

Jan 31st: Next Generation Sequencing

Gire Stephen K et al.

Genomic surveillance elucidates Ebola virus origin and transmission during the 2014 outbreak. *Science*. 2014 Sep 12;345(6202):1369-72. doi: 10.1126/science.1259657

Reviews: (Choose the best ideas from Review papers. you don't have to use everything)

*Metzker ML.

Sequencing technologies - the next generation.

Nat Rev Genet. 2010 Jan;11(1):31-46. doi: 10.1038/nrg2626. Epub 2009 Dec 8.

Misasi J, Sullivan NJ

Camouflage and Misdirection: The Full-On Assault of Ebola Virus Disease.

Cell. 2014 Oct 23;159(3):477-486. doi: 10.1016/j.cell.2014.10.006.

***Extra reading if you are interested:**

How to sequence a genome (web-based tutorials):

<http://www.genome.gov/25019885>

*Outbreak Traced to One source: <http://www.sciencenews.org/article/liberia's-ebola-outbreak-largely-traced-one-source>

*Illumina Article: <https://www.illumina.com/content/dam/illumina-marketing/documents/icomunity/sabeti-happi-miseq-ebola-article-1270-2015-001.pdf>

Feb 7th: Phylogenomics

Lek A, Lek M, North KN, Cooper ST.

Phylogenetic analysis of ferlin genes reveals ancient eukaryotic origins.

BMC Evol Biol. 2010 Jul 29;10:231. doi: 10.1186/1471-2148-10-231.

Review:

Yang Z, Rannala B.

Molecular phylogenetics: principles and practice.

Nat Rev Genet. 2012 Mar 28;13(5):303-14. doi: 10.1038/nrg3186.

*Delsuc et al: <http://www.nature.com/nrg/journal/v6/n5/full/nrg1603.html>

*Lek AI, Evesson FJ, Sutton RB, North KN, Cooper ST.

Ferlins: regulators of vesicle fusion for auditory neurotransmission, receptor trafficking and membrane repair.

Traffic. 2012 Feb;13(2):185-94. doi: 10.1111/j.1600-0854.2011.01267.x. Epub 2011 Sep 6.

Feb 14th: Domain and motif discovery

Roger Albertson, Chiswili Chabu, Amy Sheehan, Chris Q. Doe

Scribble protein domain mapping reveals a multistep localization mechanism and domains necessary for establishing cortical polarity.

Journal of Cell Science 2004 117: 6061-6070; doi: 10.1242/jcs.01525

Review:

David Lee, Oliver Redfern & Christine Orengo

Predicting protein function from sequence and structure

Nature Reviews Molecular Cell Biology 8, 995-1005 (December 2007) | doi:10.1038/nrm2281

*Tools to find domains & motifs: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC150457/>

Feb 16th: read for lab

Letunic I, Doerks T, Bork P.

SMART 7: recent updates to the protein domain annotation resource.

Nucleic Acids Res. 2012 Jan;40(Database issue):D302-5. doi: 10.1093/nar/gkr931. Epub 2011 Nov 3.

Gene ontology: http://www.nature.com/ng/journal/v25/n1/full/ng0500_25.html

DNA motifs: <http://www.nature.com/nbt/journal/v24/n8/full/nbt0806-959.html>

Gen 564 Readings

Spring 2017

Feb 21st: Genomic Techniques: CRISPR

Bhattacharya D, Marfo CA1, Li D1, Lane M1, Khokha MK.

CRISPR/Cas9: An inexpensive, efficient loss of function tool to screen human disease genes in *Xenopus*.
Dev Biol. 2015 Dec 15;408(2):196-204. doi: 10.1016/j.ydbio.2015.11.003. Epub 2015 Nov 4.

Reviews:

Xiao-Jie L1, Hui-Ying X2, Zun-Ping K3, Jin-Lian C4, Li-Juan J5.

CRISPR-Cas9: a new and promising player in gene therapy.

J Med Genet. 2015 May;52(5):289-96. doi: 10.1136/jmedgenet-2014-102968. Epub 2015 Feb 24.

Feb 28th: Transcriptomics

Labbé RM, Irimia M, Currie KW, Lin A, Zhu SJ, Brown DD, Ross EJ, Voisin V, Bader GD, Blencowe BJ, Pearson BJ.

A comparative transcriptomic analysis reveals conserved features of stem cell pluripotency in planarians and mammals.
Stem Cells. 2012 Aug;30(8):1734-45. doi: 10.1002/stem.1144.

Reviews:

Newmark PA, Sánchez Alvarado A.

Not your father's planarian: a classic model enters the era of functional genomics.

Nat Rev Genet. 2002 Mar;3(3):210-9. doi: 10.1038/nrg759

Wang Z, Gerstein M, Snyder M.

RNA-Seq: a revolutionary tool for transcriptomics.

Nat Rev Genet. 2009 Jan;10(1):57-63. doi: 10.1038/nrg2484

*Sandberg R.

Entering the era of single-cell transcriptomics in biology and medicine.

Nat Methods. 2014 Jan;11(1):22-4.

Movie: <http://www.hhmi.org/biointeractive/planarian-regeneration-and-stem-cells>

Mar 7th: Chemical Genetics

Wang CI, Tao W, Wang Y, Bikow J, Lu B, Keating A, Verma S, Parker TG, Han R, Wen XY.

Rosuvastatin, identified from a zebrafish chemical genetic screen for antiangiogenic compounds, suppresses the growth of prostate cancer. Eur Urol. 2010 Sep;58(3):418-26. doi: 10.1016/j.eururo.2010.05.024.

Reviews:

Stockwell BR.

Exploring biology with small organic molecules.

Nature. 2004 Dec 16;432(7019):846-54.

*Kaufman CK, White RM, Zon L.

Chemical genetic screening in the zebrafish embryo.

Nat Protoc. 2009;4(10):1422-32. doi: 10.1038/nprot.2009.144.

*Lieschke GJ, Currie PD.

Animal models of human disease: zebrafish swim into view.

Nat Rev Genet. 2007 May;8(5):353-67.

Mar 14th: Proteomics I- Phosphoproteomics

Morris MI, Knudsen GM2, Maeda S3, Trinidad JC2, Ioanoviciu A2, Burlingame AL2, Mucke L3.

Tau post-translational modifications in wild-type and human amyloid precursor protein transgenic mice.
Nat Neurosci. 2015 Aug;18(8):1183-9. doi: 10.1038/nn.4067. Epub 2015 Jul 20.

Reviews:

Noah Dephore, Kathleen L. Gould, Steven P. Gygi, and Douglas R. Kellogg

Mapping and analysis of phosphorylation sites: a quick guide for cell biologists

Mol Biol Cell. 2013 Mar 1;24(5):535-542.

Tony Hunter

Why nature chose phosphate to modify proteins.

Philos Trans R Soc Lond B Biol Sci. 2012 Sep 19;367(1602):2513-6. doi: 10.1098/rstb.2012.0013.

Mar 28th: Proteomics II- Quantitative proteomics

Kratchmarova, I., Blagoev, B., Haack-Sorensen, M., Kassem, M. & Mann, M.
Mechanism of divergent growth factor effects in mesenchymal stem cell differentiation.
Science **308**, 1472–1477 (2005).

Reviews: * remember that I choose papers for content and also images—so look at both
Shao-En Ong & Matthias Mann

A practical recipe for stable isotope labeling by amino acids in cell culture (SILAC)
Nature Protocols **1**, 2650 - 2660 (2007) Published online: 11 January 2007

Larance M, Lamond AII.

Multidimensional proteomics for cell biology.

Nat Rev Mol Cell Biol. 2015 May;16(5):269-80. doi: 10.1038/nrm3970. Epub 2015 Apr 10.

April 4th: Biological Networks I-Y2H techniques

Goehler H, Lalowski M, Stelzl U, Vaelter S, Stroedicke M, Worm U, et al.
A protein interaction network links GIT1, an enhancer of huntingtin aggregation, to Huntington's disease.
Mol Cell. 2004 Sep 24;15(6):853-65.

Reviews:

Hamdi A, Colas P.

Yeast two-hybrid methods and their applications in drug discovery.

Trends Pharmacol Sci. 2012 Feb;33(2):109-18. doi: 10.1016/j.tips.2011.10.008.

*Brückner A, Polge C, Lentze N, Auerbach D, Schlattner U.

Yeast two-hybrid, a powerful tool for systems biology.

Int J Mol Sci. 2009 Jun 18;10(6):2763-88. doi: 10.3390/ijms10062763.

April 11th: Biological Networks II: Co-IP techniques

Anastas JN1, Biechele TL, Robitaille M, Muster J, Allison KH, Angers S, Moon RT.
A protein complex of SCRIB, NOL1AP and VANGL1 regulates cell polarity and migration, and is associated with breast cancer progression.
Oncogene. 2012 Aug 9;31(32):3696-708. doi: 10.1038/onc.2011.528. Epub 2011 Dec 19.

Reviews:

Kuzmanov U, Emili A.

Protein-protein interaction networks: probing disease mechanisms using model systems.

Genome Med. 2013 Apr 30;5(4):37. doi: 10.1186/gm441. eCollection 2013.

*Gingras AC, Gstaiger M, Raught B, Aebersold R.

Analysis of protein complexes using mass spectrometry.

Nat Rev Mol Cell Biol. 2007 Aug;8(8):645-54. Review.

*Collins MO, Choudhary JS.

Mapping multiprotein complexes by affinity purification and mass spectrometry.

Curr Opin Biotechnol. 2008 Aug;19(4):324-30. Epub 2008 Jul 16.

*These papers are optional, but may be useful to the presenters or for your semester project