



ANTIMICROBIAL RESISTANCE - A BITTER PILL TO SWALLOW

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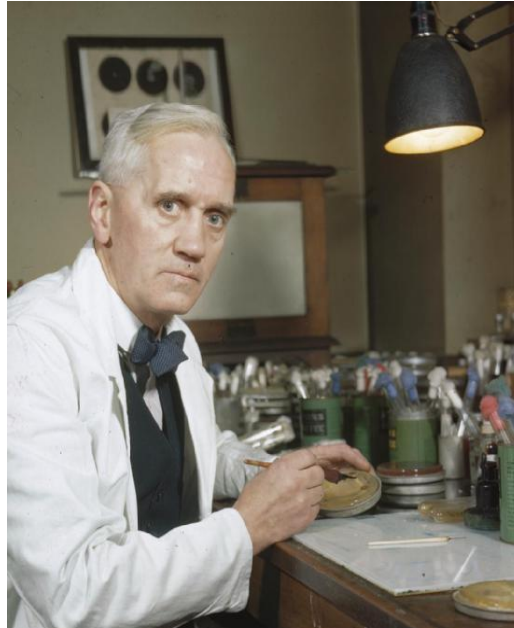
President of the BSMT

Paul Ehrlich 1854-1915



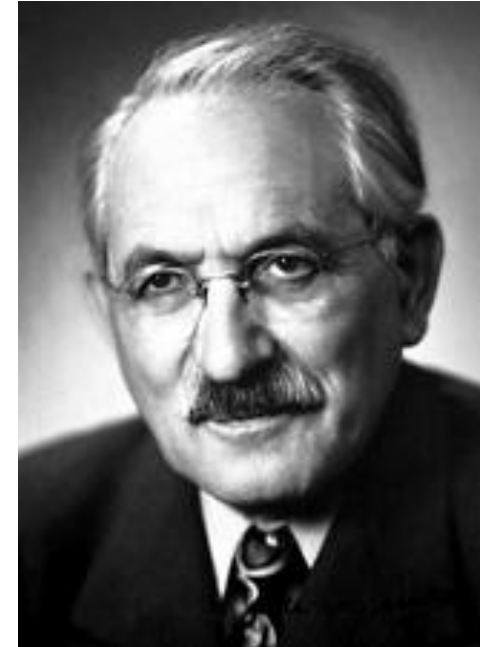
- Salvarsan 1909
- “Magische Kugel”
- Histology Staining
- Differentiation of white blood cells
- Immunology
- Nobel Prize in 1908*

Sir Alexander Fleming 1881-1955



- Discovered Penicillin in 1929
- Benzylpenicillin was released in 1942 (Florey and Chain)
- Jointly awarded the Nobel Prize in 1945*

Selman A Waksman 1888-1973



- Waksman coined the term antibiotics
- Discovered several antibiotics produced by soil micro-organisms: streptomycin and neomycin
- Streptomycin was the first cure for tuberculosis.
- Awarded Nobel Prize in 1952*

Antibiotic Era: 1935- 1964

- 1911 - [Arsphenamine aka Salvarsan\[1\]](#)
- 1912 - [Neosalvarsan](#)
- 1935 - [Prontosil, the first sulfonamide](#)
- 1936 - [Sulfanilimide](#)
- 1938 - [Sulfapyridine \(M&B 693\)](#)
- 1939 - [sulfacetamide](#)
- 1940 - [sulfamethizole](#)
- 1942 - [benzylpenicillin, the first penicillin](#)
- 1942 - [gramicidin S, the first peptide antibiotic](#)
- 1942 - [sulfadimidine](#)
- 1943 - [sulfamerazine](#)
- 1944 - [streptomycin, the first aminoglycoside\[2\]](#)
- 1947 - [sulfadiazine](#)
- 1948 - [chlortetracycline, the first tetracycline](#)
- 1949 - [chloramphenicol, the first amphenicol\[2\]](#)
- 1949 - [neomycin](#)
- 1950 - [oxytetracycline](#)
- 1950 - [penicillin G procaine](#)
- 1952 - [erythromycin, the first macrolide\[2\]](#)
- 1954 - [benzathine penicillin](#)
- 1955 - [spiramycin](#)
- 1955 - [tetracycline](#)
- 1955 - [thiamphenicol](#)
- 1955 - [vancomycin, the first glycopeptide](#)
- 1956 - [phenoxymethylpenicillin](#)
- 1958 - [colistin, the first polymyxin](#)
- 1958 - [demeclocycline](#)
- 1959 - [virginiamycin](#)
- 1960 - [methicillin](#)
- 1960 - [metronidazole, the first nitroimidazole](#)
- 1961 - [ampicillin](#)
- 1961 - [spectinomycin](#)
- 1961 - [sulfamethoxazole](#)
- 1961 - [trimethoprim,](#)
- 1962 - [cloxacillin](#)
- 1962 - [fusidic acid](#)
- 1963 - [fusafungine](#)
- 1963 - [lymecycline](#)
- 1964 - [gentamicin](#)
- 1964 - [Cefalotin, the first cephalosporin](#)



Antibiotic Era: 1964- ??

- 1966 - [doxycycline](#)
- 1967 - [carbenicillin](#)
- 1967 - [rifampicin](#)
- 1967 - [Nalidixic acid, the first quinolone](#)
- 1968 - [clindamycin](#)
- 1970 - [cefalexin](#)
- 1971 - [cefazolin](#)
- 1971 - [pivampicillin](#)
- 1971 - [tinidazole](#)
- 1972 - [amoxicillin](#)
- 1972 - [cefradine](#)
- 1972 - [minocycline](#)
- 1972 - [pristinamycin](#)
- 1973 - [fosfomycin](#)
- 1974 - [talampicillin](#)
- 1975 - [tobramycin](#)
- 1975 - [bacampicillin](#)
- 1975 - [ticarcillin](#)
- 1976 - [amikacin](#)
- 1977 - [azlocillin](#)
- 1977 - [cefadroxil](#)
- 1977 - [cefamandole](#)
- 1977 - [cefoxitin](#)
- 1977 - [cefuroxime](#)
- 1977 - [mezlocillin](#)
- 1977 - [pivmecillinam](#)
- 1980 - [cefmetazole](#)
- 1980 - [cefotaxime](#)
- 1980 - [cefsulodin](#)
- 1980 - [piperacillin](#)
- 1981 - [co-amoxiclav](#)
- 1981 - [cefoperazone](#)
- 1981 - [cefotiam](#)
- 1981 - [cefsulodin](#)
- 1981 - [latamoxef](#)
- 1981 - [netilmicin](#)
- 1982 - [apalcillin](#)
- 1982 - [ceftriaxone](#)
- 1982 - [micronomicin](#)
- 1983 - [cefmenoxime](#)
- 1983 - [ceftazidime](#)
- 1983 - [ceftizoxime](#)
- 1983 - [norfloxacin](#)
- 1984 - [cefonicid](#)
- 1984 - [cefotetan](#)
- 1984 - [temocillin](#)
- 1985 - [cefpiramide](#)
- 1985 - [imipenem/cilastatin, the first carbapenem](#)
- 1985 - [ofloxacin](#)
- 1986 - [mupirocin](#)
- 1986 - [aztreonam](#)
- 1986 - [cefoperazone/sulbactam](#)
- 1986 - [co-ticarclav \(ticarcillin/clavulanic acid\)](#)
- 1987 - [ampicillin/sulbactam](#)
- 1987 - [cefixime](#)
- 1987 - [roxithromycin](#)
- 1987 - [sultamicillin](#)
- 1987 - [ciprofloxacin, the first 2nd-gen fluoroquinolone](#)
- 1987 - [rifaximin, the first ansamycin](#)
- 1988 - [azithromycin](#)
- 1988 - [flomoxef](#)
- 1988 - [isepamycin](#)
- 1988 - [midecamycin](#)
- 1988 - [rifapentine](#)
- 1988 - [teicoplanin](#)
- 1989 - [cefpodoxime](#)
- 1989 - [enrofloxacin](#)
- 1989 - [lomefloxacin](#)
- 1989 - [moxifloxacin](#)
- 1990 - [arbakacin](#)
- 1990 - [cefozidime](#)
- 1990 - [clarithromycin](#)
- 1991 - [cefdinir](#)
- 1992 - [cefetamet](#)
- 1992 - [cefprome](#)
- 1992 - [cefprozil](#)
- 1992 - [ceftibuten](#)
- 1992 - [fleroxacin](#)
- 1992 - [loracarbef](#)
- 1992 - [piperacillin/tazobactam](#)
- 1992 - [rifaxacin](#)
- 1993 - [brodimoprim](#)
- 1993 - [dirithromycin](#)
- 1993 - [levofloxacin](#)
- 1993 - [nadifloxacin](#)
- 1993 - [panipenem/betamipron](#)
- 1993 - [sparfloxacin](#)
- 1994 - [cefepime](#)
- 1999 - [quinupristin/dalfopristin](#)
- 2000 - [linezolid, the first oxazolidinone](#)
- 2001 - [telithromycin, the first ketolide](#)
- 2003 - [daptomycin](#)
- 2005 - [tigecycline](#)
- 2005 - [doripenem](#)
- 2009 - [telavancin, the first Lipoglycopeptide](#)
- 2010 - [ceftaroline](#)
- 2011 - [fidaxomicin](#)



Warnings from the Chief Medical Officer – Dame Sally Davies

- “Antibiotic resistance is one of the greatest threats to modern health and we face a future without cures for infection if antibiotics are not used responsibly” - November 2012
- "If we don't take action, then we may all be back in an almost 19th Century environment where infections kill us as a result of routine operations. We won't be able to do a lot of our cancer treatments or organ transplants.” - March 2013