Readings and Resources

A Guide to this Document

This is a comprehensive list of readings and resources to support your learning in MEDI501. It includes articles about the science conducted in the case study as well as articles and websites that are referenced in the course lectures. It also includes relevant videos that complement course content.

Each week, we will highlight particular articles from this list that are especially relevant to that week's course content. But we encourage you to review the full set of readings and resources.

Introduction to NCATS

Video Providing an Overview of NCATS: NCATS, the National Center for Advancing Translational Sciences (4 mins)

Video Providing a Look Inside NCATS Labs: Inside the NCATS Laboratories (7 mins)

Introduction to Translational Science

Austin CP. (2018). Translating translation. *Nature Reviews Drug Discovery*, 17 (7), 455-6.

Translational Science Principles

Translational Science Principles

Population Burden of Cancer

American Cancer Society (ACS) Report: Cancer Facts and Figures, 2020

Siegel RL, Miller KD, and Jemal A. (2020). Cancer statistics, 2020. *CA - A Cancer Journal for Clinicians*, 70(1) - 7-30.

General Cancer Biology, and Historical Perspective on Related Research

Webinar: "Hallmarks of Cancer: New Dimensions." This one-hour webinar was recorded in 2022, and features updates on the "Hallmarks of Cancer" publications, by Dr. Douglas Hanahan. And here is the URL — https://www.youtube.com/watch?v=d0AKtbLgWQk

Hanahan D and Weinberg RA. (2000). The hallmarks of cancer. *Cell*, 100, 57-70.

Hanahan D and Weinberg RA. (2011). Hallmarks of cancer - the next generation. *Cell*, 144, 646-74.

Note: The two articles above represent a 2000 article and its 2011 update. The differences reflect changes in the science in the intervening decade, particularly the emergence of new areas of research.

Current Cancer Treatment Landscape, as Reflected in Recent Drug Approvals

Kurzrock R, Kantarjian HM, Kesselheim AS, and Sigal EV. (2020). New drug approvals in oncology. *Nature Reviews Clinical Oncology*, 17, 140-1

Singh H, Blumenthal G, and Pazdur R. (2020). Approvals in 2019-international review and a new agnostic molecular entity. *Nature Reviews Clinical Oncology*, 17, 130-132.

Research Papers on Perinucleolar Compartments (PNCs) – Listed Chronologically

Huang S, Deerinck TJ, Ellisman MH, and Spector DL. (1997). The dynamic organization of the perinucleoloar compartment in the cell nucleus. *Journal of Cell Biology*, 137(5): 965-974.

Kamath RV, Thor AD, Wang C, Edgerton SM, Slusarczyk A, Leary DJ, Wang J, Wiley EL, Jovanovic B, Wu Q, Nayar R, Kovarik P, Shi F, and Huang S. (2005). Perinucleolar compartment prevalence has an independent prognostic value for breast cancer. *Cancer Research*, 65(1): 246-53.

Norton JT, Pollock CB, Wang C, Schink JC, Kim JJ, and Huang S. (2008). Perinucleolar compartment prevalence is a phenotypic pancancer marker of malignancy. *Cancer*, 113(4):861-9.

Norton JT, Titus SA, Dexter D, Austin CP, Zheng W, and Huang S. (2009). Automated High-Content Screening for Compounds That Disassemble the Perinucleolar Compartment. Journal of Biomolecular Screening, 14(9):1045-53.

Frankowski KJ, Wang C, Patnaik S, et al.
(2018). Metarrestin,a perinucleolar compartment inhibitor, effectively suppresses metastasis. Science Translational Medicine, 16;10(441).

Press related to the release of the Frankowski et al, 2018 paper

National Cancer Institute. (2018). Experimental Cancer Drug Metarrestin Targets Metastatic Tumors.

National Institutes of Health. (2018). NIH, Northwestern scientists develop potential new approach to stop cancer metastasis.

Northwestern University: Paul, M. (2018). A “dirty bomb” battles cancer metastasis.

University of Kansas Cancer Center. (2018). Researchers identify metastasis-suppressing compound.

Swinney DC and Anthony J. (2011). How were new medicines discovered *Nature Reviews Drug Discovery*, 10(7): 507-19.

Eder J, Sedrani R, and Wiesmann C. (2014). The discovery of first-in-class drugs origins and evolution. *Nature Reviews Drug Discovery*, 13(8): 577-87.

Haasen D, Schopfer U, Antczak C, Guy C, Fuchs F, and Selzer P. (2017). How phenotypic screening influenced drug discovery Lessons from five years of practice. *Assay and Drug Development Technologies*,15(6): 239-246.

Moffat JG, Vincent F, Lee JA, Eder J, and Prunotto M. (2017). Opportunities and challenges in phenotypic drug discovery an industry perspective. *Nature Reviews Drug Discovery*, 16(8): 531-543.

NCATS Team Science Environment

Vogel AL, Knebel AR, Faupel-Badger JM, Portilla LM, Simeonov A. A systems approach to enable effective team science from the internal research program of the National Center for Advancing Translational Sciences. *J Clin Transl Sci*. 2021;5(1):e163.

Team Science

Hall KL Vogel AL and Crowston K. (2019). Comprehensive collaboration plans practical considerations spanning across individual collaborators to institutional supports. In K.L. Hall, A.L. Vogel, and R.T. Croyle (Eds). Strategies for Team Science Success: Handbook of Evidence-Based Principles for Cross-Disciplinary Science and Practical Lessons Learned from Health Researchers. (pp. 587-611).

Kozlowski SWJ and Bell BS. (2019). Evidence-based Principles and Strategies for Optimizing Team Functioning and Performance in Science Teams. In K.L. Hall, A.L. Vogel, and R.T. Croyle (Eds). Strategies for Team Science Success: Handbook of Evidence-Based Principles for Cross-Disciplinary Science and Practical Lessons Learned from Health Researchers. (pp. 269-293).

Schwarz RM, Bennett LM. Team effectiveness model for science (TEMS) Using a mutual learning shared mindset to design, develop, and sustain science teams. *J Clin Transl Sci*. 2021;5(1):e157.

INVITED BLOG POST

Bennett LM, Cardenas E, and O'Rourke M. Collaboration agreement template. July 19, 2022. Integration and Implementation Insights blog.

Rolland B, Hohl SD, Johnson LJ. Enhancing translational team effectiveness: The Wisconsin Interventions in Team Science framework for translating empirically informed strategies into evidence-based interventions. J Clin Transl Sci. 2021;5(1):e158.

Rolland B, Cross JE, Hohl SD, Johnson LJ, Wooten K, Brasier AR. Introduction to the themed issue on the design, development, evaluation, and dissemination of team science interventions in clinical and translational research. *J Clin Transl Sci*. 2021 Dec 2;5(1):e202.

McDaniel SH, Salas E. The science of teamwork Introduction to the special issue. *Am Psychol*. 2018;73(4)305-307.

In Vitro vs. In Vivo Research Findings

Johnson JI, Decker S, Zaharevitz D, Rubinstein LV, Venditti JM, Schepartz S, Kalyandrug S, Christian M, Arbuck S, Hollingshead M, Suasville EA. (2001). Relationships between drug activity in NCI preclinical in vitro and in vivo models and early clinical trials. *British Journal of Cancer*. 18;84(10)1424-31.

Metarrestin metabolism and pharmacokinetic study

Padilha E, Wang A, Singleton M, Hughes E, Li D, Rice K, Konrath K, Patnaik, S, Marugan J, Rudloff U, and Xu, X. (2020). Metabolism and pharmacokinetic characterization of metarrestin in multiple species. *Cancer Chemother Pharmacol*. 2020 Apr;85(4):805-816.

Clinical Trials

International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use. (2000). *ICH Harmonised Tripartite Guideline. Choice of Control Group and Related Issues in Clinical Trials (E10)*.

International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use. (2016). *Guidelines for Good Clinical Practice E6(R2)*.

US Office of the Federal Register. (2018). *Electronic Code of Federal Regulations (ECFR) Part 46 - Protection of Human Subjects*.

United States Food and Drug Administration Clinical Trials Guidance Documents.

Metarrestin Clinical Trial Webpage on ClinicalTrials.Gov

Metarrestin (ML-246) in Subjects with Metastatic Solid Tumors.