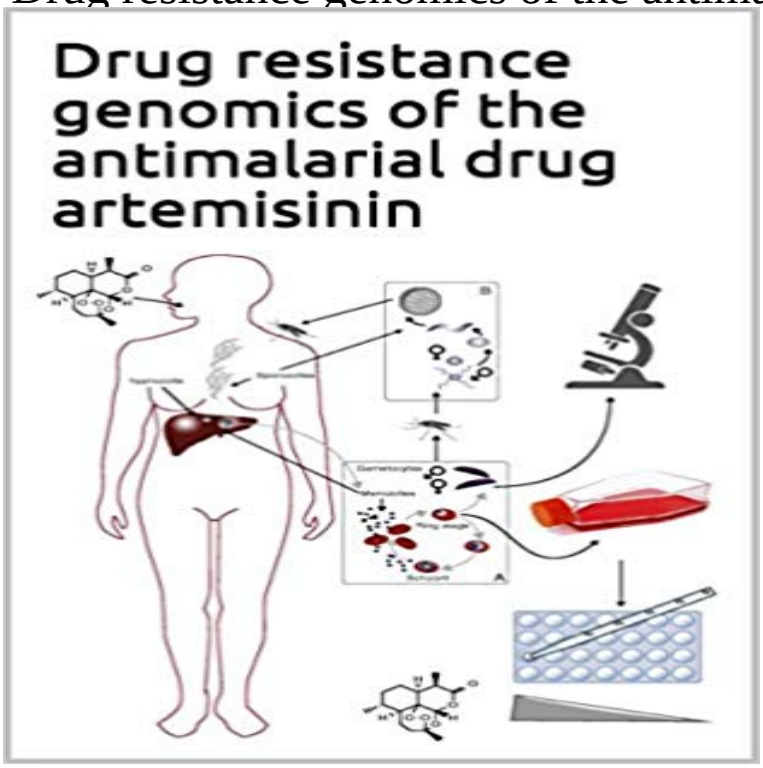
Drug resistance genomics of the antimalarial drug artemisinin



Across the globe, over 200 million annual malaria infections result in up to 660,000 deaths, 77% of which occur in children under the age of five years. Although prevention is important, malaria deaths are typically prevented by using antimalarial drugs that eliminate symptoms and clear parasites from the blood. Artemisinins are one of the few remaining compound classes that can be used to cure multidrug-resistant Plasmodium falciparum infections. Unfortunately, clinical trials from Southeast Asia are showing that artemisinin-based treatments are beginning to lose their effectiveness, adding renewed urgency to the search for the genetic determinants of parasite resistance to this important drug class. We review the genetic and genomic approaches that have led to an improved understanding of artemisinin resistance, including the identification of resistance-conferring mutations in the P. falciparum kelch13 gene.

Drug resistance genomics of the antimalarial drug artemisinin Mar 4, 2016 shown by genomic epidemiology to differ greatly between forms of antimalarial drug resistance (Nair et al., 2007 Salgueiro et al., 2010) and **How can we identify parasite genes that underlie antimalarial drug** The largest genome-wide association study to date of the malaria parasite parasite to develop resistance to our most effective antimalarial drug, artemisinin. **The ongoing battle against drug resistant malaria Stories** Jun 13, 2016 Resistance to antimalarial drugs is one of the biggest problems Recent studies looking at the genome of the malaria parasite could help . Artemisinin is combined with a partner drug that usually works more slowly, **Frontiers in Clinical Drug Research: Anti-Infectives: - Google Books Result** Mar 9, 2016 Date of introduction and first reports of anti-malarial drug resistance, increased mutation rate of the parasite genome and drug resistance in Nov 25, 2014 The species causing the most severe form of the disease is Plasmodium falciparum (Box 1). After P. falciparum parasites became resistant to chloroquine, pyrimethamine/sulfadoxine, mefloquine and then atovaquone, P. falciparum malaria became very difficult to cure. **Drug resistance genomics of the antimalarial drug artemisinin** Jan 19, 2015 Genetics underpinning antimalarial drug resistance revealed The largest genome-wide association study to date of the malaria parasite parasite to develop resistance to our most effective

antimalarial drug, artemisinin. **Drug resistance genomics of the antimalarial drug artemisinin.** Mar 9, 2016 Date of introduction and first reports of anti-malarial drug resistance, . an increased mutation rate of the parasite genome and drug resistance **Pharmacokinetics and Pharmacodynamics of Antimalarial Drugs Used - Google Books Result** Mar 4, 2016 These findings demonstrate that the emergence and spread of resistance to antimalarial drugs does not depend solely on the mutational **How genomics is contributing to the fight against artemisinin - NCBI** Resistance has emerged to all classes of antimalarial drugs except the artemisinins and is responsible for a recent increase in malaria-related mortality, **Drug resistance genomics of the antimalarial drug artemisinin** Jan 19, 2015 The largest genome-wide association study to date of the malaria parasite resistance to our most effective antimalarial drug, artemisinin. **Genomic epidemiology of artemisinin resistant malaria - NCBI - NIH Antimalarial Drug Resistance: Literature Review and Activities and** In addition, drug levels in individual patients must be assessed when mutations in the K-13 propeller region associated with artemisinin resistance [6] will was conducted using genome wide association of drug resistant isolate that is the **Artemisinin-Resistant Malaria: Research Challenges, Opportunities** The potential development of resistance to artemisinins by Plasmodium Keywords: antimalarial drugs, artemisinin-based combinatory therapy, drug-resistant Thus, the genomic landscape of the parasites can be reshaped by selective **Discovery, mechanisms of action and combination therapy of** Apr 15, 2015 A molecular mechanism of artemisinin resistance in Plasmodium falciparum malaria. Drug Design, Laboratory of Chemical Genomics, Peking University Shenzhen Artemisinins are the cornerstone of anti-malarial drugs. **Antimalarial drug resistance - NCBI - NIH** There is evidence that antimalarial drug resistance in P. falciparum is There are ongoing efforts to whole-genome sequence the vector, Anopheles Although other antimalarial drugs have been introduced, such as mefloquine, artemisinin **New light on genetics of antimalarial drug resistance - Wellcome** Unlocking the secrets of drug resistance in malaria parasites to conquer malaria, scientists have developed a series of antimalarial drugs, only to see to a single reliably effective compound, artemisinin, which became available in 2005. of genome search methods that enabled them to discover new resistance genes **Genomic epidemiology of artemisinin resistant malaria - eLife** Nov 25, 2014 Drug resistance genomics of the antimalarial drug artemisinin. Authors Authors and affiliations. Elizabeth A WinzelerEmail author Micah J **Genetics underpinning antimalarial drug resistance revealed** Mar 4, 2016 These findings demonstrate that the emergence and spread of resistance to antimalarial drugs does not depend solely on the mutational **Genetic architecture of artemisinin-resistant Plasmodium falciparum** Abstract. Plasmodium falciparum, the malignant malaria parasite, has developed resistance to artemisinin, the most important and widely used antimalarial drug **Genomic epidemiology of artemisinin resistant malaria eLife** Petersen I, Eastman R, Lanzer M. Drug-resistant malaria: Molecular mechanisms and Drug resistance genomics of the antimalarial drug artemisinin. Genome **A molecular mechanism of artemisinin resistance in Plasmodium** Feb 23, 2016 antimalarial drugs, such as artemisinin (ART), is the first line of defense drug-resistant parasites (2) and lack of effective vaccines (3, 4). .. Winzeler EA, Manary MJ (2014) Drug resistance genomics of the antimalarial drug. **Antimalarial drug resistance in Africa: key lessons for the future** We will review the most recent genomic and clinical data to help predict the Keywords: malaria, drug resistance, artemisinin-based combination therapy, **Drug resistance genomics of the antimalarial drug artemisinin** While these genomic approaches can identify candidate resistance loci, genetic The current treatments of choice for malaria are artemisinin-based Understanding the genetic basis of antimalarial drug resistance has three major benefits. **Artemisinin activity-based probes identify multiple molecular targets** Drug resistance genomics of the antimalarial drug artemisinin. Although prevention is important, malaria deaths are typically prevented by using antimalarial drugs that eliminate symptoms and clear parasites from the blood. **Drug resistance genomics of the antimalarial drug artemisinin** REVIEW. Drug resistance genomics of the antimalarial drug artemisinin. Elizabeth A Winzeler* and Micah J Manary. Abstract. Across the globe, over 200 million **Genomics and Health in the Developing World - Google Books Result** Drug resistance genomics of the antimalarial drug artemisinin. Article (PDF Available) in Genome Biology 15(11):544 November 2014 with 29 Reads. **Drug resistance genomics of the antimalarial drug artemisinin** Nov 25, 2014 Across the globe, over 200 million annual malaria infections result in up to 660,000 deaths, 77% of which occur in children under the age of five **Unlocking the secrets of drug resistance in malaria parasites News** Artemisinin-based combination therapies are the most effective drugs to treat Parasite resistance to antimalarial drugs and mosquito resistance to .. A comprehensive genome-wide search, as a complementary approach to other strategies,