



Block calendar/Éphéméride

Hermann Emil Fischer – The most outstanding chemist in history

Hermann Emil Fischer was an eminent German organic chemist who made brilliant contributions to the chemistry of natural products. He was an exemplary chemist and an excellent model for all future generations of chemists. He is considered one of the great “discoverers” of biochemistry. His main studies addressed the molecular structures of various biochemical molecules, especially sugars. He was the first to clarify the structures of various sugars and enzymes as well as of several other natural products, including glucose, caffeine, and uric acid, and to demonstrate the mechanisms of their formation. He synthesized several amino acids and created small chains thereof as precursors to protein formation. He defined the “lock-and-key” mechanism to explain how enzymes can catalyze certain reactions, but not others. He discovered the chemical compound phenylhydrazine, which later proved to be very useful for a variety of purposes and has been found to induce eczema. His work included methods of managing the chemistry of carbohydrates, thanks in part to the use of phenylhydrazine. This research resulted in the synthesis of a series of sugars; his greatest success was the synthesis of glucose, fructose, and mannose. He was awarded the 1902 Nobel Prize in chemistry in recognition of his achievements in sugar and purine synthesis. He was the first organic chemist to receive this honor. He laid the chemical foundations for biochemistry through his study of sugars, enzymes, purines, and proteins, thereby establishing a close relationship between chemistry and biology.

This year, the French Academy of Science is celebrating its 350th anniversary, which is the perfect occasion to remember Fischer, as he was also a member of the French Academy of Sciences.

1. The life of Fischer

Gaudeamus! Hermann Emil Fischer was born to Julie Poensen Fischer and Laurenz Fischer on 9 October 1852, in Euskirchen, a beautiful town near Bonn, Germany. He was the only male child, the youngest of five children. This was

the year, 1852, in which Beer's law was proposed by August Beer. Also born in the same year as Fischer were the German bacteriologists Friedrich August Johannes Loeffler and Julius Richard Petri, the winner of the Nobel Prize in Physics in 1907, Albert Abraham Michelson, the winner of the Nobel Prize in Physics in 1903, Antoine Henri Becquerel, the winner of the first Nobel Prize in Chemistry in 1901, Jacobus Henricus van't Hoff, Jr., the winner of the Nobel Prize in Chemistry in 1906, Ferdinand Frédéric Henri Moissan, the winner of the Nobel Prize in Chemistry in 1904, William Ramsay, the winner of the Nobel Prize in Physiology or Medicine in 1906, Santiago Ramón y Cajal, the Dutch physician and feminist Catharine van Tussenbroek, the Nobel Peace Prize winner Paul-Henri-Benjamin Balluet d'Estournelles, and the famous German musicians Robert Hausmann and Otto Neitzel.

Fischer attended the Gymnasium in Bonn. He was an eminent pupil, and he graduated at the top of his class. Although his father wished that Emil would follow him into the business world, Emil showed interest in scientific subjects. Through his obstinacy, Emil convinced his father of his aptitude for science, and finally, his father agreed to his pursuit of a university education. This was the turning point in Emil's life and laid the foundation for his later scientific achievements. Emil wished to become a mathematician or a physicist, but his father considered these professions to be without economic potential and instead persuaded his son to study chemistry. In 1871, Fischer began his studies in chemistry at the University of Bonn and became a pupil of August Kekulé and Rudolf Clausius. In 1872, he transferred to Strasbourg (along with his cousin Otto Fischer), where he studied chemistry with Adolf von Baeyer, who had recently been appointed the director of the chemical institute. In 1874, he received his doctorate from the Strasbourg University for his research on coal tar dyes that he had performed while working with Adolf von Baeyer. Von Baeyer chose Fischer to be a private assistant in his research laboratory. In 1875, he followed von Baeyer to Munich, where he qualified as Privatdozent in 1878, and joined the University as an

Assistant Professor in 1879. In 1882, he was promoted to Professor of Chemistry at Erlangen, and in 1885, he became Professor of Chemistry at Würzburg. In 1892, he succeeded A.W.V. Hofmann as the Director of the Chemistry Institute of Berlin, where he remained until the end of his career.

2. Research activities or a love of science is only the way to achieve conquest

The beginning of Fischer's most important work was his accidental discovery, in 1875, of phenylhydrazine and this random event ultimately proved to drive his destiny.

Under von Baeyer, Fischer performed research on phthalein dyes and wrote his Ph.D. thesis on fluorescein and orcin-phthalein. He was appointed assistant instructor at the Strasbourg University, and there he discovered the first hydrazine derivative, phenylhydrazine, and demonstrated its relationship to hydrazobenzene. Fischer's doctoral thesis had concerned the chemistry of colors and dyes. He extended this interest to new synthetic dyestuffs. Together with his cousin, Otto Fischer, he examined the composition of rosaniline. At that time, there were several conjectures regarding the composition of this substance, but no satisfactory solution was reached until the Fischers succeeded in showing that it was a triphenylmethane derivative. They reduced rosaniline to a colorless derivative, which they called leucaniline, and by removing its nitrogen atoms, they converted it into a hydrocarbon with the composition $C_{20}H_{18}$. They performed similar reactions with pararosaniline, obtaining a hydrocarbon with the formula $C_{19}H_{16}$, which proved to be identical to triphenylmethane. In 1878, they proved that these rosaniline dyes were homologs and were triamine derivatives of triphenylmethane and its homologs, rosaniline being a derivative of metatolyldiphenylmethane and *p*-rosaniline a derivative of triphenylmethane. Fischer's first publications (1875) were concerned with the organic derivatives of hydrazine. He discovered this new group of compounds, considering them to be derivatives of the as-yet-unknown compound N_2H_4 , which he named hydrazine to reflect its relation to nitrogen. Fischer prepared phenylhydrazine itself and established its formula by 1878. The reaction of hydrazines with carbon disulfide was found to yield various dyestuffs. Oxidation produced tetrazenes, compounds with chains containing four nitrogen atoms. He found that aryl hydrazines reacted with ketones and keto acids to form derivatives of indole (Fischer indole synthesis, 1886). In 1884, Fischer discovered that phenylhydrazine was a valuable reagent for aldehydes and ketones. By 1888, he had established the structures of hydrazones and osazones. He would later utilize these reactions of phenylhydrazine to elucidate the chemistry and structures of carbohydrates. Fischer studied uric acid and related substances between 1881 and 1914, when he achieved the first synthesis of a nucleotide. In 1882, he published structural formulas for uric acid, caffeine, theobromine, xanthine, and guanine. He synthesized theophylline and caffeine (1895) as well as uric acid (1897), but further research convinced him that his structures were incorrect, since his reaction products were

not reconcilable with his formulas. In 1897, he published a new set of formulas. In 1914, he prepared glucosides of theophylline, theobromine, adenine, hypoxanthine, and guanine. Xanthine, hypoxanthine, adenine, and guanine are all present in the nuclei of animal cells. Theobromine, caffeine, and theophylline are stimulants found in plants.

From theophylline-*D*-glucoside, he prepared the first synthetic nucleotide, theophylline-*D*-glucoside phosphoric acid. Fischer's purine research was of considerable interest to the German drug industry. His laboratory methods became the basis for the industrial production of caffeine, theophylline, and theobromine. In 1903, he synthesized 5,5-diethyl-barbituric acid. Under various trade names—Barbital, Veronal, and Dorminal—this compound proved to be a valuable hypnotic. Another commercially valuable purine prepared by Fischer, in 1912, was phenylethylbarbituric acid, also known as Luminal or phenobarbital. Fischer became the prime investigator in the field, and it is to him that almost all knowledge of the purines can be attributed. He explored the entire series, established their structures, and synthesized approximately 130 derivatives by 1900.

2.1. Success is not luck but rather ideal means and hard work

Fischer conducted his purine research simultaneously with his carbohydrate studies and became the prime investigator in both fields. When he began his carbohydrate studies in 1884, there were four known monosaccharides, namely, two aldohexoses (glucose and galactose) and two ketohexoses (fructose and sorbose), and three known disaccharides (sucrose, maltose, and lactose). Glucose and galactose are straight-chain pentahydroxy aldehydes, and ketohexoses are straight-chain pentahydroxy ketones. Through an enormous effort, Fischer elaborated the complex structures and chemistry of carbohydrates, synthesized many of them, and established the configurations of the sixteen possible stereoisomers of glucose. Fischer utilized the method of Heinrich Kiliani to convert pentoses into hexoses, the latter into heptoses, etc., thereby synthesizing sugars with as many as nine carbon atoms. Starting with glyceraldehyde, he built up molecules step by step to synthesize several pentoses and hexoses, including glucose, fructose, and mannose, using the Kiliani method. Fischer achieved his first synthesis of a sugar in 1887. Fischer found that glucose, fructose, and mannose form the same osazone and, therefore that the three sugars have the same configuration below the second carbon atom. He subsequently found that upon hydrolysis with hydrochloric acid, the phenylhydrazine is eliminated from osazones to form osones, a new type of glucose derivative possessing adjacent carbonyl groups. By reducing these, he obtained sugars, although with the conversion of aldoses into ketoses. Through differential reduction and oxidation reactions, Fischer could transfer the carbonyl group from one end of the chain to the other, and by testing the products for their properties and the optical rotation of the plane of light polarization that they induced, he could elucidate the structures of the compounds. Fischer

prepared several artificial sugars. He established the structures of the natural pentoses arabinose and xylose. He found that by extending the carbon chain of each of these pentoses, he could obtain two products. By means of the reaction of the carbonyl group with alcohols, Fischer prepared α -methyl glucoside β -methyl glucoside, the first synthetic glucosides (1893). Since there were two of these methyl glucosides, he suggested that they must have a cyclic structure. Fischer believed that disaccharides might have such rings and represented them as two hexoses united through an oxygen linkage: lactose was a glucose- β -galactoside, whereas maltose was a glucose- α -glucoside. He regarded the synthesis of glucosides as important because polysaccharides were themselves glucosides of sugars, meaning that there was now the possibility of synthesizing polysaccharides.

Fischer investigated the properties of enzymes, the substances responsible for the fermentation of sugars. He concluded that enzymes were asymmetric agents capable of attacking only molecules of specific geometric configurations. The action of enzymes in hydrolyzing glucosides led him to use the analogy of a lock-and-key structural relationship between an enzyme and its corresponding sugar (1894). Thus, molecular asymmetry gained new significance: the chemical transformations in organisms depended on asymmetry.

As an extension of his work on carbohydrates, beginning in 1908, Fischer studied tannins, the gallic acid derivatives of sugars. In 1912, he showed that tannins were not glucosides but esters, and synthesized a pentadigalloyl glucose that had the properties of a tannin. In 1918, he established the composition of Chinese tannin as a penta(*meta*-digalloyl)glucose. He also synthesized hepta(tribenzoylgalloyl)-*p*-iodophenylmaltosazone. This derivative of maltose had a molecular weight of 4021, far exceeding that of any synthetic product.

2.2. *Hard work is the gateway to eternity*

In 1899, Fischer turned to the proteins in the hope of revealing their chemical nature. He knew of thirteen amino acids that had been obtained as the hydrolysis products of proteins, and he discovered several additional amino acids. In 1901, he modified a method for the separation of amino acids developed by Theodor Curtius in 1883. This method allowed a mixture of amino acids to be separated by esterifying the acids and distilling them at reduced pressure. Fischer used Curtius' method to separate mixtures of amino acids from protein hydrolysates by fractionally distilling their esters. He discovered valine, proline, and hydroxyproline in this manner. He prepared esters of several amino acids and condensed two amino acid molecules into dipeptides. By 1907, he was preparing polypeptides, the largest one consisting of fifteen glycyl and three leucyl residues and having a molecular weight of 1213. He suggested that the peptide linkage—CONH—was repeated in long chains in the polypeptide molecule. Fischer was a key figure in establishing the complexity of proteins. By 1905, he had differentiated twenty-nine polypeptides and tested their behavior with various enzymes. He characterized proteins in terms of their

numbers, types, and arrangements of amino acids. In 1916, he summarized his work on the synthesis of approximately 100 polypeptides, cautioning that these represented only a tiny fraction of the possible combinations that might be found in natural proteins. Fischer's last work was on the esterification of glycerol by fatty acids. The objective of all his investigations was to apply the methods of organic chemistry to elucidate the synthesis and processes of substances found in living matter.

Fischer's publications were collected in eight large volumes: *Untersuchungen über Aminosäuren, Polypeptide und Proteine, 1899–1906* (Berlin, 1906); *Untersuchungen in der Puringruppe, 1882–1906* (Berlin, 1907); *Untersuchungen über Kohlenhydrate und Fermente, 1884–1908* (Berlin, 1909); *Untersuchungen über Depside und Gerbstoffe, 1908–1919* (Berlin, 1920); *Untersuchungen über Kohlenhydrate und Fermente, II, 1908–1918* (Berlin, 1922); *Untersuchungen über Aminosäuren, Polypeptide und Proteine. II, 1907–1919* (Berlin, 1923); *Untersuchungen über Triphenylmethanfarbstoffe, Hydrazine und Indole* (Berlin, 1924); and *Untersuchungen aus verschiedenen Gebieten, Vorträge und Abhandlungen allgemeinen Inhalts* (Berlin, 1924).

2.3. *Giving joy to others is a virtue*

Fischer married Agnes Gerlach in 1888, but she died seven years later. She bore him three sons. Two of their sons were killed in World War I, but the eldest, Hermann Emil Fischer, also became an outstanding organic chemist and a Professor of Biochemistry at the University of California, Berkeley.

2.4. *The first step that leads to eternity is sacrifice and hard work*

During World War I, Fischer was active in organizing Germany's chemical resources and headed the commissions for chemical production and food supplies. After the war, he helped to reorganize the teaching of chemistry and to establish research facilities. While in Berlin, Fischer also became active in the promotion of chemistry and science in Germany. He was instrumental in establishing the Kaiser Wilhelm Society and its related institutes for chemistry and physics in 1911. Fischer has to his credit several awards and honors from various universities and institutions and was made an honorary member of many societies, academies and scientific organizations. He was awarded the Davy Medal of the Royal Society of London in 1890, and he held honorary doctorates from the Universities of Cambridge, Manchester and Brussels.

2.5. *How could a man know happiness who knew no sadness?*

Upon his death on 15 July, 1919, the Emil Fischer Memorial Medal was established by the German Chemical Society. Others who died in 1919 include the winner of the Nobel Prize in Literature in 1917, Karl Adolph Gjellerup, the first inorganic chemist to win the Nobel Prize in Chemistry, Alfred Werner, and the well-known English physicist John William Strutt, 3rd Baron Rayleigh.

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(I. Fechete)

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OCTOBER	MEMBERS OF THE FRENCH ACADEMY OF SCIENCES
1	<p>Le Seur, Thomas (1 October 1703–25 September 1770), French mathematician.</p> <p>Landriani, Marsilio (1 October 1751–13 March 1815), Italian chemist.</p> <p>Faye, Hervé Etienne Auguste Albans (1 October 1814–4 July 1902), French astronomer.</p> <p>Christie, William Henry Mahoney (1 October 1845–22 January 1922), British astronomer.</p> <p>Andoyer, Marie Henri (1 October 1862–12 June 1929), French astronomer and mathematician.</p> <p>Jeanbrau, Émile Alexis (1 October 1873–14 May 1950), French medical doctor.</p> <p>Dubost, Charles Louis (1 October 1914–11 January 1991), French surgeon.</p>
2	<p>Geoffroy, Estienne Louis (2 October 1725–12 August 1810), French entomologist and pharmacist.</p> <p>Delpech, Jacques Mathieu (2 October 1777–29 October 1832), French surgeon.</p> <p>Lebesgue, Victor Amédée (2 October 1791–10 June 1875), French mathematician.</p> <p>Cahours, Auguste André Thomas (2 October 1813–17 March 1891), French chemist.</p> <p>Wiedemann, Gustav Heinrich (2 October 1826–24 March 1899), German physicist.</p> <p>Ranvier, Louis-Antoine (2 October 1835–23 March 1922), French medical doctor.</p> <p>Foch, Ferdinand (2 October 1851–20 March 1929), French general and Marshal of France, Poland and Great Britain.</p> <p>Ramsay, William (2 October 1852–23 July 1916), Scottish chemist and Nobel laureate (1904).</p> <p>Leriche, René (2 October 1879–28 December 1955), French surgeon.</p> <p>Draper, Charles Stark (2 October 1901–25 July 1987), American scientist and engineer.</p> <p>Moyse, Alexis Joseph (2 October 1912–18 November 1991), French biochemist.</p> <p>Duve, Christian de (2 October 1917–4 May 2013), Belgian biochemist-medical doctor and Nobel laureate (1974).</p> <p>John Gurdon (2 October 1933), English biologist and Nobel laureate (2012).</p>
3	<p>Forbonnais, François Véron Duverger de (3 October 1722–19 September 1800), French economist.</p> <p>Manson, Patrick (3 October 1844–9 April 1922), Scottish physicist.</p> <p>Flahault, Charles Henri Marie (3 October 1852–3 February 1935), French botanist.</p> <p>Dulac, Henri Claudius Rosario (3 October 1870–2 September 1955), French mathematician.</p> <p>Deligne, Pierre René (vicomte) (3 October 1944), Belgian mathematician.</p>
4	<p>Arbogast, Louis François Antoine (4 October 1759–8 April 1803), French mathematician.</p> <p>Delezenne, Charles Édouard Joseph (4 October 1776–20 August 1866), French scientist.</p> <p>Saint-Hilaire, Augustin François César Prouvansal de (4 October 1779–30 September 1853), French botanist.</p> <p>Savary, Félix (4 October 1797–15 July 1841), French astronomer.</p> <p>Normand, Jacques Augustin (4 October 1839–21 December 1906), French engineer.</p> <p>Wüthrich, Kurt (4 October 1938), Swiss chemist and Nobel laureate (2002).</p> <p>Braunstein, Pierre (4 October 1947), French chemist.</p>
5	<p>Genty, Louis (5 October 1743–23 September 1817), French philosopher.</p> <p>Scoresby, William (5 October 1789–21 March 1857), English Arctic explorer and scientist.</p> <p>Lumière, Louis Jean (5 October 1864–6 June 1948), French engineer.</p> <p>Peyerimhoff de Fontenelle, Marie Paul de (5 October 1873–2 January 1957), French intellectual.</p> <p>Haïssaguerre, Michel (5 October 1955), French cardiac electrophysiologist.</p> <p>Villani, Cédric (5 October 1973), French mathematician and Fields laureate (2010).</p>
6	<p>Gaultier, Jean-François (6 October 1708–10 July 1756), French medical doctor.</p> <p>Maret, Hugues (6 October 1726–11 June 1786), French medical doctor.</p> <p>Maskelyne, Nevil (6 October 1732–9 February 1811), British astronomer.</p> <p>Dupuytren, Guillaume (6 October 1777–8 February 1835), French anatomist.</p> <p>Magendie, François (6 October 1783–7 October 1855), French medical doctor.</p> <p>Dupin, Pierre Charles François (6 October 1784–18 January 1873), French mathematician.</p> <p>Reiset, Jules (6 October 1818 – 5 February 1896), French chemist.</p> <p>Thenard, Arnould Paul Edmond (6 October 1819–8 August 1884), French chemist.</p> <p>Dedekind, Richard Julius Wilhelm (6 October 1831–12 February 1916), German mathematician.</p> <p>Waldeyer, Heinrich Wilhelm Gottfried (6 October 1836–23 January 1921), German anatomist.</p> <p>Gäumann, Ernst (6 October 1893–5 December 1963), Swiss botanist.</p>

Courrier, Marie Jules Constant Robert (6 October 1895–14 March 1986), French biologist and medical doctor.
Sobolev, Sergueï Lvovitch (6 October 1908–3 January 1989), Soviet mathematician.

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- 7** **Bergonié, Jean Alban** (7 October 1857–2 January 1925), French medical doctor.
Poisson, Victor Marie Augustin Charles (7 October 1882–28 February 1965), French intellectual.
Bohr, Niels Henrik David (7 October 1885–18 November 1962), Danish physicist and Nobel laureate (1922).
Malavard, Lucien Clément (7 October 1910–2 March 1990), French mathematician and physicist.
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- 8** **Viussens, Daniel Louis** (8 October 1693–31 March 1762), French intellectual.
Bourdelin, Louis-Claude (8 October 1696–13 September 1777), French chemist.
Bonnard, Augustin-Henri de (8 October 1781–5 January 1857), French engineer.
Gambey, Henri-Prudence (8 October 1787–28 January 1847), French inventor.
Daussy, Pierre (8 October 1792–5 September 1860), French engineer.
Tholozan, Joseph Désiré (8 October 1820–31 July 1897), Franco-Mauritians medical doctor and physicist.
Le Chatelier, Henry Louis (8 October 1850–17 September 1936), French chemist.
Glangeaud, Philippe (8 October 1866–8 September 1930), French geologist.
Hertzprung, Ejnar (8 October 1873–21 October 1967), Danish chemist and astronomer.
Stille, Hans (8 October 1876–26 December 1966), German geologist.
Pères, Jean-Marie Léon Joseph (8 October 1915–9 March 1998), French biologist.
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- 9** **Aiguillon, Armand-Désiré de Vignerot du Plessis de Richelieu, duc d'** (9 October 1683–4 February 1750), French intellectual.
Macquer, Pierre-Joseph (9 October 1718–15 February 1784), French chemist and medical doctor.
Loménie de Brienne, Étienne-Charles de (9 October 1727–19 February 1794), French churchman and politician.
La Rive, Auguste Arthur de (9 October 1801–27 November 1873), Swiss physicist.
Bresse, Jacques Antoine Charles (9 October 1822–22 May 1883), French engineer.
Fischer, Hermann Emil (9 October 1852–14 July 1919), German chemist and Nobel laureate (1902).
Cotton, Aimé Auguste (9 October 1869–16 April 1951), French physicist.
Munnich, Arnold (9 October 1949), French pediatrician geneticist.
-
- 10** **Cavendish, Henry** (10 October 1731–24 February 1810), British scientist.
Fougeroux de Bondaroy, Auguste-Denis (10 October 1732–31 December 1789), French botanist.
Marion, Antoine Fortuné (10 October 1846–23 January 1900), French naturalist.
Nansen, Fridtjof (10 October 1861–13 May 1930), Norwegian scientist, diplomat, humanitarian and Nobel Peace laureate (1922).
Giraud, Raoul Gaston (10 October 1888–16 January 1975), French intellectual.
Chauvin, Yves (10 October 1930–27 January 2015), French chemist and Nobel laureate (2005).
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- 11** **Polignac, Melchior de** (11 October 1661–20 November 1741), French churchman and diplomat.
Sabatier, Raphaël-Bienvenu (11 October 1732–19 July 1811), French surgeon.
Olbers, Heinrich Wilhelm Matthias (11 October 1758–2 March 1840), German astronomer and physicist.
Godchot, Marcel (11 October 1879–11 February 1939), French scientist.
Chatton, Édouard Pierre Léon (11 October 1883–23 April 1947), French biologist.
Binet, Léon René (11 October 1891–10 July 1971), French medical doctor.
Duparque, André Benjamin Louis Eugène (11 October 1892–11 June 1960), French geologist and mineralogist.
Montreuil, Jean (11 October 1920–16 July 2010), French biochemist.
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- 12** **Bugge, Thomas** (12 October 1740–15 January 1815), Danish astronomer and geographer.
Cubières, Simon Louis Pierre de (12 October 1747–10 August 1821), French writer.
Bérard, Jacques Étienne (12 October 1789–10 June 1869), French chemist.
Tresca, Henri Édouard (12 October 1814–21 June 1885), French engineer.
Leriche, René (12 October 1879–28 December 1955), French surgeon.
Cabane, Bernard (12 October 1945), French chemist.
Bréchet, Yves (12 October 1961), French scientist.
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- 13** **Lardillon, Jean Claude** (13 October 1705–21 August 1780), French scientist.
Romas, Jacques de (13 October 1713–21 January 1776), French physicist.
Béguillet, Edme (13 October 1729 – May 1786), French agronomer.
Maurice, Jean Frédéric Théodore (13 October 1775–16 April 1851), Swiss mathematician.
Barlow, Peter (13 October 1776–1 March 1862), British mathematician and physicist.
Maunoir, Jean-Pierre (13 October 1768–16 January 1861), Swiss scientist.
Virchow, Rudolph Ludwig Karl (13 October 1821–5 September 1902), German scientist.
Milne-Edwards, Alphonse (13 October 1835–21 April 1900), French medical doctor.
Rateau, Auguste Camille Edmond (13 October 1863–13 January 1930), French engineer.
Rothé, Edmond Ernest Antoine (13 October 1873–28 August 1942), French scientist.
Bouligand, Georges Louis (13 October 1889–12 April 1979), French mathematician.
Tárczy-Hornoch, Antal (13 October 1900–16 January 1986), Hungarian scientist.
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- 14** **Cervi, Joseph** (14 October 1663–25 January 1748), Spanish medical doctor.
Sonolet, Jacques (14 October 1740 - ?), French scientist.
Saussure, Nicolas Théodore de (14 October 1767–18 April 1845), Swiss chemist.
Sabine, Edward (14 October 1788–26 May 1883), Irish astronomer.
Plateau, Joseph Antoine Ferdinand (14 October 1801–15 September 1883), Belgian mathematician and physicist.
Binger, Louis Gustave (14 October 1856–10 November 1936), French officer.
Carlet, Philippe (14 October 1938), French mathematician.
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- 15** **Dupuy de Lôme, Stanislas-Charles-Henri-Laurent** (15 October 1816–1 February 1885), French military engineer.
Bergh, Ludvig Rudolph Sophus (15 October 1824–20 June 1909), Danish physicist.
Hall, Asaph (15 October 1829–22 November 1907), American astronomer.
Guye, Charles Eugène (15 October 1866–15 July 1942), Swiss physicist.

- Cot, Donatien François Pierre Jean** (15 October 1873–24 March 1961), French engineer.
Merril, Elmer Drew (15 October 1876–25 February 1956), American botanist.
Benzer, Seymour (15 October 1921–30 November 2007), American scientist.
Robieux, Jean (15 October 1925–14 June 2012), French physicist.
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- 16** **Haller, Albrecht von** (16 October 1708–12 December 1777), Swiss anatomist.
Pages, Pierre-Marie de (16 October 1740–1792), French intellectual.
Tessier, Henri-Alexandre (16 October 1741–11 December 1837), French medical doctor and agronomer.
Fabry, Charles Eugène (16 October 1856–6 October 1944), French mathematician.
Stratton, Frederick John Marrian (16 October 1881–2 September 1960), British astrophysicist.
Wyart, Jean Léon (16 October 1902–13 March 1992), French mineralogist.
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- 17** **Gouye, Thomas** (17 October 1650–24 March 1725), French astronomer.
Haller, Gottlieb Emmanuel von (17 October 1735–9 April 1786), Swiss historian.
Meckel, Johann Friedrich (17 October 1781–31 October 1833), German astronomer.
Cloizeaux, Alfred Louis Olivier Le Grand des (17 October 1817–6 May 1897), French mineralogist.
Roche, Édouard Albert (17 October 1820–18 April 1883), French astronomer and mathematician.
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Retzius, Gustaf Magnus (17 October 1842–21 July 1919), Swedish physicist and anatomist.
Chokalski, Iouli Mikhailovitch (17 October 1856–26 March 1940), Russian oceanographer.
Brocq-Rousseu, Denis (17 October 1869–22 January 1950), French botanist and veterinarian.
Grandjean, François Alfred (17 October 1882–22 January 1975), Swiss mineralogist.
Latarjet, Raymond (17 October 1911–3 June 1998), French biologist.
Hirzebruch, Friedrich (17 October 1927–27 May 2012), German mathematician.
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- 18** **Bourdalin, Louis-Claude** (18 October 1696–13 September 1777), French chemist.
Lorgna, Antonio Maria (18 October 1735–28 June 1796), Italian mathematician.
Schenbein, Christian Friedrich (18 October 1799–20 August 1868), German chemist.
Matheron, Pierre Philippe Émile (18 October 1807–31 December 1899), French engineer.
Andrieux, Jean Lucien (18 October 1887–1 April 1962), French chemist.
Marsily, Ghislain de (18 October 1939), French engineer.
Fink, Mathias (18 October 1945), French physicist.
-
- 19** **Cheselden, William** (19 October 1688–10 April 1752), English surgeon.
Fougeroux de Blaveau, Armand Eustache François (19 October 1734–6 October 1788), French engineer.
Morin, Arthur Jules (19 October 1795–7 February 1880), French physicist.
Bert, Paul (19 October 1833–11 November 1886), French medical doctor.
Wilson, Edmund Beecher (19 October 1856–3 March 1939), American zoologist and geneticist.
Boulenger, Georges Albert (19 October 1858–23 November 1937), Belgian-British zoologist.
Lumière, Auguste Marie Louis Nicolas (19 October 1862–10 April 1954), French film director in history.
De Wildeman, Émile Auguste Joseph (19 October 1866–24 July 1947), Belgian botanist and phycologist.
Gignoux, Maurice Irénée Marie (19 October 1881–20 August 1955), French geologist.
Fernandes, Abilio (19 October 1906–7 October 1994), Portuguese botanist.
Perey, Marguerite (19 October 1909–13 May 1975), French chemist.
Dausset, Jean (19 October 1916–6 June 2009), French immunologist and Nobel laureate (1980).
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- 20** **Baillou, Johann von** (20 October 1679–1758), Italian scientist.
Cotte, Louis (20 October 1740–4 October 1815), French meteorologist.
Lapeyrouse, Picot de (20 October 1744–1 October 1818), French naturalist.
Bazin, Henry Émile (20 October 1829–14 February 1917), French engineer.
Ditte, Alfred (20 October 1843–7 November 1908), French chemist.
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- 21** **Duperrey, Louis Isidore** (21 October 1786–25 August 1865), French naval officer.
Hellriegel, Hermann (21 October 1831–24 September 1895), German agricultural chemist.
Cuénod, Lucien Claude Jules Marie (21 October 1866–7 January 1951), French scientist.
Sauvage, Jean-Pierre (21 October 1944), French chemist.
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- 22** **Ortega y Hernandez, José** (22 October 1703–23 January 1781), Spanish scientist.
Forster, Johann Reinhold (22 October 1729–9 December 1798), Scottish-American naturalist and Reformed pastor.
Neumann, Louis Georges (22 October 1846–28 June 1930), French veterinarian.
Bataillon, Jean Eugène (22 October 1864–1 November 1953), French biologist.
Locquin, Émile René (22 October 1876–13 July 1965), French intellectual.
Nevanlinna, Rolf Hermann (22 October 1895–28 May 1980), Finnish mathematician.
Stanier, Roger Yate (22 October 1916–29 January 1982), Canadian microbiologist.
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- 23** **Vosmaer, Arnout** (23 October 1720–14 January 1799), Dutch naturalist.
Edwards, Henri-Milne (23 October 1800–29 July 1885), French medical doctor and zoologist.
Kühn, Julius (23 October 1825–14 April 1910), German agronomist.
Branly, Édouard (23 October 1844–24 March 1940), French physicist and medical doctor.
Lundegårdh, Henrik Gunnar (23 October 1888–16 November 1969), Swedish botanist.
Julia, Marc (23 October 1922–26 June 2010) French chemist.
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- 24** **Leeuwenhoek, Antony van** (24 October 1632–28 August 1723), Dutch scientist.
Sigorgne, Pierre (24 October 1719–10 November 1809), French physicist.
Dunal, Félix Michel (24 October 1789–28 July 1856), French botanist.
Weber, Wilhelm Eduard (24 October 1804–23 June 1891), German physicist.
Whittaker, Edmund Taylor (24 October 1873–24 March 1956), English mathematician.

Olszack, Waclaw (24 October 1902–8 December 1980), Polish constructor.
Schützenberger, Marcel-Paul (24 October 1920–29 July 1996), French scientist.
de Gennes, Pierre-Gilles (24 October 1932–18 May 2007), French physicist and Nobel laureate (1991).

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- 25** **Ferrein, Antoine** (25 October 1693–28 February 1769), French anatomist.
Nadault, Jean (25 October 1701–17 November 1779), French intellectual.
Perronet, Jean-Rodolphe (25 October 1708–27 February 1794), French architect and engineer.
Berthelot, Pierre Eugène Marcelin (25 October 1827–18 March 1907), French chemist and biologist.
Russel, Henry Norris (25 October 1877–18 February 1957), American astronomer.
Nørlund, Niels Erik (25 October 1885–4 July 1981), Danish mathematician.
Rouard, Pierre (25 October 1908–6 September 1989), French physicist.
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- 26** **Des Essartz, Jean Charles** (26 October 1729–12 April 1811), French scientist.
Noailles, Jean Louis Paul François d'Ayen, duc de (26 October 1739–20 October 1824), French scientist.
Paoli, Pietro (26 October 1759–21 February 1839), Italian mathematician.
Ferrer, José Joaquín de (26 October 1763–18 May 1818), Spanish astronomer.
Chavannes, Marc-Antoine Puvis de (26 October 1776–28 July 1851), French agronomer and engineer.
Puvis, Marc Antoine (26 October 1776–30 July 1851), French engineer and agronomer.
Lottin, Victor Charles (26 October 1795–18 February 1858), French traveler and cartographer.
Oppolzer, le chevalier Theodor von (26 October 1841–26 December 1886), Austrian astronomer.
Chern, Shiing-shen (26 October 1911–3 December 2004), Chinese –American mathematician.
Roques, Maurice Prosper (26 October 1911–19 June 1997), French scientist.
Livage, Jacques (26 October 1938), French chemist.
Dénarié, Jean (26 October 1940), French biologist.
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- 27** **Montmort, Pierre Rémond de** (27 October 1678–7 October 1719), French mathematician.
Perronet, Jean-Rodolphe (27 October 1708–27 February 1794), French engineer and architect.
Candolle, Alphonse Louis Pierre Pyramus de (27 October 1806–4 April 1893), French-Swiss botanist.
Duchartre, Pierre Étienne Simon (27 October 1811–5 November 1894), French botanist.
Faure, Jean-Louis (27 October 1863–26 October 1944), French surgeon.
Rousset, Auguste (27 October 1905–10 October 1997), French physicist.
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- 28** **Deparcieux, Antoine** (28 October 1703–2 September 1768), French mathematician.
Percy, Pierre-François (28 October 1754–18 February 1825), French medical doctor and surgeon.
La Billardiére, Jacques-Julien Houtou de (28 October 1755–8 January 1834), French botanist.
Jaubert, Hippolyte-François (28 October 1798–5 December 1874), French botanist.
Perrier, Antoine François Jacques Justin Georges (28 October 1872–16 February 1946), French astronomer.
Fontaine, Maurice (28 October 1904–14 July 2009), French biologist.
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- 29** **Halley, Edmond** (29 October 1656–14 January 1742), English astronomer and physicist.
Folkes, Martin (29 October 1690–28 June 1754), English mathematician and astronomer.
Melander alias Melanderhjelm, Daniel (29 October 1726–8 January 1810), Swedish mathematician and astronomer.
Carpenter, William Benjamin (29 October 1813–19 November 1885), English physicist.
Marsh, Othniel Charles (29 October 1831–18 March 1899), American paleontologist.
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- 30** **Poczobut, le P. Martin Odlanicki** (30 October 1728–20 February 1810), Polish-Lithuanian jesuit, mathematician and astronomer.
Halphen, Georges Henri (30 October 1844–21 May 1889), French mathematician.
Pacault, Adolphe (30 October 1918–18 January 2008), French chemist.
Curien, Hubert (30 October 1924–6 February 2005), French crystallographer.
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- 31** **Bevis, John** (31 October 1693–6 November 1771), English scientist and astronomer.
Dunlop, James (31 October 1793–23 September 1848), Scottish astronomer.
Weierstrass, Karl Theodor Wilhelm (31 October 1815–19 February 1897), German mathematician.
Baeyer, Johann Friedrich Wilhelm Adolf von (31 October 1835–20 August 1917), German chemist and Nobel laureate (1905).
Hamy, Maurice Théodore Adolphe (31 October 1861–9 April 1936), French astronomer.
Russel, Edward John (31 October 1872–12 July 1965), British agronomer.
Riabouchinsky, Dimitri Pavlovitch (31 October 1882–22 August 1962), Russian fluid dynamicist.
Pères, Joseph Jean Camille (31 October 1890–12 February 1962), French physicist and mathematician.
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