

Inventor / Discoverers	Invention / Discovery
Avogadro	Molecular Hypothesis
Becquerel	Principle of Photo-electric Cell
Becquerel	Radio-activity
Einstein	Theory of Relativity
Lavoisier	Nature of Combustion
Archimedes	Theory of Displacement of water 3rd century
Charles Darwin	Theory of Evolution by Natural by Natural Selection
Charles Darwin	Origin of Species
Linneaus	Classification of Plants and Animals
Mendeleev	Periodic Table
Soddy	Theory of Isotopes
Galileo	Laws of Falling bodies
Mendel	Laws of Heredity
Ohm	Ohm's Law
Strassman, Hahn, Bohr, Fermi	Uranium Fission Theory
H. Cavendish	Synthesis of Water
Heinrich Hertz	Electro-magnetic Waves
H.G. Khorana	Genetic Code
Moseley	Atomic Number
Newton	Laws of Gravitation
J.C. Maxwell	Electromagnetic Theory of Light
John Dalton	Atomic Theory
John Dalton	Laws of Multiple proportion
Joseph Gay-Lussac	Laws Governing Gases
Pavlov	Theory of Conditioned Reflex
Kelvin	Dynamite Theory of Heat
Max Von Planck	Quantum Theory of radiation
Romer	Velocity of Light
Rutherford	Atom Smashing Theory
Sigmund Freud	Theory of Psycho-analysis

Inventor / Discoverers	Invention / Discovery
Steinmetz	Laws of Alternating Current
L. Victor de Broglie	Wave nature of electron
Rontgen	X-rays
Newton	Laws of motion
Volta	Current electricity and electrical battery
Priestley	Oxygen
J. J. Thomson	Electron
Cavendish	Hydrogen
Faraday	Electromagnetic Induction
Faraday	Laws of electrolysis
Benjamin Franklin	Lightning Conductor
Louis Braille	Printing for the blind
Madam Marie Curie	Radium
Louis Pasteur	Germ theory: Hydrophobia Antitoxin; Anti-rabies treatment
Hahnemann	Homoeopathy
Banting	Insulin (cure of diabetes)
Ronald Ross	Malaria Parasites
Alexander Fleming	Penicillin
Edward Jenner	Small-pox vaccination
Kepler	Laws of planetary motion
Robert Koch	Tuberculosis bacilli
J. Dalton	Law of partial pressures
Otto Hahn	Atom bomb
C.V. Raman	Raman Effect
Joseph Lister	Antiseptic Surgery
Leeuwenhock	Bacteria
Harvey	Blood circulation and functioning of heart
Landsteiner	Blood transfusion
Simpson	Chloroform
Robert Koch	Cholera Bacillus

No.	Scientists	Research
1.	Aristotle	Father of Biology. Introduced study of morphology. (384-322 BC)
2.	Theophrastus	Described 480 kinds of plants in ' <i>Historia plantarum</i> ', Theophrastus was known as Father of Botany. (370-285 BC)
3.	A. Van Leeuwenhoek	Improved the microscope and observed bacteria, protozoa and sperm. (1674)
4.	N. Grew	Described reproductive parts in flowers for the first time. (1682)
5.	Stephan Hales	Called Father of Plant physiology. (1727)
6.	Carolus Linnaeus	Father of Plant Taxonomy. Gave binomial system of nomenclature. He wrote a book <i>Species Plantarum</i> (1753) and <i>Genera Plantarum</i> (1754). Gave sexual system of classification of plants. (1753)
7.	Goethe	Proposed "flower is a condensed metamorphosed shoot". (1790)
8.	Lamarck & Treviranus	Coined the term 'Biology'. (1802)
9.	A. P. Condolle	Introduced the term ' Taxonomy '. (1813)
10.	Amici	Observed pollen tube. (1823)
11.	Mayer	Proposed that during photosynthesis light energy is converted into chemical energy. (1842)
12.	W. Hofmeister	Studied nuclear division in <i>Tradescantia</i> staminal hair. Observed fertilization. (1849) Described alternation of generations. (1851)
13.	Charls Darwin	Proposed natural selection. Published book "Origin of Species". (1859)
14.	Louis Pasteur	Proposed germ theory of disease. Described fermentation. (1864)
15.	Gregor J. Mendel	Conducted hybridization experiments in pea. Father of genetics. Born in Austria, worked in Brunn. (1866)
16.	F. Miescher	Isolated nucleus and nucleoprotein. (1871)
17.	W. Kuhne	Coined the term enzyme for soluble ferment of Yeast-Bacter. (1878)
18.	W. Flemming	Introduced the term chromatin. (1879)

19.	E. Strasburger	First satisfactory account of structure of nucleus, and its mode of division in plant cells. Introduced the terms cytoplasm and nucleoplasm . (1880)
		Described fertilization in angiosperms. (1884)
		Reported reduction division in plants. (1894)
		Coined the term "Plasmodesmata". (1901)
20.	A. Engler and A. E. Prantl	Proposed phylogenetic system of classification. Wrote the book 'Die Natürlichen Pflanzenfamilien' in 23 volumes. (1887)
21.	W. Waldeyer	Introduced the term chromosome . (1888)
22.	R. Altman	Made systematic study of mitochondrion but called them bioplast . (1890)
23.	Dixon and Jolly	Ascent of sap due to transpiration pull and cohesive force of water. (1894)
24.	S. G. Nawaschin	Discovered double fertilization in angiosperms. (1898)
25.	C. Benda	Name mitochondrion assigned for the first time. (1898)
26.	R. Altman	Gave the name nucleic acid to nuclein of Meischer. (1899)
27.	W. S. Sutton	Showed importance of reduction division. Proposed chromosomal theory of heredity. (1902)
28.	W. Bateson	Coined the term 'Genetics'. (1905)
29.	Rosenberg	Described Apospory . (1907)
30.	Winkler	Described Apomixis . (1908)
31.	W. L. Johannsen	Coined the term 'gene'. (1911)
32.	Richard Wilstätter	Studies of chlorophyll and other plant pigments (Nobel Prize). (1915)
33.	W. W. Garner & Allard	Discovered Photoperiodism . (1920)
34.	J. C. Bose	Ascent of sap is due to pulsatile activity of inner layer of cortical cells. (1924)
35.	F. W. Went	Demonstrated how auxin affects plant growth. (1926)
36.	Munch	Gave Mass flow hypothesis for conduction of food. (1930)
37.	M. C. Chailakhyan	Gave the concept of florigen (flowering hormone). (1936)
38.	Melchers	Gave the concept of flowering hormone Vernalin . (1936-1937)
39.	Hans Krebs	Discovered citric acid cycle of aerobic respiration (Nobel Prize 1953). (1937)

		Scientists Name and Discover
40.	R. Hill	In light reaction of photosynthesis. Oxygen is released and a reducing substance is produced. (1940)
41.	S. A. Waksman	Discovered Streptomyces . (1945)
42.	Nass and Nass	Discovered DNA in mitochondrion. (1963)
43.	Park and Biggins	Discovery of quantasome in chloroplasts. (1964)
44.	M. D. Hatch & C. R. Slack	Gave Hatch-Slack pathway in C ₄ plants. (1967)
45.	Barbara McClintock	Studies of movable genetic elements, jumping genes (Nobel Prize). (1983)
46.	E. Fisher, E. Krebs	Alteration of enzyme activity by phosphorylation/dephosphorylation (Nobel Prize). (1992)
47.	Thomas R. Malthus	Proposed the theory of human population growth. (1778 A.D.)
48.	Halls	Discovered Blood Pressure
49.	Karot Koff	Invented Sphygmomanometer
50.	Einthoven	Discovered Electrocardiograph
51.	Christian Bernard	Conducted first heart transplantation (1967)
52.	Stephen Hales	First attempt to measure blood pressure in glass tube (1732)
53.	Waller	Recorded first ECG (1887)
54.	Keith and Flack	Reported SA node (1907)
55.	Tawara	Reported SA node (1906)
56.	Laennec	Invented Stethoscope
57.	Kendrew and Perutz	Gave hemoglobin structure
58.	Landsteiner	Discovered the antigen-antibody system of blood groups
59.	DeCastello and Sturli	Discovered blood group AB (1902)
60.	Landsteiner and Weiner	First found Rh-factor in Rhesus monkey (lion tail monkey)
61.	Marcello Malpighi	Discovered capillary system.
62.	Wirz	Gave the Counter Current Multiplier System (1951)
63.	Krebs and Hanseleit	First studied urea formation (1932 A.D.)

64.	Marcello Malpighi	First reported Malpighian body or renal corpuscle or Pygmalion corpuscle (1666)
65.	Ludwig	Gave the details of ultrafiltration or glomerular filtration
66.	Richard	Gave the details fo selective reabsorption
67.	Heidenchain	Gave the details of tubular secretion
68.	Haber	Proposed the term osmoregulation
69.	William M. Bayllis and Ernst H. Starling	Discovered the first hormone (secretin) (1903)
70.	F. Banting et al.	isolated insulin hormone from dogs (1920)
71.	Vesalius	Gave the name pituitary
72.	Kocher	Isolated the hormone thyroxine
73.	Kendall	Crystalized the thyroxine hormone
74.	Harrington and Berger	Gave the molecular structure of thyroxine hormone
75.	Eustachian	Discovered adrenal gland
76.	Langley	Discovered Autonomic Nervous System
77.	Sir Charles Sherrington	Coined the term synapse
78.	McLennan	Gave the physiological importance of synapse in nerve impulse conduction (1963)
79.	Marshall	Discovered Reflex Actions
80.	Ivan Pavlov	First demonstrated the conditional reflexes (1929)
81.	Hodgkin and Huxley	Proposed the ionic theory
82.	Sherrington	First reported Antigravity reflex
83.	Joseph Priestley (1791)	explained that green plants purify the air by releasing Oxygen.
84.	Pelletier & Caventon (1818)	coined the term Chlorophyll.
85.	Julius Robert Mayer (1845)	explained that the light i.e. solar energy is converted to chemical energy
86.	Sachs (1862)	stated starch is the product of photosynthesis
87.	Willstatter & Stoll (1918)	gave detailed account of chemical composition & function of chlorophyll

		Scientists Name and Discoveries
88.	Keilin (1925)	Coined the term Cytochrome.
89.	Van Niel (1930)	explained that Oxygen is released during the process of photosynthesis by dissociation of water.
90.	Martin, Kamen & Ruben (1941)	confirmed by using isotopic form of Oxygen
91.	Menke (1961)	coined the term Thylakoid

SOME FAMOUS INDIAN SCIENTISTS

1.	J. C. Bose	Plant Physiology
2.	S. R. Kashyap	Bryology (Called father of Indian Bryology)
3.	Birbal Sahani	Paleobotany
4.	P. Maheshwari	Embryology
5.	T. S. Sadasivan	Mycology
6.	B. P. Pal	Plant Breeding
7.	A. K. Sharma	Cytology
8.	V. Puri	Morphology
9.	H. Santapau	Taxonomy
10.	P. N. Mehra	Pteridology
11.	R. Mishra	Ecology
12.	J. J. Chinoy	Plant Physiology
13.	B. B. Mundkur	Plant Pathology
14.	M. O. P. Iyengar	Phycology (Father of Indian Algology)
15.	B. K. Nair	Palynology
16.	K. A. Chaudhari	Xylotomy
17.	K. C. Mehta	Plant Pathology
18.	Shri Ranjan	Plant Physiology
19.	M. S. Swaminathan	Cytogenetics and plant breeding
20.	R. P. Roy	Cytogenetics, plant breeding and tissue culture
21.	Karl Landsteiner	Father of blood groups
22.	Thomas E. Addison	Father of Endocrinology
23.	Ivan Pavlov	Father of conditioned reflexes

Associated Terms	Inventors
Vitamins	Hopkins
Antigen	Landsteiner
DNA	Watson & Crick
DDT	Paul Muller
Homeopathy	Samuel Hahnemann
Insulin	Bating & West
Polio Vaccine	J. E. Salk
TB Bacteria	Robert Koch
BCG	Calmette and Guerin
Bacteria	Leeuwenhoek
Open Heart Surgery	Walton Lillehei
Streptomycin	Waksman

Stethoscope	Rene Laennec
Penicillin	A. Fleming
RNA	Watson & Arthur
Microbes of Malaria	Charles Laveran
Kidney Machine	<i>Dr. Willem Kolff</i>
Heart Transplantation	Christiaan Barnard
Anti-pregnancy pills	Pincus
Genetic Code	Har Gobind Khorana
First Test tube baby	Edwards & Steptoe
Blood Circulation	William Harvey
Bacteria of Leprosy	Henson

Vaccination	Edward Jenner
Polio Drop	Albert Sabin
Gene of Cancer	Robert Weinberg
Chloroform	Harrison & Simpson
Rh factor, blood replacement	Charles Landsteiner
Sex Hormones	Eugen Stainak
Sperm	Humm & Leeuwenhoek
Spleen-Functions	Barcroft
Streptomycin – antibiotic	Selman Waksman
Sulpha drugs	Domagk G.
Three- Kingdom	Ernest Haeckel

Thyroxin	Edward Calvin
Turner's Syndrome	Turner
Cancer	Robert Wellberg
X-rays	Roentgen
Zymase, the first enzyme	Edward Buchner
ABA (Absciscic acid)	Addicott
Amoeba	Roesel Von Rosenhof
Animal Cloning-First (frogs from tadpole cells)	Robert Briggs and Thomas King
Antibody against Rabies	Louis Pasteur
Antitoxin against Diphtheria	Won Berring

Artificial Heart	Michael Dibake
Aspirin	Dresser
ATP	Lohmann K
Bacteriophage	Towrt and De Herelle
Biocatalysts	Bushner
Biochemical Evolution	Wald
Blood Capillaries	Marcello Malpighi
Blood Circulation	William Harvey
Blood Coagulation- Explained	Moravits
Blood Group (AB)	De Castello and Sturli

Blood Group (O)	De Castello and Sturli
Blood Gropus (A, B and O)	Carl Land Steiner
Blood Pressure-Measured	Stephen Hales
Carbon Dating	Libby W.F
Cell	Robert Hooke
Cell Division	Hofmeister
Cell Theory	Schleiden and Schwann
Chemotherapy	Paul Erlich
Chloroform	James Simpson
Chloromycetin (antibiotic)	Burk Holder
Chloroplast	Schimper

Cholera Bacteria	Robert Koch
Chromatin	Fleming W
Chromatography	Michael Tswett
Chromosomes (Nuclear Filaments)- described	Anton Schneider
Colour Blindness (Daltonism)	Hornerd
Compound Microscope	Zacharias Janssen
Contraceptive Pills	Pincus
Cortisone	Edward Calvin
CT Scan (Computer Assisted Tomography (CAT)	Allan Mcleod Cormack and God Frey Newbold Hounsfield

ECG (Electrocardiogram) Mechanism	Einthoven
Electron Microscope	Knoll M. and Ruska E.
Endoplasmic Reticulum	Porter K.R, Claude and Fullman
Evolution of man	Leakey
Five Kingdom Classification Flower-its reproductive parts	Whittaker R.H Grew
Foot and Mouth Disease- First viral disease of animals	Loeffler F. and Frosch A.
Four-Kingdom Classification	Copeland

Glycolysis (EMP pathway)	Embden, Meyerhof and Parnas
Glyoxysomes	Breidenbach
Golgibodies	Camillo Golgi
Green Revolution	Norman E. Borlaug
Haemophilia	John C. Otto
Heart transplantation Surgery	Christian Bernard
HIV	Luc Montagnier
Hormones	Bayliss and Starling
Human Gene Therapy	Martin Clive
Insulin	Sir Frederick

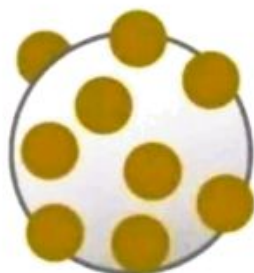


Dalton, 1808

First to describe atoms in a modern, scientific sense

– Doesn't explain electricity

+ Idea of "atoms"



Thomson, 1897

Thomson's Plum Pudding Model

– Doesn't explain why some of Rutherford's α -particles bounced back

+ Protons & electrons

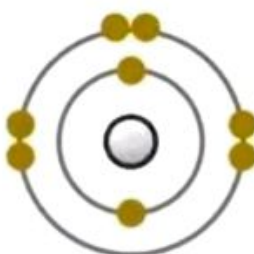


Rutherford, 1911

Rutherford shot α -particles through gold foil; some bounced back!

– Why don't the electrons lose energy and crash into the nucleus?

+ the Nucleus

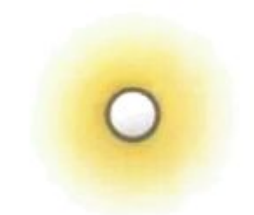


Bohr, 1913

Basis for our modern atomic model

– Doesn't explain quantum mechanics

+ Electron Shells



Schrödinger, 1926

Quantum mechanics

– Why are some atoms of the same element heavier?

+ Subshells

+ 'Shells' are actually 'orbitals'



Chadwick, 1932

+ Neutrons!

