

IMPORTANT DICOVERIES

Contrast agents Guerbet

Date on which the product was first marketed

*: products that are no longer marketed.

Imaging techniques

		1895	Roentgen discovered X-rays (1)
		1896	Becquerel discovered uranium
		1897	Investigation of the gastrointestinal tract using bismuth (2)/ 1st double emulsion film (25)
*LIPIODOL®	1901	1901	Roentgen was awarded the Nobel Prize
		1910	Barium used to investigate the gastrointestinal tract (3)
		1913	Coolidge invented the X-ray tube (4)
		1917	1st piezo-electric ultrasound generator (23)
		1918	Gas ventriculography (5)
		1921	Myelography using Lipiodol® (6)
		1924	1st cholecystography in man (24)
		1925	Hysterography using Lipiodol® (26)
		1927	1st cerebral angiography in man performed by Moniz (7)
		1929	1st intravenous urography (8)/ Films with cellulose acetate base (25)/ Forssmann carried out the 1st right cardiac catheterisation on himself (9)
		1931	Lymphangiography using thorium dioxide

*LIPIODOL® F	1932	
*TENEBRYL®	1932	
	1935	Image subtraction methods (10)
	1938	1st Angiocardiography (11)
	1942	Ultrasound applied to medicine by Dussik who developed hyperphonography of the brain (23)
*VASURIX®	1950	1950 Left cardiac catheterisation by Zimmermann (12)
LIPIODOL® UF	1951	
	1952	Nobel Prize for Purcell and Bloch for their discovery of the magnetic moment
	1953	Development of the Seldinger technique (13)
	1959	Satomura applied the " doppler " technique to the study of blood flow (23)
*HYTRAST®	1961	1961 Brown and Donald presented the Diasonograph to the British Institute of Radiology (23)/ Lymphography using Lipiodol® (14)
	1964	Endoluminal treatment of atherosclerosis using interventional radiological techniques by Dotter (15)
	1967	1st coronary arteriography by femoral approach by Judkins (16)
*CONTRIX® 28 Perfusion *DUROLIOPAQUE® BLEU PATENTE V®	1969	

*DIMERX® *VASOBRIX® TELEBRIX® MICROPAQUE® SUSPENSION®	1970	
		1971 1st phase contrast doppler flowmetry (23)
*TRANSBILIX®	1972	1972 Hounsfield invented the scanner (17)
		1973 1st NMR imaging by Lauterbur (18)
MICROTRAST®	1974	
		1976 1st MRI equipment commercialised by Damadian
TELEBRIX® HYSTERO	1977	1977 1st PTCA performed by Gruentzig (19)
HEXABRIX®	1979	1979 Angiography no longer systematically requires anesthesia
		1981 Digital angiography with luminescence amplifier
		1982 Chemoembolisation using Lipiodol® (20)
		1984 MRI angiography (21)
TELEBRIX® GASTRO	1986	
		1987 Puel placed the 1st coronary stent (22)
DOTAREM®	1989	1989 Spiral CT scan
OPTIRAY® (en France)	1991	1991 1st functional MRI of the brain (28)

LUMIREM® (in France) LIPIODOL CAPSULE® (for WHO)	1994	
XENETIX® ENDOREM® (in France)	1995	
OXILAN®	1996	
OPTIJECT®	1997	
	1998	Multislice scanner
	2001	PET-Scan
	2002	8 and 16 slice scanner / 3T high-field MRI
ARTIREM®	2003	2003 The Nobel Prize in medicine awarded for research in MRI to theamerican Paul Lauterbur and to the Englishman Peter Mansfield

Références :

- 1 - RÖNTGEN WC
Ueber eine neue Art von Strahlen (Vorläufige Mittheilung)
Sber. Phys.-med. Ges., Würzb., 1895 : 137 132-141
- 2 - CANNON WB
The movements of the stomach studied by means of the Röntgen rays
Am. J. Physiol., 1898 : 1 359-382
- 3 - BACHEM C; GÜNTHER H
Bariumsulfat als schattenbildenes Kontrastmittel bei Röntgenuntersuchungen
Z. Röntgenk. Radiumforsch., 1910 : 12 369-376
- 4 - COOLIDGE WD, CHARLTON EE
Roentgen ray tubes
Radiology, 1945 : 45 449-466
- 5 - DANDY WE
Ventriculography following the injection of air into the cerebral ventricles
Ann. Surg., 1918 : 68 5-11
- 6 - SICARD JA, FORESTIER J
Méthode radiologique d'exploration de la cavité épidurale par le lipiodol
Soc. Neurol. 1er déc. 1921; Rev. Neurol., Paris, 28e A, n°12, n°6, décembre 1921, 1264-1266
- 7 - MONIZ E
L'encéphalographie artérielle, son importance dans la localisation des tumeurs cérébrales
Revue Neurol., 1927 : 34(II) 72-90
- 8 - SWICK M
Darstellung der Niere und Harnwege im Röntgenbild durch intravenöse Einbringung eines neuen Kontraststoffes, des Uroselectans
Klin. Wschr., 1929 : 8 2087-2089
- 9 - FORSSMANN W
Über Konstrastdarstellung der Höhlen des lebenden rechten Herzens und der Lungenschlagader.
Münchener Med. Wschr., 1931 : 78 489-492
- 10 - ZIEDESSES des PLANTES BG
Subtraktion : eine röntgenographische methode zur seratan abbildung bestimmter teile des objects
Fortschr. Geb. Roentgenstr. Nuclear Med., 1935 : 52 59
- 11 - ROBB GP, STEINBERG I
Practical method of visualizing the chambers of the heart, pulmonary vessels, and great blood vessels in man
J. Clin. Invest., 1938 : 17 507
- 12 - ZIMMERMANN HA
Catheterization of the left size of the heart in man
Circulation, 1950 : 1 357
- 13 - SELDINGER SI
Catheter replacement of the needle in percutaneous arteriography: a new technique
Acta Radiol.; 1953 39 368-376
- 14 - SHEEHAN R
The use of lymphography as a diagnostic method
Radiology, 1961 : 76 41-43
- 15 - DOTTER CT
Transluminal treatment of arteriosclerotic obstruction: description of a new technique
Circulation, 1964 : 30 654-670
- 16 - JUDKINS MP

Selective coronary arteriography. Part I. A percutaneous transfemoral technic
Radiology, 1967 : 89 815-824

17 - HOUNSFIELD GN
Computerized axial scanning (tomography). I. Description of system
Br. J. Radiol., 1973 : 46 1016

18 - LAUTERBUR PC
Image formation by induced local interactions: examples employing nuclear magnetic resonance
Nature (London), 1973 : 242 190

19 - GRUENTZIG AR
Coronary transluminal angioplasty
Circulation, 1977 : 56 (II) 319 (Abst.)

20 - KONNO T
Use of a lipid lymphographic agent, lipiodol, as a carrier of high molecular weight antitumor agent, smancs, for
hepatocellular carcinoma
Gan To Kagaku Rooho, 1982 : 9 (11) 2005-2015

21 - ALFIDI RJ
MR angiography of peripheral, carotid, and coronary arteries
AJR, 1987 : 149 1097-1109

22 - SIGWART U, PUEL J
Intravascular stents to prevent occlusions and restenosis after transluminal angioplasty
New Engl. J. Med., 1987 : 316 (12) 701-706

23 - PALLARDY G
Histoire illustrée de la radiologie
Paris - Editions Roger Dacosta - 1989

24 - KNOEFEL PK (Ed.)
International encyclopedia of pharmacology and therapeutics, section 76, radiocontrast agents
Oxford : Pergamon Press; 1971

25 - NICE CM
Medical images : past, present, and future
Crit. Rev. Diagn imaging; 1980 : 14 (1) 73-109

26 - BONNEMAIN B
L'huile iodée (Lipiodol®) en radiologie. Les premières années d'expérience : 1921-1931
Rev. Hist. Pharm. ; 2000 : 48 (328) 493-508

27 - <http://www.emrf.org/FAQs MRI History.html>

28 - <http://www.ncrr.nih.gov/newspub/apr02rpt/stories3.asp>