2012 Aug;22(8):646-51. PMCID: PMC3395771.
256. Poon AH, Gong L, Brasch-Andersen C, Litonjua AA, Raby BA, Hamid Q, Laprise C, Weiss ST, **Altman RB**, Klein TE. Very important pharmacogene summary for VDR. *Pharmacogenet Genomics.* 2012 Oct;22(10):758-763.
257. Thorn CF, Whirl-Carrillo M, Leeder JS, Klein TE, **Altman RB**. PharmGKB summary: phenytoin pathway. *Pharmacogenet Genomics.* 2012 Jun;22(6):466-70. PMCID: PMC3349446.
258. Lahti JL, Tang GW, Capriotti E, Liu T, **Altman RB**. Bioinformatics and variability in drug response: a protein structural perspective. *J R Soc Interface*. 2012 Jul 7;9(72):1409 37. Epub 2012 May 2. Review. PMCID: PMC3367825.
259. **Altman RB**. Translational bioinformatics: linking the molecular world to the clinical world. *Clin Pharmacol Ther.* 2012 Jun;91(6):994-1000. Review.
260. White RE, Palm C2, Xu L, Ling E, Ginsburg M, Daigle BJ, Han R, Patterson A, **Altman RB**, Giffard RG. Mice lacking the β2 adrenergic receptor have a unique genetic profile before and after focal brain ischaemia. ASN Neuro. 2012 Sep 7;4(5). PMID: 22867428; PMCID: PMC3436074.
261. McDonagh EM, Wassenaar C, David SP, Tyndale RF, **Altman RB**, Whirl-Carrillo M, Klein TE. PharmGKB summary: very important pharmacogene information for cytochrome P-450, family 2, subfamily A, polypeptide 6. *Pharmacogenet Genomics*. 2012 Sep;22(9):695-708. PMCID: PMC3413746.
262. Whirl-Carrillo M, McDonagh EM, Hebert JM, Gong L, Sangkuhl K, Thorn CF, **Altman RB**, Klein TE. Pharmacogenomics knowledge for personalized medicine. *Clin Pharmacol Ther*. 2012 Oct;92(4):414-7.
263. Karczewski KJ, Daneshjou R, Altman RB. Chapter 7: Pharmacogenomics. *PLoS Comput Biol*. 2012;8(12):e1002817. Epub 2012 Dec 27. PMCID: PMC3531317.

264. **Altman RB**. Introduction to translational bioinformatics collection. *PLoS Comput Biol*. 2012 Dec;8(12):e1002796. Epub 2012 Dec 27. PMCID: PMC3531318.
265. **Altman RB**. Personal genomic measurements: the opportunity for information integration. *Clin Pharmacol Ther*. 2013 Jan;93(1):21-3.
266. **Altman RB**, Clayton EW, Kohane IS, Malin BA, Roden DM. Data re-identification: societal safeguards. *Science*. 2013 Mar 1;339(6123):1032-3.
267. Percha B, **Altman RB**. Informatics confronts drug-drug interactions. Trends *Pharmacol Sci*. 2013 Mar;34(3):178-84. Epub 2013 Feb 13.
268. Chen JH, **Altman RB**. Mining for clinical expertise in (undocumented) order sets to power an order suggestion system. *AMIA Summits Transl Sci Proc*. 2013 Mar 18;2013:34-8. PMID: 24303232; PMCID: PMC3845792.
269. Daneshjou R, Tatonetti NP, Karczewski KJ, Sagreiya H, Bourgeois S, Drozda K, Burmester JK, Tsunoda T, Nakamura Y, Kubo M, Tector M, Limdi NA, Cavallari LH, Perera M, Johnson JA, Klein TE, **Altman RB**. Pathway analysis of genome-wide data improves warfarin dose prediction. *BMC Genomics*. 2013;14 Suppl 3:S11. Epub 2013 May 28. PMID: 23819817; PMCID: PMC3829086.
270. Thorn CF, Klein TE, **Altman RB**. PharmGKB: the Pharmacogenomics Knowledge Base. *Methods Mol Biol*. 2013;1015:311-20. PMID: 23824865.
271. **Altman RB**, Whirl-Carrillo M, Klein TE. Challenges in the pharmacogenomics annotation of whole genomes. *Clin Pharmacol Ther*. 2013 Aug;94(2):211-3. Epub 2013 May 24. PMID: 23708745.
272. Lyalina S, Percha B, Lependu P, Iyer SV, **Altman RB**, Shah NH. Identifying phenotypic signatures of neuropsychiatric disorders from electronic medical records. *J Am Med Inform Assoc*. 2013 Dec;20(e2):e297-305. doi: 10.1136/amiajnl-2013-001933. Epub 2013 Aug 16. PMID: 23956017; PMCID: PMC3861917
273. Thorn CF, Ellison DH, Turner ST, **Altman RB**, Klein TE. PharmGKB summary: Diuretics pathway, pharmacodynamics. *Pharmacogenet Genomics*. 2013 Aug;23(8):449-53. PMID: 23788015.
274. McDonagh EM, Bautista JM, Youngster I, **Altman RB**, Klein TE. PharmGKB summary: methylene blue pathway. *Pharmacogenet Genomics.* 2013 Sep;23(9):498-508. PMID: 23913015.
275. Province MA, Goetz MP, Brauch H, Flockhart DA, Hebert JM, Whaley R, Suman VJ, Schroth W, Winter S, Zembutsu H, Mushiroda T, Newman WG, Lee MT, Ambrosone CB, Beckmann MW, Choi JY, Dieudonné AS, Fasching PA, Ferraldeschi R, Gong L, Haschke-Becher E, Howell A, Jordan LB, Hamann U, Kiyotani K, Krippl P, Lambrechts D, Latif A, Langsenlehner U, Lorizio W, Neven P, Nguyen AT, Park BW, Purdie CA, Quinlan P, Renner W, Schmidt M, Schwab M, Shin JG, Stingl JC, Wegman P, Wingren S, Wu AH, Ziv E, Zirpoli G, Thompson AM, Jordan VC, Nakamura Y, **Altman RB**, Ames MM, Weinshilboum RM, Eichelbaum M, Ingle JN, Klein TE. CYP2D6 Genotype and Adjuvant Tamoxifen: Meta-Analysis of Heterogeneous Study Populations. *Clin Pharmacol Ther.* 2013 Sep 23. doi: 10.1038/clpt.2013.186. [Epub ahead of print] PMID: 24060820.

276. Gottlieb A, Stein GY, Ruppin E, **Altman RB**, Sharan R. A method for inferring medical diagnoses from patient similarities. *BMC Med*. 2013 Sep 2;11:194. doi: 10.1186/1741-7015-11-194. PMID: 24004670; PMCID: PMC3844462.
277. Barbarino JM, Staatz CE, Venkataramanan R, Klein TE, **Altman RB**. PharmGKB summary: cyclosporine and tacrolimus pathways. *Pharmacogenet Genomics*. 2013 Oct;23(10):563-85. PMID: 23922006.
278. Fernald GH, **Altman RB**. Using molecular features of xenobiotics to predict hepatic gene expression response. *J Chem Inf Model*. 2013 Oct 28;53(10):2765-73. doi: 10.1021/ci3005868. Epub 2013 Oct 2. PMID: 24010729; PMCID: PMC3810861.
279. Hodoglugil U, Carrillo MW, Hebert JM, Karachaliou N, Rosell RC, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for the epidermal growth factor receptor. *Pharmacogenet Genomics*. 2013 Nov;23(11):636-42. PMID: 23962910.
280. Klein DJ, Thorn CF, Desta Z, Flockhart DA, **Altman RB**, Klein TE. PharmGKB summary: tamoxifen pathway, pharmacokinetics. *Pharmacogenet Genomics*. 2013 Nov;23(11):643-7. doi: 10.1097/FPC.0b013e3283656bc1. PMID: 23962908.
281. Aquilante CL, Niemi M, Gong L, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for cytochrome P450, family 2, subfamily C, polypeptide 8. *Pharmacogenet Genomics*. 2013 Dec;23(12):721-8. doi: 10.1097/FPC.0b013e3283653b27. PMID: 23962911.
282. Kohlhoff KJ, Shukla D, Lawrenz M, Bowman GR, Konerding DE, Belov D, **Altman RB**, Pande VS. Cloud-based simulations on Google Exacycle reveal ligand modulation of GPCR activation pathways. *Nat Chem*. 2014 Jan;6(1):15-21. Epub 2013 Dec 15. PMID: 24345941.
283. Daneshjou R, Zappala Z, Kukurba K, Boyle SM, Ormond KE, Klein TE, Snyder M, Bustamante CD, **Altman RB**, Montgomery SB. Path-scan: a reporting tool for identifying clinically actionable variants. *Pac Symp Biocomput*. 2014;19:229-40. PMID: 24297550.
284. Lamba V, Sangkuhl K, Sanghavi K, Fish A, **Altman RB**, Klein TE. PharmGKB summary: mycophenolic acid pathway. *Pharmacogenet Genomics*. 2014 Jan;24(1):73-9. PMID: 24220207.
285. Sangkuhl K, Stingl JC, Turpeinen M, Altman RB, Klein TE. PharmGKB summary: venlafaxine pathway. *Pharmacogenet Genomics*. 2014 Jan;24(1):62-72. PMID: 24128936.
286. Lowenberg D, Thorn CF, Desta Z, Flockhart DA, **Altman RB**, Klein TE. PharmGKB summary: ifosfamide pathways, pharmacokinetics and pharmacodynamics. *Pharmacogenet Genomics*. 2014 Feb;24(2):133-8PMID: 24401834.
287. Liu T, **Altman RB**. Identifying druggable targets by protein microenvironments matching: application to transcription factors. *CPT Pharmacometrics Syst Pharmacol*. 2014 Jan 22;3:e93. PMID: 24452614; PMCID: PMC3910014.
288. Barbarino JM, Haidar CE, Klein TE, **Altman RB**. PharmGKB summary: very important pharmacogene information for UGT1A1. *Pharmacogenet Genomics*. 2014 Mar;24(3):177-83. PMID: 24492252.

289. Buturovic L, Wong M, Tang GW, **Altman RB**, Petkovic D. High precision prediction of functional sites in protein structures. *PLoS One.* 2014 Mar 14;9(3):e91240. PMID: 24632601; PMCID: PMC3954699.
290. Rzhetsky A, Bagley SC, Wang K, Lyttle CS, Cook EH Jr, **Altman RB**, Gibbons RD. Environmental and state-level regulatory factors affect the incidence of autism and intellectual disability. *PLoS Comput Biol*. 2014 Mar 13;10(3):e1003518. PMID: 24625521; PMCID: PMC3952819.
291. Tang GW, **Altman RB**. Knowledge-based fragment binding prediction. PLoS *Comput Biol*. 2014 Apr 24;10(4):e1003589. PMID: 24762971; PMCID: PMC3998881.
292. MacArthur DG, Manolio TA, Dimmock DP, Rehm HL, Shendure J, Abecasis GR, Adams DR, **Altman RB**,Antonarakis SE, Ashley EA, Barrett JC, Biesecker LG, Conrad DF,Cooper GM, Cox NJ, Daly MJ, Gerstein MB, Goldstein DB, Hirschhorn JN, Leal SM,Pennacchio LA, Stamatoyannopoulos JA, Sunyaev SR,Valle D, Voight BF, Winckler W,Gunter C. Guidelines for investigating causality of sequence variants in human disease. *Nature.* 2014 Apr 24;508(7497):469-76. PMID: 24759409.
293. Durruthy-Durruthy R, Gottlieb A, Hartman BH, Waldhaus J, Laske RD, **Altman Rb**, Heller S. Reconstruction of the mouse otocyst and early neuroblast lineage at single-cell resolution. Cell. 2014 May 8;157(4):964-78. Epub 2014 Apr 24. PMID: 24768691; PubMed; Central PMCID: PMC4051200.
294. Kálai T, **Altman RB**, Maezawa I, Balog M, Morisseau C, Petrlova J, Hammock BD,Jin LW, Trudell JR,Voss JC, Hideg K. Synthesis and functional survey of new Tacrine analogs modified with nitroxides or their precursors. *Eur J Med Chem.* 2014 Apr 22;77:343-50. PMID: 24657571; PMCID: PMC4065883.
295. Goswami S, Gong L, Giacomini K, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for SLC22A1. *Pharmacogenet Genomics*. 2014 Jun;24(6):324-8. PMID: 24681965; PMCID: PMC4035531.
296. McDonagh EM, Thorn CF, Callaghan JT, **Altman RB**, Klein TE. PharmGKB summary: uric acid-lowering drugs pathway, pharmacodynamics. *Pharmacogenet Genomics.* 2014 Jun;9. [Epub ahead of print] PMID: 24915143.
297. Gong L, Stamer UM, Tzvetkov MV, **Altman RB**, Klein TE. PharmGKB summary: tramadol pathway. *Pharmacogenet Genomics*. 2014 Jul;24(7):374-80. PMID: 24849324; PMCID: PMC4100774.
298. Province MA, **Altman RB**, Klein TE. Interpreting the CYP2D6 results from the International Tamoxifen Pharmacogenetics Consortium. Clin Pharmacol Ther. 2014 Aug;96(2):144-6. Review. PMID: 25056393; PMCID: PMC4147833.
299. McDonagh EM, Boukouvala S, Aklillu E, Hein DW, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for N acetyltransferase 2. *Pharmacogenet Genomics.* 2014 Aug;24(8):409-25. PMID: 24892773; PMCID: PMC4109976.
300. McDonagh EM, Thorn CF, Callaghan JT, **Altman RB**, Klein TE. PharmGKB summary: uric acid-lowering drugs pathway, pharmacodynamics. Pharmacogenet Genomics. 2014 Sep;24(9):464-76. PMID: 24915143; PMCID: PMC4122637.
301. Daneshjou R, Gamazon ER, Burkley B, Cavallari LH, Johnson JA, Klein TE, Limdi N, Hillenmeyer S, Percha B, Karczewski KJ, Langaee T, Patel SR, Bustamante

CD, **Altman RB**, Perera MA. Genetic variant in folate homeostasis is associated with lower warfarin dose in African Americans. Blood. 2014 Oct 2;124(14):2298-305. Epub 2014 Jul 30. PMID: 25079360; PMCID: PMC4183989.

302. Alvarellos ML, Lamba J, Sangkuhl K, Thorn CF, Wang L, Klein DJ, **Altman RB**, Klein TE. PharmGKB summary: gemcitabine pathway. Pharmacogenet Genomics. 2014 Nov;24(11):564-74. PMID: 25162786; PMCID: PMC4189987.
303. Costello JC, Heiser LM, Georgii E, Goenen M, Menden MP, Wang NJ, Bansal M, Ammad-Ud-Din M, Hintsanen P, Khan SA, Mpindi JP, Kallioniemi O, Honkela A, Aittokallio T, Wennerberg K; NCI DREAM Community, Collins JJ, Gallahan D, Singer D, Saez-Rodriguez J, Kaski S, Gray JW, Stolovitzky G; NCI DREAM Community; **Altman, RB** is part of the NCI DREAM Community. A community effort to assess and improve drug sensitivity prediction algorithms. Nat Biotechnol. 2014 Dec;32(12):1202-12. Epub 2014 Jun 1. PMID: 24880487.
304. Bansal M, Yang J, Karan C, Menden MP, Costello JC, Tang H, Xiao G, Li Y, Allen J, Zhong R, Chen B, Kim M, Wang T, Heiser LM, Realubit R, Mattioli M, Alvarez MJ, Shen Y; NCI-DREAM Community, Gallahan D, Singer D, Saez-Rodriguez J, Xie Y, Stolovitzky G, Califano A; NCI-DREAM Community; **Altman, RB** is part of the NCI DREAM Community. A community computational challenge to predict the activity of pairs of compounds. Nat Biotechnol. 2014 Dec;32(12):1213-22. Epub 2014 Nov 17. PMID: 25419740.
305. **Altman RB**, Ashley EA. Using "big data" to dissect clinical heterogeneity. Circulation. 2015 Jan 20;131(3):232-3. PMID: 25601948.
306. Hewett D, Whirl-Carrillo M, Hunter LE, **Altman RB**, Klein TE. A twentieth anniversary tribute to PSB. Pac Symp Biocomput. 2015;20:1-7. PMID: 25592562.
307. McDonagh EM, Clancy JP, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for CFTR. Pharmacogenet Genomics. 2014 Dec 15. [Epub ahead of print] PMID: 25514096; PMCID: PMC4336773.
308. Alvarellos ML, Sangkuhl K, Daneshjou R, Whirl-Carrillo M, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for CYP4F2. Pharmacogenet Genomics. 2015 Jan;25(1):41-7. PMID: 25370453; PMCID: PMC4261059.
309. Mazaleuskaya LL, Theken KN, Gong L, Thorn CF, FitzGerald GA, **Altman RB**, Klein TE. PharmGKB summary: ibuprofen pathways. Pharmacogenet Genomics. 2015 Feb;25(2):96-106. PMID: 25502615; PMCID: PMC4355401.
310. Chen JH, **Altman RB**. Data-Mining Electronic Medical Records for Clinical Order Recommendations: Wisdom of the Crowd or Tyranny of the Mob? AMIA Jt Summits Transl Sci Proc. 2015 Mar 25;2015:435-9. eCollection 2015. PubMed PMID: 26306281; PubMed Central PMCID: PMC4525236.
311. Miguel A, Hsin J, Liu T, Tang G, **Altman RB**, Huang KC. Variations in the binding pocket of an inhibitor of the bacterial division protein FtsZ across genotypes and species. PLoS Comput Biol. 2015 Mar 26;11(3):e1004117. eCollection 2015 Mar. PMID: 25811761; PMCID: PMC4374959.
312. Psaty BM, Platt R, **Altman RB**. Neurotoxicity of generic anesthesia agents in infants and children: an orphan research question in search of a sponsor. JAMA. 2015 Apr 21;313(15):1515-6. PMID: 25898045.

313. Biernacka JM, Sangkuhl K, Jenkins G, Whaley RM, Barman P, Batzler A, **Altman RB**, Arolt V, Brockmöller J, Chen CH, Domschke K, Hall-Flavin DK, Hong CJ, Illi A, Ji Y, Kampman O, Kinoshita T, Leinonen E, Liou YJ, Mushiroda T, Nonen S, Skime MK, Wang L, Baune BT, Kato M, Liu YL, Praphanphoj V, Stingl JC, Tsai SJ, Kubo M, Klein TE, Weinshilboum R. The International SSRI Pharmacogenomics Consortium (ISPC): a genome-wide association study of antidepressant treatment response. Transl Psychiatry. 2015 Apr 21;5:e553. PMID: 25897834; PMCID: PMC4462610.
314. McDonagh EM, Lau JL, Alvarellos ML, **Altman RB**, Klein TE. PharmGKB summary: Efavirenz pathway, pharmacokinetics. Pharmacogenet Genomics. 2015 May 8. [Epub ahead of print] PMID: 25966836. PMCID: PMC4461466.
315. Gottlieb A, Hoehndorf R, Dumontier M, **Altman RB**. Ranking adverse drug reactions with crowdsourcing. J Med Internet Res. 2015 Mar 23;17(3):e80. PMID: 25800813; PMCID: PMC4387295.
316. **Altman RB**. Predicting cancer drug response: advancing the DREAM. Cancer Discov. 2015 Mar;5(3):237-8. Epub 2015 Jan 26. PubMed PMID: 25623160.
317. Barbarino JM, Kroetz DL, Klein TE, **Altman RB**. PharmGKB summary: very important pharmacogene information for human leukocyte antigen B. Pharmacogenet Genomics. 2015 Apr;25(4):205-21. PMID: 25647431; PMCID: PMC4356642.
318. Chen JH, **Altman RB**. Automated physician order recommendations and outcome predictions by data-mining electronic medical records. AMIA Jt Summits Transl Sci Proc. 2014 Apr 7;2014:206-10. eCollection 2014. PubMed PMID: 25717414; PubMed Central PMCID: PMC4333710.
319. Shuldiner SR, Gong L, Muir AJ, **Altman RB**, Klein TE. PharmGKB summary:peginterferon-α pathway. Pharmacogenet Genomics. 2015 Jun 23. [Epub ahead of print] PMID: 26111151.
320. Mazaleuskaya LL, Sangkuhl K, Thorn CF, FitzGerald GA, **Altman RB**, Klein TE.PharmGKB summary: pathways of acetaminophen metabolism at the therapeutic versus toxic doses. Pharmacogenet Genomics. 2015 Jun 5. [Epub ahead of print] PMID: 26049587. PMCID: PMC4498995.
321. Kaufman AL, Spitz J, Jacobs M, Sorrentino M, Yuen S, Danahey K, Saner D, Klein TE, **Altman RB**, Ratain MJ, O'Donnell PH. Evidence for Clinical Implementation of Pharmacogenomics in Cardiac Drugs. Mayo Clin Proc. 2015 Jun;90(6):716-29. PMID: 26046407; PMCID: PMC4475352.
322. Mugzach O, Peleg M, Bagley SC, Guter SJ, Cook EH, **Altman RB**. An ontology for Autism Spectrum Disorder (ASD) to infer ASD phenotypes from Autism Diagnostic Interview-Revised data. J Biomed Inform. 2015 Jul 4. pii: S1532-0464(15)00136-7. [Epub ahead of print] PubMed PMID: 26151311. PMCID: PMC4532604.
323. McDonagh EM, Lau JL, Alvarellos ML, **Altman RB**, Klein TE. PharmGKB summary: Efavirenz pathway, pharmacokinetics. Pharmacogenet Genomics. 2015 Jul;25(7):363-76. PMID: 25966836; PMCID: PMC4461466.
324. Chen JH, Podchiyska T, **Altman RB**. OrderRex: Clinical order decision support and outcome predictions by data-mining electronic medical records. J Am Med

Inform Assoc. 2015 Jul 21. pii: ocv091. doi: 10.1093/jamia/ocv091. [Epub ahead of print] PubMed PMID: 26198303.
325. Nguyen PK, Lee WH, Li YF, Hong WX, Hu S, Chan C, Liang G, Nguyen I, Ong SG, Churko J, Wang J, **Altman RB**, Fleischmann D, Wu JC. Assessment of the Radiation Effects of Cardiac CT Angiography Using Protein and Genetic Biomarkers. JACC Cardiovasc Imaging. 2015 Aug;8(8):873-84. doi: 10.1016/j.jcmg.2015.04.016. Epub 2015 Jul 22. PubMed PMID: 26210695.
326. Psaty BM, Platt R, **Altman RB**. Potential Adverse Effects of Anesthesia in Children--Reply. JAMA. 2015 Jul 28;314(4):409. doi: 10.1001/jama.2015.7387. PubMed PMID: 26219066.
327. Percha B, **Altman RB**. Learning the Structure of Biomedical Relationships from Unstructured Text. PLoS Comput Biol. 2015 Jul 28;11(7):e1004216. doi: 10.1371/journal.pcbi.1004216. eCollection 2015 Jul. PubMed PMID: 26219079; PubMed Central PMCID: PMC4517797.
328. Zhou W, Tang GW, **Altman RB**. High Resolution Prediction of Calcium-Binding Sites in 3D Protein Structures Using FEATURE. J Chem Inf Model. 2015 Aug 24;55(8):1663-72. doi: 10.1021/acs.jcim.5b00367. Epub 2015 Aug 10. PubMed PMID: 26226489.
329. Patwardhan A, Harris J, Leng N, Bartha G, Church DM, Luo S, Haudenschild C, Pratt M, Zook J, Salit M, Tirch J, Morra M, Chervitz S, Li M, Clark M, Garcia S, Chandratillake G, Kirk S, Ashley E, Snyder M, **Altman RB**, Bustamante C, Butte AJ, West J, Chen R. Achieving high-sensitivity for clinical applications using augmented exome sequencing. Genome Med. 2015 Jul 16;7(1):71. doi: 10.1186/s13073-015-0197-4. eCollection 2015. PubMed PMID: 26269718; PubMed Central PMCID: PMC4534066.
330. Mallory EK, Zhang C, Ré C, **Altman RB**. Large-scale extraction of gene interactions from full-text literature using DeepDive. Bioinformatics. 2016 Jan 1;32(1):106-13. doi: 10.1093/bioinformatics/btv476. Epub 2015 Sep 3. PubMed PMID: 26338771; PubMed Central PMCID: PMC4681986.
331. Iyengar R, **Altman RB**, Troyanskya O, FitzGerald GA. MEDICINE. Personalization in practice. Science. 2015 Oct 16;350(6258):282-3. doi: 10.1126/science.aad5204. PubMed PMID: 26472898.
332. Dewey FE, Grove ME, Priest JR, Waggott D, Batra P, Miller CL, Wheeler M, Zia A, Pan C, Karzcewski KJ, Miyake C, Whirl-Carrillo M, Klein TE, Datta S, **Altman RB**, Snyder M, Quertermous T, Ashley EA. Sequence to Medical Phenotypes: A Framework for Interpretation of Human Whole Genome DNA Sequence Data. PLoS Genet. 2015 Oct 8;11(10):e1005496. doi: 10.1371/journal.pgen.1005496. eCollection 2015 Oct. PubMed PMID: 26448358; PubMed Central PMCID: PMC4598191.
333. **Altman R**. Current Progress in Bioinformatics 2016. Brief Bioinform. 2015 Nov 30. pii: bbv105. [Epub ahead of print] PubMed PMID: 26628559.
334. **Altman RB**, Khuri N, Salit M, Giacomini KM. Unmet needs: Research helps regulators do their jobs. Sci Transl Med. 2015 Nov 25;7(315):315ps22. doi: 10.1126/scitranslmed.aac4369. Review. PubMed PMID: 26606966.
335. Elliott JH, Grimshaw J, **Altman R**, Bero L, Goodman SN, Henry D, Macleod M, Tovey D, Tugwell P, White H, Sim I. Informatics: Make sense of health data.

Nature. 2015 Nov 5;527(7576):31-2. doi: 10.1038/527031a. PubMed PMID: 26536942.
336. Alvarellos ML, McDonagh EM, Patel S, McLeod HL, **Altman RB**, Klein TE. PharmGKB summary: succinylcholine pathway, pharmacokinetics/pharmacodynamics. Pharmacogenet Genomics. 2015 Dec;25(12):622-30. PubMed PMID: 26398623; PubMed Central PMCID: PMC4631707.
337. Alvarellos ML, Krauss RM, Wilke RA, **Altman RB**, Klein TE. PharmGKB Summary: very important pharmacogene information for RYR1. Pharmacogenet Genomics. 2015 Dec 24. [Epub ahead of print] PubMed PMID: 26709912. PMCID in progress.
338. Evitt NH, Mascharak S, **Altman RB**. Human Germline CRISPR-Cas Modification: Toward a Regulatory Framework. Am J Bioeth. 2015 Dec;15(12):25-9. doi: 10.1080/15265161.2015.1104160. PubMed PMID: 26632357; PubMed Central PMCID: PMC4699477.
339. Li YF, Xin F, **Altman RB**. Separating the Causes and Consequences in Disease Transcriptome. Pac Symp Biocomput. 2016;21:381-92. PubMed PMID: 26776202.
340. Chen JH, Goldstein MK, Asch SM, **Altman RB**. Dynamically Evolving Clinical Practices and Implications for Predicting Medical Decisions. Pac Symp Biocomput. 2016;21:195-206. PubMed PMID: 26776186. PMCID: PMC4719775.
341. Alvarellos ML, Krauss RM, Wilke RA, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for RYR1. Pharmacogenet Genomics. 2016 Mar;26(3):138-44. PubMed PMID: 26709912; PubMed Central PMCID: PMC4738161.
342. **Altman RB**, Prabhu S, Sidow A, Zook JM, Goldfeder R, Litwack D, Ashley E, Asimenos G, Bustamante CD, Donigan K, Giacomini KM, Johansen E, Khuri N, Lee E, Liang XS, Salit M, Serang O, Tezak Z, Wall DP, Mansfield E, Kass-Hout T. A research roadmap for next-generation sequencing informatics. Sci Transl Med. 2016 Apr 20;8(335):335ps10. Review. PubMed PMID: 27099173.
343. Bagley SC, Sirota M, Chen R, Butte AJ, **Altman RB**. Constraints on Biological Mechanism from Disease Comorbidity Using Electronic Medical Records and Database of Genetic Variants. PLoS Comput Biol. 2016 Apr 26;12(4):e1004885. PubMed PMID: 27115429; PubMed Central PMCID: PMC4846031.
344. **Altman RB**. Towards Clinical Bioinformatics: Redux 2015. Yearb Med Inform. 2016 May 20;25(Suppl. 1). PubMed PMID: 27199190.
345. Klein DJ, Boukouvala S, McDonagh EM, Shuldiner SR, Laurieri N, Thorn CF, **Altman RB**, Klein TE. PharmGKB summary: isoniazid pathway, pharmacokinetics. Pharmacogenet Genomics. 2016 May 26. PubMed PMID: 27232112.
346. Burridge PW, Li YF, Matsa E, Wu H, Ong SG, Sharma A, Holmström A, Chang AC, Coronado MJ, Ebert AD, Knowles JW, Telli ML, Witteles RM, Blau HM, Bernstein D, **Altman RB**, Wu JC. Human induced pluripotent stem cell-derived cardiomyocytes recapitulate the predilection of breast cancer patients to

doxorubicin-induced cardiotoxicity. Nat Med. 2016 May;22(5):547-56. PubMed PMID: 27089514.
347. Yu KH, Zhang C, Berry GJ, **Altman RB**, Ré C, Rubin DL, Snyder M. Predicting non-small cell lung cancer prognosis by fully automated microscopic pathology image features. Nat Commun. 2016 Aug 16;7:12474. doi: 10.1038/ncomms12474. PubMed PMID: 27527408; PubMed Central PMCID: PMC4990706.
348. Hillenmeyer S, Davis LK, Gamazon ER, Cook EH, Cox NJ, **Altman RB**. STAMS: STRING-assisted module search for genome wide association studies and application to autism. Bioinformatics. 2016 Dec 15;32(24):3815-3822. Epub 2016 Aug 19. PubMed PMID: 27542772; PubMed Central PMCID: PMC5167061.
349. Fohner AE, McDonagh EM, Clancy JP, Whirl Carrillo M, **Altman RB**, Klein TE. PharmGKB summary: ivacaftor pathway, pharmacokinetics/pharmacodynamics. Pharmacogenet Genomics. 2017 Jan;27(1):39-42. PubMed PMID: 27636560; PubMed Central PMCID: PMC5140711.
350. Daneshjou R, Cavallari LH, Weeke PE, Karczewski KJ, Drozda K, Perera MA, Johnson JA, Klein TE, Bustamante CD, Roden DM, Shaffer C, Denny JC, Zehnder JL, **Altman RB**. Population-specific single-nucleotide polymorphism confers increased risk of venous thromboembolism in African Americans. Mol Genet Genomic Med. 2016 Jun 21;4(5):513-20. doi: 10.1002/mgg3.226. eCollection 2016 Sep. PubMed PMID: 27652279; PubMed Central PMCID: PMC5023936.
351. Evitt NH, Mascharak S, **Altman RB**. Response to Open Peer Commentaries on "Human Germline CRISPR-Cas Modification: Toward a Regulatory Framework". Am J Bioeth. 2016 Oct;16(10):W1-2. doi: 10.1080/15265161.2016.1214308. PubMed PMID: 27653416.
352. Chen JH, Goldstein MK, Asch SM, Mackey L, **Altman RB**. Predicting inpatient clinical order patterns with probabilistic topic models vs conventional order sets. J Am Med Inform Assoc. 2017 May 1;24(3):472-480. doi: 10.1093/jamia/ocw136. PubMed PMID: 27655861; PubMed Central PMCID: PMC5391730.
353. Liu T, Oprea T, Ursu O, Hasselgren C, **Altman RB**. Estimation of Maximum Recommended Therapeutic Dose Using Predicted Promiscuity and Potency. Clin Transl Sci. 2016 Dec;9(6):311-320. doi: 10.1111/cts.12422. Epub 2016 Oct 13. PubMed PMID: 27736015; PubMed Central PMCID: PMC5161261.
354. Bagley SC, **Altman RB**. Computing disease incidence, prevalence and comorbidity from electronic medical records. J Biomed Inform. 2016 Oct;63:108-111. doi: 10.1016/j.jbi.2016.08.005. Epub 2016 Aug 4. PubMed PMID: 27498067.
355. Barbarino JM, McGregor TL, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for MT-RNR1. Pharmacogenet Genomics. 2016 Dec;26(12):558-567. PubMed PMID: 27654872; PubMed Central PMCID: PMC5083147.
356. Wilson JL, **Altman RB**. Biomarkers: Delivering on the expectation of molecularly driven, quantitative health. Exp Biol Med (Maywood). 2017 Jan 1:1535370217744775. doi: 10.1177/1535370217744775. [Epub ahead of print] PubMed PMID: 29199461.

357. Zhou W, Han L, **Altman RB**. Imputing gene expression to maximize platform compatibility. Bioinformatics. 2017 Feb 15;33(4):522-528. doi: 10.1093/bioinformatics/btw664. PubMed PMID: 27797771; PubMed Central PMCID: PMC5408923.
358. Luzum JA, Pakyz RE, Elsey AR, Haidar CE, Peterson JF, Whirl-Carrillo M, Handelman SK, Palmer K, Pulley JM, Beller M, Schildcrout JS, Field JR, Weitzel KW, Cooper-DeHoff RM, Cavallari LH, O'Donnell PH, **Altman RB**, Pereira N, Ratain MJ, Roden DM, Embi PJ, Sadee W, Klein TE, Johnson JA, Relling MV, Wang L, Weinshilboum RM, Shuldiner AR, Freimuth RR; Pharmacogenomics Research Network Translational Pharmacogenetics Program.. "The Pharmacogenomics Research Network Translational Pharmacogenetics Program: Outcomes and Metrics of Pharmacogenetic Implementations Across Diverse Healthcare Systems". Clin Pharmacol Ther. 2017 Jan 16. doi: 10.1002/cpt.630. [Epub ahead of print] PubMed PMID: 28090649.
359. Fohner AE, Sparreboom A, **Altman RB**, Klein TE. PharmGKB summary: Macrolide antibiotic pathway, pharmacokinetics/pharmacodynamics. Pharmacogenet Genomics. 2017 Apr;27(4):164-167. doi: 10.1097/FPC.0000000000000270. PubMed PMID: 28146011; PubMed Central PMCID: PMC5346035.
360. **Altman RB**. Artificial intelligence (AI) systems for interpreting complex medical datasets. Clin Pharmacol Ther. 2017 May;101(5):585-586. doi: 10.1002/cpt.650. Epub 2017 Mar 17. Review. PubMed PMID: 28182259.
361. Barbarino JM, Owusu Obeng A, Klein TE, **Altman RB**. PharmGKB summary: voriconazole pathway, pharmacokinetics. Pharmacogenet Genomics. 2017 May;27(5):201-209. doi: 10.1097/FPC.0000000000000276. PubMed PMID: 28277330; PubMed Central PMCID: PMC5405706.
362. Gong L, Giacomini MM, Giacomini C, Maitland ML, **Altman RB**, Klein TE. PharmGKB summary: sorafenib pathways. Pharmacogenet Genomics. 2017 Jun;27(6):240-246. doi: 10.1097/FPC.0000000000000279. PubMed PMID: 28362716; PubMed Central PMCID: PMC5418090.
363. Han L, Ball R, Pamer CA, **Altman RB**, Proestel S. Development of an automated assessment tool for MedWatch reports in the FDA adverse event reporting system. J Am Med Inform Assoc. 2017 Mar 21. doi: 10.1093/jamia/ocx022. [Epub ahead of print] PubMed PMID: 28371826.
364. O'Donnell PH, Wadhwa N, Danahey K, Borden BA, Lee SM, Hall JP, Klammer C, Hussain S, Siegler M, Sorrentino MJ, Davis AM, Sacro YA, Nanda R, Polonsky TS, Koyner JL, Burnet DL, Lipstreuer K, Rubin DT, Mulcahy C, Strek ME, Harper W, Cifu AS, Polite B, Patrick-Miller L, Yeo KJ, Leung EK, Volchenboum SL, **Altman RB**, Olopade OI, Stadler WM, Meltzer DO, Ratain MJ. Pharmacogenomics-Based Point-of-Care Clinical Decision Support Significantly Alters Drug Prescribing. Clin Pharmacol Ther. 2017 Apr 11. doi: 10.1002/cpt.709. [Epub ahead of print] PubMed PMID: 28398598.
365. Chen B, **Altman RB.** Opportunities for developing therapies for rare genetic diseases: focus on gain-of-function and allostery. Orphanet J Rare Dis. 2017 Apr 17;12(1):61. doi: 10.1186/s13023-017-0614-4. PubMed PMID: 28412959; PubMed Central PMCID: PMC5392956.

366. Rensi S, **Altman RB**. Flexible Analog Search with Kernel PCA Embedded Molecule Vectors. Comput Struct Biotechnol J. 2017 Mar 24;15:320-327. doi: 10.1016/j.csbj.2017.03.003. eCollection 2017. PubMed PMID: 28458783; PubMed Central PMCID: PMC5396859.
367. Chen JH, Alagappan M, Goldstein MK, Asch SM, **Altman RB**. Decaying relevance of clinical data towards future decisions in data-driven inpatient clinical order sets. Int J Med Inform. 2017 Jun;102:71-79. doi: 10.1016/j.ijmedinf.2017.03.006. Epub 2017 Mar 18. PubMed PMID: 28495350; PubMed Central PMCID: PMC5459355.
368. Torng W, **Altman RB**. 3D deep convolutional neural networks for amino acid environment similarity analysis. BMC Bioinformatics. 2017 Jun 14;18(1):302. doi: 10.1186/s12859-017-1702-0. PubMed PMID: 28615003; PubMed Central PMCID: PMC5472009.
369. Daneshjou R, Wang Y, Bromberg Y, Bovo S, Martelli PL, Babbi G, Lena PD, Casadio R, Edwards M, Gifford D, Jones DT, Sundaram L, Bhat RR, Li X, Pal LR, Kundu K, Yin Y, Moult J, Jiang Y, Pejaver V, Pagel KA, Li B, Mooney SD, Radivojac P, Shah S, Carraro M, Gasparini A, Leonardi E, Giollo M, Ferrari C, Tosatto SCE, Bachar E, Azaria JR, Ofran Y, Unger R, Niroula A, Vihinen M, Chang B, Wang MH, Franke A, Petersen BS, Pirooznia M, Zandi P, McCombie R, Potash JB, **Altman RB**, Klein TE, Hoskins RA, Repo S, Brenner SE, Morgan AA. Working toward precision medicine: Predicting phenotypes from exomes in the Critical Assessment of Genome Interpretation (CAGI) challenges. Hum Mutat. 2017 Sep;38(9):1182-1192. doi: 10.1002/humu.23280. Epub 2017 Jul 7. PubMed PMID: 28634997; PubMed Central PMCID: PMC5600620.
370. Rensi SE, **Altman RB**. Shallow Representation Learning via Kernel PCA Improves QSAR Modelability. J Chem Inf Model. 2017 Aug 28;57(8):1859-1867. doi: 10.1021/acs.jcim.6b00694. Epub 2017 Aug 7. PubMed PMID: 28727421.
371. Thorn CF, Sharma MR, **Altman RB**, Klein TE. PharmGKB summary: pazopanib pathway, pharmacokinetics. Pharmacogenet Genomics. 2017 Aug;27(8):307-312. doi:10.1097/FPC.0000000000000292. PubMed PMID: 28678138.
372. Han L, Maciejewski M, Brockel C, Gordon W, Snapper SB, Korzenik JR, Afzelius L, **Altman RB**. A PRObabilistic Pathway Score (PROPS) for Classification with Applications to Inflammatory Bowel Disease. Bioinformatics. 2017 Oct 18. doi: 10.1093/bioinformatics/btx651. [Epub ahead of print] PubMed PMID: 29048458.
373. Liu T, Ish-Shalom S, Torng W, Lafita A, Bock C, Mort M, Cooper DN, Bliven S, Capitani G, Mooney SD, **Altman RB**. Biological and functional relevance of CASP predictions. Proteins. 2017 Oct 4. doi: 10.1002/prot.25396. [Epub ahead of print] PubMed PMID: 28975675.
374. Gottlieb A, Daneshjou R, DeGorter M, Bourgeois S, Svensson PJ, Wadelius M, Deloukas P, Montgomery SB, **Altman RB**. Cohort-specific imputation of gene expression improves prediction of warfarin dose for African Americans. Genome Med. 2017 Nov 24;9(1):98. doi: 10.1186/s13073-017-0495-0. PubMed PMID: 29178968; PubMed Central PMCID: PMC5702158.
375. Yu KH, Berry GJ, Rubin DL, Ré C, **Altman RB**, Snyder M. Association of Omics Features with Histopathology Patterns in Lung Adenocarcinoma. Cell Syst. 2017

Nov 13. pii: S2405-4712(17)30484-2. doi: 10.1016/j.cels.2017.10.014. [Epub ahead of print] PubMed PMID: 29153840.
376. **Altman RB**. Challenges for Training Translational Researchers in the Era of Ubiquitous Data. Clin Pharmacol Ther. 2017 Nov 14. doi: 10.1002/cpt.918. [Epub ahead of print] PubMed PMID: 29134624.
377. Fohner AE, Brackman DJ, Giacomini KM, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for ABCG2. Pharmacogenet Genomics. 2017 Nov;27(11):420-427. doi: 10.1097/FPC.0000000000000305. PubMed PMID: 28858993.
378. Mallory EK, Acharya A, Rensi SE, Turnbaugh PJ, Bright RA, **Altman RB**. Chemical reaction vector embeddings: towards predicting drug metabolism in the human gut microbiome. Pac Symp Biocomput. 2018;23:56-67. PubMed PMID: 29218869. PubMed Central PMCID: PMC5771676.
379. Wilson JL, **Altman RB**. Biomarkers: Delivering on the expectation of molecularly driven, quantitative health. Exp Biol Med (Maywood). 2018 Feb;243(3):313-322. doi: 10.1177/1535370217744775. Epub 2017 Dec 3. PubMed PMID: 29199461; PubMed Central PMCID: PMC5813871.
380. Wagner J, Dahlem AM, Hudson LD, Terry SF, **Altman RB**, Gilliland CT, DeFeo C, Austin CP. A dynamic map for learning, communicating, navigating and improving therapeutic development. Nat Rev Drug Discov. 2018 Feb;17(2):150. doi: 10.1038/nrd.2017.217. Epub 2017 Dec 22. PubMed PMID: 29269942.
381. Wagner JA, Dahlem AM, Hudson LD, Terry SF, **Altman RB**, Gilliland CT, DeFeo C, Austin CP. Application of a Dynamic Map for Learning, Communicating, Navigating, and Improving Therapeutic Development. Clin Transl Sci. 2018 Mar;11(2):166-174. doi: 10.1111/cts.12531. Epub 2017 Dec 22. PubMed PMID: 29271559; PubMed Central PMCID: PMC5866991.
382. Li YF, **Altman RB**. Systematic target function annotation of human transcription factors. BMC Biol. 2018 Jan 10;16(1):4. doi: 10.1186/s12915-017-0469-0. PubMed PMID: 29325558; PubMed Central PMCID: PMC5795274.
383. Han L, Maciejewski M, Brockel C, Afzelius L, **Altman RB**. Mendelian Disease Associations Reveal Novel Insights into Inflammatory Bowel Disease. Inflamm Bowel Dis. 2018 Feb 15;24(3):471-481. doi: 10.1093/ibd/izx087. PubMed PMID: 29462399; PubMed Central PMCID: PMC6037048.
384. Barbarino JM, Whirl-Carrillo M, **Altman RB**, Klein TE. PharmGKB: A worldwide resource for pharmacogenomic information. Wiley Interdiscip Rev Syst Biol Med. 2018 Jul;10(4):e1417. doi: 10.1002/wsbm.1417. Epub 2018 Feb 23. Review. PubMed PMID: 29474005; PubMed Central PMCID: PMC6002921.
385. Chavez G, Richman IB, Kaimal R, Bentley J, Yasukawa LA, **Altman RB**, Periyakoil VS, Chen JH. Reversals and limitations on high-intensity, life-sustaining treatments. PLoS One. 2018 Feb 28;13(2):e0190569. doi: 10.1371/journal.pone.0190569. eCollection 2018. PubMed PMID: 29489814; PubMed Central PMCID: PMC5830043.
386. Percha B, **Altman RB**. A global network of biomedical relationships derived from text. Bioinformatics. 2018 Feb 27. doi: 10.1093/bioinformatics/bty114. [Epub ahead of print] PubMed PMID: 29490008.

387. Alvarellos M, Guillemette C, **Altman RB**, Klein TE. PharmGKB summary: atazanavir pathway, pharmacokinetics/pharmacodynamics. Pharmacogenet Genomics. 2018 May;28(5):127-137. doi: 10.1097/FPC.0000000000000331. PubMed PMID: 29517518; PubMed Central PMCID: PMC5910198.
388. Huddart R, Leeder JS, **Altman RB**, Klein TE. PharmGKB summary: clobazam pathway, pharmacokinetics. Pharmacogenet Genomics. 2018 Apr;28(4):110-115. doi: 10.1097/FPC.0000000000000327. PubMed PMID: 29517622; PubMed Central PMCID: PMC5914180.
389. Amare AT, Schubert KO, Tekola-Ayele F, Hsu YH, Sangkuhl K, Jenkins G, Whaley RM, Barman P, Batzler A, **Altman RB**, Arolt V, Brockmöller J, Chen CH, Domschke K, Hall-Flavin DK, Hong CJ, Illi A, Ji Y, Kampman O, Kinoshita T, Leinonen E, Liou YJ, Mushiroda T, Nonen S, Skime MK, Wang L, Kato M, Liu YL, Praphanphoj V, Stingl JC, Bobo WV, Tsai SJ, Kubo M, Klein TE, Weinshilboum RM, Biernacka JM, Baune BT. Association of the Polygenic Scores for Personality Traits and Response to Selective Serotonin Reuptake Inhibitors in Patients with Major Depressive Disorder. Front Psychiatry. 2018 Mar 6;9:65. doi: 10.3389/fpsyt.2018.00065. eCollection 2018. PubMed PMID: 29559929; PubMed Central PMCID: PMC5845551.
390. Lavertu A, McInnes G, Daneshjou R, Whirl-Carrillo M, Klein TE, **Altman RB**. Pharmacogenomics and big genomic data: from lab to clinic and back again. Hum Mol Genet. 2018 May 1;27(R1):R72-R78. doi: 10.1093/hmg/ddy116. PubMed PMID: 29635477; PubMed Central PMCID: PMC5946941.
391. Bergmeijer TO, Reny JL, Pakyz RE, Gong L, Lewis JP, Kim EY, Aradi D, Fernandez-Cadenas I, Horenstein RB, Lee MTM, Whaley RM, Montaner J, Gensini GF, Cleator JH, Chang K, Holmvang L, Hochholzer W, Roden DM, Winter S, **Altman RB**, Alexopoulos D, Kim HS, Déry JP, Gawaz M, Bliden K, Valgimigli M, Marcucci R, Campo G, Schaeffeler E, Dridi NP, Wen MS, Shin JG, Simon T, Fontana P, Giusti B, Geisler T, Kubo M, Trenk D, Siller-Matula JM, Ten Berg JM, Gurbel PA, Hulot JS, Mitchell BD, Schwab M, Ritchie MD, Klein TE, Shuldiner AR; ICPC Investigators. Genome-wide and candidate gene approaches of clopidogrel efficacy using pharmacodynamic and clinical end points-Rationale and design of the International Clopidogrel Pharmacogenomics Consortium (ICPC). Am Heart J. 2018 Apr;198:152-159. doi: 10.1016/j.ahj.2017.12.010. Epub 2017 Dec 17. PubMed PMID: 29653637; PubMed Central PMCID: PMC5903579.
392. Lo YC, Rensi SE, Torng W, **Altman RB**. Machine learning in chemoinformatics and drug discovery. Drug Discov Today. 2018 May 8. pii: S1359-6446(17)30469-5. doi: 10.1016/j.drudis.2018.05.010. [Epub ahead of print] Review. PubMed PMID: 29750902.
393. Percha B, Zhang Y, Bozkurt S, Rubin D, **Altman RB**, Langlotz CP. Expanding a radiology lexicon using contextual patterns in radiology reports. J Am Med Inform Assoc. 2018 Jun 1;25(6):679-685. doi: 10.1093/jamia/ocx152. PubMed PMID: 29329435; PubMed Central PMCID: PMC5978019.
394. Lo YC, Liu T, Morrissey KM, Kakiuchi-Kiyota S, Johnson AR, Broccatelli F, Zhong Y, Joshi A, **Altman RB**. Computational Analysis of Kinase Inhibitor

Selectivity using Structural Knowledge. Bioinformatics. 2018 Jul 9. doi: 10.1093/bioinformatics/bty582. [Epub ahead of print] PubMed PMID: 29985971.
395. Thorn CF, Müller DJ, **Altman RB**, Klein TE. PharmGKB summary: clozapine pathway, pharmacokinetics. Pharmacogenet Genomics. 2018 Sep;28(9):214-222. doi: 10.1097/FPC.0000000000000347. PubMed PMID: 30134346; PubMed Central PMCID: PMC6449846.
396. Huddart R, Clarke M, **Altman RB,** Klein TE. PharmGKB summary: oxycodone pathway, pharmacokinetics. Pharmacogenet Genomics. 2018 Oct;28(10):230-237. doi: 10.1097/FPC.0000000000000351. PubMed PMID: 30222708.
397. Zhou W, **Altman RB**. Data-driven human transcriptomic modules determined by independent component analysis. BMC Bioinformatics. 2018 Sep 17;19(1):327. doi: 10.1186/s12859-018-2338-4. PubMed PMID: 30223787; PubMed Central PMCID: PMC6142401.
398. Devchand PR, Liu T, **Altman RB**, FitzGerald GA, Schadt EE. The Pioglitazone Trek via Human PPAR Gamma: From Discovery to a Medicine at the FDA and Beyond. Front Pharmacol. 2018 Oct 4;9:1093. doi: 10.3389/fphar.2018.01093. eCollection 2018. Review. PubMed PMID: 30337873; PubMed Central PMCID: PMC6180177.
399. Danese E, Raimondi S, Montagnana M, Tagetti A, Langaee T, Borgiani P, Ciccacci C, Carcas AJ, Borobia AM, …, **Altman R**, …, Johnson JA, Fava C. Effect of CYP4F2, VKORC1, and CYP2C9 in Influencing Coumarin Dose: A Single-Patient Data Meta-Analysis in More Than 15,000 Individuals. Clin Pharmacol Ther. 2018 Dec 2. doi: 10.1002/cpt.1323. [Epub ahead of print] PubMed PMID: 30506689.
400. Thorn CF, Whirl-Carrillo M, Hachad H, Johnson JA, McDonagh EM, Ratain MJ, Relling MV, Scott SA, **Altman RB**, Klein TE. Essential Characteristics of Pharmacogenomics Study Publications. Clin Pharmacol Ther. 2019 Jan;105(1):86-91. doi: 10.1002/cpt.1279. Review. PubMed PMID: 30406943; PubMed Central PMCID: PMC6449845.
401. Huddart R, Fohner AE, Whirl-Carrillo M, Wojcik GL, Gignoux CR, Popejoy AB, Bustamante CD, **Altman RB**, Klein TE. Standardized Biogeographic Grouping System for Annotating Populations in Pharmacogenetic Research. Clin Pharmacol Ther. 2019 May;105(5):1256-1262. doi: 10.1002/cpt.1322. Epub 2019 Jan 21. PubMed PMID: 30506572; PubMed Central PMCID: PMC6465129.
402. Wilson JL, Racz R, Liu T, Adeniyi O, Sun J, Ramamoorthy A, Pacanowski M, **Altman R**. PathFX provides mechanistic insights into drug efficacy and safety for regulatory review and therapeutic development. PLoS Comput Biol. 2018 Dec 7;14(12):e1006614. doi: 10.1371/journal.pcbi.1006614. eCollection 2018 Dec. PubMed PMID: 30532240; PubMed Central PMCID: PMC6285459.
403. Amare AT, Schubert KO, Tekola-Ayele F, Hsu YH, Sangkuhl K, Jenkins G, Whaley RM, Barman P, Batzler A, **Altman RB**, …, Baune BT. The association of obesity and coronary artery disease genes with response to SSRIs treatment in major depression. J Neural Transm (Vienna). 2019 Jan;126(1):35-45. doi: 10.1007/s00702-018-01966-x. Epub 2019 Jan 4. PubMed PMID: 30610379.
404. Huddart R, **Altman RB**, Klein TE. PharmGKB summary: Ondansetron and tropisetron pathways, pharmacokinetics and pharmacodynamics. Pharmacogenet

Genomics. 2019 Jun;29(4):91-97. doi: 10.1097/FPC.0000000000000369. PubMed PMID: 30672837; PubMed Central PMCID: PMC6476683.
405. Giacomini KM, Lin L, **Altman RB**. Research Projects Supported by the University of California, San Francisco-Stanford Center of Excellence in Regulatory Science and Innovation. Clin Pharmacol Ther. 2019 Apr;105(4):815-818. doi: 10.1002/cpt.1308. Epub 2019 Feb 17. PubMed PMID: 30773618.
406. Lo YC, Cormier O, Liu T, Nettles KW, Katzenellenbogen JA, Stearns T, **Altman RB**. Pocket similarity identifies selective estrogen receptor modulators as microtubule modulators at the taxane site. Nat Commun. 2019 Mar 4;10(1):1033. doi: 10.1038/s41467-019-08965-w. PubMed PMID: 30833575; PubMed Central PMCID: PMC6399299.
407. Daneshjou R, Huddart R, Klein TE, **Altman RB**. Pharmacogenomics in dermatology: tools for understanding gene-drug associations. Semin Cutan Med Surg. 2019 Mar 1;38(1):E19-E24. doi: 10.12788/j.sder.2019.009. PubMed PMID: 31051019; PubMed Central PMCID: PMC6681802.
408. Stevens T, Sangkuhl K, Brown JT, **Altman RB**, Klein TE. PharmGKB summary: methylphenidate pathway, pharmacokinetics/pharmacodynamics. Pharmacogenet Genomics. 2019 Apr 3. doi: 10.1097/FPC.0000000000000376. PubMed PMID: 30950912; PubMed Central PMCID: PMC6581573.
409. Torng W, **Altman RB**. High precision protein functional site detection using 3D convolutional neural networks. Bioinformatics. 2019 May 1;35(9):1503-1512. doi: 10.1093/bioinformatics/bty813. PubMed PMID: 31051039; PubMed Central PMCID: PMC6499237.
410. Wilson JL, Wong M, Chalke A, Stepanov N, Petkovic D, **Altman RB.** PathFXweb: a web application for identifying drug safety and efficacy phenotypes. Bioinformatics. 2019 May 22. pii: btz419. doi: 10.1093/bioinformatics/btz419. [Epub ahead of print] PubMed PMID: 31114840. PubMed Central PMCID: PMC6821302
411. McInnes G, Daneshjou R, Katsonis P, Lichtarge O, Srinivasan R, Rana S, Radivojac P, Mooney SD, Pagel KA, Stamboulian M, Jiang Y, Capriotti E, Wang Y, Bromberg Y, Bovo S, Savojardo C, Martelli PL, Casadio R, Pal LR, Moult J, Brenner SE, **Altman R.** Predicting venous thromboembolism risk from exomes in the Critical Assessment of Genome Interpretation (CAGI) challenges. Hum Mutat. 2019 Sep;40(9):1314-1320. doi: 10.1002/humu.23825. Epub 2019 Jun 24. PubMed PMID: 31140652.
412. Sangkuhl K, Whirl-Carrillo M, Whaley RM, Woon M, Lavertu A, **Altman RB**, Carter L, Verma A, Ritchie MD, Klein TE. Pharmacogenomics Clinical Annotation Tool (PharmCAT). Clin Pharmacol Ther. 2019 Jul 15. doi: 10.1002/cpt.1568. [Epub ahead of print] PubMed PMID: 31306493.
413. Gijsen V, Maddux M, Lavertu A, Gonzalez-Hernandez G, Ram N, Reeves B, Robinson T, Ziesenitz V, Shakhnovich V, **Altman R**. #Science: The Potential and the Challenges of Utilizing Social Media and Other Electronic Communication Platforms in Health Care. Clin Transl Sci. 2019 Aug 7. doi: 10.1111/cts.12687. Epub 2019 Sep 13. Review. PubMed PMID: 31392837; PubMed Central PMCID: PMC6951453.

414. Lewis JP, Backman JD, Reny JL, Bergmeijer TO, Mitchell BD, Ritchie MD, Déry JP, Pakyz RE, Gong L, Ryan K, Kim EY, Aradi D, Fernandez-Cadenas I, Lee MTM, Whaley RM, Montaner J, Gensini GF, Cleator JH, Chang K, Holmvang L, Hochholzer W, Roden DM, Winter S, **Altman R**, … Klein TE, Shuldiner AR. Pharmacogenomic Polygenic Response Score Predicts Ischemic Events and Cardiovascular Mortality in Clopidogrel-Treated Patients. Eur Heart J Cardiovasc Pharmacother. 2019 Sep 3. pii: pvz045. doi: 10.1093/ehjcvp/pvz045. [Epub ahead of print] PubMed PMID: 31504375.
415. Beaulieu-Jones BK, Finlayson SG, Yuan W, **Altman RB**, Kohane IS, Prasad V, Yu KH. Examining the Use of Real-World Evidence in the Regulatory Process. Clin Pharmacol Ther. 2019 Sep 28. doi: 10.1002/cpt.1658. [Epub ahead of print] Review. PubMed PMID: 31562770.
416. Torng W, **Altman RB**. Graph Convolutional Neural Networks for Predicting Drug-Target Interactions. J Chem Inf Model. 2019 Oct 28;59(10):4131-4149. doi: 10.1021/acs.jcim.9b00628. Epub 2019 Oct 16. PubMed PMID: 31580672.
417. Han L, Askari M, **Altman RB**, Schmitt SK, Fan J, Bentley JP, Narayan SM, Turakhia MP. Atrial Fibrillation Burden Signature and Near-Term Prediction of Stroke: A Machine Learning Analysis. Circ Cardiovasc Qual Outcomes. 2019 Oct;12(10):e005595. doi: 10.1161/CIRCOUTCOMES.118.005595. Epub 2019 Oct 15. PubMed PMID: 31610712.
418. Chen B, Khodadoust MS, Olsson N, Wagar LE, Fast E, Liu CL, Muftuoglu Y, Sworder BJ, Diehn M, Levy R, Davis MM, Elias JE, **Altman RB**, Alizadeh AA. Predicting HLA class II antigen presentation through integrated deep learning. Nat Biotechnol. 2019 Nov;37(11):1332-1343. doi: 10.1038/s41587-019-0280-2. Epub 2019 Oct 14. PubMed PMID: 31611695.
419. Lavertu A, **Altman RB**. RedMed: Extending drug lexicons for social media applications. J Biomed Inform. 2019 Nov;99:103307. doi: 10.1016/j.jbi.2019.103307. Epub 2019 Oct 15. PubMed PMID: 31627020; PubMed Central PMCID: PMC6874884.
420. Lam JH, Li Y, Zhu L, Umarov R, Jiang H, Héliou A, Sheong FK, Liu T, Long Y, Li Y, Fang L, **Altman RB**, Chen W, Huang X, Gao X. A deep learning framework to predict binding preference of RNA constituents on protein surface. Nat Commun. 2019 Oct 30;10(1):4941. doi: 10.1038/s41467-019-12920-0. PubMed PMID: 31666519; PubMed Central PMCID: PMC6821705.
421. Morgens DW, Chan C, Kane AJ, Weir NR, Li A, Dubreuil MM, Tsui CK, Hess GT, Lavertu A, Han K, Polyakov N, Zhou J, Handy EL, Alabi P, Dombroski A, Yao D, **Altman RB**, Sello JK, Denic V, Bassik MC. Retro-2 protects cells from ricin toxicity by inhibiting ASNA1-mediated ER targeting and insertion of tail-anchored proteins. Elife. 2019 Nov 1;8. pii: e48434. doi: 10.7554/eLife.48434. PubMed PMID: 31674906; PubMed Central PMCID: PMC6858068.
422. Sosa DN, Derry A, Guo M, Wei E, Brinton C, **Altman RB**. A Literature-Based Knowledge Graph Embedding Method for Identifying Drug Repurposing Opportunities in Rare Diseases. Pac Symp Biocomput. 2020;25:463-474. PubMed PMID: 31797619; PubMed Central PMCID: PMC6937428.
423. Lever J, Barbarino JM, Gong L, Huddart R, Sangkuhl K, Whaley R, Whirl-Carrillo M, Woon M, Klein TE, **Altman RB**. PGxMine: Text mining for curation

of PharmGKB. Pac Symp Biocomput. 2020;25:611-622. PubMed PMID: 31797632; PubMed Central PMCID: PMC6917032.
424. Pershad Y, Guo M, **Altman RB**. Pathway and network embedding methods for prioritizing psychiatric drugs. Pac Symp Biocomput. 2020;25:671-682. PubMed PMID: 31797637; PubMed Central PMCID: PMC6951442.
425. Sangkuhl K, Dirksen RT, Alvarellos ML, **Altman RB**, Klein TE. PharmGKB summary: very important pharmacogene information for CACNA1S. Pharmacogenet Genomics. 2020 Feb;30(2):34-44. doi: 10.1097/FPC.0000000000000393. PubMed PMID: 31851124.
426. Huddart R, Hicks JK, Ramsey LB, Strawn JR, Smith DM, Bobonis Babilonia M, **Altman RB**, Klein TE. PharmGKB summary: sertraline pathway, pharmacokinetics. Pharmacogenet Genomics. 2020 Feb;30(2):26-33. doi: 10.1097/FPC.0000000000000392. PubMed PMID: 31851125; PMCID: PMC7008964.
427. Lo C, Nguyen S, Yang C, Witt L, Wen A, Liao TV, Nguyen J, Lin B, **Altman RB**, Palaniappan L. Pharmacogenomics in Asian Subpopulations and Impacts on Commonly Prescribed Medications. Clin Transl Sci. 2020 Feb 26. doi: 10.1111/cts.12771. Epub ahead of print. PMID: 32100936.
428. Mitra-Ghosh T, Callisto SP, Lamba JK, Remmel RP, Birnbaum AK, Barbarino JM, Klein TE, Altman RB. PharmGKB summary: lamotrigine pathway, pharmacokinetics and pharmacodynamics. Pharmacogenet Genomics. 2020 Jun;30(4):81-90. doi: 10.1097/FPC.0000000000000397. PMID: 32187155.
429. Yu KH, Wang F, Berry GJ, Ré C, **Altman RB**, Snyder M, Kohane IS. Classifying non-small cell lung cancer types and transcriptomic subtypes using convolutional neural networks. J Am Med Inform Assoc. 2020 May 1;27(5):757-769. doi: 10.1093/jamia/ocz230. PMID: 32364237.
430. Mallory EK, de Rochemonteix M, Ratner A, Acharya A, Re C, Bright RA, **Altman RB**. Extracting chemical reactions from text using Snorkel. BMC Bioinformatics. 2020 May 27;21(1):217. doi: 10.1186/s12859-020-03542-1. PMID: 32460703.
431. Verma SS, Bergmeijer TO, Gong L, Reny JL, Lewis JP, Mitchell BD, Alexopoulos D, Aradi D, **Altman RB**, Bliden K, Bradford Y, Campo G, Chang K, Cleator JH, Déry JP, Dridi NP, Fernandez-Cadenas I, Fontana P, Gawaz M, Geisler T, Gensini GF, Giusti B, Gurbel PA, Hochholzer W, Holmvang L, Kim EY, Kim HS, Marcucci R, Montaner J, Backman JD, Pakyz RE, Roden DM, Schaeffeler E, Schwab M, Shin JG, Siller-Matula JM, Ten Berg JM, Trenk D, Valgimigli M, Wallace J, Wen MS, Kubo M, Lee MTM, Whaley R, Winter S, Klein TE, Shuldiner AR, Ritchie MD; ICPC Investigators. Genome-wide association study of platelet reactivity and cardiovascular response in patients treated with clopidogrel: a study by the International Clopidogrel Pharmacogenomics Consortium (ICPC). Clin Pharmacol Ther. 2020 May 30. doi: 10.1002/cpt.1911. Epub ahead of print. PMID: 32472697.
432. Mitra-Ghosh T, Callisto SP, Lamba JK, Remmel RP, Birnbaum AK, Barbarino JM, Klein TE, **Altman RB**. PharmGKB summary: lamotrigine pathway, pharmacokinetics and pharmacodynamics. Pharmacogenet Genomics. 2020

Jun;30(4):81-90. doi: 10.1097/FPC.0000000000000397. PubMed PMID: 32187155.

433. Lever J, **Altman R**, Kim JD. Extending TextAE for annotation of non-contiguous entities. Genomics Inform. 2020 Jun;18(2):e15. doi: 10.5808/GI.2020.18.2.e15. Epub 2020 Jun 15. PMID: 32634869; PMCID: PMC7362949.
434. Lewis JP, Backman JD, Reny JL, Bergmeijer TO, Mitchell BD, Ritchie MD, Déry JP, Pakyz RE, Gong L, Ryan K, Kim EY, Aradi D, Fernandez-Cadenas I, Lee MTM, Whaley RM, Montaner J, Gensini GF, Cleator JH, Chang K, Holmvang L, Hochholzer W, Roden DM, Winter S, **Altman RB**, Alexopoulos D, Kim HS, Gawaz M, Bliden KP, Valgimigli M, Marcucci R, Campo G, Schaeffeler E, Dridi NP, Wen MS, Shin JG, Fontana P, Giusti B, Geisler T, Kubo M, Trenk D, Siller-Matula JM, Ten Berg JM, Gurbel PA, Schwab M, Klein TE, Shuldiner AR. Pharmacogenomic polygenic response score predicts ischaemic events and cardiovascular mortality in clopidogrel-treated patients. Eur Heart J Cardiovasc Pharmacother. 2020 Jul 1;6(4):203-210. doi: 10.1093/ehjcvp/pvz045. PubMed PMID: 31504375; PubMed Central PMCID: PMC7363022.
435. Wang S, Flynn ER, **Altman RB**. Gaussian Embedding for Large-scale Gene Set Analysis. Nat Mach Intell. 2020 Jul;2(7):387-395. doi: 10.1038/s42256-020-0193-2. Epub 2020 Jun 15. PMID: 32968711; PMCID: PMC7505077.
436. Wilson JL, Cheung KWK, Lin L, Green EAE, Porrás AI, Zou L, Mukanga D, Akpa PA, Darko DM, Yuan R, Ding S, Johnson WCN, Lee HA, Cooke E, Peck CC, Kern SE, Hartman D, Hayashi Y, Marks PW, **Altman RB**, Lumpkin MM, Giacomini KM, Blaschke TF. Scientific considerations for global drug development. Sci Transl Med. 2020 Jul 29;12(554):eaax2550. doi: 10.1126/scitranslmed.aax2550. PMID: 32727913; PMCID: PMC8158457.
437. Lo C, Nguyen S, Yang C, Witt L, Wen A, Liao TV, Nguyen J, Lin B, **Altman RB**, Palaniappan L. Pharmacogenomics in Asian Subpopulations and Impacts on Commonly Prescribed Medications. Clin Transl Sci. 2020 Sep;13(5):861-870. doi: 10.1111/cts.12771. Epub 2020 Apr 13. PMID: 32100936; PMCID: PMC7485947.
438. Kaushal A, **Altman R**, Langlotz C. Geographic Distribution of US Cohorts Used to Train Deep Learning Algorithms. JAMA. 2020 Sep 22;324(12):1212-1213. doi: 10.1001/jama.2020.12067. PMID: 32960230; PMCID: PMC7509620.
439. Luvsantseren S, Whirl-Carrillo M, Sangkuhl K, Shin N, Wen A, Empey P, Alam B, David S, Dunnenberger HM, Orlando L, **Altman R**, Palaniappan L. Variant Interpretation in Current Pharmacogenetic Testing. J Pers Med. 2020 Oct 31;10(4):204. doi: 10.3390/jpm10040204. PMID: 33142667; PMCID: PMC7712137.
440. Verma SS, Bergmeijer TO, Gong L, Reny JL, Lewis JP, Mitchell BD, Alexopoulos D, Aradi D, **Altman RB**, Bliden K, Bradford Y, Campo G, Chang K, Cleator JH, Déry JP, Dridi NP, Fernandez-Cadenas I, Fontana P, Gawaz M, Geisler T, Gensini GF, Giusti B, Gurbel PA, Hochholzer W, Holmvang L, Kim EY, Kim HS, Marcucci R, Montaner J, Backman JD, Pakyz RE, Roden DM, Schaeffeler E, Schwab M, Shin JG, Siller-Matula JM, Ten Berg JM, Trenk D, Valgimigli M, Wallace J, Wen MS, Kubo M, Lee MTM, Whaley R, Winter S, Klein TE, Shuldiner AR, Ritchie MD; ICPC Investigators. Genomewide

Association Study of Platelet Reactivity and Cardiovascular Response in Patients Treated With Clopidogrel: A Study by the International Clopidogrel Pharmacogenomics Consortium. Clin Pharmacol Ther. 2020 Nov;108(5):1067-1077. doi: 10.1002/cpt.1911. Epub 2020 Jul 9. PMID: 32472697; PMCID: PMC7689744.

441. McInnes G, Dalton R, Sangkuhl K, Whirl-Carrillo M, Lee SB, Tsao PS, Gaedigk A, **Altman RB**, Woodahl EL. Transfer learning enables prediction of CYP2D6 haplotype function. PLoS Comput Biol. 2020 Nov 2;16(11):e1008399. doi: 10.1371/journal.pcbi.1008399. PMID: 33137098; PMCID: PMC7660895.
442. Brbić M, Zitnik M, Wang S, Pisco AO, **Altman RB**, Darmanis S, Leskovec J. MARS: discovering novel cell types across heterogeneous single-cell experiments. Nat Methods. 2020 Dec;17(12):1200-1206. doi: 10.1038/s41592-020-00979-3. Epub 2020 Oct 19. PMID: 33077966.
443. Kumar A, Aikens RC, Hom J, Shieh L, Chiang J, Morales D, Saini D, Musen M, Baiocchi M, **Altman R**, Goldstein MK, Asch S, Chen JH. OrderRex clinical user testing: a randomized trial of recommender system decision support on simulated cases. J Am Med Inform Assoc. 2020 Dec 9;27(12):1850-1859. doi: 10.1093/jamia/ocaa190. PMID: 33106874; PMCID: PMC7727352.
444. Lever J, **Altman RB**. Analyzing the vast coronavirus literature with CoronaCentral. bioRxiv [Preprint]. 2020 Dec 22:2020.12.21.423860. doi: 10.1101/2020.12.21.423860. Update in: Proc Natl Acad Sci U S A. 2021 Jun 8;118(23): PMID: 33398279; PMCID: PMC7781314.
445. Flynn E, Tanigawa Y, Rodriguez F, **Altman RB**, Sinnott-Armstrong N, Rivas MA. Sex-specific genetic effects across biomarkers. Eur J Hum Genet. 2021 Jan;29(1):154-163. doi: 10.1038/s41431-020-00712-w. Epub 2020 Sep 1. PMID: 32873964; PMCID: PMC7794464.
446. Huddart R, Whirl-Carrillo M, **Altman RB**, Klein TE. PharmGKB Tutorial for Pharmacogenomics of Drugs Potentially Used in the Context of COVID-19. Clin Pharmacol Ther. 2021 Jan;109(1):116-122. doi: 10.1002/cpt.2067. Epub 2020 Oct 24. PMID: 32978778; PMCID: PMC7537078.
447. McInnes G, **Altman RB**. Drug Response Pharmacogenetics for 200,000 UK Biobank Participants. Pac Symp Biocomput. 2021;26:184-195. PMID: 33691016; PMCID: PMC7951365.
448. Han L, Sayyid ZN, **Altman RB**. Modeling drug response using network-based personalized treatment prediction (NetPTP) with applications to inflammatory bowel disease. PLoS Comput Biol. 2021 Feb 5;17(2):e1008631. doi: 10.1371/journal.pcbi.1008631. PMID: 33544718; PMCID: PMC7891788.
449. Sosa DN, Chen B, Kaushal A, Lavertu A, Lever J, Rensi S, **Altman R**. Repurposing biomedical informaticians for COVID-19. J Biomed Inform. 2021 Mar;115:103673. doi: 10.1016/j.jbi.2021.103673. Epub 2021 Jan 21. PMID: 33486067; PMCID: PMC7825863.
450. Flynn E, Chang A, **Altman RB**. Large-scale labeling and assessment of sex bias in publicly available expression data. BMC Bioinformatics. 2021 Mar 30;22(1):168. doi: 10.1186/s12859-021-04070-2. PMID: 33784977; PMCID: PMC8011224.

451. McInnes G, Sharo AG, Koleske ML, Brown JEH, Norstad M, Adhikari AN, Wang S, Brenner SE, Halpern J, Koenig BA, Magnus DC, Gallagher RC, Giacomini KM, **Altman RB**. Opportunities and challenges for the computational interpretation of rare variation in clinically important genes. Am J Hum Genet. 2021 Apr 1;108(4):535-548. doi: 10.1016/j.ajhg.2021.03.003. PMID: 33798442; PMCID: PMC8059338.
452. Liu T, Han L, Tilley M, Afzelius L, Maciejewski M, Jelinsky S, Tian C, McIntyre M; 23andMe Research Team, Bing N, Hung K, **Altman RB**. Distinct clinical phenotypes for Crohn's disease derived from patient surveys. BMC Gastroenterol. 2021 Apr 9;21(1):160. doi: 10.1186/s12876-021-01740-6. PMID: 33836648; PMCID: PMC8034169.
453. Lavertu A, Vora B, Giacomini KM, **Altman R**, Rensi S. A New Era in Pharmacovigilance: Toward Real-World Data and Digital Monitoring. Clin Pharmacol Ther. 2021 May;109(5):1197-1202. doi: 10.1002/cpt.2172. Epub 2021 Feb 28. PMID: 33492663; PMCID: PMC8058244.
454. Wong M, Previde P, Cole J, Thomas B, Laxmeshwar N, Mallory E, Lever J, Petkovic D, **Altman RB**, Kulkarni A. Search and visualization of gene-drug-disease interactions for pharmacogenomics and precision medicine research using GeneDive. J Biomed Inform. 2021 May;117:103732. doi: 10.1016/j.jbi.2021.103732. Epub 2021 Mar 16. PMID: 33737208; PMCID: PMC9042200.
455. McInnes G, Lavertu A, Sangkuhl K, Klein TE, Whirl-Carrillo M, **Altman RB**. Pharmacogenetics at Scale: An Analysis of the UK Biobank. Clin Pharmacol Ther. 2021 Jun;109(6):1528-1537. doi: 10.1002/cpt.2122. Epub 2020 Dec 17. PMID: 33237584; PMCID: PMC8144239.
456. Lever J, **Altman RB**. Analyzing the vast coronavirus literature with CoronaCentral. Proc Natl Acad Sci U S A. 2021 Jun 8;118(23):e2100766118. doi: 10.1073/pnas.2100766118. PMID: 34016708; PMCID: PMC8202008.
457. McInnes G, Yee SW, Pershad Y, **Altman RB**. Genomewide Association Studies in Pharmacogenomics. Clin Pharmacol Ther. 2021 Sep;110(3):637-648. doi: 10.1002/cpt.2349. Epub 2021 Jul 18. PMID: 34185318; PMCID: PMC8376796.
458. Wilson JL, Wong M, Stepanov N, Petkovic D, **Altman R**. PhenClust, a standalone tool for identifying trends within sets of biological phenotypes using semantic similarity and the Unified Medical Language System metathesaurus. JAMIA Open. 2021 Sep 15;4(3):ooab079. doi: 10.1093/jamiaopen/ooab079. PMID: 34541463; PMCID: PMC8442701.
459. Wang S, Pisco AO, McGeever A, Brbic M, Zitnik M, Darmanis S, Leskovec J, Karkanias J, **Altman RB**. Leveraging the Cell Ontology to classify unseen cell types. Nat Commun. 2021 Sep 21;12(1):5556. doi: 10.1038/s41467-021-25725-x. PMID: 34548483; PMCID: PMC8455606.
460. Lavertu A, Hamamsy T, **Altman RB**. Quantifying the Severity of Adverse Drug Reactions Using Social Media: Network Analysis. J Med Internet Res. 2021 Oct 21;23(10):e27714. doi: 10.2196/27714. PMID: 34673524; PMCID: PMC8569532.

461. Derry A, Carpenter KA, **Altman RB**. Training data composition affects performance of protein structure analysis algorithms. Pac Symp Biocomput. 2022;27:10-21. PMID: 34890132; PMCID: PMC8669736.
462. Guo MG, Sosa DN, **Altman RB**. Challenges and opportunities in network-based solutions for biological questions. Brief Bioinform. 2022 Jan 17;23(1):bbab437. doi: 10.1093/bib/bbab437. PMID: 34849568; PMCID: PMC8769687.
463. Anand N, Eguchi R, Mathews II, Perez CP, Derry A, **Altman RB**, Huang PS. Protein sequence design with a learned potential. Nat Commun. 2022 Feb 8;13(1):746. doi: 10.1038/s41467-022-28313-9. PMID: 35136054; PMCID: PMC8826426.
464. Liu T, Wang S, Wornow M, **Altman RB**. Construction of disease-specific cytokine profiles by associating disease genes with immune responses. PLoS Comput Biol. 2022 Apr 11;18(4):e1009497. doi: 10.1371/journal.pcbi.1009497. PMID: 35404985; PMCID: PMC9022887.
465. Sosa DN, **Altman RB**. Contexts and contradictions: a roadmap for computational drug repurposing with knowledge inference. Brief Bioinform. 2022 Jul 18;23(4):bbac268. doi: 10.1093/bib/bbac268. PMID: 35817308; PMCID: PMC9294417.
466. Szarfman A, Levine JG, Tonning JM, Weichold F, Bloom JC, Soreth JM, Geanacopoulos M, Callahan L, Spotnitz M, Ryan Q, Pease-Fye M, Brownstein JS, Ed Hammond W, Reich C, **Altman RB**. Recommendations for achieving interoperable and shareable medical data in the USA. Commun Med (Lond). 2022 Jul 18;2:86. doi: 10.1038/s43856-022-00148-x. PMID: 35865358; PMCID: PMC9293957.
467. Wilson JL, Steinberg E, Racz R, **Altman RB**, Shah N, Grimes K. A networkparadigm predicts drug synergistic effects using downstream protein-protein interactions. CPT Pharmacometrics Syst Pharmacol. 2022 Nov;11(11):1527-1538. doi: 10.1002/psp4.12861. Epub 2022 Oct 6. PMID: 36204824; PMCID: PMC9662203.
468. Donohue LKH, Guo MG, Zhao Y, Jung N, Bussat RT, Kim DS, Neela PH, Kellman LN, Garcia OS, Meyers RM, **Altman RB**, Khavari PA. A *cis*-regulatory lexicon of DNA motif combinations mediating cell-type-specific gene regulation. Cell Genom. 2022 Nov 9;2(11):100191. doi: 10.1016/j.xgen.2022.100191. Epub 2022 Oct 5. PMID: 36742369; PMCID: PMC9894309.
469. Koleske ML, McInnes G, Brown JEH, Thomas N, Hutchinson K, Chin MY, Koehl A, Arkin MR, Schlessinger A, Gallagher RC, Song YS, **Altman RB**, Giacomini KM. Functional genomics of OCTN2 variants informs protein-specific variant effect predictor for Carnitine Transporter Deficiency. Proc Natl Acad Sci U S A. 2022 Nov 16;119(46):e2210247119. doi: 10.1073/pnas.2210247119. Epub 2022 Nov 7. PMID: 36343260; PMCID: PMC9674959.
470. Cousins H, Hall T, Guo Y, Tso L, Tzeng KTH, Cong L, **Altman RB**. Gene set proximity analysis: expanding gene set enrichment analysis through learned geometric embeddings, with drug-repurposing applications in COVID-19. Bioinformatics. 2023 Jan 1;39(1):btac735. doi: 10.1093/bioinformatics/btac735. PMID: 36394254; PMCID: PMC9805577.

471. Yang L, Wang S, **Altman RB**. POPDx: an automated framework for patient phenotyping across 392 246 individuals in the UK Biobank study. J Am Med Inform Assoc. 2023 Jan 18;30(2):245-255. doi: 10.1093/jamia/ocac226. PMID: 36469791; PMCID: PMC9846671.
472. Derry A, **Altman RB**. COLLAPSE: A representation learning framework for identification and characterization of protein structural sites. Protein Sci. 2022 Dec 15:e4541. doi: 10.1002/pro.4541. Epub ahead of print. PMID: 36519247; PMCID: PMC9847082.
473. Coassolo L, Liu T, Jung Y, Taylor NP, Zhao M, Charville GW, Nissen SB, Yki-Jarvinen H, **Altman RB**, Svensson KJ. Mapping transcriptional heterogeneity and metabolic networks in fatty livers at single-cell resolution. iScience. 2022 Dec 15;26(1):105802. doi: 10.1016/j.isci.2022.105802. PMID: 36636354; PMCID: PMC9830221.
474. Xu H, Woicik A, Poon H, **Altman RB**, Wang S. Multilingual translation for zero-shot biomedical classification using BioTranslator. Nat Commun. 2023 Feb 10;14(1):738. doi: 10.1038/s41467-023-36476-2. PMID: 36759510; PMCID: PMC9911740.
475. Carpenter KA, **Altman RB**. Using GPT-3 to Build a Lexicon of Drugs of Abuse Synonyms for Social Media Pharmacovigilance. Biomolecules. 2023 Feb 18;13(2):387. doi: 10.3390/biom13020387. PMID: 36830756; PMCID: PMC9953178.
476. Cousins HC, Kline AS, Wang C, Qu Y, Zengel J, Carette J, Wang M, **Altman RB**, Luo Y, Cong L. Integrative analysis of functional genomic screening and clinical data identifies a protective role for spironolactone in severe COVID-19. Cell Rep Methods. 2023 May 29;3(7):100503. doi: 10.1016/j.crmeth.2023.100503. PMID: 37529368; PMCID: PMC10243122.
477. Brown A, Cousins H, Cousins C, Esquenazi K, Elze T, Harris A, Filipowicz A, Barna L, Yonwook K, Vinod K, Chadha N, **Altman RB**, Coote M, Pasquale LR. Deep learning for localized detection of optic disc hemorrhages. Am J Ophthalmol. 2023 Jul 23:S0002-9394(23)00284-2. doi: 10.1016/j.ajo.2023.07.007. Epub ahead of print. PMID: 37490992.
478. Cousins HC, Cousins CC, Valluru G, **Altman RB**, Liu Y, Pasquale LR, Ahmad S. Genetic Correlations Among Corneal Biophysical Parameters and Anthropometric Traits. Transl Vis Sci Technol. 2023 Aug 1;12(8):8. doi: 10.1167/tvst.12.8.8. PMID: 37561511; PMCID: PMC10424803.
479. Sosa DN, Hintzen R, Xiong B, de Giorgio A, Fauqueur J, Davies M, Lever J, **Altman RB**. Associating biological context with protein-protein interactions through text mining at PubMed scale. J Biomed Inform. 2023 Sep;145:104474. doi: 10.1016/j.jbi.2023.104474. Epub 2023 Aug 10. PMID: 37572825.
480. Bastarache L, Delozier S, Pandit A, He J, Lewis A, Annis AC, LeFaive J, Denny JC, Carroll RJ, **Altman RB**, Hughey JJ, Zawistowski M, Peterson JF. The phenotype- genotype reference map: Improving biobank data science through replication. Am J Hum Genet. 2023 Sep 7;110(9):1522-1533. doi: 10.1016/j.ajhg.2023.07.012. Epub 2023 Aug 21. PMID: 37607538; PMCID: PMC10502848.

481. Trotsyuk AA, Federico CA, Cho MK, **Altman RB**, Magnus D. Stronger regulation of AI in biomedicine. Sci Transl Med. 2023 Sep 13;15(713):eadi0336. doi: 10.1126/scitranslmed.adi0336. Epub 2023 Sep 13. PMID: 37703349.
482. Altman RB. A Holy Grail - The Prediction of Protein Structure. N Engl J Med. 2023 Oct 12;389(15):1431-1434. doi: 10.1056/NEJMcibr2307735. Epub 2023 Sep 21. PMID: 37732608.
483. Guo MG, Reynolds DL, Ang CE, Liu Y, Zhao Y, Donohue LKH, Siprashvili Z, Yang X, Yoo Y, Mondal S, Hong A, Kain J, Meservey L, Fabo T, Elfaki I, Kellman LN, Abell NS, Pershad Y, Bayat V, Etminani P, Holodniy M, Geschwind DH, Montgomery SB, Duncan LE, Urban AE, **Altman RB**, Wernig M, Khavari PA. Integrative analyses highlight functional regulatory variants associated with neuropsychiatric diseases. Nat Genet. 2023 Nov;55(11):1876-1891. doi: 10.1038/s41588-023-01533-5. Epub 2023 Oct 19. PMID: 37857935; PMCID: PMC10859123.
484. Derry A, **Altman RB**. Explainable protein function annotation using local structure embeddings. bioRxiv [Preprint]. 2023 Oct 16:2023.10.13.562298. doi: 10.1101/2023.10.13.562298. PMID: 37905033; PMCID: PMC10614799.
485. Bharat V, Durairaj AS, Vanhauwaert R, Li L, Muir CM, Chandra S, Kwak CS, Le Guen Y, Nandakishore P, Hsieh CH, Rensi SE, **Altman RB**, Greicius MD, Feng L, Wang X. A mitochondrial inside-out iron-calcium signal reveals drug targets for Parkinson's disease. Cell Rep. 2023 Dec 26;42(12):113544. doi: 10.1016/j.celrep.2023.113544. Epub 2023 Dec 6. PMID: 38060381; PMCID: PMC10804639.
486. Carpenter KA, **Altman RB**. Databases of ligand-binding pockets and protein-ligand interactions. Comput Struct Biotechnol J. 2024 Mar 24;23:1320-1338. doi:10.1016/j.csbj.2024.03.015. PMID: 38585646; PMCID: PMC10997877.
487. Cousins HC, Nayar G, **Altman RB**. Computational Approaches to Drug Repurposing: Methods, Challenges, and Opportunities. Annu Rev Biomed Data Sci. 2024 Apr 10. doi: 10.1146/annurev-biodatasci-110123-025333. Epub ahead of print. PMID:38598857.
488. Sadler MC, Apostolov A, Cevallos C, Ribeiro DM, **Altman RB**, Kutalik Z. Leveraging large-scale biobank EHRs to enhance pharmacogenetics of cardiometabolic disease medications. medRxiv [Preprint]. 2024 Apr 7:2024.04.06.24305415. doi: 10.1101/2024.04.06.24305415. PMID: 38633781; PMCID: PMC11023668.
489. Sosa DN, Neculae G, Fauqueur J, **Altman RB**. Elucidating the semantics-topology trade-off for knowledge inference-based pharmacological discovery. J Biomed Semantics. 2024 May 1;15(1):5. doi: 10.1186/s13326-024-00308-z. PMID: 38693563; PMCID: PMC11064343.

EDITED BOOKS:

1. **Altman, R.**, Brutlag, D., Karp, P., Lathrop, R., Searls, D. (eds.). (1994). Proceedings of the Second International Conference on Intelligent Systems for Molecular Biology (Stanford, CA). Menlo Park, CA: AAAI Press.
2. Rawlings, C., Clark, D., **Altman, R.**, Hunter, L., Lengauer, T., Wodak, S. (eds.). (1995). Proceedings of the Third International Conference on Intelligent Systems

for Molecular Biology (Cambridge, England). AAAI Press, Menlo Park, CA: AAAI Press.
3. **Altman, R.**, Dunker, K., Hunter, L., Klein, T. (eds.). (1997). Proceedings of Pacific Symposium on Biocomputing 1997. Singapore: World Scientific Publishing.
4. **Altman, R.**, Dunker, K., Hunter, L., Klein, T. (eds.). (1998). Proceedings of Pacific Symposium on Biocomputing 1998. Singapore: World Scientific Publishing.
5. **Altman, R.**, Dunker, K., Hunter, L., Klein, T., Lauderdale, K. (eds.). (1999). Proceedings of Pacific Symposium on Biocomputing 1999. Singapore: World Scientific Publishing.
6. **Altman, R.**, Dunker, K., Hunter, L., Lauderdale, K., Klein, T.(eds.). (2000). Proceedings of Pacific Symposium on Biocomputing 2000. Singapore: World Scientific Publishing.
7. National Research Council Panel. (2000). Networking Health: Prescriptions for the Internet. Washington, DC: National Academy Press.
8. **Altman, R.**, Dunker, K., Hunter, L., Lauderdale, K., Klein, T., (eds.). (2001). Proceedings of Pacific Symposium on Biocomputing 2001. Singapore: World Scientific Publishing.
9. **Altman, R.**, Dunker, K., Hunter, L., Lauderdale, K., Klein, T., (eds.). (2002). Proceedings of Pacific Symposium on Biocomputing 2002. Singapore: World Scientific Publishing.
10. **Altman, R.**, Dunker, K., Hunter, L., Jung, T., Klein, T., (eds.). (2003). Proceedings of Pacific Symposium on Biocomputing 2003. Singapore: World Scientific Publishing.
11. **Altman, R.**, Dunker, K., Hunter, L., Jung, T., Klein, T., (eds.). (2004). Proceedings of Pacific Symposium on Biocomputing 2004. Singapore: World Scientific Publishing.
12. **Altman, R.**, Dunker, K., Hunter, L., Jung, T., Klein, T., (eds.). (2005). Proceedings of Pacific Symposium on Biocomputing 2005. Singapore: World Scientific Publishing.
13. **Altman, R.**, Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.). (2006). Proceedings of Pacific Symposium on Biocomputing 2006. Singapore: World Scientific Publishing.
14. **Altman, R.**, Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.). (2007). Proceedings of Pacific Symposium on Biocomputing 2007. Singapore: World Scientific Publishing.
15. **Altman, R.**, Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.). (2008). Proceedings of Pacific Symposium on Biocomputing 2008. Singapore: World Scientific Publishing.
16. **Altman, R.**, Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.). (2009). Proceedings of Pacific Symposium on Biocomputing 2009. Singapore: World Scientific Publishing.
17. **Altman, R.**, Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.). (2010). Proceedings of Pacific Symposium on Biocomputing 2010. Singapore: World Scientific Publishing.

18. **Altman, R.**, Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.). (2011). Proceedings of Pacific Symposium on Biocomputing 2011. Singapore: World Scientific Publishing.
19. **Altman, R.**, Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.). (2012). Proceedings of Pacific Symposium on Biocomputing 2012. Singapore: World Scientific Publishing.
20. **Altman, R.**, Dunker, K., Hunter, L., Murray, T., Klein, T., (eds.). (2013). Proceedings of Pacific Symposium on Biocomputing 2013. Singapore: World Scientific Publishing.
21. **Altman, R.**, Dunker, K., Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2014). Proceedings of Pacific Symposium on Biocomputing 2014. Singapore: World Scientific Publishing.
22. **Altman, R.**, Dunker, K., Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2015). Proceedings of Pacific Symposium on Biocomputing 2015. Singapore: World Scientific Publishing.
23. **Altman, R.**, Dunker, K., Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2016). Proceedings of Pacific Symposium on Biocomputing 2016. Singapore: World Scientific Publishing.
24. **Altman, R.**, Dunker, K., Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2017). Proceedings of Pacific Symposium on Biocomputing 2017. Singapore: World Scientific Publishing.
25. **Altman, R.**, Dunker, K., Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2018). Proceedings of Pacific Symposium on Biocomputing 2018. Singapore: World Scientific Publishing.
26. **Altman, R.**, Dunker, K., Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2019). Proceedings of Pacific Symposium on Biocomputing 2019. Singapore: World Scientific Publishing.
27. **Altman, R.**, Dunker, K., Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2020). Proceedings of Pacific Symposium on Biocomputing 2020. Singapore: World Scientific Publishing.
28. **Altman, R.**, Dunker, K., Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2021). Proceedings of Pacific Symposium on Biocomputing 2021. Singapore: World Scientific Publishing.
29. **Altman, R.**, Dunker, K., Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2022). Proceedings of Pacific Symposium on Biocomputing 2022. Singapore: World Scientific Publishing.
30. **Altman, R.**, Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2023). Proceedings of Pacific Symposium on Biocomputing 2023. Singapore: World Scientific Publishing.
31. **Altman, R.**, Hunter, L., Ritchie, M., Murray, T., Klein, T., (eds.). (2024). Proceedings of Pacific Symposium on Biocomputing 2024. Singapore: World Scientific Publishing.

CHAPTERS OF BOOKS:

1. S.C. Harrison, P.K. Sorger, P.G. Stockley, J. Hogle, **R. Altman** and R.K. Strong (1987). Positive Strand RNA Viruses, UCLA Symposia vol. 54, (pp. 379–395). New York: Alan R. Liss, Inc.
2. **Altman, R.**, Duncan, B., Brinkley, J., Buchanan, B., Jardetzky, O. (1988). Determination of the Spatial Distribution of Protein Structure Using Solution Data. In: J. Jaroszewski, K. Schaumburg & H. Kofod (eds), NMR Spectroscopy in Drug Research Alfred Benzon Symposium 26 (pp. 209–232). Monksgaard, Copenhagen.
3. Hayes-Roth, B., Buchanan, B., Lichtarge, O., Hewett, M., **Altman, R.**, Brinkley, J., Cornelius, C., Duncan, B., Jardetzky, O. (1988). PROTEAN: Deriving Protein Structure from Constraints. In: R. Engelmore & A. Morgan (eds.), Blackboard Systems (pp. 417–431). Workingham: Addison-Wesley.
4. **Altman, R.** and Jardetzky, O. (1989). The Heuristic Refinement Method for the Determination of the Solution Structure of Proteins from NMR Data. In: N. Oppenheimer & T. James (eds.), Nuclear Magnetic Resonance, Part B: Structure and Mechanisms (Methods in Enzymology, Vol. 177) (pp.218-247). New York: Academic Press.
5. Duncan, B., Brinkley, J., **Altman, R.**, Buchanan, B., Jardetzky, O. (1989). Artificial Intelligence Techniques and NMR Spectroscopy: Application to the Structure of Proteins in Solution. In: J. Pettegrew (ed.), Nuclear Magnetic Resonance: The Principles and Applications of NMR Spectroscopy and Imaging to Biomedical Research (pp. 99–123). New York: Springer-Verlag.
6. **Altman, R.**, Pachter, R., Jardetzky, O. (1989). The Determination of Structural Uncertainty from NMR and Other Data: The Lac Repressor Headpiece. In: O. Jardetzky (ed.), Protein Structure and Engineering. New York: Plenum Publishing Corp.
7. **Altman, R.**, Arrowsmith, C., Pachter, R., Jardetzky, O. (1991). Determination of Large Protein Structures from NMR Data: Definition of the Solution Structure of the TRP Repressor. In: J. Hoch, F. Poulsen, and C. Redfield (eds.), Computational Aspects of the Study of Biological Macromolecules by NMR Spectroscopy (pp. 363–374). New York: Plenum Publishing Corp.
8. Chen, R., Fink, D., **Altman, R.** (1995). Computing the Structure of Large Complexes: Applying Constraint Satisfaction Techniques to Modeling the 16S Ribosomal RNA. In: J. Markley, and S. Opella (eds.), Biomolecular NMR Spectroscopy (pp. 279-299). London: Oxford University Press.
9. Wei, L., Chang, J., **Altman, R.** (1998). Probabilistic and Statistical Descriptions of Protein Structure. In: S. Salzberg, D. Searls, and S. Kasif (eds.), Computational Biology: Pattern Analysis and Machine Learning Methods (pp. 207-225). London, UK: Elsevier Science.
10. **Altman, R.** (2000). Bioinformatics. In: T. Shortliffe, G. Wiederhold, and L. Fagan (eds.), Medical Informatics: Computer Applications in Health Care (pp. 638-660), Heidelberg: Springer-Verlag.
11. **Altman, R**., Preface. In Kohane, I., Kho, A., Butte, A. (2002). *Microarrays For An Integrative Genomics.* Mar 2002, xii-xv.
12. Chang, J., Carrillo, M., Waugh, A., Wei, L., **Altman, R.** (2002). Scoring Functions

Sensitive to Alignment Error Have a More Difficult Search: A Paradox for Threading. In Structures and Mechanisms. (pp. 309-320). ACS Publications.

13. **Altman, R.**, Dugan, J. (2003). Defining Bioinformatics and Structural Bioinformatics. In: H. Weissig & P. Bourne (eds.). Structural Bioinformatics (pp. 3-14). Hoboken: Wiley-Liss, Inc.
14. **Altman, R.**, Preface. In Pevsner, J. (2003). *Bioinformatics and Functional Genomics.* Oct 2003
15. Thorn, C., Klein, T., **Altman, R.** (2005). *PharmGKB: The Pharmacogenetics and Pharmacogenomics Knowledge Base*. In Innocenti, F (ed.). Pharmacogenomics: Methods and Applications (pp. 177-192). Totowa: Humana Press.
16. **Altman, R.** (2005). *Introduction to ontologies in biomedicine: from powertools to assistants*. In Encyclopedia of Genetics, Genomics, Proteomics and Bioinformatics. Wiley Online Library.
17. Thorn, C., Whirl-Carrillo, M., Klein, T., **Altman, R.** (2007). In Current Pharmacogenomics, Volume 5, Number 1, (pp. 79-86(8)). Bentham Science Publishers.

INVITED LECTURES AND PRESENTATIONS (selected from over 100):

1. "AI in Medicine: Challenges from managed care to molecular medicine." Annual Conference of American Association for Artificial Intelligence, Invited Talk, Madison, WI, July 29, 1998.
2. "Bioinformatics in support of molecular medicine." Annual Conference of the American Medical Informatics Association, Invited Talk, Orlando, FL, November 9, 1998.
3. "Challenges for Discovery in Molecular Biology." Knowledge Discovery and Data Mining Conference, 2001, San Francisco, CA, August 28, 2001.
4. "Challenges for Knowledge Management in Bioinformatics." IEEE Computer Society Bioinformatics Conference, August 16, 2002.
5. "AI in Biomedicine: helping scientists reason about genomes, drugs and diseases." American Association for Artificial Intelligence (AAAI) 2004, San Jose, CA, July 28, 2004.
6. "Challenges for Informatics & Medicine in the Post-Genome Era." Medinfo 2004, San Francisco, CA, September 10, 2004.
7. "Building genotype-phenotype data resources for pharmacogenomics." Frontiers in Bioinformatics: Unsolved Problems and Challenges, Arthur M. Sackler Colloquia of the National Academy of Sciences, Irvine, CA, October 16, 2004.
8. "Challenges for knowledge management in biomedical informatics." IEEE Computational Systems Bioinformatics Conference, Stanford, CA, August 11, 2005.
9. "PharmGKB: is sharing pharmacogenomics information worthwhile?" Pharmacogenomics Meeting at Sanger Centre/Cold Spring Harbor, Hinxton, UK. September 15, 2005.
10. "Simbios: creating an infrastructure for physics-based simulation of biological structure." American Medical Informatics Association (AMIA) Annual Meeting, Washington, DC, October 24, 2005.
11. "Annual Review of Translational Bioinformatics." American Medical Informatics

Association (AMIA) Summit on Translational Bioinformatics, San Francisco, CA, March 12, 2008.

12. "Annual Review of Translational Bioinformatics." American Medical Informatics Association (AMIA) Summit on Translational Bioinformatics, San Francisco, CA, March 17, 2009.
13. "Annual Review of Translational Bioinformatics." American Medical Informatics Association (AMIA) Summit on Translational Bioinformatics, San Francisco, CA. March 12, 2010.
14. "Translational Bioinformatics: Challenges for the AMIA community." Semi-Plenary Session, American Medical Informatics Association Fall Symposium, Washington, DC. November 10, 2008.
15. "Genes & Drugs." Columbia University Department of Biomedical Informatics Colloquium, New York, Oct 16, 2009.
16. "Systems approaches for Pharmacogenomics." Scripps Genomic Medicine Conference, San Diego, CA, March 6, 2010.
17. "Translational Bioinformatics Year-in-Review." American Medical Informatics Association (AMIA) Joint Summits on Translational Science, San Francisco, CA, March 9, 2011
18. "7th annual Grant R. Wilkinson Distinguished Lecture in Clinical Pharmacology." Vanderbilt University, Nashville, TN, April 14, 2011.
19. "The emerging network of data for understanding the interactions of genes and drugs." Dewitt Stetten Jr. 2011 Lecture, NIGMS, October 12, 2011.
20. "Translational Bioinformatics Year-in-Review." American Medical Informatics Association (AMIA) Joint Summits on Translational Science, San Francisco, CA, March 21, 2012
21. "Integrating Multiple Sources of Information to Understand Drug Action: From Molecular Structure to Clinical Population Data." American Society for Clinical Pharmacology & Therapeutics (ASCPT) and Food and Drug Administration William B. Abrams Lecture, FDA White Oak Campus, Silver Spring, MD, March 23, 2012.
22. "Understanding drug action over 17 orders of magnitude—from molecular to global." Mario Stefanelli Memorial Lecture, The National Congress of Italian Group of Bioengineering Annual Meeting, Rome, Italy, June 28, 2012.
23. "Dealing with biomedical knowledge explosion for better healthcare: identifying actionable knowledge items at the point of care." International Center for Scientific Debate (Inbiomedvision), Barcelona, Spain, July 3, 2012
24. Three invited lectures at the Annual International Conference on Intelligent Systems for Molecular Biology (ISMB) 2012, Long Beach, CA, July 15-17, 2012.
25. "The Network of Data for Understanding Drug Response." The Oxford-Stanford Conference on Big Data: Challenges & Opportunities for Human Health, Oxford University, Oxford, United Kingdom, November 29, 2012.
26. "Translational Bioinformatics Year-in-Review." AMIA Joint Summits on Translational Science, San Francisco, CA, March 20, 2013
27. "Systems pharmacology methods for linking drugs to genetic networks." Leon I Goldberg Memorial Lectures in Clinical Pharmacology, Department of Medicine, University of Chicago, Chicago, IL, December 10, 2013.

28. “Big data for drug repurposing, druggability, drug design & side effect prediction.” The Flexner Discovery Series, Vanderbilt University Medical Center, Nashville, TN, February 6, 2014.
29. “Translational Bioinformatics Year-in-Review.” AMIA Joint Summits on Translational Science, San Francisco, CA, April 9, 2014
30. “Informatics for understanding drug response at all scales.” 2014 International Society for Computational Biology Fellows Keynote, Boston, MA, July 15, 2014.
31. “Translational Bioinformatics Year-in-Review.” AMIA Joint Summits on Translational Science, San Francisco, CA, March 26, 2015
32. “Translational Bioinformatics Year-in-Review.” AMIA Joint Summits on Translational Science, San Francisco, CA, March 21, 2016
33. “Genetic Variations Impact on Drug Response: Current Trends and Research.” ACMT (American College of Medical Toxicology) Annual Scientific Meeting in San Francisco, CA, April 11, 2019.
34. "Machine learning methods to triage rare pharmacogenetic variation.” 24th International Conference on Research in Computational Molecular Biology (RECOMB 2020), June 25, 2020.
35. "Text mining to understand drug action: from PubMED to Reddit." ISMB 2020 (“in Chicago” but virtual) Text-Mining Track Keynote, July 13, 2020.
36. “AI for recognizing phenotypes in large biobanks." St. Jude Children’s Research Hospital, 2024 Faculty Scientific Retreat, Memphis, TN, February 9, 2024.

PATENTS

1. Tatonetti, N., **Altman, R**., Fernald, G. *Signal detection algorithms to identify drug effects and drug interactions.* April 5, 2016. US Patent 9,305,267 B2.
2. **Altman, R.**, Abernethy, N. *Frame-based knowledge representation system and methods.* August 27, 2002. US Patent 6,442,566 B1.