**History of Epigenetics**

Felsenfeld G. A brief history of epigenetics. Cold Spring Harb Perspect Biol.

2014 Jan 1;6(1). pii: a018200. doi: 10.1101/cshperspect.a018200. PubMed PMID:

24384572; PubMed Central PMCID: PMC3941222.

Noble D. Conrad Waddington and the origin of epigenetics. J Exp Biol. 2015

Mar;218(Pt 6):816-8. doi: 10.1242/jeb.120071. PubMed PMID: 25788723.

Waddington CH. The epigenotype. 1942. Int J Epidemiol. 2012 Feb;41(1):10-3.

doi: 10.1093/ije/dyr184. Epub 2011 Dec 20. PubMed PMID: 22186258.

Goldberg AD, Allis CD, Bernstein E. Epigenetics: a landscape takes shape.

Cell. 2007 Feb 23;128(4):635-8. Review. PubMed PMID: 17320500.

Epigenetic Landscaping: Waddington’s Use of Cell Fate Bifurcation Diagrams. Scott F. GILBERT Biology and Philosphy 1991

Holliday R. Epigenetics: a historical overview. Epigenetics. 2006

Apr-Jun;1(2):76-80. Epub 2006 Mar 15. PubMed PMID: 17998809.

Slack JM. Conrad Hal Waddington: the last Renaissance biologist? Nat Rev

Genet. 2002 Nov;3(11):889-95. doi: 10.1038/nrg933. Review. PubMed PMID: 12415319.

Van Speybroeck L. From epigenesis to epigenetics: the case of C. H.

Waddington. Ann N Y Acad Sci. 2002 Dec;9861-81. Review. PubMed PMID: 12547674.

Waddington C.H. Canalization of development and the inheritance of acquired chaacters. Nature 1942.

C.H. Waddington Genetic Assimilation of the Bithorax Phenotype. International journralof organic evolution 1955

**Epigenetic Computational validation**

Wang J, Zhang K, Xu L, Wang E. Quantifying the Waddington landscape and

biological paths for development and differentiation. Proc Natl Acad Sci U S A.

2011 May 17;108(20):8257-62. doi: 10.1073/pnas.1017017108. Epub 2011 May 2.

PubMed PMID: 21536909; PubMed Central PMCID: PMC3100956.

Moris N, Pina C, Arias AM. Transition states and cell fate decisions in

epigenetic landscapes. Nat Rev Genet. 2016 Nov;17(11):693-703. doi:

10.1038/nrg.2016.98. Epub 2016 Sep 12. Review. PubMed PMID: 27616569.

Li C, Wang J. Quantifying the Landscape for Development and Cancer from a Core

Cancer Stem Cell Circuit. Cancer Res. 2015 Jul 1;75(13):2607-18. doi:

10.1158/0008-5472.CAN-15-0079. Epub 2015 May 13. PubMed PMID: 25972342.

**Animal Model**

Harel I, Benayoun BA, Machado B, Singh PP, Hu CK, Pech MF, Valenzano DR, Zhang

E, Sharp SC, Artandi SE, Brunet A. A platform for rapid exploration of aging and

diseases in a naturally short-lived vertebrate. Cell. 2015 Feb 26;160(5):1013-26.

doi: 10.1016/j.cell.2015.01.038. Epub 2015 Feb 12. PubMed PMID: 25684364; PubMed

Central PMCID: PMC4344913.

Harris C. Animal models in epigenetic research: institutional animal care and

use committee considerations across the lifespan. ILAR J. 2012;53(3-4):370-6.

doi: 10.1093/ilar.53.3-4.370. PubMed PMID: 23744973.

Dolinoy DC, Faulk C. Introduction: The use of animals models to advance

epigenetic science. ILAR J. 2012;53(3-4):227-31. doi: 10.1093/ilar.53.3-4.227.

PubMed PMID: 23744962; PubMed Central PMCID: PMC3747759.

Cox TC, Luquetti DV, Cunningham ML. Perspectives and challenges in advancing

research into craniofacial anomalies. Am J Med Genet C Semin Med Genet. 2013

Nov;163C(4):213-7. doi: 10.1002/ajmg.c.31383. Epub 2013 Oct 18. PubMed PMID:

24142870; PubMed Central PMCID: PMC3983849.

**Epigenetics regulation of transcription**

Jaenisch R, Bird A. Epigenetic regulation of gene expression: how the genome

integrates intrinsic and environmental signals. Nat Genet. 2003 Mar;33

Suppl:245-54. Review. PubMed PMID: 12610534.

Long HK, Prescott SL, Wysocka J. Ever-Changing Landscapes: Transcriptional

Enhancers in Development and Evolution. Cell. 2016 Nov 17;167(5):1170-1187. doi:

10.1016/j.cell.2016.09.018. Review. PubMed PMID: 27863239; PubMed Central PMCID:

PMC5123704.

Allis CD, Jenuwein T. The molecular hallmarks of epigenetic control. Nat Rev

Genet. 2016 Aug;17(8):487-500. doi: 10.1038/nrg.2016.59. Epub 2016 Jun 27.

Review. PubMed PMID: 27346641.

Slotkin RK, Martienssen R. Transposable elements and the epigenetic regulation

of the genome. Nat Rev Genet. 2007 Apr;8(4):272-85. Review. PubMed PMID:

17363976.

Tronick E, Hunter RG. Waddington, Dynamic Systems, and Epigenetics. Front

Behav Neurosci. 2016 Jun 10;10:107. doi: 10.3389/fnbeh.2016.00107. eCollection

2016. PubMed PMID: 27375447; PubMed Central PMCID: PMC4901045.

Dolinoy DC. The agouti mouse model: an epigenetic biosensor for nutritional

and environmental alterations on the fetal epigenome. Nutr Rev. 2008 Aug;66 Suppl

S7-11. doi: 10.1111/j.1753-4887.2008.00056.x. Review. PubMed PMID: 18673496;

PubMed Central PMCID: PMC2822875.

Morgan HD, Sutherland HG, Martin DI, Whitelaw E. Epigenetic inheritance at the

agouti locus in the mouse. Nat Genet. 1999 Nov;23(3):314-8. PubMed PMID:

10545949.

Morgan DK, Whitelaw E. The case for transgenerational epigenetic inheritance

in humans. Mamm Genome. 2008 Jun;19(6):394-7. doi: 10.1007/s00335-008-9124-y.

Epub 2008 Jul 29. Review. PubMed PMID: 18663528.

Kouzarides T. Chromatin modifications and their function. Cell. 2007 Feb 23;128(4):693-705. Review. PubMed PMID: 17320507.

Laskowski RA, Thornton JM. Understanding the molecular machinery of genetics

through 3D structures. Nat Rev Genet. 2008 Feb;9(2):141-51. Review. PubMed PMID:

18160966.

Zhou VW, Goren A, Bernstein BE. Charting histone modifications and the

functional organization of mammalian genomes. Nat Rev Genet. 2011 Jan;12(1):7-18.

doi: 10.1038/nrg2905. Epub 2010 Nov 30. Review. PubMed PMID: 21116306.

Li B, Carey M, Workman JL. The role of chromatin during transcription. Cell.

2007 Feb 23;128(4):707-19. Review. PubMed PMID: 17320508.

Gaspar-Maia A, Alajem A, Meshorer E, Ramalho-Santos M. Open chromatin in

pluripotency and reprogramming. Nat Rev Mol Cell Biol. 2011 Jan;12(1):36-47. doi:

10.1038/nrm3036. Review. Erratum in: Nat Rev Mol Cell Biol. 2011 Apr;12(4):273.

PubMed PMID: 21179060; PubMed Central PMCID: PMC3891572.

**Behavioral Epigenetics**

Rosenfeld CS. Animal models to study environmental epigenetics. Biol Reprod.

2010 Mar;82(3):473-88. doi: 10.1095/biolreprod.109.080952. Epub 2009 Oct 14.

Review. PubMed PMID: 19828779.

Gravitz L. Animal behaviour: Nested instincts. Nature. 2015 May

21;521(7552):S60-1. doi: 10.1038/521S60a. PubMed PMID: 25992675.

Kwapis JL, Wood MA. Epigenetic mechanisms in fear conditioning: implications

for treating post-traumatic stress disorder. Trends Neurosci. 2014

Dec;37(12):706-20. doi: 10.1016/j.tins.2014.08.005. Epub 2014 Sep 11. Review.

PubMed PMID: 25220045; PubMed Central PMCID: PMC4258434.

Robinson GE, Barron AB. Epigenetics and the evolution of instincts. Science.

2017 Apr 7;356(6333):26-27. doi: 10.1126/science.aam6142. PubMed PMID: 28385970.

Bell AM, Robinson GE. Genomics. Behavior and the dynamic genome. Science. 2011

Jun 3;332(6034):1161-2. doi: 10.1126/science.1203295. PubMed PMID: 21636765;

PubMed Central PMCID: PMC3319369.

Su Y, Shin J, Zhong C, Wang S, Roychowdhury P, Lim J, Kim D, Ming GL, Song H.

Neuronal activity modifies the chromatin accessibility landscape in the adult

brain. Nat Neurosci. 2017 Mar;20(3):476-483. doi: 10.1038/nn.4494. Epub 2017 Feb

6. PubMed PMID: 28166220; PubMed Central PMCID: PMC5325677.

**Epigenetics Cell differentiation and reprogramming**

Spivakov M, Fisher AG. Epigenetic signatures of stem-cell identity. Nat Rev

Genet. 2007 Apr;8(4):263-71. Review. PubMed PMID: 17363975.

Ziller MJ, Edri R, Yaffe Y, Donaghey J, Pop R, Mallard W, Issner R, Gifford

CA, Goren A, Xing J, Gu H, Cachiarelli D, Tsankov A, Epstein C, Rinn JR,

Mikkelsen TS, Kohlbacher O, Gnirke A, Bernstein BE, Elkabetz Y, Meissner A.

Dissecting neural differentiation regulatory networks through epigenetic

footprinting. Nature. 2015 Feb 19;518(7539):355-359. doi: 10.1038/nature13990.

Epub 2014 Dec 24. PubMed PMID: 25533951; PubMed Central PMCID: PMC4336237.

Atlasi Y, Stunnenberg HG. The interplay of epigenetic marks during stem cell

differentiation and development. Nat Rev Genet. 2017 Nov;18(11):643-658. doi:

10.1038/nrg.2017.57. Epub 2017 Aug 14. Review. PubMed PMID: 28804139.

Hochedlinger K, Plath K. Epigenetic reprogramming and induced pluripotency.

Development. 2009 Feb;136(4):509-23. doi: 10.1242/dev.020867. Review. PubMed

PMID: 19168672; PubMed Central PMCID: PMC2685952.

**Epigenetics aging**

Sen P, Shah PP, Nativio R, Berger SL. Epigenetic Mechanisms of Longevity and

Aging. Cell. 2016 Aug 11;166(4):822-839. doi: 10.1016/j.cell.2016.07.050. Review.

PubMed PMID: 27518561.

Blasco MA. The epigenetic regulation of mammalian telomeres. Nat Rev Genet.

2007 Apr;8(4):299-309. Review. PubMed PMID: 17363977.

Valenzano DR, Benayoun BA, Singh PP, Zhang E, Etter PD, Hu CK, Clément-Ziza M,

Willemsen D, Cui R, Harel I, Machado BE, Yee MC, Sharp SC, Bustamante CD, Beyer

A, Johnson EA, Brunet A. The African Turquoise Killifish Genome Provides Insights

into Evolution and Genetic Architecture of Lifespan. Cell. 2015 Dec

3;163(6):1539-54. doi: 10.1016/j.cell.2015.11.008. PubMed PMID: 26638078; PubMed

Central PMCID: PMC4684691.

Day K, Waite LL, Thalacker-Mercer A, West A, Bamman MM, Brooks JD, Myers RM,

Absher D. Differential DNA methylation with age displays both common and dynamic

features across human tissues that are influenced by CpG landscape. Genome Biol.

2013;14(9):R102. PubMed PMID: 24034465; PubMed Central PMCID: PMC4053985.

Heyn H, Li N, Ferreira HJ, Moran S, Pisano DG, Gomez A, Diez J, Sanchez-Mut

JV, Setien F, Carmona FJ, Puca AA, Sayols S, Pujana MA, Serra-Musach J,

Iglesias-Platas I, Formiga F, Fernandez AF, Fraga MF, Heath SC, Valencia A, Gut

IG, Wang J, Esteller M. Distinct DNA methylomes of newborns and centenarians.

Proc Natl Acad Sci U S A. 2012 Jun 26;109(26):10522-7. doi:

10.1073/pnas.1120658109. Epub 2012 Jun 11. PubMed PMID: 22689993; PubMed Central

PMCID: PMC3387108.

Fraga MF, Agrelo R, Esteller M. Cross-talk between aging and cancer: the

epigenetic language. Ann N Y Acad Sci. 2007 Apr;1100:60-74. Review. PubMed PMID:

17460165.

Horvath S. DNA methylation age of human tissues and cell types. Genome Biol.

2013;14(10):R115. Erratum in: Genome Biol. 2015;16:96. PubMed PMID: 24138928;

PubMed Central PMCID: PMC4015143.

Sun D, Luo M, Jeong M, Rodriguez B, Xia Z, Hannah R, Wang H, Le T, Faull KF,

Chen R, Gu H, Bock C, Meissner A, Göttgens B, Darlington GJ, Li W, Goodell MA.

Epigenomic profiling of young and aged HSCs reveals concerted changes during

aging that reinforce self-renewal. Cell Stem Cell. 2014 May 1;14(5):673-88. doi:

10.1016/j.stem.2014.03.002. PubMed PMID: 24792119; PubMed Central PMCID:

PMC4070311.

**DNA methylation**

Ehrlich M. DNA methylation in cancer: too much, but also too little. Oncogene.

2002 Aug 12;21(35):5400-13. Review. PubMed PMID: 12154403.

Song J, Rechkoblit O, Bestor TH, Patel DJ. Structure of DNMT1-DNA complex

reveals a role for autoinhibition in maintenance DNA methylation. Science. 2011

Feb 25;331(6020):1036-40. doi: 10.1126/science.1195380. Epub 2010 Dec 16. PubMed

PMID: 21163962; PubMed Central PMCID: PMC4689315.

**DNA methylation and diseases**

Robertson KD. DNA methylation and human disease. Nat Rev Genet. 2005

Aug;6(8):597-610. Review. PubMed PMID: 16136652.

**Cancer Epigenetics**

Esteller M. Cancer epigenomics: DNA methylomes and histone-modification maps.

Nat Rev Genet. 2007 Apr;8(4):286-98. Epub 2007 Mar 6. Review. PubMed PMID:

17339880.

Vidal E, Sayols S, Moran S, Guillaumet-Adkins A, Schroeder MP, Royo R, Orozco

M, Gut M, Gut I, Lopez-Bigas N, Heyn H, Esteller M. A DNA methylation map of

human cancer at single base-pair resolution. Oncogene. 2017 Oct

5;36(40):5648-5657. doi: 10.1038/onc.2017.176. Epub 2017 Jun 5. PubMed PMID:

28581523; PubMed Central PMCID: PMC5633654.

Dawson MA, Kouzarides T. Cancer epigenetics: from mechanism to therapy. Cell.

2012 Jul 6;150(1):12-27. doi: 10.1016/j.cell.2012.06.013. Review. PubMed PMID:

22770212.

Feinberg AP, Tycko B. The history of cancer epigenetics. Nat Rev Cancer. 2004

Feb;4(2):143-53. doi: 10.1038/nrc1279. Review. PubMed PMID: 14732866.

**Environmental Epigenetics**

Jirtle RL, Skinner MK. Environmental epigenomics and disease susceptibility.

Nat Rev Genet. 2007 Apr;8(4):253-62. Review. PubMed PMID: 17363974.

Feil R, Fraga MF. Epigenetics and the environment: emerging patterns and

implications. Nat Rev Genet. 2012 Jan 4;13(2):97-109. doi: 10.1038/nrg3142.

Review. PubMed PMID: 22215131.

**Inheritance Epigenetics**

Weaver IC, Cervoni N, Champagne FA, D'Alessio AC, Sharma S, Seckl JR, Dymov S,

Szyf M, Meaney MJ. Epigenetic programming by maternal behavior. Nat Neurosci.

2004 Aug;7(8):847-54. Epub 2004 Jun 27. PubMed PMID: 15220929.

Roemer I, Reik W, Dean W, Klose J. Epigenetic inheritance in the mouse. Curr

Biol. 1997 Apr 1;7(4):277-80. PubMed PMID: 9094308.

Simola DF, Graham RJ, Brady CM, Enzmann BL, Desplan C, Ray A, Zwiebel LJ,

Bonasio R, Reinberg D, Liebig J, Berger SL. Epigenetic (re)programming of

caste-specific behavior in the ant Camponotus floridanus. Science. 2016 Jan

1;351(6268):aac6633. doi: 10.1126/science.aac6633. PubMed PMID: 26722000; PubMed

Central PMCID: PMC5057185.

Szyf M. Lamarck revisited: epigenetic inheritance of ancestral odor fear

conditioning. Nat Neurosci. 2014 Jan;17(1):2-4. doi: 10.1038/nn.3603. PubMed

PMID: 24369368.

Moazed D. Mechanisms for the inheritance of chromatin states. Cell. 2011 Aug

19;146(4):510-8. doi: 10.1016/j.cell.2011.07.013. PubMed PMID: 21854979; PubMed

Central PMCID: PMC3244757.

Crews D, Gore AC, Hsu TS, Dangleben NL, Spinetta M, Schallert T, Anway MD,

Skinner MK. Transgenerational epigenetic imprints on mate preference. Proc Natl

Acad Sci U S A. 2007 Apr 3;104(14):5942-6. Epub 2007 Mar 26. PubMed PMID:

17389367; PubMed Central PMCID: PMC1851596.

Rakyan V, Whitelaw E. Transgenerational epigenetic inheritance. Curr Biol.

2003 Jan 8;13(1):R6. PubMed PMID: 12526754.

Dias BG, Ressler KJ. Parental olfactory experience influences behavior and

neural structure in subsequent generations. Nat Neurosci. 2014 Jan;17(1):89-96.

doi: 10.1038/nn.3594. Epub 2013 Dec 1. PubMed PMID: 24292232; PubMed Central

PMCID: PMC3923835.

Daxinger L, Whitelaw E. Understanding transgenerational epigenetic inheritance

via the gametes in mammals. Nat Rev Genet. 2012 Jan 31;13(3):153-62. doi:

10.1038/nrg3188. Review. PubMed PMID: 22290458.

Heard E, Martienssen RA. Transgenerational epigenetic inheritance: myths and

mechanisms. Cell. 2014 Mar 27;157(1):95-109. doi: 10.1016/j.cell.2014.02.045.

Review. PubMed PMID: 24679529; PubMed Central PMCID: PMC4020004.

Probst AV, Dunleavy E, Almouzni G. Epigenetic inheritance during the cell

cycle. Nat Rev Mol Cell Biol. 2009 Mar;10(3):192-206. doi: 10.1038/nrm2640.

Review. PubMed PMID: 19234478.

Martin C, Zhang Y. Mechanisms of epigenetic inheritance. Curr Opin Cell Biol.

2007 Jun;19(3):266-72. Epub 2007 Apr 26. Review. PubMed PMID: 17466502.

**Epigenetics Imprinting**

Reik W, Walter J. Genomic imprinting: parental influence on the genome. Nat

Rev Genet. 2001 Jan;2(1):21-32. Review. PubMed PMID: 11253064.

**Comparative biology of epigenetics**

Lowdon RF, Jang HS, Wang T. Evolution of Epigenetic Regulation in Vertebrate

Genomes. Trends Genet. 2016 May;32(5):269-83. doi: 10.1016/j.tig.2016.03.001.

Epub 2016 Apr 12. Review. PubMed PMID: 27080453; PubMed Central PMCID:

PMC4842087.

**Next Generation Sequencing and technologies**

Rivera CM, Ren B. Mapping human epigenomes. Cell. 2013 Sep 26;155(1):39-55.

doi: 10.1016/j.cell.2013.09.011. Review. PubMed PMID: 24074860; PubMed Central

PMCID: PMC3838898.