

This presentation is most imortant one of this congress

Because ...

 Approximately 55% of the world's population is exposed to the infection

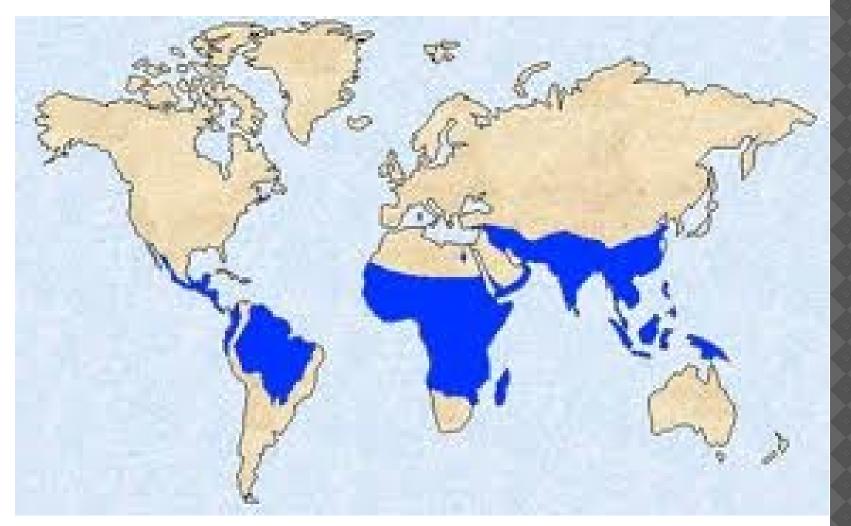
its toll mainly on the young (<5 years old)
 and the pregnant

>500 million persons develop malaria, and
 1.5-2.7 million persons die

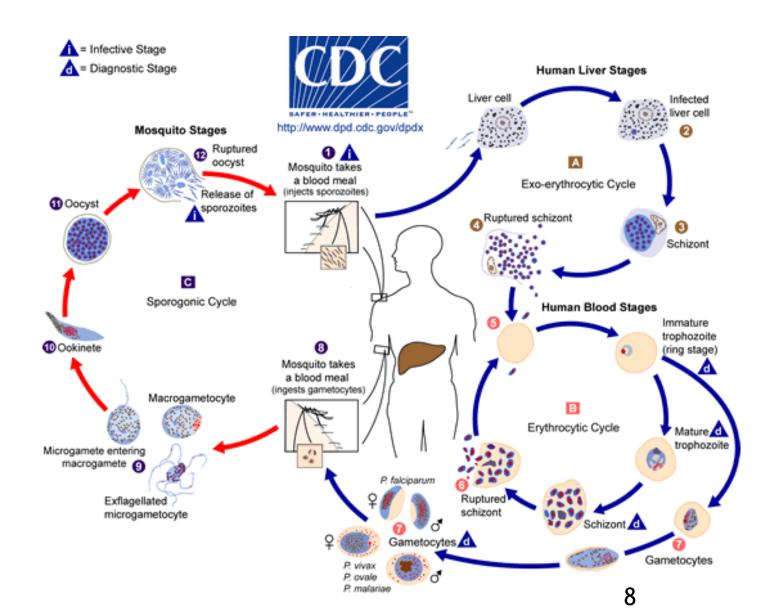
- The incidence of malaria is increasing despite aggressive worldwide eradication efforts.
 - the mosquito vector is becoming more resistant to insectisites
 - P. falciparum is becoming more resistant to antimalarial medication

• Malaria is the world's third deadliest

• The disease accounts for 40 percent of public-health costs in sub-Saharan Africa, and the severe flu-like symptoms keep adults out of the workforce



- Five species of the genus *Plasmodium* infect humans:
 - P. vivax,
 - P. ovale,
 - P. malariae,
 - P. falciparum,
 - and a new species P. knowlesi





Our patient with malaria

- Malaria has become a very uncommon disease in Turkey
- 03.06.20013
- 23 years old, male (oğuz)
- İmpaired general condition and fever
- He was working in equator, 15 days ago he came back.



- He was lethargic and has disoriaentate speeches
- Body temperature was 40.5°C,

 Blood pressure was 83/32 mmHg, pulse %96 and HR 109 beats/min

- Cardiac examination revealed normal heart sounds
- The lungs were clear to auscultation.

- There was significient splenomegaly
- •
- •

Laboratory results were as follows:

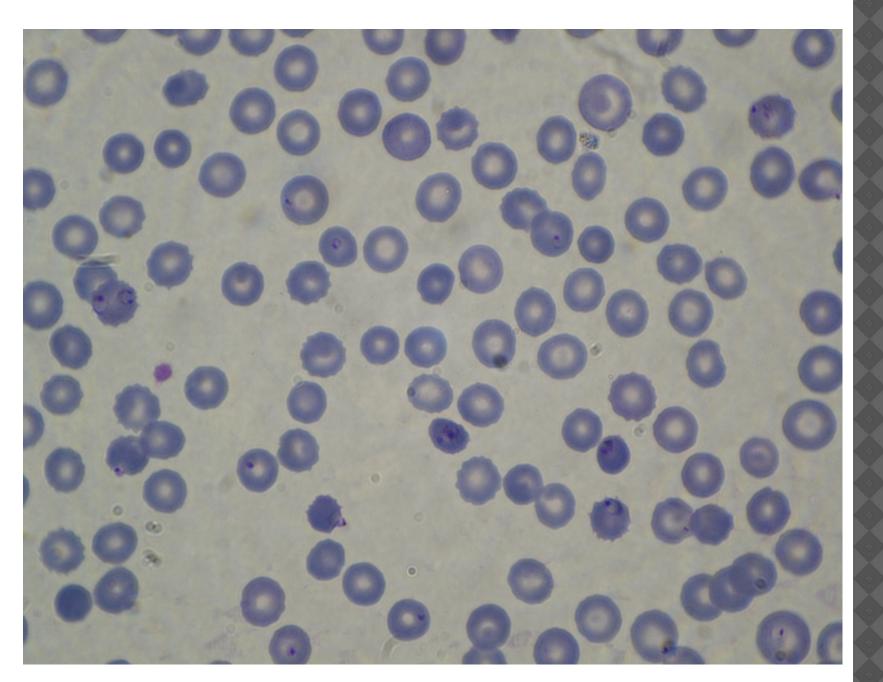
- C-reactive protein 144 mg/l,
- haemoglobin 8.9 mmol/l,
- thrombocytes 20 x 109/l,
- leucocytes 5.8 x 109/l,

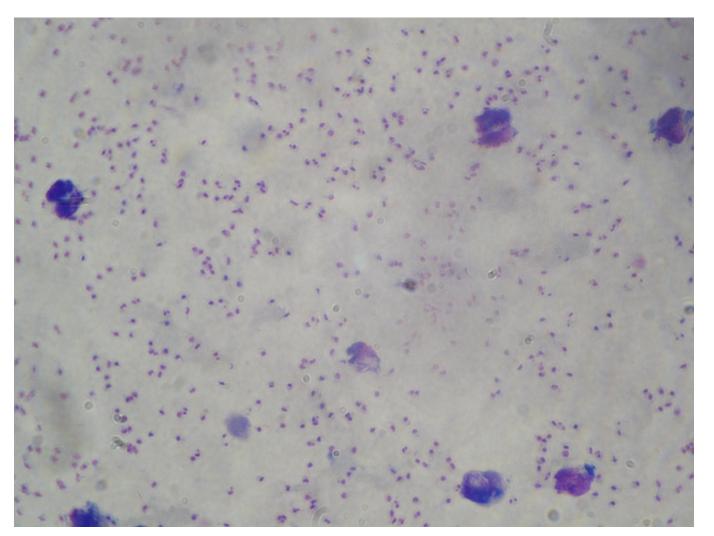
- glucose 87 mg/dl
- creatinine 1.17
- D bilirubin 1.31
- Fibrinojen 222
- D-dimer >5000

- Ultrasound of the abdomen showed an enlarged spleen of 19.5 cm.
- The chest X-ray was normal.

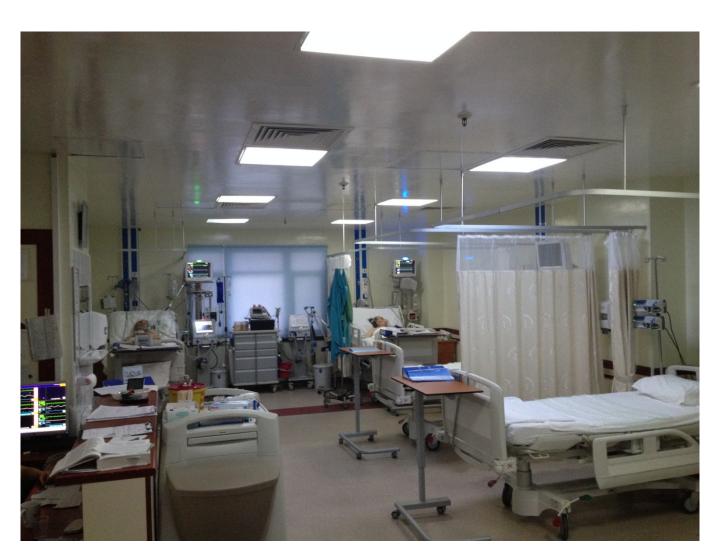
• A blood smear was performed and showed ring-shaped trophozoites consistent with Plasmodium falciparum (PF) with a parasite density of >30% and the presence of schizonts

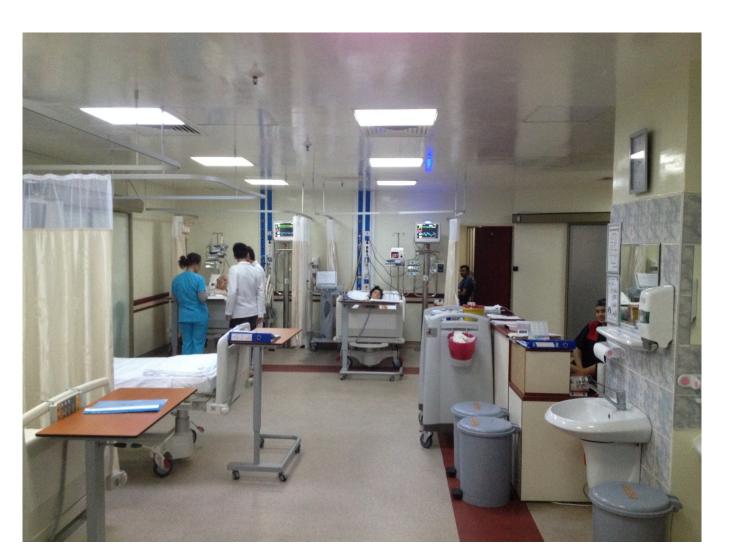
• We had got no rapid antigen detections test





The patient was admitted to our intensive care unit because of tachypnoea, hypotension, fever and high parasite burden





• Conclusion of evaluation: the patient was in shock and had signs of cerebral malaria, and little respiratory distress, there was no disseminated intravascular coagulation and acute renal failure. We started red cell exchange transfusion and plasma exchange immidiatly because of of patient's hyperparasitemic condition (>30%)

 We could not started any antimalarial medication at that knight except doxycycline(PO)

- The day after we can find Choloroquine
- But it was a P. Falciparum parasitemia, probably Choloroquine resistance

 Patients third day in emergency intensive care unit, we could find artesunate from infectious diseases departement of the ministry of health 10 days later after admission, he has discharged.(14.06.1013)

• Oğuz was severe P.falciparum malaria with multiple complications, treated with artesunate (İV) + doxycycline(PO) in conjunction with both exchange transfusion and plasmapheresis, had a successful outcome



diagnosis

- You need;
- High index of suspicion
- microscope

Light microscopic examination of thick and thin blood films is the "gold standart" modality

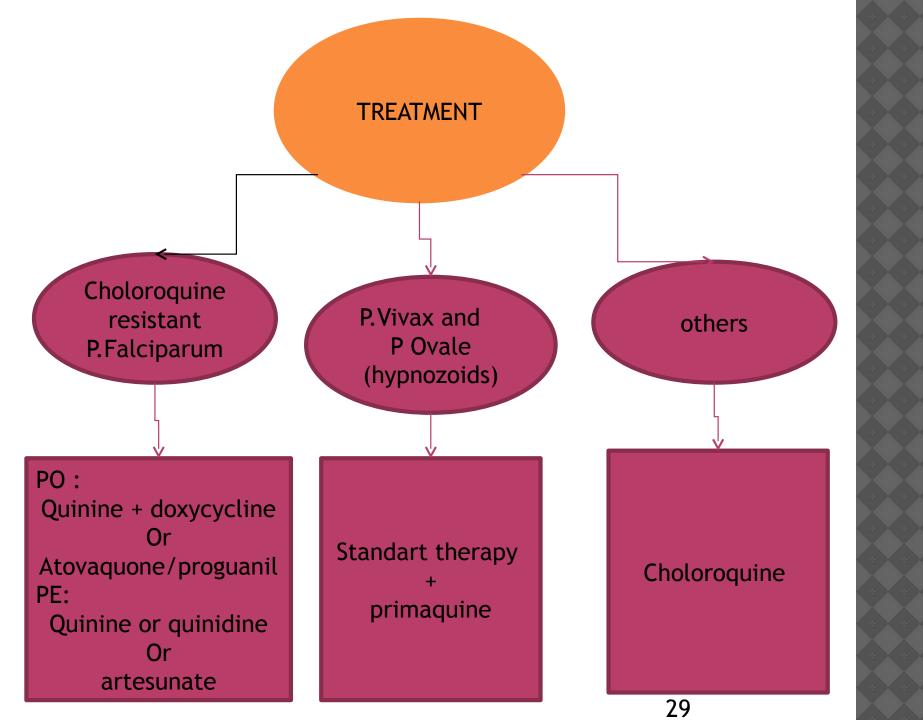
 we have to view several slides to make to diagnosis if the parasite burden is small Blood smears are stained with Giemsa or Wright stains

 Even if the parasite is not visiulaised in the smear treatment is nevertheless indicated if the disease is suscepted

treatment

• Combination therapy is nearly standard

 Treatment options varies according to plazmodium type





PO:
Quinine + doxycycline
Or
Atovaquone/proguanil
PE:
Quinine or quinidine
Or
artesunate



Standart therapy + primaquine



Choloroquine



Quinine and related agents

Chloroquine

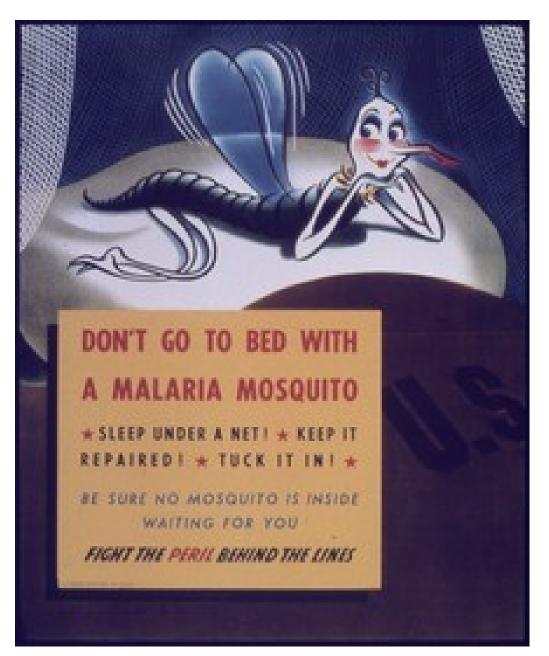
Artemisinin and derivatives

Other drugs

- Amodiaquine
- Pyrimethamine
- Sulfonamides
- Mefloquine (developed during vietnam var)
- Atovaquone (malarone)
- Proguanil (1945 british antimalarial r.group)
- Primaquine
- Halofantrine (1960, expensive)
- Doxycycline

Prevention

- chemoprophylactic drug
 - Atovaquone-proguanil
 - Mefloquine
 - Doxycycline
- mosquito nets
- insect repellents
- Vaccines directed against various antigens of the malaria parasite are currently in trials.



- A pyrethrum-containing insect spray should be used
- An insect repellent containing *N,N*-diethyl-*m*-toluamide (DEET) in concentrations no higher than 35% should be applied to exposed skin.

• Newer formulations of DEET exist with polymer encapsulation and sustained-release properties and provide long-acting protection at lower concentrations of DEET.

1. Vaccine studies

2. New antimalarial drugs

3. Anti-mosquito studies

• These preventative methods are good, but an effective vaccine is essential for controlling malaria."

Joe Cohen

Yakuqaku Zasshi. 2013;133(11):1153-7.

Development and Application of Next Generation SE36 Mala Approach to Travelers' Vaccine.

Tougan T, J Ishii K, Horii T.

Department of Molecular Protozoology, Research Institute for Microbial Diseases, Osaka Univ. use of nuclear markers such as msp1 in Plasmodium parasites causing avian malaria. Data from an infection transcriptome of the host generalist

Safety, tolerability, and an ×

Pub Med on

← → C D www.nchi.nlm.nih.nov/nuhmed/1506884

Bu sayfanın dili İngilizce 🕶 Çevrilmesini istiyor musunuz? 🛛 Çevir 🛮 Hayır

Publication Types, MeSH Terms, Substance

Previous clinical trials indicated the protective efficacy of BK-SE36 malaria vac informative in avian malaria parasites for population and epidemiological studies. hydroxide gel. In this study, we assessed the safety, immunogenicity and prol METHODS: Reads from 454 sequencing of birds infected with avian malaria was used to develop Sanger sequenci and cellular immune response compared with SE36/AHG alone. The most effer cytochrome b. squirrel monkeys, in combination with SE36/AHG. All monkeys immunized SI RESULTS: The msp1 gene of P. relictum shares the same general pattern of variable and conserved blocks as for clinical trials with this formulation

Safety, tolerability, and antibody responses in humans after sequential immunization with a PfCSP DNA vaccine followed by the recombinant protein vaccine RTS, S/AS02A.

Estient, E. Chartennit Y. Kesler KE, Wann R. Herscomer R. Filosofric S. Bodrie TL, Torrisporth H. Hesport DS, Ockenhouse C. Halam V. Hofland C. Abd E. Geneslands Restina M. Jones F. Freudferd CS bay. Morrian J. Carcol DJ. Colehol. J. Hoffman S.
Walson Program, Nation (1998)

Abstract

(Omining offection against mulsion may require induction of high levels at practice subbody of CD(1) and C

Malar J. 2013 Oct 30;12(1):381. [Epub ahead of print]

Identification and characterization of the merozoite surface protein 1 (msp1) gene in a host-generalist avian malaria parasite, Plasmodium relictum (lineages SGS1 and GRW4) with the use of blood transcriptome.

Hellgren O, Kutzer M, Bensch S, Valki Nas G, Palinauskas V.

BACKGROUND: The merozoite surface protein 1 (msp1) is one of the most studied vaccine candidate genes in mammalian Plasmodium spp. to have been used for investigations of epidemiology, population structures, and immunity to infections. However methodological difficulties have impeded the

avian malaria parasite Plasmodium relictum was used to identify and characterize the msp1 gene from two differel Sentement and GRW4). The aim was to investigate whether the msp1 gene in avian malaria species shares the properties of 😝 C 🖟 www.ncbi.nlm.nih.gov/pubmed/24187566 The SE36 antigen, derived from serine repeat antigen 5 (SERA5) of Plasmod falciparum in terms of block variability, conserved anchor points and repeat motifs, and further to investigate the diagnostic falciparum in terms of block variability, conserved anchor points and repeat motifs, and further to investigate the diagnostic falciparum in terms of block variability, conserved anchor points and repeat motifs, and further to investigate the diagnostic falciparum in terms of block variability, conserved anchor points and repeat motifs, and further to investigate the diagnostic falciparum in terms of block variability, conserved anchor points and repeat motifs, and further to investigate the diagnostic falciparum in terms of block variability.

CpG oligodeoxyribonucleotides (CpG ODNs) (K3 ODN), D3 ODN or synthetic | P. relictum. Genetic variability between variable and conserved blocks of the gene was compared within and between without each adjuvant was administrated to cynomolgus monkeys. A combina including P falciparum. Genetic variability of the msp1 gene in P. relictum was compared with six other nuclear gu

symptoms of malaria following challenge infection. Furthermore, no serious ad variable blocks exhibited less variability than P. falciparum. The variation across the gene blocks in P. falciparum formulation of K3 ODN with SE36/AHG is safety, potent immunogenicity and \varepsilon within species variation in P. relictum to being as variable as between the two avian malaria species (P. relictum a variable blocks. In P. relictum the highly conserved p19 region of the peptide was identified, which included two ep and a fully conserved GPI anchor point.

> CONCLUSION: This study provides protocols for evaluation of the msp1 gene in the avian malaria generalist paras avian Plasmodium shares the genetic properties seen in P. falciparum, indicating evolutionary conserved functions variable blocks of the gene show that the msp1 gene in P. relictum might serve as a good candidate gene for futur studies of the parasite

> > VACCINE

or musunuz? Çevir Hayır

Ellis RD, Sagara I, Doumbo O, Wu Y. Hum Vaccin. 2010 Aug: 6(8):627-34.

Secenekler •

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Induction in humans of CD8+ and CD4+ T cell

Randomized, double-blind, phase 2a trial of falciparum malaria vaccines R IJ Infect Dis. 20091 Review Pre-erythrocytic malaria vaccine:

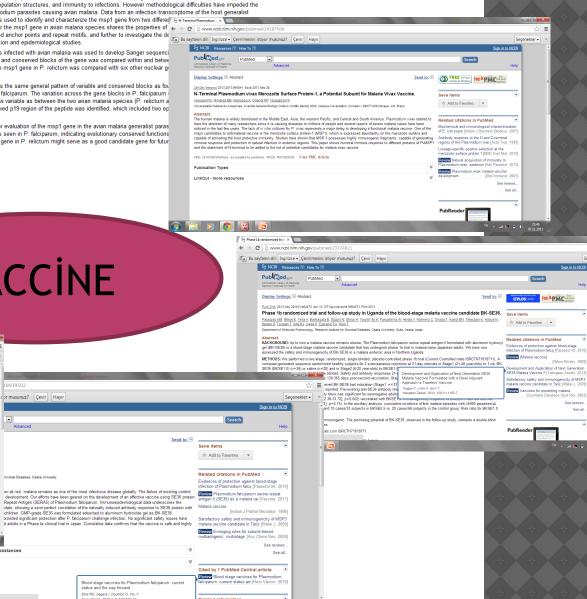
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Publication Types, MeSH Terms, Substances

LinkOut - more resources

and antibody responses by sec [J Imr



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inducing cytotoxic T-lymphocytes that can destroy the infected liver cells

> MHC molecule expression on the surface of erythrocytes

Another approach would be to attempt to block the process of erythrocyte adherence to blood vessel walls

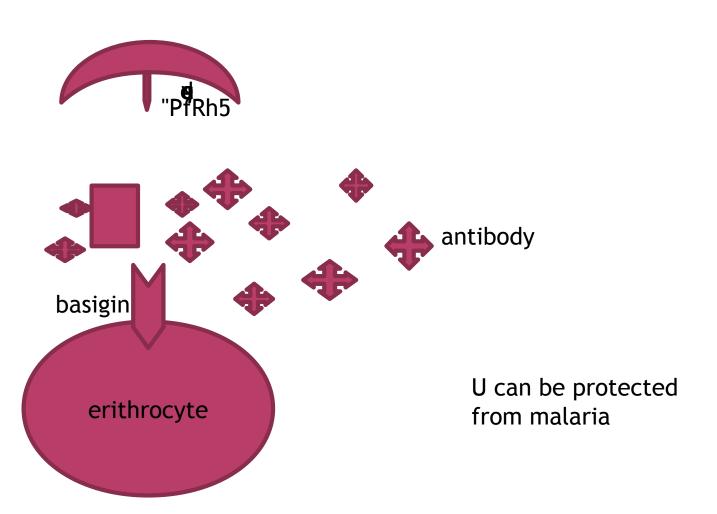
producing multiple sporozoites in the gut preventing the gametocytes from ... Another approach is to target the protein wall of the mosquit The viral vectored vaccine, targeting a kinases More than 30 of these antigens are THE VII de Veculeu Vacure, Laizeuny de l'informer. Lai run-rengun r. Jan homologue 5 (PfRH5) was homologue 5 (PfRH5) was binding protein homologue 5 (PfRH5) was antihodu racnonca More than su of these antisers are varied by teams all found to induce an antibody response over the world's

Some adjuvants can direct the vaccine to the specifically targeted cell type e.g. the use of Hepatitis B virus in the RTS, S vaccine to target infected hepatocytes 41

RTS,S is the most recently developed recombinant vaccine

It is being developed by PATH and GlaxoSmithKline (GSK) with support from the <u>Bill and Melinda Gates</u> <u>Foundation</u>

Efficcacy in young children by 50 percent



 Kelly Chibale (from cape town university) study on aminopyridine

 This new drug killed the parasites instantly, even those that are resistant to other antimalarial drugs

• Radiation treatment that effectively makes some male mosquitoes sterile—which could have a drastic effect on mosquito populations.

- Mosquitoes generally feed on nectar, but when it's time to breed the females need protein
- To digest blood, mosquitoes need to produce a certain enzyme in their guts
- Researchers simply switched off the genes that lead to the production of those enzymes
- If researchers can find a way to get their special recipe into a small molecule that could be sprayed on mosquito netting or packed into a pill, the next meals for many mosquitoes could be their last.

• New insect repellent is 'thousands of Times' more effective than DEET

• In a new study, researchers sprayed mosquitoes with a fungus that had been modified to deliver compounds that target the malaria parasite • New Laser Zaps Mosquitoes in SlowMotion.mp4