

Timeline of Genetics

The history of genetics has been a compilation of information from different sources. I don't claim any due credit on my own.

The information provided is correct to the best of my knowledge. However, readers' discretion is suggested. I will be grateful for providing information if any correction is to be made.

SN	Year	Scientist	Events
1	8000 BC	Earlier Mankind	Domestication of plant and Animals
2	7000 BC	Earlier Mankind	Yeast was used for beer-brewing, bread baking and wine fermenting
3	3000 BC	Earlier Mankind	Use of Lactobacillus for making yogurt and cheese
4	1590	Sacharias Jansen	Invented microscope
5	1670	Earlier Mankind	Bio-mining in Spain: Copper was mined with help of microbes
6	1833	Robert Brown	Described cell nucleus;
7	1858	C Darwin, Alfred Russel Wallace	Joint announcement of theory of "Natural Selection": the members of a population who are better adapted to the environment survive and pass on their traits
8	1859	C Darwin	Published the "Origin of Species"
9	1866	Gregor Johan Mendel	Published the results of his investigations of the inheritance of "Factors" in Pea Plants
10	1868	C Darwin	Postulated "Pangenesis" Theory
11	1868	F Mischer	Discovered and coined "Nucleic Acid" or "Nuclein" (from WBC) of pus
12	1871	C Darwin	Published "Decent of Man"
13	1873	A Schneider	Provided the first account of mitosis
14	1873	S Schnieder	First gave the account of mitosis
15	1875	F Galton	Forwarded "Strip" theory of Heredity
16	1876	Louis Pasteur	Found the cause of failure of beer formation was microbes
17	1880	Emil Fischer	Discovered the pyrimidine and purine bases of DNA
18	1880	A Kolliker	Discovered mitochondria
19	1881	E G Bolbiani	Discovered "Polytene" or "Multi-stranded chromosome" in salivary gland of <i>Chiromonus</i>
20	1882	W Flemming	Discovered Lamp-brush chromosome
21	1882	W Flemming	Coined "Mitosis"
22	1883	E V Beneden	Showed that the gamete of round worm contains half of the chromosomes of body cells
23	1884	Nageli	Developed "Idioplasm theory"
24	1886	Theodor Escherich	E. coli discovery
25	1888	W Waldeyer	Coined "Chromosome"

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26	1889	F Galton	Forwarded "Blending Inheritance" theory
27	1890		Alcohol was first used as fuels of motors
28	1891	Henking	Discovered and termed "X-Body"
29	1892	Ruckert	Coined the term "Lamp-brush Chromosome"
30	1897	Edward Buchner	Discovered that enzymes extracted from Yeast can convert sugar to alcohol
31	1899	Altman	Coined "DNA"
32	1899	M W Beijernick	Discovered viruses
33	1900	Carl Correns; H D Vries; Eric von Tshermak	Mendel's principles were independently discovered and verified; thus it marked the beginning of modern genetics
34	1900	Karl Landsteinner	Discovered the blood agglutination phenomenon in man
35	1901	F Galton, K Pearson, WFR Welden	Founded the journal "Biometrika"
36	1901	Bateson & Punnet	Founded the Journal "Genetics"
37	1902	C E Mc Clung	Described Sex Chromosomes in Grass-hopper
38	1902	William Bateson	Translated Mendel's paper and defended Mendelism
39	1902	Yule	Proposed the principle of genetic equilibrium for a special case of $p=q=0.05$
40	1902	Mc Clung	Described Sex Chromosome in Grasshopper
41	1902	C E McClung	Described the sex-chromosomes
42	1903	W E Castle	Supported Mendel's principles of gametic purity and challenged Galton's "Blending Inheritance". He proposed genetic equilibrium principle for other values of gene frequencies in mice coat color
43	1903	W Johannsen	Proposed pure-line concept that variations in pure-line are due to environmental factors, not due to selection
44	1904	K Pearson	Proposed Genetic Equilibrium principle for $p=q=0.5$
45	1905	Farmer & Moore	Coined "Meiosis"
46	1905	W Bateson & R C Punnet	Modification of F2 ratio of dihybrid cross
47	1905	Nettiesterens & Edmond Wilson	Independently described the behavior of sex chromosomes in males and females (XX & XY, respectively)
48	1906	W Bateson & R C Punnet	Reported the first case of linkage in sweet pea
49	1908	G H Hardy & W Winberg	Independently showed that genetic equilibrium principle can be applicable for any value of gene frequency
50	1908	George Harrison Shull	Reported Inbreeding depression in size and vigor in Maize. He coined the term "Heterosis"
51	1908	Archibold Garrod	Proposed that some human diseases are due to inborn errors of metabolism that results from lack of a specific enzyme

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52	1909	W Johannsen	Coined the term "Gene". He took the term and concept from de Vries's Pangenesis hypothesis
53	1909	F A Janssens	Demonstrated exchanges between non-sister chromatids produce Chiasmata
54	1909	H Nilsson-Ehle	Forwarded the "Multiple factor hypothesis"
55	1909	P A Levin & W A Jacobs	Identified the pentose sugar of RNA was Ribose: Thus RNA was discovered
56	1910	Thomus Hunt Morgan	Proposed the mechanism of sex linkage for white eye in drosophila. The concept of linear arrangement of genes was derived. He coined "Linkage"
57	1910	Thomus Hunt Morgan	The era of "Drosophila genetics" started
58	1910	P A Levene	Discovered the phosphate (ie. H ₃ PO ₄ molecule & 2'-deoxyribose of DNA)
59	1910	Olaf Hammersten	Discovered that DNA contains pentose sugar
60	1916	H S Jennings	Developed the mathematical theory of inbreeding
61	1917	East & D S Jones	Produced the first commercial "crossed corns"
62	1918	Ronald Ayelmar Fisher	Forwarded the techniques of the ANOVA for partitioning the variance due to independent causing factors
63	1919	Kerl Ereky	Coined the term "Biotechnology". He was Hungarian Engineer.
64	1921	Sewell Wright	Invented the method of "Path Coefficient" to subdivide the correlation in a casual scheme"
65	1922	R A Fisher	Discussed "Balanced Polymorphism"
66	1924	Fuelgen	Discovered types of Nucleic Acid
67	1925	F Burnstein	Suggested that "ABO blood group" are determined by a series of alleles of a gene
68	1927	Hemann Joseph Muller	Induced artificial gene mutation in Drosophila by exposing to X-Rays (Nobel: 1946); Beginning of Radiation genetics
69	1928	Alexander Flemming	Discovered Penicillin
70	1928	F Griffith	Discovered Transformation principle in <i>Diplococcus pneumonia</i>
71	1929	R A Fisher	Proposed the theory of evolution of dominance and "Discriminant function"
72	1929	P A Levene	Discovered that the sugar in DNA is 2'-Deoxy Ribose: Thus DNA was discovered
73	1930	R A Fisher	Published the "Fundamental theory of natural selection"
74	1931	Harriet B Creighton & B McClintock; C Stern	Demonstrated the cytological proof for crossing over in maize
75	1936	Smith	Fisher's selection index involving discriminant function was used in plant
76	1940	K Landsteiner & A S Weiner	Discovered Rh Factor
77	1940	W T Astbury	First demonstrated the 3D structure of DNA molecule by X-Ray crystallography

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78	1940	Delbruck, Lauria & Hershey	Discovered genetic recombination in phages
79	1941	George beadle & Edward Tatum	Irradiated the red bread mold <i>Neurospora crassa</i> and proved that the gene produces its effect by regulating particular enzymes
80	1943	Hazel	Applied the same in animals
81	1944	Oswald Avery, Colin McLeod & Maclyl Mc Carty	Purified the transforming principle in Griffith's experiment and identified it as DNA
82	1945	Max Delbruck	Organized a phage course in Cold Spring Harbour Laboratory which was taught for 26 consecutive years
83	1946	J Lederberg	Showed conjugation in bacteria
84	1946	Joshua Lederberg & Edward tatum	Genetic recombination in <i>E. coli</i>
85	1947	Dr. C Polge	Dr C Polge discovered that glycerol can be used as cryoprotectant for semen deep freezing
86	1948	A. Boivin, R. Vendrely, C. Vendrely	Showed that quantity of DNA in different types of Cells of an organism is same and constant
87	1949	Hershey & Rotman	"Single Burst" experiment to analyze genetic recombination in phages
88	1950	E. Chargaff	Demonstrated that in DNA the number of "A"="T" and the number of "C" ="G"
89	1950	Barbara McClintock	Proposed the hypothesis of "Transposable Element" in Maize
90	1950	Erwin Chargaff	Discovered the 1:1 ratio of A:T and G:C in a variety of species
91	1950	R A Brink	Discovered paramutation in maize
92	1951	Rosalind Franklin	Observed sharp X-Ray defraction photographs of DNA
93	1951		AI using frozen semen was first introduced
94	1952	Martha Chase & Alfred D. Herhey	Used phages (protein labeled with 35S & DNA with 32P) for the final proof that DNA is the molecule of heredity
95	1952	Rosalind Franklin	Took X-Ray defraction photograph of DNA to show that DNA is a helix
96	1953	F H C Crick & J D Watson	Solved the 3D structure of DNA molecule
97	1955	Ochoa and Grunberg-Manago	Discovered Polynucleotide Phosphorylase
98	1955	S Benzer	First Divided gene into Cistron, Muton, Reckon
99	1955	Kaiser	Conducted 2 & 3 point crosses to study linkage in lambda phage genome
100	1955	Morton	Formulated LoD score
101	1957	Hoagland, Zamencik and Stephenson	Isolated t-RNA and postulated its function
102	1957	Arthur Kornberg & Severo Ochoa	Discovered DNA Polymerase-II and artificially synthesized DNA
103	1958	S B Weiss, Hurwitz <i>et al.</i>	Discovered DNA directed RNA polymerization
104	1958	F H C Crick	Enunciated the central dogma of molecular genetics

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105	1958	Meselson and Stahl	Provided Experimental confirmation of the Watson-Crick model by the semi-conservative replication of DNA
106	1958	Methew Meselson & Frank Stahl	Used isotopes of Nitrogen to prove the semi-conservative replication of DNA
107	1958	François Jacob & Elie Wollman	Forwarded the concept of episome
108	1959	Kemphorne & Nordskog	Constructed restricted selection index
109	1959	Serra	Found Overdominance/ superdominance / Heterodominance
110	1959	E Freeze	First postulated transversion
111	1961	F H C Crick <i>et al.</i>	Genetic language is made up of 3 letter words
112	1961	F Jacob & J Monad	Put forward the operon concept
113	1965	R H Holley <i>et al.</i>	Isolated & sequenced the t-RNA for Alanine
114	1966	Marshal Nirenberg & H. G. Khorana	Cracked the genetic code that triplet mRNA codons specify each of the 20 amino acids
115	1966	Flach	Observed "Holokinetic" chromosome
116	1969	J Roberts	Discovered protein factor "Rho" that detect the genetic signal that terminate the RNA transcription encoded in the DNA
117	1970	B Ephrussi	Cell Hybridization
118	1970	H Harries	DNA-RNA hybridization technique
119	1970	Hamilton Smith & Daniel Nathans	Discovered RE Hind III; Awarded Nobel prize in Physiology
120	1971	E W Sutherland	Role of Cyclic AMP
121	1971	H G Khorana & K H Agarwal	Artificially synthesized the gene which coded for Alanine tRNA from Yeast
122	1972	W H Stein, S Moore and C B Anfinsen	Structure of RNase
123	1972	R R Porter & G N Edelman	Chemical nature of Antibodies
124	1972	Paul Berg & Herb Boyr	Produced the first recombinant DNA molecules
125	1973	Joseph Sambrook	Led the team at Cold Spring Harbour Laboratory that refined the DNA electrophoresis by using agarose gel & staining with Ethidium Bromide
126	1974	A Claude & D Baltimore	Ultrastructure of Cells
127	1975	H Temin & D Baltimore	Discovery of Reverse Transcriptase
128	1975	R Dulbecco	Viruses as causative agent of cancer
129	1975	H G Khorana <i>et al.</i>	Artificially synthesized the gene coding for Tyrosine tRNA of E. coli
130	1975	Kohler & Cesar Milstein	Hybridomas for production of monoclonal antibody started
131	1975		International meeting for Asilomer, California urged the adoption of guidelines regulating rDNA experiments
132	1975		First human IVF baby (test tube baby) born in Cambridge.
133	1976	C Gajdusec & B S Blumberg	Got Nobel prize for discovery of Kuru disease

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134	1976		US online guideline for genetic engineering was first introduced
135	1977	Maxam & Gilbert	DNA sequencing techniques
136	1977	Fred Sanger, Niccklen & Coulson	Dideoxy chain termination method for DNA sequencing
137	1977		First genetic engineering company "Genentech" is found using rDNA methods to produce medically important drugs
138	1977	Chanbdon <i>et al.</i>	Forwarded the concept of "Split Gene" from the ovalbumin gene of chicken (8 exons & 7 introns)
139	1978		Somatostatin was the first human hormone was produced using rDNA technology
140	1978	Clyde Hutchison and Marshall Edgell	Introduced specific mutations at specific sites in a DNA molecule.
141	1980's	A. Rich and A. H.-J. Wang	Z-DNA structure was discovered
142	1980		First IVF calf "Bublin" was produced in Ireland
143	1981		Monoclonal antibodies got approved to be used in USA. Cetus foundation broke all record in stock market.
144	1982		Genetically engineered human insulin "Humulin" was produced for use in diabetics
145	1983	James Gusella	Demonstrated that Huntington's disease gene in chromosome no. 4
146	1983		T1 plasmid was discovered
147	1985	Kary B Mullis	Published a paper describing PCR is the most sensitive assay for DNA yet devised
148	1987	P A Sharp	Discovered intron
149	1987	T R Cech	Discovered RNA has enzymatic activity
150	1988		Human genome project began with the goal to determine the entire sequence of DNA composing human chromosomes
151	1988		Harvard molecular geneticists were awarded patent for a genetically engineered mouse
152	1989	Alec Jeffreys	Coined "DFP". He was the first to use DNA polymorphisms in forensics
153	1989	Francis Collins & Lap Chee Tsui	Identified the gene coding for "Cystic fibrosis trans-membrane conductance regulator" protein on chromosome 7, when mutates causes cystic fibrosis
154	1990	Williams <i>et al.</i>	Forwarded the technique of RAPD
155	1996		First cloned sheep "Dolly" was born
156	1999		Sequence of first human chromosome no. 22
157	2000		Completion of a "rough draft" of the human genome in the Human Genome Project & published in 2001 (Nature)