resistance. Int J Antimicrob Agents. 2010;36:255-8 http://dx.doi.org/10.1016/j.ijantimicag.2010.05.011
9. Walker J, Fairley CK, Bradshaw CS, Tabrizi SN, Twin J, Chen MY, et al. Mycoplasma genitalium incidence, organism load, and treatment failure in a cohort of young Australian women. Clin Infect Dis. 2013;56:1094-100. http://dx.doi.org/10.1093/cid/cis1210
10. Tagg KA, Jeoffreys NJ, Couldwell DL, Donald JA, Gilbert GL. Fluoroquinolone and macrolide resistance-associated mutations in Mycoplasma genitalium. J Clin Microbiol. 2013;51:2245-9. http://dx.doi.org/10.1128/JCM.00495-13
11. Deguchi T, Yasuda M, Horie K, Seike K, Kikuchi M, Mizutani K, et al. Drug resistance-associated mutations in Mycoplasma genitalium in female sex workers, Japan. Emerg Infect Dis. 2015;21:1062-4. http://dx.doi.org/10.3201/eid2106.142013
12. Dumke R, Thurmer A, Jacobs E. Emergence of Mycoplasma genitalium strains showing mutations associated with macrolide and fluoroquinolone resistance in the region Dresden, Germany. Diagn Microbiol Infect Dis. 2016;86:221-3. http://dx.doi.org/10.1016/j.diagmicrobio.2016.07.005
13. Pond MJ, Nori AV, Witney AA, Lopeman RC, Butcher PD, Sadiq ST. High prevalence of antibiotic-resistant Mycoplasma genitalium in nongonococcal urethritis: the need for routine testing and the inadequacy of current treatment options. Clin Infect Dis. 2014;58:631-7. http://dx.doi.org/10.1093/cid/cit752
14. Le Roy C, Hénin N, Pereyre S, Bébéar C. Fluoroquinoloneresistant Mycoplasma genitalium, southwestern France. Emerg Infect Dis. 2016;22:1677-9. http://dx.doi.org/10.3201/eid2209.160446
15. Deguchi T, Maeda S, Tamaki M, Yoshida T, Ishiko H, Ito M, et al. Analysis of the gyrA and parC genes of Mycoplasma genitalium detected in first-pass urine of men with non-gonococcal urethritis before and after fluoroquinolone treatment. J Antimicrob Chemother. 2001;48:742-4. http://dx.doi.org/10.1093/jac/48.5.742

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## etymologia

## Fluoroquinolone [floor"o-kwin'o-lōn]

## Ronnie Henry

The first quinolone (quinol[ine] + -one [compound related to ketone]), nalidixic acid, was isolated as a byproduct of chloroquine (see "quinine," https://wwwnc. cdc.gov/EID/article/21/7/ET-2107_article) synthesis and was introduced in 1962 to treat urinary tract infections. In 1980, researchers at the Kyorin Pharmaceutical Company showed that the addition of a fluorine atom to the quinolone ring resulted in an antibiotic with broader antimicrobial activity, which was named norfloxacin, the first fluoroquinolone. In 1983, Bayer published data that showed adding a single carbon atom to norfloxacin-what would become ciprofloxacin-further increased activity. Fluoroquinolones are today among the most frequently used antimicrobial drugs to treat infections in humans and animals.


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## Sources

1. Dorland's Illustrated Medical Dictionary. 32nd ed. Philadelphia: Elsevier Saunders; 2012.
2. Ito A, Hirai K, Inoue M, Koga H, Suzue S, Irikura T, et al. In vitro antibacterial activity of AM-715, a new nalidixic acid analog. Antimicrob Agents Chemother. 1980;17:103-8. http://dx.doi.org/10.1128/AAC.17.2.103
3. Petri WA Jr. Sulfonamides, trimethoprim-sulfamethoxazole, quinolones, and agents for urinary tract infections.

In: Brunton LL, editor. Goodman and Gilman's The Pharmacological Basis of Therapeutics. 12th ed. New York: McGraw Hill; 2011. p. 1463-76.
4. Wise R, Andrews JM, Edwards LJ. In vitro activity of Bay 09867, a new quinoline derivative, compared with those of other antimicrobial agents. Antimicrob Agents Chemother. 1983;23:559-64. http://dx.doi.org/10.1128/ AAC.23.4.559

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DOI: http://dx.doi.org/10.3201/eid2305.ET2305

