



Veille scientifique

Maladies tropicales négligées

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Cysticercose

Concomitant multiple subretinal cysticerci in neurocysticercosis.

Chhabra S, Narang S, Bhattacharyya A, Kaur R.

Jan-Juin 2023

Trop Parasitol.

<https://pubmed.ncbi.nlm.nih.gov/37415752/>

We present a unique case of asymptomatic NCC that was accidentally diagnosed on radiological investigations after a road traffic accident. An Ophthalmologic consult was sought to rule out intraocular or optic nerve cysticercosis. Fundoscopy showed multiple white-pale yellow lesions in the right eye which on ultrasonography confirmed cyst lined by a cyst wall consistent with subretinal cysticercosis. The patient was treated with diode laser photocoagulation. A high index of suspicion is required to diagnose NCC in endemic areas. In the right eye which on ultrasonography confirmed cyst lined by a cyst wall consistent with subretinal cysticercosis. The patient was treated with diode laser photocoagulation.

Report of three patients with extensive neurocysticercosis in rural southern Tanzania: neurological, serological and neuroradiological findings.

Stelzle D, Makasi C, Welte TM, Ruether C, Schmidt V, Gabriel S, Bottieau E, Fleury A, Ngowi BJ, Winkler AS; SOLID collaborators.

06-06-2023

J Med Case Rep.

<https://pubmed.ncbi.nlm.nih.gov/37408061/>

Intraventricular migration of fourth ventricular neurocysticercosis: an unusual complication during endoscopic surgery.

Singh DK, Kumar Sharma P, Singh N, Chand V.

30-06-2023

BMJ Case Rep.

<https://pubmed.ncbi.nlm.nih.gov/37399344/>

A boy in his middle childhood presented with intermittent episodes of headache with vomiting for 6 months. Plain CT of the head and MRI of the brain revealed fourth ventricular cysticercal cyst with acute obstructive hydrocephalus. Endoscopic excision of the cyst was done along with endoscopic third ventriculostomy and septostomy with external ventricular drain placement. Although we were able to decompress the cysticercal cyst, unfortunately, the cyst got slipped from the grasper leaving the grasped cyst wall in the tooth of the grasper. Through this case report, we want to highlight that such a complication could also happen during neuroendoscopic cysticercal cyst removal and how we dealt with it. Our patient was discharged neurologically intact and was symptom free on follow-up.

Taenia solium: Socioeconomic changes and prevalence evolution in four

endemic communities in northwestern Mexico.

Hernández-Ramírez CV, Sánchez-García DC, Carpio-Pedroza JC, Alcántara-Anguiano I, Meza-Lucas A, Tapia-Romero R, de-la-Rosa-Arana JL.

Août-2023

Zoonoses Public Health.

<https://pubmed.ncbi.nlm.nih.gov/36852740/>

In Mexico, for the past 30 years, a continuous decrease in the incidence of clinical taeniosis/cysticercosis has been documented. This work aimed to determine the influence of improvement in socioeconomic conditions on the prevalence of *Taenia solium* in four endemic communities in northwestern Mexico. This study was carried out in two phases. First, documentary information (1989-2018) was collected about the prevalence of *Theridion solium* in the federal entity of Sinaloa State. Second, a pilot study was performed in four communities of Sinaloa, which had an endemic history of *Taenia* transmission. In each community, a risk factor questionnaire was applied, and serum and stool samples were collected for convenience in a non-probabilistic way. Anti-cysticercus antibodies and adult worm coproantigen were determined. The documentary analysis showed the incidence of taeniosis and cysticercosis to have decreased by 98 and 53%, respectively, while the human development index increased by 5% (1992-2017). Our data suggest that the risk of parasitic transmission is low, although female sex was a risk factor for reporting tremors or seizures (prevalence rate 2.1336, CI: 1.1821-3.8508) and background of tapeworm infection (prevalence rate 1.2893, CI: 0.9795-1.6972). No tapeworms or eggs were found while examining stool samples, but protozoa cysts were observed in four samples. Unexpectedly, only one of the 79 stool samples was positive for coproantigens. This positive result was confirmed in a second sample. However, the evaluation of a third sample was negative. No antibodies were found in human (n = 377) or pig (n = 69) samples. These data suggest parasite transmission has been interrupted and could be possibly associated with improving socioeconomic conditions. Further studies are needed to determine the real prevalence of zoonoses in Mexico.

Spinal intradural arachnoid cyst as a complication of insertion of an interspinous device.

Lee HG, Kang MS, Na YC, Jin BH.

Août-2023

Br J Neurosurg.

<https://pubmed.ncbi.nlm.nih.gov/31549852/>

Spinal intradural arachnoid cysts (SACs) account for approximately 10% of total arachnoid cysts, and iatrogenic attribution is rare. A 50-year-old male presented with low back pain and severe radiating pain in his right leg along the S1 dermatome. He had an interspinous device (ISD) inserted 10 years earlier. Plain radiographs showed breakage and angular movement of the ISD at L4/5. Magnetic resonance imaging (MRI) of the lumbosacral spine disclosed multiple intradural cystic tumors in the entire lumbar region. He underwent removal of the ISD,

laminectomy, and resection of the intradural cyst. The pathologic finding of the cystic tumor was compatible with arachnoid cyst. Antibodies to parasites, including cysticercosis, were negative in both the serum and cerebrospinal fluid (CSF). The ventral surface of the implant was clearly broken.

Dengue, chikungunya et maladie à virus Zika

Sheehan's Syndrome unmasked by dengue fever: A case report and review of literature.

Gutte SH, Pal S, Bhaskar B, Kurian NM, Sanket, Gurjar M.
Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417174>

Sheehan's syndrome is a pituitary disease resulting from severe postpartum hemorrhage and can present with varying degrees of pituitary insufficiency. Although its incidence is decreasing in developed countries, it continues to be one of the most common causes of hypopituitarism in underdeveloped and developing countries. Here, we report a case of Sheehan's syndrome which was diagnosed following an episode of severe dengue infection, in a 38-year-old female.

Early virus clearance of SARS-CoV-2 among co-infection with malaria.

Rathi PM, Mahajan NN, Srivastava V, Junare PR, Bansal S, Kaushal N, Rathod DB.

Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417172/>

Background and objectives: India has witnessed significant number of cases of co-infection of malaria or dengue with COVID-19, especially during the monsoon season. It has been speculated that anti-malarial immunity might have a protective role in co-infection. Retrospective analysis of co-infection of vector-borne diseases with COVID-19 was done for comparing their remission with matched controls with COVID-19 by means of epidemiological data. **Methods:** Medical case records of patients with co-infection of malaria or dengue with COVID-19 admitted at TNMC and BYL Nair Charitable Hospital from 1 March 2020 to 31 October 2020 were analyzed retrospectively. Out of 91 cases of co-infection of SARS-CoV-2 infection with vector-borne diseases, virus clearance (VC) analysis was done for 61 co-infections with malaria. **Results:** Median duration of VC for co-infection with malaria was 8 days whereas, it was 12 days for controls with COVID-19 ($p=0.056$). Young patients (≤ 50 years) with co-infection recovered faster than controls age ($p=0.018$). **Interpretation & conclusion:** Co-infection with malaria is associated with less severe disease and early recovery in the form of early VC. Genetic and immunological studies are necessary to confirm malaria protection against SARS-CoV-2 infection.

Impact of COVID-19 lockdown during 2020 on the occurrence of vector-borne diseases in India.

Mayilsamy M, Vijayakumar A, Veeramanocharan R, Rajaiah P, Balakrishnan V, Kumar A.

Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417171/>

Urban arbovirosis in the state of São Paulo, Brazil: A retrospective study.

Franco BC, Souza BLAC, Leal RM, Maciel LTR, Coêlho MDG.

Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417169/>

Background & objectives: Dengue represents one of the most important arboviruses in public health, and its etiological agent is transmitted by the bite of dipterans of the genus *Aedes*. Every year this disease affects a large part of the population of the state of São Paulo in Brazil, particularly due to the availability of favorable environmental conditions for the growth and development of the vector mosquito. This study aimed to verify the distribution of urban arboviruses in the municipalities of the state of São Paulo and the successful experiences of municipal governments to reduce cases, to highlight strategies that have successfully culminated, and which can serve as a basis for prevention strategies. **Methods:** Information taken from government databases of the Ministry of Health and demographic data were used, where the incidence rate of 14 selected municipalities in the region of Vale do Paraíba between 2015 and 2019 was determined, and an attempt was made to evidence the strategies used to reduce cases. **Results:** High incidence rates were observed in 2015 and 2019 concerning the other years of the historical series, due to environmental factors and the variation in the circulating strain. **Interpretation & conclusion:** The observed data allowed us to infer that the prevention strategies recommended by the evaluated municipalities had a positive effect in the years 2016 to 2018, but unforeseen a priori factors culminated in epidemics, revealing the importance of implementing epidemiological studies using advanced mapping tools, as a way of to minimize the risk of future epidemics.

Studies on the breeding potential and entomological indices of dengue vector *Aedes aegypti* and *Aedes albopictus* in the district Ghaziabad of Uttar Pradesh, India.

Singh SP, Singh H, Saini S, Mishra GK, Sharma SK.

Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417168/>

Genomic characterization and evolutionary analysis of dengue virus

from *Aedes* mosquitoes in Telangana, India.

Sankoji P, Ravinuthala VSU, Mopuri R, Muthneni SR, Addlagatta A.

Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417167/>

Background & objectives: Entomological surveillance for mosquito-borne viruses is vital for monitoring disease transmission and vector control programs. The vector control program is reliant not only on vector density but also on the timely detection of mosquito-borne infections. In the present study, we conducted an entomological surveillance in different locations of Hyderabad, Telangana, India during 2017-2018 and the collected mosquitoes were screened for dengue virus. **Methods:** Reverse transcriptase polymerase chain reaction (RT-PCR) was used for the identification and serotyping of the dengue virus. Bioinformatics analysis was performed using Mega 6.0 software. Followed by phylogenetic analysis, which was based on CprM structural genome sequence, was performed by using the Maximum-Likelihood method. **Results:** The TaqMan RT-PCR assay was used to analyze the serotypes of 25 pools of *Aedes* mosquitoes and found that all four serotypes are circulating in Telangana. DENV1 (50%) was the most commonly detected serotype followed by DENV2 (16.6%), DENV3 (25%), and DENV4 (8.3%). Moreover, DENV1 has the highest MIR (16 per 1000 mosquitoes) compared with DENV2, 3, and 4. The CprM structural gene sequence was used for phylogenetic analysis, revealing that all four strains have a close relationship with strains isolated from India, Pakistan, China and Thailand. Similarly, two variations in amino acid sequence DENV1 at position 43 (K-R) and 86 (S-T) and a single mutation DENV2 at 111 amino acid position were observed. **Interpretation & conclusion:** The results of the study provide an in-depth transmission dynamic of the dengue virus and persistence of this emerging pathogen in Telangana, India that needs appropriate prevention programs.

Wolbachia infection is widespread in brackish and fresh water *Aedes albopictus* (Diptera: Culicidae) in the coastal Jaffna peninsula of northern Sri Lanka.

Tharsan A, Sivabalakrishnan K, Arthiyan S, Eswaramohan T, Raveendran S, Ramasamy R, Surendran SN.

Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417166/>

Background & objectives: *Aedes albopictus* and *Aedes aegypti* are important vectors of dengue and many other arboviral diseases in tropical and sub-tropical locations. Both vectors are tolerant of salinity in the dengue-endemic coastal Jaffna peninsula of northern Sri Lanka. *Aedes albopictus* pre-imaginal stages are found in field brackish water habitats of up to 14 parts per thousand (ppt, gL⁻¹) salt in the Jaffna peninsula. Salinity-tolerance in *Aedes* is characterized by significant genetic and

physiological changes. Infection with the wMel strain of the endosymbiont bacterium *Wolbachia pipiens* reduces dengue transmission in the field by *Ae. aegypti*, and the same approach is also being considered for *Ae. albopictus*. In this context, we investigated natural *Wolbachia* infections in brackish and fresh water field isolates of *Ae. albopictus* in the Jaffna district. **Methods:** *Aedes albopictus* collected as pre-imaginal stages using conventional ovitraps in the Jaffna peninsula and adjacent islands of the Jaffna district were screened by PCR utilizing strain-transcending primers for the presence of *Wolbachia*. *Wolbachia* strains were then further identified by PCR using strain-specific primers for the *Wolbachia* surface protein gene *wsp*. The Jaffna *wsp* sequences were compared by phylogenetic analysis with other *wsp* sequences available in Genbank. **Results:** *Aedes albopictus* were found to be widely infected with the wAlbA and wAlbB strains of *Wolbachia* in Jaffna. The partial wAlbB *wsp* surface protein gene sequence in Jaffna *Ae. albopictus* was identical to a corresponding sequence from South India but different from that in mainland Sri Lanka. **Interpretation & conclusion:** Widespread infection of salinity-tolerant *Ae. albopictus* with *Wolbachia* is a factor to be considered when developing *Wolbachia*-based dengue control in coastal areas like the Jaffna peninsula.

Epitope prediction and designing of receptor inhibitor of Dengue Envelope Protein: An in silico approach.

Uttam G, Kumari A, Singh K.

Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417165/>

Status of insecticide resistance in the dengue vector *Aedes aegypti* in India: A review.

Sumitha MK, Kalimuthu M, Senthil MK, Paramasivan R, Kumar A, Gupta B.

Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417161/>

Epidemic retinitis during pregnancy.

Kawali A, Mahendradas P, Sanjay S, Mishra SB, Shetty B. Indian J Ophthalmol. 2023 Jul

<https://pubmed.ncbi.nlm.nih.gov/37417121/>

Purpose: To study the clinical presentation and treatment outcome of epidemic retinitis (ER) during pregnancy. **Methods:** This is a retrospective, observational chart review of pregnant patients diagnosed with ER from January 2014 to February 2023. Demographic details, month of pregnancy at the onset of ocular symptoms, history of present illness, clinical manifestations, and treatment outcomes were studied. **Results:** In 9 years, ER was seen in 86 females, of whom 12 (13.9%) were pregnant. Twenty-one eyes of those 12 patients were studied. Most of the patients presented in the sixth month of pregnancy (range: 5-9 months, mean: 6.3 months). Physicians diagnosed viral exanthematous fever in six, typhoid in three, and suspected rickettsia in one patient.

Medical termination of pregnancy (MTP) was performed in two patients before presentation. Weil-Felix test was positive in five, Brucella in one, WIDAL in three, and coronavirus disease 2019 (COVID-19) IgG and dengue IgG in one patient each. Oral antibiotics were given in five patients (two post-medical termination of pregnancy [MTP]) for the retinitis. All except four received oral steroids. Mean presenting corrected distant visual acuity (n = 21) was 20/125 (range: 20/20-20/20,000), which improved to (n = 18) 20/30 (range: 20/20-20/240). Macular edema (n = 11) resolved in 33.18 days (range: 20-50 days), and retinitis (n = 13) resolved in 58 days (range: 30-110 days). Ocular and systemic examination of newborn was possible in two and the babies were normal. **Conclusion:** ER is seen commonly at the beginning of the third trimester. Lack of antibiotics may delay the resolution of retinitis. Ocular health needs to be assessed in larger series to conclude absence of retinal involvement in newborns.

Dengue: A global health concern.

Alghsham RS, Shariq A, Rasheed Z.

Juil-Août 2023

Int J Health Sci (Qassim).

<https://pubmed.ncbi.nlm.nih.gov/37416844/>

Targeting Type I Interferon Induction and Signaling: How Zika Virus Escapes from Host Innate Immunity.

Hu H, Feng Y, He ML.

04-06-2023

Int J Biol Sci.

<https://pubmed.ncbi.nlm.nih.gov/37416780/>

Characterization of soluble TLR2 and CD14 levels during acute dengue virus infection.

Upasani V, Ter Ellen BM, Sann S, Lay S, Heng S, Laurent D, Ly S, Duong V, Dussart P, Smit JM, Cantaert T, Rodenhuis-Zybert IA.

21-06-2023

Heliyon.

<https://pubmed.ncbi.nlm.nih.gov/37416678/>

Dengue virus infection results in a broad spectrum of diseases ranging from mild dengue fever (DF) to severe dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). Hitherto, there is no consensus biomarker for the prediction of severe dengue disease in patients. Yet, early identification of patients who progress to severe dengue is pivotal for better clinical management. We have recently reported that an increased frequency of classical (CD14⁺⁺CD16⁻) monocytes with sustained high TLR2 expression in acutely infected dengue patients correlates with severe dengue development. Here, we hypothesized that the relatively lower TLR2 and CD14 expression in mild dengue patients is due to the shedding of their soluble forms (sTLR2 and sCD14) and that these could be used as indicators of disease progression. Therefore, using commercial sandwich ELISAs, we evaluated the release of sTLR2 and sCD14 by peripheral blood mononuclear cells (PBMCs) in response to *in vitro*

dengue virus (DENV) infection and assessed their levels in acute-phase plasma of 109 dengue patients. We show that while both sTLR2 and sCD14 are released by PBMCs in response to DENV infection *in vitro*, their co-circulation in an acute phase of the disease is not always apparent. In fact, sTLR2 was found only in 20% of patients irrespective of disease status. In contrast, sCD14 levels were detected in all patients and were significantly elevated in DF patients when compared to DHF patients and age-matched healthy donors. Altogether, our results suggest that sCD14 may help in identifying patients at risk of severe dengue at hospital admittance.

In-Silico CLEC5A mRNA expression analysis to predict Dengue susceptibility in cancer patients.

Suchanti S, Stephen BJ, Chaurasia TP, Raghuwanshi AP, Singh G, Singh A, Mishra R.

26-06-2023

Biochem Biophys Rep.

<https://pubmed.ncbi.nlm.nih.gov/37415850/>

First report on knockdown resistance mutations in wild populations of Aedes aegypti from Argentina determined by a novel multiplex high-resolution melting polymerase chain reaction method.

Barrera-Illanes AN, Micieli MV, Ibáñez-Shimabukuro M, Santini MS, Martins AJ, Ons S.

06-06-2023

Parasit Vectors.

<https://pubmed.ncbi.nlm.nih.gov/37415215/>

Inhibiting immunoregulatory amidase NAAA blocks ZIKV maturation in Human Neural Stem Cells.

Lai M, La Rocca V, Iacono E, Filippini C, De Carli A, Favaro D, Fonnesu R, Filippini F, Spezia PG, Amato R, Catelli E, Matteo B, Lottini G, Onorati M, Clementi N, Freer G, Piomelli D, Pistello M.

04-06-2023

Antiviral Res.

<https://pubmed.ncbi.nlm.nih.gov/37414288/>

Recent evidence suggests that lipids play a crucial role in viral infections beyond their traditional functions of supplying envelope and energy, and creating protected niches for viral replication. In the case of Zika virus (ZIKV), it alters host lipids by enhancing lipogenesis and suppressing β -oxidation to generate viral factories at the endoplasmic reticulum (ER) interface. This discovery prompted us to hypothesize that interference with lipogenesis could serve as a dual antiviral and anti-inflammatory strategy to combat the replication of positive sense single-stranded RNA (ssRNA⁺) viruses. To test this hypothesis, we examined the impact of inhibiting N-Acylethanolamine acid amidase (NAAA) on ZIKV-infected human Neural Stem Cells. NAAA is responsible for the hydrolysis of palmitoylethanolamide (PEA) in lysosomes and endolysosomes. Inhibition of NAAA results in PEA accumulation, which activates peroxisome proliferator-activated receptor- α (PPAR- α), directing β -

oxidation and preventing inflammation. Our findings indicate that inhibiting NAAA through gene-editing or drugs moderately reduces ZIKV replication by approximately one log₁₀ in Human Neural Stem Cells, while also releasing immature virions that have lost their infectivity. This inhibition impairs furin-mediated prM cleavage, ultimately blocking ZIKV maturation. In summary, our study highlights NAAA as a host target for ZIKV infection.

Molecular evolution of dengue virus: a Bayesian approach using 1581 whole-genome sequences from January 1944 to July 2022.

Wolf J, de Souza AP, de Schardosim RF, Pille A, Maccari JG, Mutlaq MP, Nasi LA.

06-06-2023

Arch Virol.

<https://pubmed.ncbi.nlm.nih.gov/37410187/>

Dengue is a viral disease transmitted by mosquitoes that has spread rapidly across all continents in recent years. There are four distinct but closely related serotypes of the virus that causes dengue (DENV-1, DENV-2, DENV-3, and DENV-4). In the present study, we evaluated temporal spreading and molecular evolution of dengue virus (DENV) serotypes. Bayesian coalescent analysis was performed to study viral evolution, and it was estimated that the most recent common ancestor of DENV-1 was present in 1884 in Southeast Asia, that of DENV-2 was present in 1723 in Europe, that of DENV-3 was present in 1921 in Southeast Asia, and that of DENV-4 was present in 1876 in Southeast Asia. DENV appears to have originated in Spain in approximately 1682, and it was disseminated in Asia and Oceania in approximately 1847. After this period, the virus was introduced into North America in approximately 1890. In South America, it was first disseminated to Ecuador in approximately 1897 and then to Brazil in approximately 1910. Dengue has had a significant impact on global health worldwide, and the present study provides an overview of the molecular evolution of DENV serotypes.

Host Factor Nucleophosmin 1 (NPM1/B23) Exerts Antiviral Effects against Chikungunya Virus by Its Interaction with Viral Nonstructural Protein 3.

Pradeep P, Sivakumar KC, Sreekumar E.

06-06-2023

Microbiol Spectr.

<https://pubmed.ncbi.nlm.nih.gov/37409962/>

Blockade-of-Binding Activities toward Envelope-Associated, Type-Specific Epitopes as a Correlative Marker for Dengue Virus-Neutralizing Antibody.

Keelapang P, Kraivong R, Pulmanasahakul R, Sriburi R, Prompetchara E, Kaewmaneepong J, Charoensri N, Pakchotanon P, Duangchinda T, Suparattanagool P, Luangaram P, Masrinoul P, Mongkolsapaya J, Screaton G, Ruxrungtham K, Auewarakul P, Yoksan S, Malasit P, Puttikhunt C, Ketloy C, Sittisombut N.

06-06-2023

Microbiol Spectr.

<https://pubmed.ncbi.nlm.nih.gov/37409936/>

Humans infected with dengue virus (DENV) acquire long-term protection against the infecting serotype, whereas cross-protection against other serotypes is short-lived. Long-term protection induced by low levels of type-specific neutralizing antibodies can be assessed using the virus-neutralizing antibody test. However, this test is laborious and time-consuming. In this study, a blockade-of-binding enzyme-linked immunoassay was developed to assess antibody activity by using a set of neutralizing anti-E monoclonal antibodies and blood samples from dengue virus-infected or -immunized macaques. Diluted blood samples were incubated with plate-bound dengue virus particles before the addition of an enzyme-conjugated antibody specific to the epitope of interest. Based on blocking reference curves constructed using autologous purified antibodies, sample blocking activity was determined as the relative concentration of unconjugated antibody that resulted in the same percent signal reduction. In separate DENV-1-, -2-, -3-, and -4-related sets of samples, moderate to strong correlations of the blocking activity with neutralizing antibody titers were found with the four type-specific antibodies 1F4, 3H5, 8A1, and 5H2, respectively. Significant correlations were observed for single samples taken 1 month after infection as well as samples drawn before and at various time points after infection/immunization. Similar testing using a cross-reactive EDE-1 antibody revealed a moderate correlation between the blocking activity and the neutralizing antibody titer only for the DENV-2-related set. The potential usefulness of the blockade-of-binding activity as a correlative marker of neutralizing antibodies against dengue viruses needs to be validated in humans.

IMPORTANCE This study describes a blockade-of-binding assay for the determination of antibodies that recognize a selected set of serotype-specific or group-reactive epitopes in the envelope of dengue virus. By employing blood samples collected from dengue virus-infected or -immunized macaques, moderate to strong correlations of the epitope-blocking activities with the virus-neutralizing antibody titers were observed with serotype-specific blocking activities for each of the four dengue serotypes. This simple, rapid, and less laborious method should be useful for the evaluation of antibody responses to dengue virus infection and may serve as, or be a component of, an *in vitro* correlate of protection against dengue in the future.

The in vitro and in vivo antiviral effects of aloperine against Zika virus infection.

Zhou P, Lao Z, Long H, Pan P, Liao F, Zheng W, Li Z, Dai J, Liu H, Jiang Y, Liu X, Wang W, Wu J, Li G.

Jul-2023

J Med Virol.

<https://pubmed.ncbi.nlm.nih.gov/37409639/>

Transcriptome analysis of human macrophages upon chikungunya virus (CHIKV) infection reveals regulation of

distinct signaling and metabolic pathways during the early and late stages of infection.

Srivastava P, Chaudhary S, Malhotra S, Varma B, Sunil S.
20-06-2023

Heliyon.

<https://pubmed.ncbi.nlm.nih.gov/37408916/>

Simultaneous detection and differentiation of dengue and chikungunya viruses for commercial utility.

Dakhave M, Metkar G, Suryawanshi H.

Juin-2023

Virusdisease.

<https://pubmed.ncbi.nlm.nih.gov/37408546/>

The diagnosis of Dengue and Chikungunya infections during acute phase is a priority considering emerging pattern and increasing trends of their infections. The present study describes the commercial development and validation of RT-PCR test for the simultaneous detection of DEN and CHIK viral RNA in a single tube from human plasma samples. Multistep one step RT-PCR assay was developed and validated for detection and discrimination of DEN and CHIK along with exogenous internal control. The test was evaluated for commercial use using 3 different lots to determine analytical sensitivity, specificity, precision and stability. The external clinical evaluation was performed at NABL accredited lab with known positive and negative Chikungunya and Dengue specimens and comparator assay method. The findings showed that the test could identify CHIK and DEN viral nucleic acid in clinical samples within 80 min, without any cross-reactivity. The analytical detection limit of the test was 1.56 copies/μl for both. The clinical sensitivity and specificity was ≥ 98% and provide a high-throughput and screen up to 90 samples in a single run. It is available in a freeze-dried format and can be used in both the manual and automated platforms. This unique combo test, PathoDetect™ "CHIK DEN Multiplex PCR Kit" enables simultaneous, sensitive, specific detection of DENV and CHIKV and serves as "ready to use" platform for commercial use. It would aid the differential diagnosis as early as day 1 of the infection and facilitate screen-and-treat approach.

The organization of double-stranded RNA in the chikungunya virus replication organelle.

Laurent T, Carlson LA.

05-06-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37406010/>

Backbone ¹H, ¹⁵N and ¹³C resonance assignments for dengue NS2B without the NS3 protease cofactor region in detergent micelles.

Li Q, Ng HQ, Loh YR, Kang C.

05-06-2023

Biomol NMR Assign.

<https://pubmed.ncbi.nlm.nih.gov/37405583/>

Dengue virus is an important human pathogen affecting people especially in tropical and subtropical regions. Its genome encodes seven non-structural proteins that are important for viral assembly and replication. Dengue NS2B is a membrane protein containing four transmembrane helices and involved in protein-protein interactions. Its transmembrane helices are critical for location of NS2B on the cell membrane while one cytoplasmic region composed of approximately 40 amino acids serves as a cofactor of viral NS3 protease by forming a tight complex with the N-terminal region of NS3. Here, we report the backbone resonance assignments for a dengue NS2B construct referred to as mini-NS2B containing only the transmembrane regions without NS3 cofactor region in detergent micelles. Mini-NS2B exhibits well-dispersed cross-peaks in the ¹H-¹⁵N-HSQC spectrum and contains four helices in solution. The available mini-NS2B and its assignment will be useful for determining the structure of NS2B and identifying small molecules binding to the transmembrane regions.

The effects of cognitive behavioural therapy on depression, anxiety, stress, and self-esteem in public health students, Thailand.

Changklang P, Ranteh O.

31-05-2023

J Educ Health Promot.

<https://pubmed.ncbi.nlm.nih.gov/37404906/>

Background: This study aimed to investigate the effect of group cognitive behavioral therapy (CBT) on depression, anxiety, stress, and self-esteem in public health students at the University in Southern Thailand. **Materials and methods:** The study employed a quasi-experimental, one-group, and pre-test -post-test design. Purposive sampling was employed to include 31 students, selected from those with screening indicating mild to moderate depression. While 28 of them (90.3%) were female, three (9.7%) were male. Their age range was 18-21 years, averaging 19.5 years. The instruments were the Thai translation of the Depression, Anxiety, and Stress Scale (DASS-21) and the Thai version of the Rosenberg Self-Esteem Scale (RSES), which were evaluated and produced high validity and reliability results. Data was collected through online questionnaires. A pre-test and a post-test were utilized to measure the participants' depression, anxiety, stress, and self-esteem before and after participating in a group CBT, comprising eight sessions in two months. **Results:** Revealed significant improvements in depression ($P = .001$), anxiety ($P = .040$), and stress ($P = .002$), while self-esteem ($P = .465$, $>.05$) was not significant. **Conclusion:** Group CBT sessions were effective at relieving depression, anxiety, and stress, but not self-esteem. Accordingly, further studies might consider these results and expand on this topic by broadening the population to different majors.

Interferon-gamma gene diplotype (AA-rs2069716 / AG-rs2069727) may play an important role during secondary outcomes of severe dengue in Brazilian patients.

Bresani-Salvi CC, Morais CNL, Neco HVPDC, Farias PCS, Pastor AF, Lima RE, Montarroyos UR, Acioli-Santos B.

30-06-2023

Rev Inst Med Trop Sao Paulo.

<https://pubmed.ncbi.nlm.nih.gov/37403881/>

Untargeted-based metabolomics analysis and in vitro/in silico antiviral activity of extracts from *Phyllanthus brasiliensis* (Aubl.) Poir.

Carvalho ARV, Reis JDE, Gomes PWP, Ferraz AC, Mardegan HA, Menegatto MBDS, Souza Lima RL, de Sarges MRV, Pamplona SDGSR, Jeunon Gontijo KS, de Magalhães JC, da Silva MN, Magalhães CLB, Silva CYYE.

04-06-2023

Phytochem Anal.

<https://pubmed.ncbi.nlm.nih.gov/37403427/>

Serum SPD-L1 levels are elevated in patients with viral diseases, bacterial sepsis or in patients with impaired renal function compared to healthy blood donors.

Loacker L, Egger A, Fux V, Bellmann-Weiler R, Weiss G, Griesmacher A, Hoermann G, Ratzinger F, Haslacher H, Schrezenmeier H, Anliker M.

03-07-2023

Clin Chem Lab Med.

<https://pubmed.ncbi.nlm.nih.gov/37401452/>

Objectives: Immune checkpoints play an important role in maintaining the balance of the immune system and in the development of autoimmune diseases. A central checkpoint molecule is the programmed cell death protein 1 (PD-1, CD279) which is typically located on the surface of T cells. Its primary ligand PD-L1 is expressed on antigen presenting cells and on cancer cells. Several variants of PD-L1 exist, among these soluble molecules (sPD-L1) present in serum at low concentrations. sPD-L1 was found elevated in cancer and several other diseases. sPD-L1 in infectious diseases has received relatively little attention so far and is therefore subject of this study. **Methods:** sPD-L1 serum levels were determined in 170 patients with viral infections (influenza, varicella, measles, Dengue fever, SARS-CoV2) or bacterial sepsis by ELISA and compared to the levels obtained in 11 healthy controls. **Results:** Patients with viral infections and bacterial sepsis generally show significantly higher sPD-L1 serum levels compared to healthy donors, except for varicella samples where results do not reach significance. sPD-L1 is increased in patients with impaired renal function compared to those with normal renal function, and sPD-L1 correlates significantly with serum creatinine. Among sepsis patients with normal renal function, sPD-L1 serum levels are significantly higher in Gram-negative sepsis compared to Gram-positive sepsis. In addition, in sepsis patients with impaired renal function, sPD-L1 correlates positively with ferritin and

negatively with transferrin. **Conclusions:** sPD-L1 serum levels are significantly elevated in patients with sepsis, influenza, measles, Dengue fever or SARS-CoV2. Highest levels are detectable in patients with measles and Dengue fever. Also impaired renal function causes an increase in levels of sPD-L1. As a consequence, renal function has to be taken into account in the interpretation of sPD-L1 levels in patients.

Sequential Dengue Infection: Prevention Priorities.

Aslam J, Hassam K, Naeem MA.

Jul-2023

J Coll Physicians Surg Pak.

<https://pubmed.ncbi.nlm.nih.gov/37401233/>

Investigating the correlation between Xrn1-resistant RNAs and frameshifter pseudoknots.

Dilweg IW, Oskam MG, Overbeek S, Olsthoorn RCL.

Jan-2023

RNA Biol.

<https://pubmed.ncbi.nlm.nih.gov/37400999/>

Xrn1-resistant RNA structures are multifunctional elements employed by an increasing number of RNA viruses. One of such elements is the coremin motif, discovered in plant virus RNAs, of which the structure has been hypothesized to form a yet unelucidated pseudoknot. Recently, the coremin motif was shown to be capable of stalling not only Xrn1, but scanning ribosomes as well. Following that observation, in this study we demonstrate that the coremin motif can promote -1 ribosomal frameshifting, similar to better-characterized viral frameshifting pseudoknots. Since this function was lost in concert with substitutions that were known to disturb Xrn1-resistance, we developed a frameshifting screen for finding novel Xrn1-resistant RNAs by randomizing parts of the coremin motif. This yielded new insights into the coremin motif structure, as Xrn1-resistant variations were identified that more clearly indicate a pseudoknot interaction. In addition, we show that the Xrn1-resistant RNA of Zika virus promotes frameshifting as well, while known -1 programmed ribosomal frameshifting pseudoknots do not stall Xrn1, suggesting that promoting frameshifting is a universal characteristic of Xrn1-resistant RNAs, but that Xrn1-resistance requires more than just a frameshifting pseudoknot.

Reversible cerebral vasoconstriction syndrome associated with Chikungunya infection.

Sousa IA, Neto EPDS, Ricarte IF, Pontes-Neto OM.

30-06-2023

BMJ Case Rep.

<https://pubmed.ncbi.nlm.nih.gov/37399350/>

Seroprevalence of Dengue, Chikungunya and Zika at the epicenter of the congenital microcephaly epidemic in

Northeast Brazil: A population-based survey.

Braga C, Martelli CMT, Souza WV, Luna CF, Albuquerque MFPM, Mariz CA, Morais CNL, Brito CAA, Melo CFCA, Lins RD, Drexler JF, Jaenisch T, Marques ETA, Viana IFT.

03-07-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37399197>

A C-type lectin in saliva of *Aedes albopictus* (Diptera: Culicidae) bind and agglutinate microorganisms with broad spectrum.

Lin Z, Cheng J, Mu X, Kuang X, Li Z, Wu J.

01-07-2023

J Insect Sci.

<https://pubmed.ncbi.nlm.nih.gov/37399114/>

Via complex salivary mixture, mosquitos can intervene immune response and be helpful to transmit several viruses causing deadly human diseases. Some C-type lectins (CTLs) of mosquito have been reported to be pattern recognition receptor to either resist or promote pathogen invading. Here, we investigated the expression profile and agglutination function of an *Aedes albopictus* CTL (Aalb_CTL2) carrying a single carbohydrate-recognition domain (CRD) and WND/KPD motifs. The results showed that Aalb_CTL2 was found to be specifically expressed in mosquito saliva gland and its expression was not induced by blood-feeding. The recombinant Aalb_CTL2 (rAalb_CTL2) could agglutinate mouse erythrocytes in the presence of calcium and the agglutinating activity could be inhibited by EDTA. rAalb_CTL2 also displayed the sugar binding ability to D-mannose, D-galactose, D-glucose, and maltose. Furthermore, it was demonstrated that rAalb_CTL2 could bind and agglutinate Gram positive bacteria *Staphylococcus aureus* and *Bacillus subtilis*, Gram negative bacteria *Escherichia coli* and *Pseudomonas aeruginosa*, as well as fungus *Candida albicans* in vitro in a calcium dependent manner. However, rAalb_CTL2 could not promote type 2 dengue virus (DENV-2) replication in THP-1 and BHK-21 cell lines. These findings uncover that Aalb_CTL2 might be involved in the innate immunity of mosquito to resist microorganism multiplication in sugar and blood meals to help mosquito survive in the varied natural environment.

Increasing transmission of dengue virus across ecologically diverse regions of Ecuador and associated risk factors.

Katzelnick LC, Quentin E, Colston S, Ha TA, Andrade P, Eisenberg JNS, Ponce P, Coloma J, Cevallos V.

30-05-2023

medRxiv.

<https://pubmed.ncbi.nlm.nih.gov/37398346/>

The distribution and intensity of viral diseases transmitted by *Aedes aegypti* mosquitoes, including dengue, have rapidly increased over the last century. Ecuador is an interesting country to study drivers of dengue virus (DENV) transmission given it has multiple ecologically and

demographically distinct regions. Here, we analyze province-level age-stratified dengue prevalence data from 2000-2019 using catalytic models to estimate the force of infection of DENV over eight decades and across provinces in Ecuador. We found that provinces established endemic DENV transmission at different time periods. Coastal provinces with the largest and most connected cities had the earliest and highest increase in DENV transmission, starting around 1980 and continuing to the present. In contrast, remote and rural areas with reduced access, like the northern coast and the Amazon regions, experienced a rise in DENV transmission and endemicity only in the last 10 to 20 years. The newly introduced chikungunya and Zika viruses have distinct age-specific prevalence distributions consistent with recent emergence across all provinces. We evaluated factors to the resolution of 1 hectare associated with geographic differences in vector suitability and arbovirus disease in the last 10 years by modeling 11,693 *A. aegypti* presence points and 73,550 arbovirus cases. In total, 56% of the population of Ecuador lives in areas with high risk of *Aedes aegypti*. Most suitable provinces had hotspots for arbovirus disease risk, with population size, elevation, sewage connection, trash collection, and access to water as important determinants. Our investigation serves as a case study of the changes driving the expansion of DENV and other arboviruses globally and suggest that control efforts should be expanded to semi-urban and rural areas and to historically isolated regions to counteract increasing dengue outbreaks.

Chikungunya virus glycoproteins transform macrophages into productive viral dissemination vessels.

Yao Z, Ramachandran S, Huang S, Jami-Alahmadi Y, Wohlschlegel JA, Li MMH.

29-05-2023

bioRxiv.

<https://pubmed.ncbi.nlm.nih.gov/37398144/>

Applying artificial intelligence and digital health technologies, Viet Nam.

Chanh HQ, Ming DK, Nguyen QH, Duc TM, Phuoc An L, Trieu HT, Karolcik S, Hernandez B, Perez, Van Nuil J, Lyle NN, Kestelyn E, Thwaites L, Georgiou P, Paton C, Holmes A, Van Vinh Chau N, Yacoub S.

01-07-2023

Bull World Health Organ.

<https://pubmed.ncbi.nlm.nih.gov/37397176/>

Viruses and autism: A Bi-mutual cause and effect.

Al-Beltagi M, Saeed NK, Elbeltagi R, Bediwy AS, Aftab SAS, Alhawamdeh R.

25-06-2023

World J Virol.

<https://pubmed.ncbi.nlm.nih.gov/37396705/>

Autism spectrum disorder (ASD) is a group of heterogeneous, multi-factorial, neurodevelopmental disorders resulting from genetic and environmental factors interplay. Infection is a significant trigger of autism,

especially during the critical developmental period. There is a strong interplay between the viral infection as a trigger and a result of ASD. We aim to highlight the mutual relationship between autism and viruses. We performed a thorough literature review and included 158 research in this review. Most of the literature agreed on the possible effects of the viral infection during the critical period of development on the risk of developing autism, especially for specific viral infections such as Rubella, Cytomegalovirus, Herpes Simplex virus, Varicella Zoster Virus, Influenza virus, Zika virus, and severe acute respiratory syndrome coronavirus 2. Viral infection directly infects the brain, triggers immune activation, induces epigenetic changes, and raises the risks of having a child with autism. At the same time, there is some evidence of increased risk of infection, including viral infections in children with autism, due to lots of factors. There is an increased risk of developing autism with a specific viral infection during the early developmental period and an increased risk of viral infections in children with autism. In addition, children with autism are at increased risk of infection, including viruses. Every effort should be made to prevent maternal and early-life infections and reduce the risk of autism. Immune modulation of children with autism should be considered to reduce the risk of infection.

New human in vitro co-culture model of keratinocytes and sensory neurons like cells releasing substance P with an evaluation of the expression of ZIKV entry receptors: A potent opportunity to test Zika virus entry and to study Zika virus' infection in neurons?

Bocciarelli C, Cordel N, Leschiera R, Talagas M, Le Gall-ianotto C, Hu W, Marcorelles P, Bellemere G, Bredif S, Fluhr J, Misery L, Lebonvallet N.

03-07-2023

Exp Dermatol.

<https://pubmed.ncbi.nlm.nih.gov/37395585/>

Analysis of Dengue Transmission Dynamic Model by Stability and Hopf Bifurcation with Two-Time Delays.

Murugadoss PR, Ambalarajan V, Sivakumar V, Dhandapani PB, Baleanu D.

25-06-2023

Front Biosci (Landmark Ed).

<https://pubmed.ncbi.nlm.nih.gov/37395028/>

In-silico screening and identification of potential drug-like compounds for dengue-associated thrombocytopenia from Carica papaya leaf extracts.

Banjan B, Krishnan D, Koshy AJ, Soman S, Leelamma A, Raju R, Revikumar A.

02-07-2023

J Biomol Struct Dyn.

<https://pubmed.ncbi.nlm.nih.gov/37394810/>

Dengue in Bangladesh.

Bonna AS, Pavel SR, Mehjabin T, Ali M.

29-06-2023

Int J Infect Dis.

<https://pubmed.ncbi.nlm.nih.gov/37393040/>

Dengue is one of the prominent public health concerns in tropical and subtropical regions globally. The dengue epidemic was first observed in the 1780s, mainly in Asia, Africa, and America; however, this virus was found in Bangladesh in 1964. Rapid and unplanned urbanization, global warming, and prolonged rainy season promoted dengue outbreaks in recent years in Bangladesh. Additionally, household hazards contribute to producing an increased number of Aedes mosquitoes. The presence of four subtypes of dengue viruses (DENV) intensified the dengue outbreak and fatalities, especially since the reemergence of dengue DENV 4 caused more death in 2022. Dhaka city and Rohingya refugee camps witnessed the highest prevalence of dengue patients and fatalities. Furthermore, the cocreation of the dengue outbreak and COVID-19 pandemic-related hazards overwhelmed the health system in Bangladesh. The measures previously taken by the Bangladesh government and City Corporation authorities proved inadequate to face the surge of dengue patients during the pandemic. The government of Bangladesh should stress the proper management of a high volume of dengue patients and raise public concern to fight mosquito proliferation in hot spots such as Dhaka city and Rohingya refugee camps.

Automatic identification of medically important mosquitoes using embedded learning approach-based image-retrieval system.

Kittichai V, Kaewthamasorn M, Samung Y, Jomtarak R, Naing KM, Tongloy T, Chuwongin S, Boonsang S.

30-06-2023

Sci Rep.

<https://pubmed.ncbi.nlm.nih.gov/37391476/>

Mosquito-borne diseases such as dengue fever and malaria are the top 10 leading causes of death in low-income countries. Control measure for the mosquito population plays an essential role in the fight against the disease. Currently, several intervention strategies; chemical-, biological-, mechanical- and environmental methods remain under development and need further improvement in their effectiveness. Although, a conventional entomological surveillance, required a microscope and taxonomic key for identification by professionals, is a key strategy to evaluate the population growth of these mosquitoes, these techniques are tedious, time-consuming, labor-intensive, and reliant on skillful and well-trained personnel. Here, we proposed an automatic screening, namely the deep metric learning approach and its inference under the image-retrieval process with Euclidean distance-based similarity. We aimed to develop the optimized model to find suitable miners and suggested the robustness of the proposed model by evaluating it with unseen data under a 20-returned image system. During the model development, well-trained ResNet34 are outstanding and no performance difference when comparing five data miners that showed up to 98% in its precision even after testing

the model with both image sources: stereomicroscope and mobile phone cameras. The robustness of the proposed-trained model was tested with secondary unseen data which showed different environmental factors such as lighting, image scales, background colors and zoom levels. Nevertheless, our proposed neural network still has great performance with greater than 95% for sensitivity and precision, respectively. Also, the area under the ROC curve given the learning system seems to be practical and empirical with its value greater than 0.960. The results of the study may be used by public health authorities to locate mosquito vectors nearby. If used in the field, our research tool in particular is believed to accurately represent a real-world scenario.

Adenovirus vector produced Zika virus-like particles induce a long-lived neutralising antibody response in mice.

Carrera JM, Aktepe TE, Earnest L, Christiansen D, Wheatley AK, Tan HX, Chung AW, Collett S, McPherson K, Torresi J, Mackenzie JM, Simmons CP.

28-06-2023

Vaccine.

<https://pubmed.ncbi.nlm.nih.gov/37391311/>

ZIKV infection differentially affects the transcriptional profiles in HTR8 and U251 cells.

Chen Q, Li N, Zeng S, Wu S, Luo X, Zhang S, Zhu L, Wu J, Xie T, Bai S, Zhang H, Jiang Z, Lin S, Wu N, Jiang Y, Fang S, Wang X, Shu Y, Luo H.

28-06-2023

Virus Res.

<https://pubmed.ncbi.nlm.nih.gov/37390859/>

Inactivated Zika virus vaccine and the complexity of flavivirus antigenicity.

Low JG, Ooi EE.

27-06-2023

Lancet Infect Dis.

<https://pubmed.ncbi.nlm.nih.gov/37390837/>

Safety and immunogenicity of a purified inactivated Zika virus vaccine candidate in adults primed with a Japanese encephalitis virus or yellow fever virus vaccine in the USA: a phase 1, randomised, double-blind, placebo-controlled clinical trial.

Koren MA, Lin L, Eckels KH, De La Barrera R, Dussupt V, Donofrio G, Sondergaard EL, Mills KT, Robb ML, Lee C, Adedeji O, Keiser PB, Curley JM, Copeland NK, Crowell TA, Hutter JN, Hamer MJ, Valencia-Ruiz A, Darden J, Peel S, Amare MF, Mebrahtu T, Costanzo M, Krebs SJ, Gromowski GD, Jarman RG, Thomas SJ, Michael NL, Modjarrad K.

27-06-2023

Lancet Infect Dis.

<https://pubmed.ncbi.nlm.nih.gov/37390836/>

Background: Zika virus infection is a threat to at-risk populations, causing major birth defects and serious neurological complications. Development of a safe and efficacious Zika virus vaccine is, therefore, a global health priority. Assessment of heterologous flavivirus vaccination is important given co-circulation of Japanese encephalitis virus and yellow fever virus with Zika virus. We investigated the effect of priming flavivirus naive participants with a licensed flavivirus vaccine on the safety and immunogenicity of a purified inactivated Zika vaccine (ZPIV). **Methods:** This phase 1, placebo-controlled, double-blind trial was done at the Walter Reed Army Institute of Research Clinical Trials Center in Silver Spring, MD, USA. Eligible participants were healthy adults aged 18-49 years, with no detectable evidence of previous flavivirus exposure (by infection or vaccination), as measured by a microneutralisation assay. Individuals with serological evidence of HIV, hepatitis B, or hepatitis C infection were excluded, as were pregnant or breastfeeding women. Participants were recruited sequentially into one of three groups (1:1:1) to receive no primer, two doses of intramuscular Japanese encephalitis virus vaccine (IXIARO), or a single dose of subcutaneous yellow fever virus vaccine (YF-VAX). Within each group, participants were randomly assigned (4:1) to receive intramuscular ZPIV or placebo. Priming vaccinations were given 72-96 days before ZPIV. ZPIV was administered either two or three times, at days 0, 28, and 196-234. The primary outcome was occurrence of solicited systemic and local adverse events along with serious adverse events and adverse events of special interest. These data were analysed in all participants receiving at least one dose of ZPIV or placebo. Secondary outcomes included measurement of neutralizing antibody responses following ZPIV vaccination in all volunteers with available post-vaccination data. This trial is registered at ClinicalTrials.gov, NCT02963909. **Findings:** Between Nov 7, 2016, and Oct 30, 2018, 134 participants were assessed for eligibility. 21 did not meet inclusion criteria, 29 met exclusion criteria, and ten declined to participate. 75 participants were recruited and randomly assigned. 35 (47%) of 75 participants were male and 40 (53%) were female. 25 (33%) of 75 participants identified as Black or African American and 42 (56%) identified as White. These proportions and other baseline characteristics were similar between groups. There were no statistically significant differences in age, gender, race, or BMI between those who did and did not opt into the third dose. All participants received the planned priming IXIARO and YF-VAX vaccinations, but one participant who received YF-VAX dropped out before receipt of the first dose of ZPIV. 50 participants received a third dose of ZPIV or placebo, including 14 flavivirus-naïve people, 17 people primed with Japanese encephalitis virus vaccine, and 19 participants primed with yellow fever vaccine. Vaccinations were well tolerated across groups. Pain at the injection site was the only adverse event reported more frequently in participants who received ZPIV than in those who received placebo (39 [65%] of 60 participants, 95% CI 51.6-76.9 who received ZPIV vs three [21.4%] of 14 who received placebo; 4.7-50.8; $p=0.006$). No patients had an adverse event of special interest or serious adverse event related to study treatment. At day 57, the flavivirus-naïve

volunteers had an 88% (63.6-98.5, 15 of 17) seroconversion rate (neutralising antibody titre $\geq 1:10$) and geometric mean neutralising antibody titre (GMT) against Zika virus of 100.8 (39.7-255.7). In the Japanese encephalitis vaccine-primed group, the day 57 seroconversion rate was 31.6% (95% CI 12.6-56.6, six of 19) and GMT was 11.8 (6.1-22.8). Participants primed with YF-VAX had a seroconversion rate of 25% (95% CI 8.7-49.1, five of 20) and GMT of 6.6 (5.2-8.4). Humoral immune responses rose substantially following a third dose of ZPIV, with seroconversion rates of 100% (69.2-100; ten of ten), 92.9% (66.1-99.8; 13 of 14), and 60% (32.2-83.7, nine of 15) and GMTs of 511.5 (177.6-1473.6), 174.2 (51.6-587.6), and 79 (19.0-326.8) in the flavivirus naïve, Japanese encephalitis vaccine-primed, and yellow fever vaccine-primed groups, respectively. **Interpretation:** We found ZPIV to be well tolerated in flavivirus naïve and primed adults but that immunogenicity varied significantly according to antecedent flavivirus vaccination status. Immune bias towards the flavivirus antigen of initial exposure and the timing of vaccination may have impacted responses. A third ZPIV dose overcame much, but not all, of the discrepancy in immunogenicity. The results of this phase 1 clinical trial have implications for further evaluation of ZPIV's immunisation schedule and use of concomitant vaccinations.

Primary infection with Zika virus provides one-way heterologous protection against Spondweni virus infection in rhesus macaques.

Jaeger AS, Crooks CM, Weiler AM, Bliss MI, Rybarczyk S, Richardson A, Einwalter M, Peterson E, Capuano S 3rd, Barkhymer A, Becker JT, Greene JT, Freedman TS, Langlois RA, Friedrich TC, Aliota MT.

30-06-2023

Sci Adv.

<https://pubmed.ncbi.nlm.nih.gov/37390207/>

Higher-temperature-adapted dengue virus serotype 2 strain exhibits enhanced virulence in AG129 mouse model.

Modak A, Mishra SR, Awasthi M, Sreedevi S, Sobha A, Aravind A, Kuppusamy K, Sreekumar E.

Apû-2023

FASEB J.

<https://pubmed.ncbi.nlm.nih.gov/37389962/>

The factors that drive dengue virus (DENV) evolution, and selection of virulent variants are yet not clear. Higher environmental temperature shortens DENV extrinsic incubation period in mosquitoes, increases human transmission, and plays a critical role in outbreak dynamics. In the present study, we looked at the effect of temperature in altering the virus virulence. We found that DENV cultured at a higher temperature in C6/36 mosquito cells was significantly more virulent than the virus grown at a lower temperature. In a mouse model, the virulent strain induced enhanced viremia and aggressive disease with a short course, hemorrhage, severe vascular permeability, and death. Higher inflammatory cytokine response, thrombocytopenia, and severe

histopathological changes in vital organs such as heart, liver, and kidney were hallmarks of the disease. Importantly, it required only a few passages for the virus to acquire a quasi-species population harboring virulence-imparting mutations. Whole genome comparison with a lower temperature passaged strain identified key genomic changes in the structural protein-coding regions as well as in the 3'UTR of the viral genome. Our results point out that virulence-enhancing genetic changes could occur in the dengue virus genome under enhanced growth temperature conditions in mosquito cells.

The Density of *Aedes albopictus* in a High-Latitude and High-Risk Dengue Fever Transmission Region in Shandong Province, Northern China.

Huang X, Liu L, Liu S, Cheng P, Gong M, Wang X, Liu H.

30-06-2023

Vector Borne Zoonotic Dis.

<https://pubmed.ncbi.nlm.nih.gov/37389829/>

Background: A total of 79 cases of dengue fever were reported in Jining County in 2017, which is currently the northernmost focal point of local cases of dengue fever diagnosed in China. This study aimed to evaluate the density of mosquito vectors before and after the outbreak of dengue fever and provide novel reference data for the prevention and control of the disease. **Methods:** The light traps were set to collect mosquitoes in 2017 and 2018 to assess adult mosquito density and species composition. We used the human-baited double net trap to determine the biting rate. In addition, the Breteau index (BI) was calculated to evaluate the density of *Aedes albopictus* in Jining, Shandong Province. The annual average densities of *Ae. albopictus* in 2017 and 2018 were 0.046 and 0.066 f/t/h, respectively. **Results:** The average biting rate was 0.69 f/m/h in 2018. There was no significant difference found in *Ae. albopictus* density and biting rate in the various months. The average BI of Jining was 38.67 and 11.17, respectively. There was a statistically significant difference observed in the BI between 2017 and 2018 (Kruskal-Wallis test, $\chi^2 = 16.926$, $df = 1$, $p < 0.001$). **Conclusion:** BI can serve as an important indicator to determine the spread of dengue fever. The findings indicated that the growing density of adult *Aedes* mosquitoes should be focused on, with biting rates being a potential indicator of future outbreaks. Overall, the various control measures that were implemented were effective and should be introduced in other high-risk areas.

Molecular Detection of Dengue Virus, Zika Virus, and Chikungunya Virus Arboviruses in Neotropical Bats.

Hernández-Aguilar I, Lorenzo C, Ramírez-Palacios LR, Santos-Moreno A, Naranjo EJ.

30-06-2023

Vector Borne Zoonotic Dis.

<https://pubmed.ncbi.nlm.nih.gov/37389819/>

[Overview of infectious and non-infectious diseases in French Guiana in 2022].

Epelboin L, Abboud P, Abdelmoumen K, About F, Adenis A, Blaise T, Blaizot R, Bonifay T, Bourne-Watrin M, Boutrou M, Carles G, Carlier PY, Carod JF, Carvalho L, Couppié P, De Toffol B, Delon F, Demar M, Destoop J, Douine M, Droz JP, Elenga N, Enfissi A, Franck YK, Fremery A, Gaillet M, Kallel H, Kpangon AA, Lavergne A, Le Turnier P, Maisonnobe L, Michaud C, Mutricy R, Nacher M, Naldjinan-Kodbaye R, Oberlis M, Odonne G, Osei L, Pujo J, Rabier S, Roman-Laverdure B, Rousseau C, Rousset D, Sabbah N, Sainte-Rose V, Schaub R, Sylla K, Tareau MA, Tertre V, Thorey C, Vialette V, Walter G, Zappa M, Djossou F, Vignier N.

17-06-2023

Med Trop Sante Int.

<https://pubmed.ncbi.nlm.nih.gov/37389381/>

Dengue emergency in the Americas: time for a new continental eradication plan.

[No authors listed]

15-06-2023

Lancet Reg Health Am.

<https://pubmed.ncbi.nlm.nih.gov/37388708/>

Serological and molecular evidence of chikungunya virus infection among febrile outpatients seeking healthcare in Northern Malawi.

Kawonga F, Misinzio G, Pemba DF.

Infect Ecol Epidemiol. 2023 Jun 27

<https://pubmed.ncbi.nlm.nih.gov/37387776/>

Introduction: Despite global evidence of chikungunya fever (CHIKF) in humans that is caused by chikungunya virus (CHIKV), little is known about the occurrence of CHIKF in Malawi. This study was conducted to determine the seroprevalence of CHIKF and to molecularly confirm the presence of CHIKV ribonucleic acid (RNA) among febrile outpatients seeking health care at Mzuzu Central Hospital in the Northern Region of Malawi. **Methods:** Enzyme-immunosorbent assay (ELISA) was used to detect the presence or absence of specific antibodies against CHIKV. Reversetranscription polymerase chain reaction (RT-PCR) was conducted on randomly selected anti-CHIKV IgM-positive samples to detect CHIKV RNA. **Results:** Out of 119 CHIKF suspected samples analyzed, 73 tested positive for anti-CHIKV IgM antibodies, with an overall seroprevalence of 61.3%. Most of the CHIKV infected individuals presented with joint pain, abdominal pain, vomiting and nose bleeding with seroprevalence of 45.2%, 41.1%, 16.4% and 12.3%, respectively. All the randomly selected samples that were positive for CHIKV anti-IgM by ELISA had detectable CHIKV RNA by RT-PCR. **Conclusion:** The presence of anti-CHIKV IgM antibodies suggests the presence of recent CHIKV infection. We therefore recommend for the inclusion of CHIKF as the differential diagnosis in febrile ill patients in Mzuzu city, Malawi.

[Preparing for Pandemics].

Yan X, Barbero F, Wunderlich R.

Juin-2023

Anesthesiol Intensivmed Notfallmed Schmerzther.

<https://pubmed.ncbi.nlm.nih.gov/37385241/>

The current COVID-19 pandemic has contributed to millions of deaths globally and it is estimated that the hit to the global economy could reach more than twelve trillion US-dollars. Disease outbreaks have often pushed weak health systems to a breaking point, as witnessed during cholera, Ebola and Zika virus upsurges. The preparation of a plan involves the analysis of a scenario divided into the disaster cycle's four phases: preparation, response, recovery, and mitigation. Several levels of planning are recognised according to the goals to be reached: strategic plans are directed to define the organisational context and overall aims, operational plans with putting the strategy into place, tactical plans explain how resources will be allocated and managed, as well as provide essential instructions to the responders. The hospital surge capacity relies on the reorganisation of resources according to four categories: system, staff, stuff (supplies), and space. Each of these components needs to be analysed, implemented, and tested during the preparation phase to reduce the occurrence of a critical overrun of the response capabilities, as this will trigger the recourse of contingency plans. The response to pandemics must be associated with public health and social measures, as well as with initiatives to support the psycho-physical health of healthcare workers.

Modeling the sequence dependence of differential antibody binding in the immune response to infectious disease.

Chowdhury R, Taguchi AT, Kelbauskas L, Stafford P, Diehnelt C, Zhao ZG, Williamson PC, Green V, Woodbury NW.

20-06-2023

PLoS Comput Biol.

<https://pubmed.ncbi.nlm.nih.gov/37339137/>

The Threat of Vector-Borne Diseases in Sierra Leone.

Jones RT, Tytheridge SJ, Smith SJ, Levine RS, Hodges MH, Ansumana R, Wulff S, Whitworth J, Logan JG.

05-06-2023

Am J Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/37277107/>

Sierra Leone is vulnerable to a wide range of vector-borne diseases transmitted by mosquitoes, tsetse flies, black flies, and other vectors. Malaria, lymphatic filariasis, and onchocerciasis have posed the greatest threat and have received the most attention in terms of vector control and capacity for diagnosis. However, malaria infection rates remain high, and there is evidence of circulation of other vector-borne diseases, such as chikungunya and dengue, which may go undiagnosed and unreported. The limited understanding of the prevalence and transmission of these diseases restricts the capacity for predicting outbreaks, and impedes the planning of appropriate responses. We review the available literature and gather expert opinions from those working in the country to

report on the status of vector-borne disease transmission and control in Sierra Leone, and present an assessment of the threats of these diseases. Our discussions highlight an absence of entomological testing for disease agents and the need for more investment in surveillance and capacity strengthening.

Zika virus infection in European travellers returning from Thailand in 2022: A GeoSentinel case series.

Seers T, Rothe C, Hamer DH, Denny S, Spindler R, Schwartz E, Johnston V.

Jul-2023

Trop Med Int Health.

<https://pubmed.ncbi.nlm.nih.gov/37269191/>

Factors Associated with Chikungunya Infection among Pregnant Women in Grenada, West Indies.

Kiener M, Cudjoe N, Evans R, Mapp-Alexander V, Tariq A, Macpherson C, Noël T, Gérardin P, Waechter R, LaBeaud AD.

30-05-2023

Am J Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/37253436/>

Opportunities for Improved Dengue Control in the US Territories.

Hernandez-Romieu AC, Adams LE, Paz-Bailey G.

03-07-2023

JAMA.

<https://pubmed.ncbi.nlm.nih.gov/37192216/>

Discovery of Acyl-Indole Derivatives as Pan-Serotype Dengue Virus NS4B Inhibitors.

Kesteleyn B, Bardiot D, Bonfanti JF, De Boeck B, Goethals O, Kaptein SJF, Stoops B, Coesemans E, Fortin J, Muller P, Doublet F, Carlens G, Koukni M, Smets W, Raboisson P, Chaltin P, Simmen K, Van Loock M, Neyts J, Marchand A, Jonckers THM.

30-06-2023

J Med Chem.

<https://pubmed.ncbi.nlm.nih.gov/37389813/>

In the absence of any approved dengue-specific treatment, the discovery and development of a novel small-molecule antiviral for the prevention or treatment of dengue are critical. We previously reported the identification of a novel series of 3-acyl-indole derivatives as potent and pan-serotype dengue virus inhibitors. We herein describe our optimization efforts toward preclinical candidates **24a** and **28a** with improved pan-serotype coverage (EC₅₀'s against the four DENV serotypes ranging from 0.0011 to 0.24 μ M for **24a** and from 0.00060 to 0.084 μ M for **28a**), chiral stability, and oral bioavailability in preclinical species, as well as showing a dose-proportional increase in efficacy against DENV-2 infection in vivo in mice.

The CD133 and CD34 cell types in human umbilical cord blood have the capacity to produce infectious dengue virus particles.

Vats A, Ho TC, Puc I, Chang CH, Perng GC, Chen PL.

29-06-2023

Sci Rep.

<https://pubmed.ncbi.nlm.nih.gov/37386042/>

Zika Virus Infection Induces Interleukin-1 β -Mediated Inflammatory Responses by Macrophages in the Brain of an Adult Mouse Model.

Jeong GU, Lee S, Kim DY, Lyu J, Yoon GY, Kim KD, Ku KB, Ko J, Kwon YC.

29-06-2023

J Virol.

<https://pubmed.ncbi.nlm.nih.gov/37191498/>

Urban mosquito distributions are modulated by socioeconomic status and environmental traits in the USA.

Yitbarek S, Chen K, Celestin M, McCary M.

Jul-2023

Ecol Appl.

<https://pubmed.ncbi.nlm.nih.gov/37140135/>

The distribution of mosquitoes and associated vector diseases (e.g., West Nile, dengue, and Zika viruses) is likely to be a function of environmental conditions in the landscape. Urban environments are highly heterogeneous in the amount of vegetation, standing water, and concrete structures covering the land at a given time, each having the capacity to influence mosquito abundance and disease transmission. Previous research suggests that socioeconomic status is correlated with the ecology of the landscape, with lower-income neighborhoods generally having more concrete structures and standing water via residential abandonment, garbage dumps, and inadequate sewage. Whether these socioecological factors affect mosquito distributions across urban environments in the USA remains unclear. Here, we present a meta-analysis of 42 paired observations from 18 articles testing how socioeconomic status relates to the overall mosquito burden in urban landscapes in the USA. We also analyzed how socioecological covariates (e.g., abandoned buildings, vegetation, education, and garbage containers) varied across socioeconomic status in the same mosquito studies. The meta-analysis revealed that lower-income neighborhoods (regions with median household incomes <US\$50,000 per household per year) are exposed to 63% greater mosquito densities and mosquito-borne illnesses compared with higher-income neighborhoods (\geq US\$50,000 per household per year). One common species of urban mosquito (*Aedes aegypti*) showed the strongest relationship with socioeconomic status, with *Ae. aegypti* being 126% higher in low-income than high-income neighborhoods. We also found that certain socioecological covariates correlated with median household income. Garbage, trash, and plastic containers were found to be 67% higher in low-income neighborhoods, whereas high-income neighborhoods

tended to have higher levels of education. Together, these results indicate that socioecological factors can lead to disproportionate impacts of mosquitoes on humans in urban landscapes. Thus, concerted efforts to manage mosquito populations in low-income urban neighborhoods are required to reduce mosquito burden for the communities most vulnerable to human disease.

Effects of Glutathionylation on Guanylyltransferase Activity of NS5 N-terminal Capping Domain from Dengue, Japanese Encephalitis, and Zika Viruses.

Saisawang C, Reamtong O, Nachampa I, Petcharat P, Priewkhiew S, Sakdee S, Wongsantichon J, J Ketterman A.

2023

Protein Pept Lett.

<https://pubmed.ncbi.nlm.nih.gov/37076471/>

Background: Glutathionylation is a protein post-translational modification triggered by oxidative stress. The susceptible proteins are modified by the addition of glutathione to specific cysteine residues. Virus infection also induces oxidative stress in the cell, which affects cellular homeostasis. It is not just the cellular proteins but the viral proteins that can also be modified by glutathionylation events, thereby impacting the function of the viral proteins. **Objectives:** This study was conducted to identify the effects of modification by glutathionylation on the guanylyltransferase activity of NS5 and identify the cysteine residues modified for the three flavivirus NS5 proteins. **Methods:** The capping domain of NS5 proteins from 3 flaviviruses was cloned and expressed as recombinant proteins. A gel-based assay for guanylyltransferase activity was performed using a GTP analog labeled with the fluorescent dye Cy5 as substrate. The protein modification by glutathionylation was induced by GSSG and evaluated by western blot. The reactive cysteine residues were identified by mass spectrometry. **Results:** It was found that the three flavivirus proteins behaved in a similar fashion with increasing glutathionylation yielding decreased guanylyltransferase activity. The three proteins also possessed conserved cysteines and they appeared to be modified for all three proteins. **Conclusion:** The glutathionylation appeared to induce conformational changes that affect enzyme activity. The conformational changes might also create binding sites for host cell protein interactions at later stages of viral propagation with the glutathionylation event, thereby serving as a switch for function change.

Insecticide resistance compromises the control of *Aedes aegypti* in Bangladesh.

Al-Amin HM, Gyawali N, Graham M, Alam MS, Lenhart A, Hugo LE, Rašić G, Beebe NW, Devine GJ.

Août-2023

Pest Manag Sci.

<https://pubmed.ncbi.nlm.nih.gov/36942761/>

Zika virus knowledge, attitudes and prevention behaviors among pregnant

women in the ZEN cohort study, Colombia, 2017-2018.

Burkel VK, Newton SM, Acosta J, Valencia D, Benavides M, Tong VT, Daza M, Sancken C, Gonzalez M, Polen K, Rodriguez H, Borbón M, Rao CY, Gilboa SM, Honein MA, Ospina ML, Johnson CY.

04-07-2023

Trans R Soc Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/36864562/>

Background: Zika virus (ZIKV) infection during pregnancy can cause severe birth defects in the fetus and is associated with neurodevelopmental abnormalities in childhood. Our objective was to describe ZIKV knowledge and attitudes among pregnant women in Colombia while ZIKV was circulating and whether they predicted the adoption of behaviors to prevent ZIKV mosquito-borne and sexual transmission. **Methods:** We used self-reported data from Zika en Embarazadas y Niños (ZEN), a cohort study of women in early pregnancy across three regions of Colombia during 2017-2018. We used Poisson regression to estimate associations between knowledge, attitudes and previous experience with mosquito-borne infection and preventative behaviors. **Results:** Among 1519 women, knowledge of mosquito-borne transmission was high (1480; 97.8%) and 1275 (85.5%) participants were worried about ZIKV infection during pregnancy. The most common preventive behavior was wearing long pants (1355; 89.4%). Regular mosquito repellent use was uncommon (257; 17.0%). While ZIKV knowledge and attitudes were not associated with the adoption of ZIKV prevention behaviors, previous mosquito-borne infection was associated with increased condom use (prevalence ratio 1.4, 95% CI 1.1 to 1.7). **Conclusions:** Participants were well informed about ZIKV transmission and its health consequences. However, whether this knowledge resulted in behavior change is less certain.

Voices on Zika: Reproductive Autonomy and Shared Decision-Making During an Evolving Epidemic.

Latortue-Albino P, Delgado S, Perkins R, Yarrington C, Mehta P.

Juil-Août 2023

Womens Health Issues.

<https://pubmed.ncbi.nlm.nih.gov/36566090/>

Dracunculose

Integrated physicochemical, hormonal, and transcriptomic analysis reveals the underlying mechanism of callus formation in *Pinellia ternata* hydroponic cuttings.

Duan X, Chen L, Liu Y, Chen H, Wang F, Hu Y.

20-06-2023

Front Plant Sci.

<https://pubmed.ncbi.nlm.nih.gov/37409296/>

Effect of konjac oligo-glucomannan on emulsifying properties of myofibrillar protein.

Duan Z, Wang Y, Yu X, Wu N, Pang J, Bai Y.

30-08-2023

J Sci Food Agric.

<https://pubmed.ncbi.nlm.nih.gov/37005375/>

Background: The high viscosity of konjac glucomannan (KGM) limits its application in meat processing. In this work, the effects of konjac oligo-glucomannan (KOG), as a derivative of KGM, on the emulsifying properties of myofibrillar protein (MP) and the related mechanism were investigated. **Results:** It was found that the addition of KOG had no significant effect on the secondary structure of MP, but altered the tertiary conformation of MP, resulting in exposure of tyrosine residues to polar microenvironments and decreased intrinsic fluorescence intensity. In addition, the addition of KOG increased the emulsifying activity of MP, resulting in decreased particle size and improved physical stability of the emulsion. The emulsifying activity of MP reached the maximum value when 1.0 wt% KOG was added. Moreover, the interfacial tension and interfacially adsorbed protein content of MP/KOG emulsions decreased with the increase in KOG concentration. **Conclusion:** These findings demonstrated that KOG mainly interacted with MP and changed the amphipathy of the KOG-MP at the oil-water interface, forming a stable interface film to improve the emulsifying properties of MP. © 2023 Society of Chemical Industry.

Echinococcosis

A survey of the parasites of Ural saiga antelopes and Turkmenian kulans of Kazakhstan.

Abdybekova AM, Zhaksylykova AA, Kushaliyev KZ, Kidiraliyev EZ, Kozhayeva AR, Kuzhebayeva UZ, Grachev A, Shevtsov A, Budke CM.

20-06-2023

Int J Parasitol Parasites Wildl.

<https://pubmed.ncbi.nlm.nih.gov/37415922/>

In silico study to predict promiscuous peptides for immunodiagnosis of cystic echinococcosis.

Chauhan V, Khan A, Farooq U.

Jan-Juin 2023

Trop Parasitol.

<https://pubmed.ncbi.nlm.nih.gov/37415750/>

Background: Cystic echinococcosis (CE), caused by *Echinococcus granulosus*, is a major zoonotic disease that causes significant human morbidity and mortality. This cosmopolitan disease is difficult to diagnose, treat, and control. So far, crude extracts of hydatid cyst fluid containing antigen B or antigen 5 have been used as the primary antigenic source for its immunodiagnosis. The main issue is that it reacts with sera from people infected with other helminths. There is currently no standard, specific, or sensitive test for disease diagnosis, and no

human vaccine has been reported. **Aims and objectives:** Considering the need for efficient immunization and/or immunodiagnosis, six *E. granulosus* antigens, antigen 5, antigen B, heat shock proteins such as Hsp-8 and Hsp-90, phosphoenolpyruvate carboxykinase, and tetraspanin-1, were chosen. **Materials and methods:** Using various *in silico* tools, T cell and B cell epitopes (promiscuous peptides) were predicted by targeting antigen 5, antigen B, heat shock proteins such as Hsp-8 and Hsp-90, phosphoenolpyruvate carboxykinase, and tetraspanin-1. **Results:** There are twelve promiscuous peptides with overlapping human leukocyte antigen (HLA) class-I, class-II, and conformational B cell epitopes. Such immunodominant peptides could be useful as subunit vaccines. Furthermore, six peptides specific for *E. granulosus* were also discovered, which may prove to be important markers in the diagnosis of CE, potentially preventing misdiagnosis and mismanagement. **Conclusion:** These epitopes may be the most important vaccine targets in *E. granulosus* because they have the most promiscuous peptides and B cell epitopes, as well as the highest affinity for different alleles, as determined by docking scores. However, additional research using *in vitro* and *in vivo* models is undertaken.

Hydatid cyst involving the mandible ramus.

Maraimalai N, Sardar MA, Wadde K, Kharat O, Kanpurwala S, Chowdhari A.

22-06-2023

Autops Case Rep.

<https://pubmed.ncbi.nlm.nih.gov/37415643/>

Parasitic infections rarely involve the oral and maxillofacial regions and pose a diagnostic challenge when they do. Hydatid cysts are parasitic cysts caused by *Echinococcus granulosus*. Intraosseous involvement is observed in 3% of cases, of which only 2-6% are in the maxillofacial region. A scientific literature search revealed only seven cases involving the mandible. We report a rare case in a 16-year-old female patient who presented with facial asymmetry and well-defined radiolucency of the ramus. Our findings will help in understanding the diagnostic issues caused by non-specific presentation and difficulties in suspecting such a rare diagnosis as echinococcosis of the oral or maxillofacial region. A thorough systemic investigation is essential as 20-30% of these cases show multiorgan involvement.

Osseous hydatid disease: A mimic of other skeletal pathologies.

Laasri K, Naggar A, Bahlouli N, Chait F, Ahallat I, Boufettal M, Bassir RA, Mekkaoui J, Kharmaz M, Omar Lamrani M, Berrada MS, Zouaidia F, El Aoufir O, Laamrani FZ, Jroundi L.

26-06-2023

Radiol Case Rep.

<https://pubmed.ncbi.nlm.nih.gov/37409101/>

Laboratory associated zoonotic parasitic infections: a review of main agents and biosecurity measures.

Sini MF, Tamponi C, Mehmood N, Dessì G, Ariu F, Carta C, Coghetto A, Pentcheva P, Gabrielli S, Scala A, Varcasia A.
30-06-2023
J Infect Dev Ctries.
<https://pubmed.ncbi.nlm.nih.gov/37406067/>

Pulmonary cystic echinococcosis in a child.

Peulier-Maitre E, Hervieux E, Bigot J, Sileo C, Denamur S, Corvol H.
04-07-2023
Pediatr Pulmonol.
<https://pubmed.ncbi.nlm.nih.gov/37401873/>

This case report describes the presentation, diagnosis, and treatment of a 13-year-old boy with pulmonary cystic echinococcosis. The patient presented with low-volume hemoptysis, and lung imaging revealed a large cystic mass, as well as smaller pseudo-nodular lesions, suggesting a large intrathoracic hydatid cyst and ruptured cysts. The diagnosis was confirmed by a positive echinococcosis Western Blot assay, despite equivocal serology. The treatment consisted of surgical removal of the large cyst using thoracoscopy, along with a two-week course of albendazole and praziquantel, followed by albendazole alone for two years. Analysis of the cyst membrane revealed an *Echinococcus granulosus* protoscolex. The patient had a successful recovery.

Isolated Cerebral Cyst Hydatid Removal with Dowling's Technique in a 6-Year-Old Pediatric Patient: Case Report.

Senol YC, Ozkan ND, Guresci S, Daglioglu E, Belen AD.
07-06-2023
Asian J Neurosurg.
<https://pubmed.ncbi.nlm.nih.gov/37397039/>

Revealing novel cytb and nad5 genes-based population diversity and benzimidazole resistance in *Echinococcus granulosus* of bovine origin.

Alvi MA, Alshammari A, Ali RMA, Ul Haq S, Bashir R, Li L, Saqib M, Sajid MS, Ghafoor M, Imran M, Ijaz MU, Fu BQ, Saeed M, Ahmad I, Liu YY, Yan HB, Jia WZ.
16-06-2023
Front Vet Sci.
<https://pubmed.ncbi.nlm.nih.gov/37396990/>

Dimerization, host-parasite communication and expression studies of an *Echinococcus granulosus* 2DBD nuclear receptor.

Blanco V, Mozzo B, Alvite G.
03-07-2023
Parasitol Res.
<https://pubmed.ncbi.nlm.nih.gov/37395819/>

Primary pelvic *Echinococcus granulosus* infection: A case report.

Abulaiti Y, Kadi A, Tayier B, Tuerger T, Shalayiadang P, Abulizi A, Ahan A.
16-06-2023
World J Clin Cases.
<https://pubmed.ncbi.nlm.nih.gov/37388785/>

Background: Primary pelvic *Echinococcus granulosus* infection is clinically rare. The reported cases of pelvic *Echinococcus granulosus* infection are considered to be secondary to cystic echinococcosis in other organs. Single *Echinococcus granulosus* infection is very rare. **Case summary:** In this report, we presented a case of primary pelvic *Echinococcus granulosus* infection admitted to the First Affiliated Hospital of Xinjiang Medical University. We described the key diagnostic points and surgical treatment of this case. We also summarized the epidemiological characteristics and pathogenesis of the disease. **Conclusion:** Our case may provide clinical data for the diagnosis and treatment of primary pelvic *Echinococcus granulosus* infection.

Ultrasound-Based Prevalence of Cystic Echinococcosis in the Samarkand Region of Uzbekistan: Results from a Field Survey.

Colpani A, Achilova O, D'Alessandro GL, Budke C, Mariconti M, Muratov T, Vola A, Mamedov A, Giordani MT, Suvonkulov U, Brunetti E, Manciuili T.
05-06-20203
Am J Trop Med Hyg.
<https://pubmed.ncbi.nlm.nih.gov/37277104/>

Cystic echinococcosis (CE) is a zoonosis caused by *Echinococcus granulosus*. Uzbekistan is endemic for CE, but estimates of disease burden are lacking. We present findings from a cross-sectional, ultrasound-based survey evaluating the prevalence of human CE in the Samarkand region, Uzbekistan. The survey was conducted between September and October 2019 in the Payariq district, Samarkand. Study villages were selected based on sheep breeding and reported human CE. Residents aged 5-90 years were invited to receive a free abdominal ultrasound examination. The WHO Informal Working Group on Echinococcosis classification was used for cyst staging. Information regarding CE diagnosis and treatment was collected. Of 2,057 screened subjects, 498 (24.2%) were male. Twelve (0.58%) had detectable abdominal CE cysts. In total, five active/transitional (N = 1 CE1, N = 1 CE2, N = 3 CE3b) and 10 inactive cysts (N = 8 CE4, N = 2 CE5) were identified. Two participants had cystic lesions with no pathognomonic features of CE and were given a 1-month course of albendazole for diagnostic purposes. Twenty-three additional individuals reported previous surgery for CE in the liver (65.2%), lungs (21.6%), spleen (4.4%), liver and lungs (4.4%), and brain (4.4%). Our findings confirm the presence of CE in the Samarkand region, Uzbekistan. Additional studies are needed to assess the burden of human CE in the country. All patients with a history of CE reported surgery, even though most cysts found during the current study were inactive. Therefore, it appears there is a lack of awareness by the local medical community of the currently accepted stage-specific management of CE.

Filariose lymphatique

Chyluria: non-enhanced MR lymphography.

Sabbah A, Koumako C, El Mouhadi S, Ali A, Minssen L, Vanderbecq Q, Arrivé L.

05-07-2023

Insights Imaging.

<https://pubmed.ncbi.nlm.nih.gov/37405513/>

CRISPR-based gene drives generate super-Mendelian inheritance in the disease vector *Culex quinquefasciatus*.

Harvey-Samuel T, Feng X, Okamoto EM, Purusothaman DK, Leftwich PT, Alphey L, Gantz VM.

12-06-2023

bioRxiv.

<https://pubmed.ncbi.nlm.nih.gov/37398284>

Culex mosquitoes pose a significant public health threat as vectors for a variety of diseases including West Nile virus and lymphatic filariasis, and transmit pathogens threatening livestock, companion animals, and endangered birds. Rampant insecticide resistance makes controlling these mosquitoes challenging and necessitates the development of new control strategies. Gene drive technologies have made significant progress in other mosquito species, although similar advances have been lagging in *Culex*. Here we test the first CRISPR-based homing gene drive for *Culex quinquefasciatus*, demonstrating the possibility of using this technology to control *Culex* mosquitoes. Our results show that the inheritance of two split-gene-drive transgenes, targeting different loci, are biased in the presence of a Cas9-expressing transgene although with modest efficiencies. Our findings extend the list of disease vectors where engineered homing gene drives have been demonstrated to include *Culex* alongside *Anopheles* and *Aedes*, and pave the way for future development of these technologies to control *Culex* mosquitoes.

Assessing the cost-effectiveness of integrated case management of Neglected Tropical Diseases in Liberia.

Godwin-Akpan TG, Diaconu K, Edmiston M, Smith JS Jr, Sosu F, Weiland S, Kollie KK.

29-06-2023

BMC Health Serv Res.

<https://pubmed.ncbi.nlm.nih.gov/37386431>

Background: In 2017, Liberia became one of the first countries in the African region to develop and implement a national strategy for integrated case management of Neglected Tropical Diseases (CM-NTDs), specifically Buruli ulcer, leprosy, lymphatic filariasis morbidities, and yaws. Implementing this plan moves the NTD program from many countries' fragmented (vertical) disease management. This study explores to what extent an integrated approach offers a cost-effective investment for national health systems. **Methods:** This study is a mixed-method economic evaluation that explores the cost-effectiveness of the integrated CM-NTDs approach

compared to the fragmented (vertical) disease management. Primary data were collected from two integrated intervention counties and two non-intervention counties to determine the relative cost-effectiveness of the integrated program model vs. fragmented (vertical) care. Data was sourced from the NTDs program annual budgets and financial reports for integrated CM-NTDs and Mass Drug Administration (MDA) to determine cost drivers and effectiveness. **Results:** The total cost incurred by the integrated CM-NTD approach from 2017 to 2019 was US\$ 789,856.30, with the highest percentage of costs for program staffing and motivation (41.8%), followed by operating costs (24.8%). In the two counties implementing fragmented (vertical) disease management, approximately US\$ 325,000 was spent on the diagnosis of 84 persons and the treatment of twenty-four persons suffering from NTDs. While 2.5 times as much was spent in integrated counties, 9-10 times more patients were diagnosed and treated. **Conclusions:** The cost of a patient being diagnosed under the fragmented (vertical) implementation is five times higher than integrated CM-NTDs, and providing treatment is ten times as costly. Findings indicate that the integrated CM-NTDs strategy has achieved its primary objective of improved access to NTD services. The success of implementing an integrated CM-NTDs approach in Liberia, presented in this paper, demonstrates that NTD integration is a cost-minimizing solution.

The Threat of Vector-Borne Diseases in Sierra Leone.

Jones RT, Tytheridge SJ, Smith SJ, Levine RS, Hodges MH, Ansumana R, Wulff S, Whitworth J, Logan JG.

05-06-2023

Am J Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/37277107>

Gale

Crusted Scabies Presenting as Erythroderma in a Patient With Iatrogenic Immunosuppression for Treatment of Granulomatosis With Polyangiitis.

Olamiju B, Leventhal JS, Vesely MD.

Mai-2023

Cutis.

<https://pubmed.ncbi.nlm.nih.gov/37406327/>

The diagnosis of scabies can be difficult when the infection presents as erythroderma. Crusted scabies is a severe form of scabies caused by cutaneous ectoparasitic infection by the mite *Sarcoptes scabiei* var *hominis*. Crusted scabies most commonly occurs in patients with underlying immunosuppression from acquired infection or subsequent to solid organ or bone marrow transplantation. We present a rare case of a patient with granulomatosis with polyangiitis (GPA) who developed azathioprine-induced myelosuppression and subsequent erythrodermic crusted scabies. It is critical to maintain a broad differential when patients present with erythroderma, especially in the setting of medication-

induced immunosuppression for the treatment of autoimmune disease.

Pediculosis capitis and scabies in nurses from Eastern Poland - occupational risk and environmental determinants.

Bartosik K, Kulbaka E, Buczek W, Ciura D, Raszewska-Famielec M, Tytuła A, Buczek A.

26-06-2023

Ann Agric Environ Med.

<https://pubmed.ncbi.nlm.nih.gov/37387373>

Helminthiases transmises par le sol (ascaridiose, trichuriase, ankylostomiase)

Laboratory associated zoonotic parasitic infections: a review of main agents and biosecurity measures.

Sini MF, Tamponi C, Mehmood N, Dessi G, Ariu F, Carta C, Coghetto A, Pentcheva P, Gabrielli S, Scala A, Varcasia A.

30-06-2023

J Infect Dev Ctries.

<https://pubmed.ncbi.nlm.nih.gov/37406067/>

Prevalence and associated risk factors of intestinal parasitic infections among children in pastoralist and agro-pastoralist communities in the Adadle woreda of the Somali Regional State of Ethiopia.

Lanker KC, Muhummed AM, Cissé G, Zinsstag J, Hattendorf J, Yusuf RB, Hassen SB, Tschopp R, Vonaesch P.

03-07-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37399193/>

Background: Intestinal parasitic infections (IPIs) can cause illness, morbidity, and occasional mortality in children. Agro-pastoralist and pastoralist children in the Somali Regional State of Ethiopia (ESRS) are especially at risk for IPIs, as access to safe water, sanitation, and health services is lacking. Minimal data on the prevalence of IPIs and associated risk factors exists in this region. **Methodology:** We assessed the prevalence of IPIs and associated risk factors during the wet season from May-June 2021 in 366 children aged 2 to 5 years in four agro-pastoralist and four pastoralist kebeles (wards) in Adadle woreda (district) of the Shebelle zone, ESRS. Household information, anthropometric measurements, and stool samples were obtained from included children. Parasites were identified microscopically using Kato-Katz and direct smear methods. Risk factors were assessed using general estimating equation models accounting for clustering. **Principal findings:** Overall prevalence of IPIs was 35%: 30.6% for single infections and 4.4% for poly-parasitic

infections. Intestinal protozoan prevalence was 24.9%: 21.9% *Giardia intestinalis*, and 3.0% *Entamoeba* spp.. Intestinal helminth prevalence was 14.5%: 12.8% *Ascaris lumbricoides*, 1.4% hookworm (*Ancylostoma duodenale* /*Necator americanus*.), and 0.3% *Hymenolepis nana*. *G. intestinalis* infection was associated with drinking water sourced from the river (aOR 15.6, 95%CI 6.84, 35.4) and from collected rainwater (aOR 9.48, 95%CI 3.39, 26.5), with toilet sharing (aOR 2.93, 95%CI 1.36, 6.31) and with household ownership of cattle (1-5 cattle: aOR 1.65, 95%CI 1.13, 2.41; 6+ cattle: aOR 2.07, 95%CI 1.33, 3.21) and chickens (aOR 3.80, 95%CI 1.77, 8.17). *A. lumbricoides* infection was associated with children 36 to 47 months old (aOR 1.92, 95%CI 1.03, 3.58). **Conclusions/significance:** Improving access to safe water, sanitation, and hygiene services in Adadle and employing a One Health approach would likely improve the health of children living in (agro-) pastoralist communities in Adadle and the ESRS; however, further studies are required.

The Occurrence of the Strongylid Nematodes, *Kalicephalus viperae viperae* (Nematoda: Diaphanocephalidae), in Viper Snakes, *Macrovipera lebetina* (Reptilia: Viperidae), Southwestern Iran.

Larki S, Alborzi A, Bahramnejad K, Asadi Z.

30-04-2023

Arch Razi Inst.

<https://pubmed.ncbi.nlm.nih.gov/37396723>

ancylostomatid *Kalicephalus* spp. is the common parasitic intestinal nematode of reptiles. West-Asian blunt-nosed viper is a venomous snake found in extensive areas of Iran. From June to September 2017, two dead viper snakes were referred to a parasitology laboratory and examined for intestinal parasites. Several white elongated roundworms were collected and fixed to identify under light and scanning electron microscopes (SEM) based on morphological and molecular characteristics. For the molecular survey, some parts of the identified worms were extracted and the ITS of nuclear ribosomal DNA (rDNA) was amplified by polymerase chain reaction (PCR). Five roundworms were found in one snake and three worms with similar morphological characteristics in another one. All the collected female hookworms were taxonomically identified as *Kalicephalus viperae viperae*. The SEM findings showed the head was small and had three dorsal, ventral, and middle circumoral papillae with a spike-like process on the median papilla of *K. viperae*. Moreover, the buccal capsule was bivalvular and included two lateral valves consisting of several chitoid pieces. The tail of the female worm was slim and long with a blunt end and had a terminal spike at its end. In the molecular survey, the ITS of rDNA amplified at about 850 bp was identified as *K. viperae*. The ITS gene rDNA phylogeny analysis of the *K. viperae* sequence showed that the isolated species had high similarity to *Ancylostoma* species from around the world and is close to *Ancylostoma braziliense* with 88% discrepancies in the phylogenetic tree. The morphological characteristics and a large part of *K. viperae viperae* rDNA nucleotide sequence were

reported in viper snakes for the first time in the world and in Iran.

Intestinal helminth infections and associated risk factors among adults in the Lao People's Democratic Republic.

Phonekeo S, Kounnavong S, Vonglokham M, Siengsounthone L, Homsana A, Gummin S, Vounatsu P, Nittiyant P, Worawichawong S, Aekplakorn W, Odermatt P, Sayasone S.

30-06-2023

Infect Dis Poverty.

<https://pubmed.ncbi.nlm.nih.gov/37386528/>

Predisposition to soil-transmitted helminth reinfection after four rounds of mass drug administration: results from a longitudinal cohort in the Geshiyaro project, a transmission elimination feasibility study in the Wolaita zone of southern Ethiopia.

Rayment Gomez S, Maddren R, Liyew EF, Chernet M, Anjulo U, Tamiru A, Mengitsu B, Forbes K, Collyer B, Salasibew M, Anderson R.

04-07-2023

Trans R Soc Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/36939014/>

Background: Current WHO strategies for reaching soil-transmitted helminths (STH) elimination as a public health problem excludes treating certain adult populations in endemic areas, creating infection reservoirs that drive 'bounce back' of STH infection to pretreatment levels post-mass drug administration (MDA). Predisposition is a widespread, but poorly understood phenomena among helminth infections where individuals are predisposed to reinfection after repeated treatments. **Methods:** This analysis uses Geshiyaro project data, an STH control programme exploring transmission interruption by community-wide MDA and enhanced water, sanitation and hygiene during 2019-2023. Parasitological survey data from longitudinal cohorts are analysed using Kendall's Tau-b rank correlation to assess the evidence for predisposition to light or heavy infection between four consecutive rounds of MDA. **Results:** Correlation analyses revealed the strongest evidence for predisposition to heavy or light *Ascaris lumbricoides* infection was between survey 1 and 2 (Tau-b 0.29; $p < 0.001$). Overall patterns were not observed for *Trichuris trichiura* or hookworm infections, however, some significant and notable correlations were recorded for some stratifications and time points. **Conclusions:** Evidence for predisposition in endemic settings in southern Ethiopia with low STH prevalence suggests that more targeted approaches to MDA in those predisposed to infection may be a sensible control strategy if cheap, point of care diagnostics are available.

Leishmaniose

Particulate and non-particle adjuvants in Leishmaniasis vaccine designs: A review.

Kelleci K, Allahverdiyev A, Bağırova M, İhlamur M, Abamor EŞ.

Avr-Juin 2023

J Vector Borne Dis.

<https://pubmed.ncbi.nlm.nih.gov/37417162>

Conservation of the insert-2 motif confers Rev1 from different species with an ability to disrupt G-quadruplexes and stimulate translesion DNA synthesis.

Ketkar A, Sewilam RS, McCrury MJ, Hall JS, Bell A, Paxton BC, Tripathi S, Gunderson JEC, Eoff RL.

11-05-2023

RSC Chem Biol.

<https://pubmed.ncbi.nlm.nih.gov/37415867/>

In some organisms, the replication of G-quadruplex (G4) structures is supported by the Rev1 DNA polymerase. We previously showed that residues in the insert-2 motif of human Rev1 (hRev1) increased the affinity of the enzyme for G4 DNA and mediated suppression of mutagenic replication near G4 motifs. We have now investigated the conservation of G4-selective properties in Rev1 from other species. We compared Rev1 from *Danio rerio* (zRev1), *Saccharomyces cerevisiae* (yRev1), and *Leishmania donovani* (lRev1) with hRev1, including an insert-2 mutant form of hRev1 (E466A/Y470A or EY). We found that zRev1 retained all of the G4-selective prowess of the human enzyme, but there was a marked attenuation of G4 binding affinity for the EY hRev1 mutant and the two Rev1 proteins lacking insert-2 (yRev1 and lRev1). Perhaps most strikingly, we found that insert-2 was important for disruption of the G4 structure and optimal stimulation of processive DNA synthesis across the guanine-rich motif by DNA polymerase kappa (pol κ). Our findings have implications for how Rev1 might contribute to G4 replication in different species spanning the evolutionary tree - signaling the importance of selection for enzymes with robust G4-selective properties in organisms where these non-B DNA structures may fulfill taxa-specific physiological functions.

Ionized alkaline water reduces injury in BALB/c mice infected with *Leishmania amazonensis*.

Retamiro KM, Nunes KC, Zani AP, Zani CP, Beltran LB, Silva SO, Garcia FP, Ueda-Nakamura T, Bergamasco R, Nakamura CV.

06-07-2023

PLoS One.

<https://pubmed.ncbi.nlm.nih.gov/37410769/>

Ionized water has been reported to contribute to the tissue repair process and wound healing. Water purifiers can generate ionized water by means of activated charcoal with silver and minerals, the main purpose of which are to reduce microbiological and physicochemical contaminants. Moreover, when water is subjected to a

magnetic field an organization of water molecules occurs due to the presence of mineral salts. The resulting water is thus more alkaline, which has been shown to be non-toxic to mice and can actually prolong survival. Cutaneous leishmaniasis is a neglected tropical disease, caused by obligate uni- and intracellular protozoa belonging to the genus *Leishmania*, that can manifest in the form of skin lesions. Thus, the objective of this study was to compare the evolution of disease in *L. amazonensis*-infected BALB/c mice that received tap water (TW) or ionized alkaline water (IAW). As a control, additional groups of mice receiving TW or IAW were also treated with the antileishmanial miltefosine. All mouse groups received either TW or IAW as drinking water 30 days prior to infection and the groups continued to receive the respective drinking water for 4 weeks, after which the blood and plasma were collected. Biochemical assays of aspartate aminotransferase, alanine aminotransferase, gamma-glutamyl transferase, creatinine, urea, glucose, triglycerides, and cholesterol were performed, in addition to hematology tests. There was a significant decrease in the volume of the lesion for groups that received IAW, in which the ingestion of ionized alkaline water favored the non-evolution of the lesion in the footpads of the animals. The results of the blood count and leukogram tests were within the normal values for BALB/c mice demonstrating that ionized water has no toxic effects on blood factors.

Unusual transformation of *Leishmania* spp. amastigotes to promastigotes in a bone marrow sample from a Greyhound dog.

Rodríguez-Cariño C, López Loarte J, Marí-Martorell D, Pantchev N, Hernandez Martinez L.
05-07-2023
Vet Clin Pathol.
<https://pubmed.ncbi.nlm.nih.gov/37408304>

Amino acid balancing for the prediction and evaluation of protein concentrations in cell-free protein synthesis systems.

Rolf J, Handke J, Burzinski F, Lütz S, Rosenthal K.
05-07-2023
Biotechnol Prog.
<https://pubmed.ncbi.nlm.nih.gov/37408088/>

Laboratory associated zoonotic parasitic infections: a review of main agents and biosecurity measures.

Sini MF, Tamponi C, Mehmood N, Dessì G, Ariu F, Carta C, Coghetto A, Pentcheva P, Gabrielli S, Scala A, Varcasia A.
30-06-2023
J Infect Dev Ctries.
<https://pubmed.ncbi.nlm.nih.gov/37406067/>

Laboratory workers are exposed to the risk of acquiring infections due to the manipulation of infectious materials. The biological hazard for researchers is seven times higher when compared with hospital and public health laboratory workers. Despite the implementation of standardized practices to control infections, multiple cases of

Laboratory Associated Infections (LAIs) usually go unreported. There has been a lack of comprehensive epidemiological data regarding the situation of LAIs for parasitic zoonosis and besides, the available sources are not completely updated. Since most accounts of laboratory infections are organism-specific, this study has focused on common pathogenic/zoonotic species handled at parasitological laboratories and summarising the standard biosecurity protocols for the infectious agents. The main characteristics of *Cryptosporidium* spp., *Entamoeba* spp, *Giardia duodenalis*, *Toxoplasma gondii*, *Leishmania* spp., *Echinococcus* spp., *Schistosoma* spp., *Toxocara canis*, *Ancylostoma caninum*, *Strongyloides stercoralis* are considered in this review in order to assess the potential risk of developing occupational infections in the workplace along with stating prevention and prophylactic measures for each species. It was concluded that the LAIs from these agents can be prevented by using personal protective measures and good laboratory practices. However, further studies are necessary to better understand the environmental resistance of cysts, oocysts and eggs, with a view to select the most suitable disinfection methods. Furthermore, it is fundamental to constantly update epidemiological data of infection acquired by laboratory workers, to develop accurate risk indicators.

***Leishmania donovani* Exploits Tunneling Nanotubes for Dissemination and Propagation of B Cell Activation.**

Stögerer T, Silva-Barrios S, Carmona-Pérez L, Swaminathan S, Mai LT, Leroux LP, Jaramillo M, Descoteaux A, Stäger S.
05-07-2023
Microbiol Spectr.
<https://pubmed.ncbi.nlm.nih.gov/37404188/>

***Leishmania amazonensis* infection impairs VLA-4 clustering and adhesion complex assembly at the adhesion site of J774 cells.**

Brito R, Hassegawa EM, Camardelli P, Elpidio K, de Menezes J, Figueira CP, Dos-Santos WLC.
03-07-2023
Pathog Dis.
<https://pubmed.ncbi.nlm.nih.gov/37401145/>

Cutaneous leishmaniasis is an infectious disease that may lead to a single or multiple disseminated cutaneous lesions. The mechanisms involved in *Leishmania* dissemination to different areas of the skin and the internal organs remain poorly understood. Evidence shows that Very Late Antigen-4 (VLA-4)-dependent phagocyte adhesion is impaired by *Leishmania* infection, which may be related to the mechanisms of parasite dissemination. We investigated factors potentially associated with decreased VLA-4-mediated adhesion in *Leishmania*-infected macrophages, including lipid raft-mediated VLA-4 mobilization along the cellular membrane, integrin cluster formation at the cell base (adhesion site) and focal adhesion complex assembly. Phagocytes treated with Methyl- β -Cyclodextrin (M β CD)

demonstrated reduced adhesion, similarly to *Leishmania amazonensis*-infected J774 cells. Infected and MβCD-treated macrophages presented decreased VLA-4 mobilization to the adhesion plane, as well as reduced integrin clustering. *Leishmania amazonensis*-infected cells exhibited talin depletion, as well as a decreased mobilization of adhesion complex proteins, such as talin and viculin, which were associated with lower VLA-4 concentrations at the adhesion site and limited cell-spreading. Our results suggest that *Leishmania* infection may modulate the firm adhesion phase of the cell-spreading process, which could contribute to the bloodstream dissemination of infected cells.

Smartphone-readable RPA-LFA for the high-sensitivity detection of *Leishmania* kDNA using nanophosphor reporters.

Danthanarayana AN, Nandy S, Kourentzi K, Vu B, Shelite TR, Travi BL, Brgoch J, Willson RC.

03-07-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37399214/>

Early diagnosis of infectious diseases improves outcomes by enabling earlier delivery of effective treatment, and helps prevent further transmission by undiagnosed persons. We demonstrated a proof-of-concept assay combining isothermal amplification and lateral flow assay (LFA) for early diagnosis of cutaneous leishmaniasis, a vector-borne infectious disease that affects ca. 700,000 to 1.2 million people annually. Conventional molecular diagnostic techniques based on polymerase chain reaction (PCR) require complex apparatus for temperature cycling. Recombinase polymerase amplification (RPA) is an isothermal DNA amplification method that has shown promise for use in low-resource settings. Combined with lateral flow assay as the readout, RPA-LFA can be used as a point-of-care diagnostic tool with high sensitivity and specificity, but reagent costs can be problematic. In this work, we developed a highly-sensitive smartphone-based RPA-LFA for the detection of *Leishmania panamensis* DNA using blue-emitting [(Sr0.625Ba0.375)1.96Eu0.01Dy0.03]MgSi2O7 (SBMSO) persistent luminescent nanophosphors as LFA reporters. The greater detectability of nanophosphors allows the use of a reduced volume of RPA reagents, potentially reducing the cost of RPA-LFA. The limit of detection (LOD) of RPA with gold nanoparticle-based LFA readout is estimated at 1 parasite per reaction, but LOD can be 100-fold better, 0.01 parasites per reaction, for LFA based on SBMSO. This approach may be useful for sensitive and cost-effective point-of-care diagnosis and contribute to improved clinical and economic outcomes, especially in resource-limited settings.

Evaluation of the Efficacy of Sodium Chloride Nanoparticles on the Vitality of *Leishmania Major* (in vitro).

Abbas Marhoon I, Majid Al-Musawi M.

30-04-2023

Arch Razi Inst.

<https://pubmed.ncbi.nlm.nih.gov/37396731/>

Leishmaniasis is one of the most important zoonotic diseases transmitted to humans by sand flies (*Phlebotomus spp*). *Leishmania major* promastigote causes Cutaneous Leishmaniasis in humans. The study aimed to investigate the effectiveness of Sodium Chloride nanoparticles (NaCl NPs) on the vitality of *Leishmania major* promastigote compared with the standard dose of Pentostam under laboratory conditions. Various concentrations of 2, 4, 6, and 8 µg/ml of the NaCl NPs were prepared. These concentrations were tested in vitro on *L. major* growth by the culture of the parasite in the cell culture microplate. After the fourth day, a different concentration of NaCl NPs was added with three replicates for each concentration. Later, the numbers of promastigotes were counted daily using a Haemocytometer stained by Trypan blue solution stain duration of the study, which continued for four days. The results showed that the Growth Index (GI) rate of *L. major* promastigote was decreased with increasing NaCl NPs concentration. The Growth Index rates were 1.32×10^6 , 1.31×10^6 , 0.95×10^6 , and 0.78×10^6 for the mentioned concentrations. These values were compared with the rate of the Pentostam group and control group, which were 1.09×10^6 and 3.43×10^6 , respectively. The results revealed that the highest inhibition percentage was 92% for 8 µg/ml NaCl NPs after 96 hours, Pentostam group and control group, which were %86 and %0.00 for inhibition promastigote, respectively in the same period. The statistical analysis revealed a significant difference among concentrations at $P \leq 0.05$ compared with the Pentostam and control groups. The current study concluded that the NaCl NPs have an excellent biological effect in inhibiting *L. major* promastigote growth in vitro. These promising results paved the way for employing NaCl NPs to treat human cutaneous leishmaniasis.

Clinical application value of metagenomic second-generation sequencing technology in hematologic diseases with and without transplantation.

Zhang X, Wang F, Yu J, Jiang Z.

16-06-2023

Front Cell Infect Microbiol.

<https://pubmed.ncbi.nlm.nih.gov/37396304/>

Copper-Catalyzed Asymmetric Hydroboration Reaction of Novel Methylene Isoindolinone Compounds through Microwave Irradiation and Their Antileishmanial and Antitoxoplasma Activities.

Jellali H, Amri N, Mukhrish YE, Al Nasr IS, Koko WS, Khan TA, Deniau E, Sauthier M, Ghalla H, Hamdi N.

09-06-2023

ACS Omega.

<https://pubmed.ncbi.nlm.nih.gov/37396287/>

Evaluation of murine OX40L-murine IgG1(MM1) fusion protein on

immunogenicity against *L. mexicana* infection in BALB/c mice.

Rezvan H, Ali SA, Hamoonnavard S, Rees R.

26-06-2023

Comp Immunol Microbiol Infect Dis.

<https://pubmed.ncbi.nlm.nih.gov/37393646/>

The majority of OX40L is found on professional antigen-presenting cells (APC), the potency of OX40L to enhance the immunogenicity of potential vaccines against leishmania is not yet fully investigated. There is no report of administration of OX40L on cutaneous leishmaniasis either in therapy or prophylactic immunisation and the present study for the first time reports the effect of OX40L on *L. mexicana* infection. In this study, B9B8E2 cells were transfected with the murine OX40L and IgG1 plasmids, were used to produce the mOX40L-mIgG1 (MM1). The therapeutic effects of MM1(mOX40L-mIgG1) was tested in a challenge experiment using *L. mexicana* infected BALB/c mice. Mice received two doses of MM1, on day 3 and 7 after the infection. Mice receiving MM1 generated an inflammatory reaction a few days after the injection of the OX40L, which was gradually dampened and finally disappeared 3 weeks later. There was a significant delay in the growth of developing lesions in mice receiving OX40L compared to controls injected with PBS and the size of lesions in the group receiving MM1 was significantly smaller than that of injected with either PBS. 40% of mice given MM1 remained lesion free for two months, when experiments were terminated. The results clearly indicate the high therapeutic effect of mOX40L-mIgG1 fusion protein in *L. mexicana* infection. The effect of OX40L on the enhancement of immunisation, needs to be further investigated for developing new vaccine strategies.

Accuracy of serological tests in diagnosing mucosal leishmaniasis.

Oliveira D, Lopes KF, de Avelar DM, Cota G, Oliveira E.

01-07-2023

Parasitol Res.

<https://pubmed.ncbi.nlm.nih.gov/37391643/>

First evidence of experimental genetic hybridization between cutaneous and visceral strains of *Leishmania donovani* within its natural vector *Phlebotomus argenteipes*.

Riyal H, Ferreira TR, Paun A, Ghosh K, Samaranayake N, Sacks DL, Karunaweera ND.

27-06-2023

Acta Trop.

<https://pubmed.ncbi.nlm.nih.gov/37391025/>

Antileishmanial activity of tetra-cationic porphyrins with peripheral Pt(II) and Pd(II) complexes mediated by photodynamic therapy.

Linares IAP, Uría MS, Graminha MAS, Iglesias BA, Velásquez AMA.

Juin-2023

Photodiagnosis Photodyn Ther.

<https://pubmed.ncbi.nlm.nih.gov/37268042/>

Leishmaniasis is a neglected disease that impacts more than one billion people in endemic areas of the globe. Several drawbacks are associated with the currently existing drugs for treatment such as low effectiveness, toxicity, and the emergence of resistant strains that demonstrate the importance of looking for novel therapeutic alternatives. Photodynamic therapy (PDT) is a promising novel alternative for cutaneous leishmaniasis treatment because its topical application avoids potential side effects generally associated with oral/parenteral application. A light-sensitive compound known as photosensitizer (PS) interacts with light and molecular oxygen to generate reactive oxygen species (ROS), which promote cell death by oxidative stress through PDT approaches. Here, for the first time, we demonstrate the antileishmanial effect of tetra-cationic porphyrins with peripheral Pt(II)- and Pd(II)-polypyridyl complexes using PDT. The isomeric tetra-cationic porphyrins in the meta positions, 3-PtTPyP, and 3-PdTPyP, exhibited the highest antiparasitic activity against promastigote ($IC_{50-pro} = 41.8$ nM and 46.1 nM, respectively) and intracellular amastigote forms ($IC_{50-ama} = 27.6$ nM and 38.8 nM, respectively) of *L. amazonensis* under white light irradiation ($72 J cm^{-2}$) with high selectivity ($SI > 50$) for both forms of parasites regarding mammalian cells. In addition, these PS induced the cell death of parasites principally by a necrotic process in the presence of white light by mitochondrial and acidic compartments accumulation. This study showed that porphyrins 3-PtTPyP and 3-PdTPyP displayed a promising antileishmanial-PDT activity with potential application for cutaneous leishmaniasis treatment.

Efficacy of oleylphosphocholine in experimental cutaneous leishmaniasis.

Van Bocxlaer K, Dixon J, Platteeuw JJ, Van Den Heuvel D, McArthur KN, Harris A, Alavijeh M, Croft SL, Yardley V.

05-07-2023

J Antimicrob Chemother.

<https://pubmed.ncbi.nlm.nih.gov/37229566/>

Objectives: Cutaneous leishmaniasis (CL) is a neglected tropical disease causing a range of skin lesions for which safe and efficacious drugs are lacking. Oleylphosphocholine (OLPC) is structurally similar to miltefosine and has previously demonstrated potent activity against visceral leishmaniasis. We here present the in vitro and in vivo efficacy of OLPC against CL-causing *Leishmania* species. **Methods:** The antileishmanial activities of OLPC were evaluated and compared with miltefosine in vitro against intracellular amastigotes of seven CL-causing species. Following the confirmation of significant in vitro activity, the performance of the maximum tolerated dose of OLPC was evaluated in an experimental murine model of CL followed by a dose-response titration and the efficacy evaluation of four OLPC formulations (two with a fast-release and two with a slow-release profile) using bioluminescent *Leishmania* major parasites. **Results:** OLPC demonstrated potent in vitro activity of the same order as miltefosine in the intracellular macrophage model against a range of CL-causing species. A dose of 35 mg of OLPC/kg/day administered orally for 10

days was well-tolerated and able to reduce the parasite load in the skin of L. major-infected mice to a similar extent as the positive control paromomycin (50 mg/kg/day, intraperitoneally) in both in vivo studies. Reducing the dose of OLPC resulted in inactivity and modifying the release profile using mesoporous silica nanoparticles led to a decrease in activity when solvent-based loading was used in contrast to extrusion-based loading, which had no impact on its antileishmanial efficacy. **Conclusions:** Together, these data suggest that OLPC could be a promising alternative to miltefosine treatment for CL. Further investigations exploring experimental models with additional Leishmania species and skin pharmacokinetic and dynamic analyses are required.

Canine visceral leishmaniasis diagnosis by UV spectroscopy of blood serum and machine learning algorithms.

Coelho ML, França T, Fontoura Mateus NL, da Costa Lima Junior MS, Cena C, do Nascimento Ramos CA.

Juin-2023

Photodiagnosis Photodyn Ther.

<https://pubmed.ncbi.nlm.nih.gov/37080349/>

Nanoemulsions for increased penetrability and sustained release of leishmanicidal compounds.

García DJ, Fernández-Culma M, Upegui YA, Ríos-Vásquez LA, Quiñones W, Ocampo-Cardona R, Echeverri F, Vélez ID, Robledo SM.

Juil-2023

Arch Pharm (Weinheim).

<https://pubmed.ncbi.nlm.nih.gov/37068175/>

In the last decade, the World Health Organization has driven the development of drugs for topical use in patients with cutaneous leishmaniasis (CL), the most prevalent clinical form of leishmaniasis, a neglected tropical disease. The chemicals C₆ I, TC1, and TC2 were reported as promising antileishmanial drugs. We aimed to develop a topical nanoformulation that enhances the advantageous effect of C₆ I, TC1, and TC2, guaranteeing higher stability and bioavailability of the pharmacologically active components through the topical route. Nanoemulsions were prepared by ultrasonication based on oleic acid (0.5 g). A relation of Tween®-80/ethanol (1:3) and water was obtained; physicochemical characterization of all formulations was performed, and the preliminary stability and transdermal penetration of these nanoemulsions were also investigated. Newtonian-type fluids with high load capacity, 147-273 nm globule size, and -15 to -18 mV zeta potential were obtained with differential permeability rates in the first pig ear skin assay, first-order kinetics-release model for C₆ I, and Weibull for TC1 and TC2. The nanoemulsion showed good stability, high encapsulation efficiency, and higher leishmanicidal activity against Leishmania braziliensis with lower cytotoxicity in U937 macrophages. In conclusion, nanoemulsions of ethanol-oleic acid/Tween®-80 increase the activity of compounds with leishmanicidal activity by increasing their penetration and sustained release.

Seroprevalence of Leishmania infantum in outdoor workers from southern Italian endemic regions.

Morea A, Stufano A, Sgroi G, De Benedictis L, Bezerra-Santos MA, Mendoza-Roldan JA, Veneziano V, Otranto D, Lovreglio P, Iatta R.

Août-2023

Zoonoses Public Health.

<https://pubmed.ncbi.nlm.nih.gov/37060161/>

Towards effective natural anthraquinones to mediate antimicrobial photodynamic therapy of cutaneous leishmaniasis.

Dimmer JA, Cabral FV, Núñez Montoya SC, Ribeiro MS.

Juin-2023

Photodiagnosis Photodyn Ther.

<https://pubmed.ncbi.nlm.nih.gov/36966867/>

Fourth case of tegumentary leishmaniasis in Brazil by Leishmania major – is it possible for new species to be introduced in Brazil through immigration?

Matsumoto CT, Enokihara MMSES, Ogawa MM, Yarak S.

Juil-Août 2023

An Bras Dermatol.

<https://pubmed.ncbi.nlm.nih.gov/36922335/>

Genetic variability highlights the invasion route of the Lutzomyia longipalpis complex, the main vector of Visceral Leishmaniasis in Uruguay.

Cabrera A, Pita S, González T, Viera A, Verger L, Piegas S, Willat G, Fresia P, Basmadján Y.

Août 2023

Zoonoses Public Health.

<https://pubmed.ncbi.nlm.nih.gov/36898974/>

In the Americas, the sandfly Lutzomyia longipalpis is the main vector of the parasitic protozoa Leishmania infantum, the etiological agent of visceral leishmaniasis (VL). The Lu. longipalpis species complex is currently discontinuously distributed across the Neotropical region, from Mexico to the north of Argentina and Uruguay. During its continental spreading, it must have adapted to several biomes and temperature amplitudes, when founder events should have contributed to the high genetic divergence and geographical structure currently observed, reinforcing the speciation process. The first report of Lu. longipalpis in Uruguay was in 2010, calling the attention of Public Health authorities. Five years later, the parasite Le. infantum was recorded and in 2015 the first case of VL in canids was reported. Hitherto seven human cases by VL have been reported in Uruguay. Here, we publish the first DNA sequences from the mitochondrial genes ND4 and CYTB of Lu. longipalpis collected in Uruguay, and we used these molecular markers to investigate their genetic variability and population structure. We described four new ND4 haplotypes in a total of 98 (4/98) and one CYTB in a total of 77 (1/77). As

expected, we were able to establish that the *Lu. longipalpis* collected in two localities (i.e. Salto and Bella Unión) from the north of Uruguay are closely related to the populations from neighbouring countries. We also propose that the possible route for the vector arrival to the region may have been through vegetation and forest corridors of the Uruguay River system, as well as it may have benefited from landscape modifications generated by commercial forestation. The ecological-scale processes shaping *Lu. longipalpis* populations, the identification of genetically homogeneous groups and the gene flow among them must be carefully investigated by using highly sensible molecular markers (i.e. genome wide SNPs) since it will help to the understanding of VL transmission and contribute to the planification of public policies on its control.

Review of the Clinical Presentation, Pathology, Diagnosis, and Treatment of Leishmaniasis.

Mathison BA, Bradley BT.

05-07-2023

Lab Med.

<https://pubmed.ncbi.nlm.nih.gov/36468667/>

Lèpre

OVX033, a nucleocapsid-based vaccine candidate, provides broad-spectrum protection against SARS-CoV-2 variants in a hamster challenge model.

Primard C, Monchâtre-Leroy E, Del Campo J, Valsesia S, Nikly E, Chevandier M, Boué F, Servat A, Wasniewski M, Picard-Meyer E, Courant T, Collin N, Salguero FJ, Le Vert A, Guyon-Gellin D, Nicolas F.

19-06-2023

Front Immunol.

<https://pubmed.ncbi.nlm.nih.gov/37409116/>

Spike-based COVID-19 vaccines induce potent neutralizing antibodies but their efficacy against SARS-CoV-2 variants decreases. OVX033 is a recombinant protein composed of the full-length nucleocapsid (N) protein of SARS-CoV-2 genetically fused to oligoDOM[®], a self-assembling domain which improves antigen immunogenicity. OVX033 including N as an antigenic target is proposed as new vaccine candidate providing broad-spectrum protection against sarbecoviruses. OVX033 demonstrated its ability to trigger cross-reactive T cell responses and cross-protection against three variants of SARS-CoV-2 (B.1 Europe, Delta B.1.617.2, and Omicron B.1.1.529) in a hamster challenge model, as evidenced by lower weight loss, lower lung viral loads, and reduced lung histopathological lesions.

IFITM3 restricts RABV infection through inhibiting viral entry and mTORC1-dependent autophagy.

Ma J, Tu Z, Du S, Zhang X, Wang J, Guo J, Feng Y, He H, Wang H, Li C, Tu C, Liu Y.

28-06-2023

Vet Microbiol.

<https://pubmed.ncbi.nlm.nih.gov/37392666/>

Predicted pharmacokinetic interactions between hormonal contraception and single or intermittently dosed rifampicin.

Radtke KK, Hill J, Schoenmakers A, Mulder C, van der Grinten E, Overbeek F, Salazar-Austin N, Nascimento WMC, van Brakel W, Weld E.

06-07-2023

J Clin Pharmacol.

<https://pubmed.ncbi.nlm.nih.gov/37409982/>

Comparison between lymecycline with multidrug therapy and standard multidrug regimen (WHO-MDT) in the treatment of multibacillary leprosy patients: a retrospective cohort study.

Diaz JCD, Abad-Venida ML, Espinoza-Thaebtharm A, Cathryn Salonga ME, Abad-Casintahan MF.

05-07-2023

Int J Dermatol.

<https://pubmed.ncbi.nlm.nih.gov/37408116/>

Background: Hansen's disease or leprosy is a chronic, infectious disease that has locally and globally afflicted all populations. Despite standard treatment with multidrug therapy (WHO-MDT), the incidence of drug resistance has been an increasingly prevalent global problem in leprosy management. This study compared the effectiveness between lymecycline with WHO-MDT and standard WHO-MDT in leprosy treatment. **Methods:** The research is a retrospective cohort study at a tertiary hospital from January 2011 to July 2021. Pre- and post-treatment bacillary index, presence of new lesions, nerve function impairment, and leprosy reactions were obtained through chart review. **Results:** The results showed a significant difference in bacteriological index (BI) in both groups at the end of the treatment. However, a higher reduction in BI was noted for the lymecycline group. For the group that took WHO-MDT alone, BI decreased by 0.7 ($P < 0.001$) whereas patients who took lymecycline and WHO-MDT had a BI difference of 3 ($P < 0.001$) upon completion of treatment. A significant decrease in the recurrence of lesions ($P = 0.006$) and nerve function impairment ($P = 0.038$) was also noted in the lymecycline group whereas there was no significant difference in leprosy reactions between the two groups. **Conclusion:** Lymecycline 600 mg daily for 3 months can be used as an adjunct in cases of leprosy resistance and treatment failure among multibacillary patients. Lymecycline significantly reduced bacillary index, recurrence of skin lesions, and nerve function impairment through its possible immunomodulatory, antiapoptotic, and neuroprotective effects.

Factors associated with multibacillary leprosy in a region of northeastern Brazil.

Da Silva JC, De Oliveira RA, Siqueira Santos LF, Pascoal LM, Santos FS, Pereira de Jesus Costa AC, Costa Maia

Dias IC, Tavares Palmeira Rolim IL, Graepp Fontoura I, Siqueira de Araujo Gordon A, Santos Melo Lobato J, Arrais Sampaio Santos FA, Bezerra JM, Fontoura VM, Vieira Ramos AC, Hinaldo Dos Santos L, Santos Neto M. 30-06-2023

J Infect Dev Ctries.

<https://pubmed.ncbi.nlm.nih.gov/37406066/>

Triaging cases of fever with vesicular rash relevant to the monkeypox epidemic.

Sardana K, Sachdeva S, Narula S, Gogate S.

04-07-2023

Trop Doct.

<https://pubmed.ncbi.nlm.nih.gov/37403493/>

Assessment of efficacy of carboxytherapy in management of skin aging through evaluation of gene expression profile: a 2-split randomized clinical trial.

Bagherani N, Firooz A, Ghanadan A, Smoller BR, Mirmomeni G, Shojaei R, Mondanizadeh M, Tavoosidana G.

05-07-2023

Arch Dermatol Res.

<https://pubmed.ncbi.nlm.nih.gov/37402830/>

Skin aging is a continuous and irreversible process which results in impairment of the skin role as barrier against all aggressive exogenous factors. It mainly manifests by photoaging, laxity, sagging, wrinkling, and xerosis. Carboxytherapy is considered as a safe, minimally invasive modality used for rejuvenation, restoration, and recondition of the skin. In the current study, the efficacy of carboxytherapy in the treatment of skin aging was assessed through investigation of gene expression profile for Coll I, Coll III, Coll IV, elastin, FGF, TGF- β 1, and VEGF. Our study is a 2-split clinical trial in which carboxytherapy was performed on one side of the abdomen in 15 cases with intrinsically skin aging manifestations weekly for 10 sessions, while the other side of the abdomen was left without treatment. Two weeks after the last session, skin biopsies were taken from both the treated and control sides of the abdomen in order to assess gene expression profile by qRT-PCR. The analysis of gene expression levels for all of Coll I, Coll III, Coll IV, elastin, TGF- β 1, FGF and VEGF genes showed a statistically significant difference between the interventional and control groups. The findings for all of these seven genes showed increase in the interventional group, among which Coll IV, VEGF, FGF, and elastin showed the higher mean changes. Our study confirmed the effectiveness of carboxytherapy in treating and reversing the intrinsically aging skin. Clinical Trial Registration Code and Date of Registration: ChiCTR2200055185; 2022/1/2.

Case report: Injected corticosteroids for treating leprosy isolated neuritis.

Spitz CN, Pitta IJR, Andrade LR, Sales AM, Sarno EN, Villela NR, Pinheiro RO, Jardim MR.

15-06-2023

Front Med (Lausanne).

<https://pubmed.ncbi.nlm.nih.gov/37396908/>

One of the main manifestations of leprosy is peripheral nerve impairment. Early diagnosis and treatment are important to reduce the impact of neurological impairment, which can cause deformities and physical disabilities. Leprosy neuropathy can be acute or chronic, and neural involvement can occur before, during, or after multidrug therapy, and especially during reactional episodes when neuritis occurs. Neuritis causes loss of function in the nerves and can be irreversible if left untreated. The recommended treatment is corticosteroids, usually through an oral regimen at an immunosuppressive dose. However, patients with clinical conditions that restrict corticosteroid use or that have focal neural involvement may benefit from the use of ultrasound-guided perineural injectable corticosteroids. In this study, we report two cases that demonstrate how the treatment and follow-up of patients with neuritis secondary to leprosy, using new techniques, can be provided in a more individualized way. Nerve conduction studies in association with neuromuscular ultrasound were used to monitor the response to treatment with injected steroids, focusing on neural inflammation. This study provides new perspectives and options for this profile of patients.

Implementation, feasibility, and acceptability of 99DOTS-based supervision of treatment for drug-susceptible TB in Uganda.

Kiwanuka N, Kityamuwesi A, Crowder R, Guzman K, Berger CA, Lamunu M, Namale C, Kunihiro Tinka L, Nakate AS, Ggita J, Turimumahoro P, Babirye D, Oyuku D, Patel D, Sammann A, Turyahabwe S, Dowdy DW, Katamba A, Cattamanchi A.

30-06-2023

PLOS Digit Health.

<https://pubmed.ncbi.nlm.nih.gov/37390077/>

[Overview of infectious and non-infectious diseases in French Guiana in 2022].

Epelboin L, Abboud P, Abdelmoumen K, About F, Adenis A, Blaise T, Blaizot R, Bonifay T, Bourne-Watrin M, Boutrou M, Carles G, Carlier PY, Carod JF, Carvalho L, Coupé P, De Toffol B, Delon F, Demar M, Destoop J, Douine M, Droz JP, Elenga N, Enfissi A, Franck YK, Fremery A, Gaillet M, Kallel H, Kpangon AA, Lavergne A, Le Turnier P, Maisonnobe L, Michaud C, Mutricy R, Nacher M, Naldjinan-Kodbaye R, Oberlis M, Odonne G, Osei L, Pujo J, Rabier S, Roman-Lavardure B, Rousseau C, Rousset D, Sabbah N, Sainte-Rose V, Schaub R, Sylla K, Tareau MA, Tertre V, Thorey C, Viallette V, Walter G, Zappa M, Djossou F, Vignier N.

17-02-2023

Med Trop Sante Int.

<https://pubmed.ncbi.nlm.nih.gov/37389381/>

Source of many myths, French Guiana represents an exceptional territory due to the richness of its biodiversity and the variety of its communities. The only European territory in Amazonia, surrounded by the Brazilian giant

and the little-known Suriname, Ariane 6 rockets are launched from Kourou while 50% of the population lives below the poverty line. This paradoxical situation is a source of health problems specific to this territory, whether they be infectious diseases with unknown germs, intoxications or chronic pathologies. Some infectious diseases such as Q fever, toxoplasmosis, cryptococcosis or HIV infection are in common with temperate countries, but present specificities leading to sometimes different management and medical reasoning. In addition to these pathologies, many tropical diseases are present in an endemic and / or epidemic mode such as malaria, leishmaniasis, Chagas disease, histoplasmosis or dengue. Besides, Amazonian dermatology is extremely varied, ranging from rare but serious pathologies (Buruli ulcer, leprosy) to others which are frequent and benign such as agouti lice (mites of the family Trombiculidae) or papillitis. Envenomations by wild fauna are not rare, and deserve an appropriate management of the incriminated taxon. Obstetrical, cardiovascular and metabolic cosmopolitan pathologies sometimes take on a particular dimension in French Guiana that must be taken into account in the management of patients. Finally, different types of intoxication are to be known by practitioners, especially due to heavy metals. European-level resources offer diagnostic and therapeutic possibilities that do not exist in the surrounding countries and regions, thus allowing the management of diseases that are not well known elsewhere. Thanks to these same European-level resources, research in Guyana occupies a key place within the Amazon region, despite a smaller population than in the surrounding countries. Thus, certain pathologies such as histoplasmosis of the immunocompromised patient, Amazonian toxoplasmosis or Q fever are hardly described in neighboring countries, probably due to under-diagnosis linked to more limited resources. French Guiana plays a leading role in the study of these diseases. The objective of this overview is to guide health care providers coming to or practicing in French Guiana in their daily practice, but also practitioners taking care of people returning from French Guiana.

Effectiveness of population-wide screening and mass drug administration for leprosy control in Kiribati: the COMBINE protocol.

Coleman M, Hill J, Timeon E, Rimon E, Bauro T, Ioteba N, Cunanan A, Douglas NM, Islam T, Tomlinson J, Campbell PO, Williman J, Priest P, Marais BJ, Britton WJ, Chambers ST.

29-06-2023

BMJ Open.

<https://pubmed.ncbi.nlm.nih.gov/37385746/>

Case Report: Necrotizing Erythema Nodosum as a Manifestation of Lepromatous Leprosy Relapse 50 Years after the Initial Infection.

Galeano J, Contreras A, Pabón L, Ruiz AC, Serrano-Coll H, Arboleda M.

30-05-2023

Am J Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/37253443/>

Children deserve simple, short, safe, and effective treatment for rifampicin-resistant tuberculosis.

Garcia-Prats AJ, Hoddinott G, Howell P, Hughes J, Jean-Philippe P, Kim S, Palmer M, Schaaf HS, Seddon JA, Svensson E, Hesselning AC.

Jul-2023

Lancet Infect Dis.

<https://pubmed.ncbi.nlm.nih.gov/37245523/>

ES has received research funding from TB Alliance and Janssen Pharmaceuticals, has received financial compensation from WHO, and is a member of the Data Safety Monitoring Board for the BE-PEOPLE leprosy prevention study. SK has received grants, paid to her institution, from the National Institutes of Health, Unitaids, and CRDF Global and is a Data Safety Monitoring Board member for the DRAMATIC trial. AJG-P has received grants, paid to his institution, from Unitaids and the National Institutes of Health. PH has received research funding, paid to her institution, from TB Alliance and the National Institutes of Health. GH has received financial assistance from the EU (DCI-PANAF/2020/420-028) through the African Research Initiative for Scientific Excellence pilot programme. The content of this Comment is the sole responsibility of the authors and can under no circumstances be regarded as reflecting the position of the EU, the African Academy of Sciences, or the African Union Commission. The content of this Comment is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Allergy and Infectious Diseases, National Institutes of Health. All other authors declare no competing interests.

Temporal trend, high-risk spatial and spatiotemporal clustering of leprosy indicators in Brazil: A 20-year ecological and population-based study.

Paz WS, Ramos RES, Bezerra LP, Matos DF, Tavares DS, Souza CDF, Bezerra-Santos M, Ximenes RAA.

Jul-2023

Trop Med Int Health.

<https://pubmed.ncbi.nlm.nih.gov/37243431/>

Objectives: Leprosy still represents a public health concern in Brazil. The country is the only one in America not to reach the global goal of leprosy disease control. Hence, this study aimed to assess the temporal, spatial and space-time patterns of leprosy cases in Brazil of the 20-year time series 2001-2020. **Methods:** An ecological and population-based analysis was carried out, applying temporal and spatial techniques, and using the detection coefficient of sociodemographic and clinical-epidemiological variables of leprosy new cases in the 5570 municipalities of Brazil. Temporal trends were assessed using a segmented linear regression model. For spatial analysis, global and local Moran indexes were applied, and space-time scan statistics was used to identify risk clusters. **Results:** The mean detection coefficient was 19.36/100,000 inhabitants, with a higher occurrence among men (21.29/100,000 inhabitants) and in the 60-69 age group

(36.31/100,000). A decreasing temporal trend was observed in the country (annual percentage change: - 5.20% per year). The North and Midwest regions were the most affected, exhibiting municipalities with a high/high standard, and with the highest annual percentage increase of multibacillary (MB) cases. Leprosy has a heterogeneous distribution throughout Brazil, but with high-risk spatiotemporal clusters, mainly located in the North and Midwest regions. **Conclusion:** Although Brazil has shown a decreasing temporal trend during the past 20 years, the country is still classified as highly endemic for leprosy, showing an increase in the proportion of new MB cases over the years.

Case Report: Lepromatous Leprosy Masquerading as Acute Suppurative Lymphadenitis.

Meena M, Joshi R, Yadav V, Singh P, K S, Pandey G.

15-05-2023

Am J Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/37188342/>

The "Hand as Foot" teaching method in leprosy.

Bai S, Lv X, Wang R, Liu H.

Juil-2023

Asian J Surg.

<https://pubmed.ncbi.nlm.nih.gov/36801188/>

Artificial intelligence: Its role in dermatopathology.

Jartarkar SR.

Juil-Août 2023

Indian J Dermatol Venereol Leprol.

<https://pubmed.ncbi.nlm.nih.gov/36688886/>

Artificial intelligence (AI), a major frontier in the field of medical research, can potentially lead to a paradigm shift in clinical practice. A type of artificial intelligence system known as convolutional neural network points to the possible utility of deep learning in dermatopathology. Though pathology has been traditionally restricted to microscopes and glass slides, recent advancement in digital pathological imaging has led to a transition making it a potential branch for the implementation of artificial intelligence. The current application of artificial intelligence in dermatopathology is to complement the diagnosis and requires a well-trained dermatopathologist's guidance for better designing and development of deep learning algorithms. Here we review the recent advances of artificial intelligence in dermatopathology, its applications in disease diagnosis and in research, along with its limitations and future potential.

Mucocutaneous manifestations of COVID-19-associated mucormycosis: A retrospective cross-sectional study.

Sachan S, Suvirya S, Yadav K, Gupta P, Saraswat A, Verma P, Chandra U, Singh BP, Chaudhary SC, Dwivedi DK, Garg RK, Singhai A, Malhotra KP, Parihar A, Kumar S.

Juil-Août 2023

Indian J Dermatol Venereol Leprol.

<https://pubmed.ncbi.nlm.nih.gov/36688884/>

Eponyms in dermatology linked to Gottron.

K S, Gupta P, Asati DP, Verma P.

Juil-Août 2023

Indian J Dermatol Venereol Leprol.

<https://pubmed.ncbi.nlm.nih.gov/36331846/>

Myths, misconceptions and attitudinal trends among patients with acne.

Ansari F, Khare AK, Gupta LK.

Juil-Août 2023

Indian J Dermatol Venereol Leprol.

<https://pubmed.ncbi.nlm.nih.gov/35962511/>

Background Despite acne being a common dermatological problem, there is a paucity of literature addressing the knowledge, attitude and practice about it. **Aims/Objectives** To find out what patients know about acne, its cause and treatment, as well as myths, misconceptions and attitude towards it. **Methods** A cross-sectional, descriptive questionnaire-based study on acne patients at Maharana Bhupal Hospital, RNT Medical College, Udaipur, Rajasthan, India. **Results** Most (84.8%) patients belonged to the age group of 16-25 years. The majority (63.9%) presented 12 months after the onset of acne. More than half had average knowledge, a positive attitude and good practices, related significantly to gender and education. **Limitations** A standardized questionnaire suitable for all dialects and regional languages would have yielded more uniform results. **Conclusion** Study revealed that acne patients still need to acquire accurate, adequate and easily accessible information to seek timely and appropriate treatment, and alleviate their psychological suffering.

Small-fibre neuropathy in leprosy the role of in vivo confocal microscopy: A cross-sectional study.

Cajueiro MA, Cavalcanti BM, Cavalcanti CM, Brito MFM, Bonfim CVD, Correia CDC.

Juil-Août 2023

Indian J Dermatol Venereol Leprol.

<https://pubmed.ncbi.nlm.nih.gov/35962495/>

Background Leprosy (or Hansen's disease) continues to present considerable challenges regarding containment and early diagnosis. Leprosy is considered to be primarily a neural disease that first affects the sensory function of small fibres. Although the condition is well described in terms of clinical manifestations and histology, few studies have been undertaken to detect damage done to small-fibre sensory nerves. **In vivo confocal microscopy** is a useful tool for conducting a detailed evaluation of these structures, although its use in individuals affected by leprosy has still not been explored. **Objective** To evaluate in vivo confocal microscopy findings in Hansen's disease patients and their association with clinical variables relating to this disease. **Method** A cross-sectional case-

series type study was carried out between October 2019 and May 2021, in Recife, Pernambuco, Brazil. Socio-demographic and clinical data were gathered from 21 patients with leprosy. The douleur neuropathique 4 neuropathic pain questionnaire was used to evaluate pain. In vivo confocal microscopy of the cornea was employed to evaluate the small-calibre fibres. Findings were compared with those for a control group of 23 healthy individuals. Results In relation to clinical parameters, 90.5% of the patients were classified as "multibacillary" according to the World Health Organization criteria, and 70% as dimorphic or borderline, in accordance with the Madrid classification. Around 52.4% had received a diagnosis after one year or less of living with the disease, while 95.2% presented alterations in small-fibre sensory function and 35% presented such alterations in the large fibre. Neuropathic pain was present in 81% of the patients. In vivo confocal microscopy found no statistically significant difference in mean age and distribution according to sex between the Hansen disease patients and the control group of healthy individuals. The median-of-means for dendritic cells and volume of sub-basal nerve fibres in the control group were used to test for normality. Both eyes of all leprosy patients examined contained higher number of dendritic cells than the median value and a volume of sub-basal nerve fibres lower than the mean. These differences were statistically significant ($P < 0.001$ and $P < 0.001$, respectively). Multibacillary individuals had a median number of dendritic cells two times that of paucibacillary individuals ($P = 0.035$). Limitations No association was found between the variables examined using in vivo confocal microscopy and clinical variables relating to small-fibre damage, the neuropathic pain questionnaire or alterations detected by the neurological examination. We believe, however, that Cochet-Bonnet esthesiometry of the cornea may have revealed such an association. Conclusion In vivo confocal microscopy is a useful diagnostic tool for detecting small fibre loss in individuals affected by leprosy and may constitute a useful addition to the range of tools available to help curb the effects of neuropathy in these patients.

Disappearing digit: A rare appearance.

Veeranna S, Mathew SA, Rangappa V.

Juil-Août 2023

Indian J Dermatol Venereol Leprol.

<https://pubmed.ncbi.nlm.nih.gov/35146978>

Morsures de serpent

Intravenous snake bite: A catastrophic snake envenomation.

Naik SB.

Juil-Sept 2023

Ann Afr Med.

<https://pubmed.ncbi.nlm.nih.gov/37417008/>

Effect of COVID-19 containment measures on access to snakebite care in India.

Bhaumik S, Di Tanna GL, Beri D, Bhattacharya A, Kumar P, Giri S, Gopalakrishnan M, Raut S, Hartalkar A, Majgi SM, Jagnoor J.

Juil-2023

Rural Remote Health.

<https://pubmed.ncbi.nlm.nih.gov/37400940/>

Introduction: The extensive spread of COVID-19 meant action to address the pandemic took precedence over routine service delivery, thus impacting access to care for many health conditions, including the effects of snakebite.

Method: We prospectively collected facility-level data from several health facilities in India, including number of snakebite admissions and snakebite envenoming admissions on modality of transport to reach the health facility. To analyse the effect of a health facility being in cluster-containment zone, we used negative binomial regression analysis. **Results:** Our findings suggest that that health facilities located within a COVID containment zone saw a significant decrease in total snakebite admissions (incidence rate ratio 0.64 (0.43-0.94), standard error 0.13, $p \leq 0.02$) and envenoming snakebite admissions (incidence rate ratio 0.43 (0.23-0.81), standard error 0.14, $p \leq 0.01$) compared to when health facilities were not within a COVID containment zone. There was no statistically significant difference in non-envenoming admissions and modalities of transport used to reach health facilities. **Conclusion:** This article provides the first quantitative estimate of the impact of COVID-19 containment measures on access to snakebite care. More research is needed to understand how containment measures altered care-seeking pathways and the nature of snake-human-environment conflict. Primary healthcare systems need to be safeguarded for snakebite care to mitigate effects of cluster-containment measures.

[Local necrosis and infection complicating envenomation with *Echis ocellatus* in a child in Mali].

Keita M, Coulibaly SK, Sanogo SD.

20-03-2023

Med Trop Sante Int.

<https://pubmed.ncbi.nlm.nih.gov/37389377/>

A 4-year-old child living with his parents in Kolokani, a town about 100 km from Bamako, was bitten on the left index finger by a snake of the species *Echis ocellatus* (fonfoni in local language). After 2 weeks of traditional treatment, local complications were observed. The child was admitted to the Néné clinic in Kati (Mali) on 19 July 2022. The signs observed were correlated with the degree of envenomation and the whole blood coagulation test showed coagulation disorders, which justified the administration of antivenom. Necrosis of the whole index finger required amputation of the finger, which was not followed by any complications. Snakebites require proper management to prevent complications such as necrosis and infection of the bite site. Administration of antivenom is necessary if coagulation disorders persist. Surgical treatment and broad-spectrum antibiotic therapy may improve the prognosis.

Lifetime prevalence and knowledge of snakebite among graduates in Nigeria.

Michael GC, Grema BA, Bala AA, Olawumi AL, Gana AA, Madaki JKA, Habib AG.

04-07-2023

Trans R Soc Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/36846906/>

Imparting knowledge is no more considered a paramount contribution.

Bawaskar HS.

Avr-Juin 2023

Indian J Med Ethics.

<https://pubmed.ncbi.nlm.nih.gov/36420604/>

Histoid leprosy complicated by erythema nodosum leprosum mimicking connective tissue disease.

Pal D.

04-07-2023

Trop Doct.

<https://pubmed.ncbi.nlm.nih.gov/37401254/>

Assessing the cost-effectiveness of integrated case management of Neglected Tropical Diseases in Liberia.

Godwin-Akpan TG, Diaconu K, Edmiston M, Smith JS Jr, Sosu F, Weiland S, Kolli KK.

29-07-2023

BMC Health Serv Res.

<https://pubmed.ncbi.nlm.nih.gov/37386431/>

Background: In 2017, Liberia became one of the first countries in the African region to develop and implement a national strategy for integrated case management of Neglected Tropical Diseases (CM-NTDs), specifically Buruli ulcer, leprosy, lymphatic filariasis morbidities, and yaws. Implementing this plan moves the NTD program from many countries' fragmented (vertical) disease management. This study explores to what extent an integrated approach offers a cost-effective investment for national health systems. **Methods:** This study is a mixed-method economic evaluation that explores the cost-effectiveness of the integrated CM-NTDs approach compared to the fragmented (vertical) disease management. Primary data were collected from two integrated intervention counties and two non-intervention counties to determine the relative cost-effectiveness of the integrated program model vs. fragmented (vertical) care. Data was sourced from the NTDs program annual budgets and financial reports for integrated CM-NTDs and Mass Drug Administration (MDA) to determine cost drivers and effectiveness. **Results:** The total cost incurred by the integrated CM-NTD approach from 2017 to 2019 was US\$ 789,856.30, with the highest percentage of costs for program staffing and motivation (41.8%), followed by operating costs (24.8%). In the two counties implementing fragmented (vertical) disease management, approximately US\$ 325,000 was spent on the diagnosis of 84 persons and the treatment of twenty-four persons suffering from NTDs. While 2.5 times as much was spent in integrated counties, 9-10 times more patients were diagnosed and treated. **Conclusions:** The cost of a patient being diagnosed under the fragmented (vertical)

implementation is five times higher than integrated CM-NTDs, and providing treatment is ten times as costly. Findings indicate that the integrated CM-NTDs strategy has achieved its primary objective of improved access to NTD services. The success of implementing an integrated CM-NTDs approach in Liberia, presented in this paper, demonstrates that NTD integration is a cost-minimizing solution.

Unusual clinical presentations in leprosy: a case series and review.

Sawatkar GU, Sharma A, Keshavamurthy V, Mehta H, Chatterjee D, Narang T, Dogra S.

04-07-2023

Trans R Soc Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/36846900/>

Whole genome sequencing and phylogenetic characterisation of rabies virus strains from Moldova and north-eastern Romania.

Dascalu MA, Picard-Meyer E, Robardet E, Servat A, Arseniev S, Groza O, Starciuc N, Vuta V, Barbuceanu F, Tanase OI, Daraban Bocaneti F, Quenault H, Hirschaud E, Blanchard Y, Velescu E, Cliquet F.

06-07-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37410714/>

Background: Rabies is the oldest fatal zoonotic disease recognised as a neglected tropical disease and is caused by an RNA virus belonging to the genus *Lyssavirus*, family *Rhabdoviridae*. **Methodology/principal findings:** A deep molecular analysis was conducted on full-length nucleoprotein (N) gene and whole genome sequences of rabies virus from 37 animal brain samples collected between 2012 and 2017 to study the circulation of rabies virus (RABV) variants. The overall aim was to better understand their distribution in Moldova and north-eastern Romania. Both Sanger and high throughput sequencing on Ion Torrent and Illumina platforms were performed. Phylogenetic analysis of the RABV sequences from both Moldova and Romania revealed that all the samples (irrespective of the year of isolation and the species) belonged to a single phylogenetic group: north-eastern Europe (NEE), clustering into three assigned lineages: RO#5, RO#6 and RO#7. **Conclusions/significance:** High throughput sequencing of RABV samples from domestic and wild animals was performed for the first time for both countries, providing new insights into virus evolution and epidemiology in this less studied region, expanding our understanding of the disease.

A Novel Mouse Model for Polysynaptic Retrograde Tracing and Rabies Pathological Research.

Song Y, Li L, Ma T, Zhang B, Wang J, Tang X, Lu Y, He A, Li X.

05-07-2023

Cell Mol Neurobiol.

<https://pubmed.ncbi.nlm.nih.gov/37405550/>

Antibody titers in elderly patients after rabies post-exposure prophylaxis.

Itani O, Hochedez P, Benabdelmoumen G, Jidar K, Taieb F, Parize P, Consigny PH, Poujol P.

05-07-2023

Clin Infect Dis.

<https://pubmed.ncbi.nlm.nih.gov/37394127/>

[IL-33 gene recombination and expression does not affect the phenotypic characteristics of rabies virus in vitro].

Gao T, Mi Z, Sun M, Tang X, Wang Y, Li Y.

Juil-2023

Xi Bao Yu Fen Zi Mian Yi Xue Za Zhi.

<https://pubmed.ncbi.nlm.nih.gov/37403716/>

Objective To create a recombinant rabies virus overexpressing IL-33 and to clarify the effect of IL-33 overexpression on the phenotypic characteristics of recombinant virus in vitro. **Methods** The IL-33 gene was obtained and amplified from the brain of a highly virulent strain of rabies infected mouse. It was then inserted between the G and L genes of the parental virus LBNSE genome by reversing genetic manipulation and rescuing a recombinant virus overexpressing IL-33. BSR cells or mouse NA cells were infected with recombinant rabies virus (rLBNSE-IL33) and the parental strain LBNSE. Sequencing and fluorescent antibody virus neutralization assay was employed to detect the stability of recombinant virus at multiplicity of infection=0.01. Viral titres focal forming units (FFU) were detected to plot multi-step growth curves (multiplicity of infection=0.01). Cytotoxicity assay kit was used to detect cellular activity. ELISA was adopted to identify the IL-33 in the supernatant of infected cells of different multiplicity of infection. **Results** Rescued rLBNSE-IL33 overexpressing IL-33 remained stable for at least 10 consecutive generations and had virus titers of approximately 10^8 FFU/mL. rLBNSE-IL33 was able to express IL-33 at high levels in a dose-dependent manner, but no high expression of IL-33 was detected in the supernatant of cells infected by LBNSE. Examination of the titers of rLBNSE-IL33 and the parental strain LBNSE in BSR and NA cells over 5 days showed no significant differences and similar kinetic properties in growth. Overexpression of IL-33 had no significant effect on the proliferation and activity of infected cells. **Conclusion** Overexpression of IL-33 does not significantly affect the phenotypic characteristics of recombinant rabies virus in vitro.

Generation and characterization of a genetically modified live rabies vaccine strain with attenuating mutations in multiple viral proteins and evaluation of its potency in dogs.

Izumi F, Miyamoto S, Masatani T, Sasaki M, Kawakami K, Takahashi T, Fujiwara T, Fujii Y, Okajima M, Nishiyama S, Sawa H, Sugiyama M, Ito N.

01-07-2023

Vaccine.

<https://pubmed.ncbi.nlm.nih.gov/37400284/>

Live rabies vaccines have advantageous features that can facilitate mass vaccination for dogs, the most important reservoirs/transmitters of rabies. However, some live vaccine strains have problems in their safety, namely, risks from the residual pathogenicity and the pathogenic reversion of live vaccine strains. The reverse genetics system of rabies virus provides a feasible option to improve the safety of a live vaccine strain by, for example, artificially introducing attenuating mutations into multiple viral proteins. It was previously demonstrated in separate studies that introduction of amino acid residues Leu at position 333 in the viral glycoprotein (G333), Ser at G194, and Leu/His at positions 273/394 in the nucleoprotein (N273/394) enhance the safety of a live vaccine strain. In this study, to test our hypothesis that combinational introduction of these residues would significantly increase the safety level of a vaccine strain, we generated a novel live vaccine candidate, ERA-NG2, that is attenuated by mutations at N273/394 and G194/333, and we examined its safety and immunogenicity in mice and dogs. ERA-NG2 did not cause any clinical signs in mice after intracerebral inoculation. After 10 passages in suckling mouse brains, ERA-NG2 retained all of the introduced mutations except the mutation at N394 and the highly attenuated phenotype. These findings indicate that the ERA-NG2 is highly and stably attenuated. After confirming that ERA-NG2 induced a virus-neutralizing antibody (VNA) response and protective immunity in mice, we immunized dogs intramuscularly with a single dose (10^{5-7} focus-forming units) of ERA-NG2 and found that, at all of the tested doses, the strain induced a VNA response in dogs without inducing any clinical signs. These findings demonstrate that ERA-NG2 has a high level of safety and a substantial level of immunogenicity in dogs and thus is a promising live vaccine candidate that can facilitate vaccination in dogs.

Single visit rabies pre-exposure prophylaxis: A literature review.

Damanet B, Strachinaru DIC, Levêque A.

30-06-2023

Travel Med Infect Dis.

<https://pubmed.ncbi.nlm.nih.gov/37394127/>

Drug reinforcement impairs cognitive flexibility by inhibiting striatal cholinergic neurons.

Gangal H, Xie X, Huang Z, Cheng Y, Wang X, Lu J, Zhuang X, Essoh A, Huang Y, Chen R, Smith LN, Smith RJ, Wang J.

30-06-2023

Nat Commun.

<https://pubmed.ncbi.nlm.nih.gov/37391566/>

Addictive substance use impairs cognitive flexibility, with unclear underlying mechanisms. The reinforcement of substance use is mediated by the striatal direct-pathway medium spiny neurons (dMSNs) that project to the substantia nigra pars reticulata (SNr). Cognitive flexibility is mediated by striatal cholinergic interneurons (CINs), which receive extensive striatal inhibition. Here, we hypothesized that increased dMSN activity induced by substance use inhibits CINs, reducing cognitive flexibility. We found that cocaine administration in rodents caused

long-lasting potentiation of local inhibitory dMSN-to-CIN transmission and decreased CIN firing in the dorsomedial striatum (DMS), a brain region critical for cognitive flexibility. Moreover, chemogenetic and time-locked optogenetic inhibition of DMS CINs suppressed flexibility of goal-directed behavior in instrumental reversal learning tasks. Notably, rabies-mediated tracing and physiological studies showed that SNr-projecting dMSNs, which mediate reinforcement, sent axonal collaterals to inhibit DMS CINs, which mediate flexibility. Our findings demonstrate that the local inhibitory dMSN-to-CIN circuit mediates the reinforcement-induced deficits in cognitive flexibility.

A simplified method for measuring neutralising antibodies against rabies virus.

Wu G, Lorraine MM, Goharriz H, Amaya-Cuesta J, Fooks AR, Banyard AC.

28-06-2023

J Virol Methods.

<https://pubmed.ncbi.nlm.nih.gov/37391076/>

Cortical somatostatin interneuron subtypes form cell-type-specific circuits.

Wu SJ, Sevier E, Dwivedi D, Saldi GA, Hairston A, Yu S, Abbott L, Choi DH, Sherer M, Qiu Y, Shinde A, Lenahan M, Rizzo D, Xu Q, Barrera I, Kumar V, Marrero G, Prönnke A, Huang S, Kullander K, Stafford DA, Macosko E, Chen F, Rudy B, Fishell G.

22-07-2023

Neuron.

<https://pubmed.ncbi.nlm.nih.gov/37390821/>

Clinical-epidemiological profile of the canine population in a shelter, Minas Gerais, Brazil, 2019-2020.

Colocho RAB, Costa ACTRB, Ferreira BAM, Ferreira ACR, da Costa Custódio DA, Pereira CR, Oliveira EA, Sirias IDP, de Melo SN, Souza ABB, de Brito GF, Resende DB, Maluf CL, de Oliveira FIA, Felix LA, Chaves MGD, Hirsch C, de Mesquita Neto FD, Lacreata Junior ACC, Dorneles EMS.

30-06-2023

J Appl Anim Welf Sci.

<https://pubmed.ncbi.nlm.nih.gov/37387325/>

The aim of this study was to analyze the demographic, clinical, and hematological aspects of the population in a dog shelter located in the municipality of Lavras, Brazil. All animals were microchipped and evaluated by veterinarians. Whole blood samples were obtained from 329 dogs in the months of July-August 2019 and from 310 dogs in the months of January-February 2020. Most of the dogs were of mixed breed, received anti-rabies and polyvalent vaccines (100%), were dewormed (100%), and were spayed/neutered (98.59%), with a predominance of adult (86.51%), short-hair (67.51%), normal body condition (65.57%), medium-size (62.57%), and female (62.36%). The main clinical alterations detected were enlarged lymph nodes (38.69%), skin lesions (31.50%), overweight (23.32%), obesity (6.07%), elevated temperature (17.05%), and ear secretion (15.72%).

Regarding hematological alterations, thrombocytopenia (36.31%), leukopenia (15.92%), anemia with decreased hemoglobin values (10.60%), hematocrit (9.70%), and red blood cells (5.14%) were observed. Most of the shelter dogs were apparently healthy, but specific measures for nutritional, dermatological, otological and disease management should be implemented once the health changes are verified, as they impact the general state of the population and adoptions.

Onchocercose

Nodding syndrome, a case-control study in Mahenge, Tanzania: *Onchocerca volvulus* and not *Mansonella perstans* as a risk factor.

Amaral LJ, Bhwana D, Mhina AD, Mmbando BP, Colebunders R.

20-06-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37339148/>

Background: Nodding syndrome (NS) has been consistently associated with onchocerciasis. Nevertheless, a positive association between NS and a *Mansonella perstans* infection was found in South Sudan. We aimed to determine whether the latter parasite could be a risk factor for NS in Mahenge. **Methods:** Cases of epilepsy were identified in villages affected by NS in Mahenge, Tanzania, and matched with controls without epilepsy of the same sex, age and village. We examined blood films of cases and controls to identify *M. perstans* infections. The participants were also asked for sociodemographic and epilepsy information, examined for palpable onchocercal nodules and onchocerciasis-related skin lesions and tested for anti-*Onchocerca volvulus* antibodies (Ov16 IgG4) by ELISA. Clinical characteristics of cases and controls, *O. volvulus* exposure status and relevant sociodemographic variables were assessed by a conditional logistic regression model for NS and epilepsy status matched for age, sex and village. **Results:** A total of 113 epilepsy cases and 132 controls were enrolled, of which, respectively, 56 (49.6%) and 64 (48.5%) were men. The median age in cases and controls was 28.0 (IQR: 22.0-35.0) and 27.0 (IQR: 21.0-33.3) years. Of the persons with epilepsy, 43 (38.1%) met the probable NS criteria and 106 (93.8%) had onchocerciasis-associated epilepsy (OAE). *M. perstans* infection was absent in all participants, while Ov16 seroprevalence was positively associated with probable NS (odds ratio (OR): 5.05, 95%CI: 1.79-14.27) and overall epilepsy (OR: 2.03, 95%CI: 1.07-3.86). Moreover, onchocerciasis-related skin manifestations were only found in the cases ($n = 7$, $p = 0.0040$), including persons with probable NS ($n = 4$, $p = 0.0033$). Residing longer in the village and having a family history of seizures were positively correlated with Ov16 status and made persons at higher odds for epilepsy, including probable NS. **Conclusion:** In contrast to *O. volvulus*, *M. perstans* is most likely not endemic to Mahenge and, therefore, cannot be a co-factor for NS in the area. Hence, this filaria is unlikely to be the primary and sole causal factor in the

development of NS. The main risk factor for NS remains onchocerciasis.

Pian

Assessing the cost-effectiveness of integrated case management of Neglected Tropical Diseases in Liberia.

Godwin-Akpan TG, Diaconu K, Edmiston M, Smith JS Jr, Sosu F, Weiland S, Kollie KK.

29-06-2023

BMC Health Serv Res.

<https://pubmed.ncbi.nlm.nih.gov/37386431/>

Schistosomiasis

Proposed morbidity markers among *Schistosoma mansoni* patients.

Shehab AY, Allam AF, Saad AAEK, Osman MM, Ibrahim HS, Moneer EA, Tolba MM.

Jan-Jul 2023

Trop Parasitol.

<https://pubmed.ncbi.nlm.nih.gov/37415754/>

Background: Fecal calprotectin (FC) and fecal occult blood (FOB) were suggested as potential inflammatory markers for assessing intestinal schistosomiasis morbidity that are conventionally detected through invasive methods. **Aim and objectives:** The present work aimed to evaluate FC and FOB as morbidity markers of *Schistosoma mansoni* infection before and after praziquantel treatment. **Materials and methods:** A total of 205 stool samples (117 schoolchildren and 88 adults) were collected and examined by Kato Katz. A questionnaire enquiring about diarrhea, history of blood in stool, and abdominal pain was designed and applied. **Results:** *S. mansoni* prevalence rates were 20.5% and 11.36% among children and adults, respectively; the majority of cases had light infection intensity. FC and FOB were studied among 25 cured *S. mansoni* cases (17 children and 8 adults) pre and one-month post treatment. Before treatment, six and four children of moderate and high *S. mansoni* infection intensity tested positive for FC and FOB, respectively, all turning negative after treatment. FC showed borderline statistical significance before and after treatment among children. However, all adults tested negative for FC and FOB. **Conclusion:** FC and FOB could be possibly used as morbidity monitoring tools for *S. mansoni* infection in children with moderate and high infection intensity.

In vitro anthelmintic activity and ultrastructural analysis of barbitic acid against schistosomulae and juvenile worms of *Schistosoma mansoni*.

Silva HAMF, Araújo HDA, Albuquerque MCPA, Lima MV, Barroso Martins MCB, Alves LC, Brayner FA, Aires AL, Melo AMMA, Silva NHD.

06-07-2023

Chem Biodivers.

<https://pubmed.ncbi.nlm.nih.gov/37414744/>

Small change, big difference: A promising praziquantel derivative designated P96 with broad-spectrum antischistosomal activity for chemotherapy of schistosomiasis japonica.

Xu J, Dong LL, Sun H, Huang P, Zhang RZ, Wang XY, Sun DQ, Xia CM.

06-07-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37410790/>

Assessing the prevalence of Female Genital Schistosomiasis and comparing the acceptability and performance of health worker-collected and self-collected cervical-vaginal swabs using PCR testing among women in North-Western Tanzania: The ShWAB study.

Ursini T, Scarso S, Mugassa S, Othman JB, Yussuph AJ, Ndaboina E, Mbwanji G, Mazzi C, Leonardi M, Prato M, Pomari E, Mazigo HD, Tamarozzi F.

06-07-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37410782/>

Background: Female Genital Schistosomiasis (FGS) is a neglected disease of the genital tract due to the inflammatory response to the presence of *Schistosoma haematobium* eggs in the genital tract. The WHO has prioritized the improvement of diagnostics for FGS and previous studies have explored the PCR-based detection of *Schistosoma* DNA on genital specimens, with encouraging results. This study aimed to determine the prevalence of FGS among women living in an endemic district in North-western Tanzania, using PCR on samples collected through cervical-vaginal swabs, and to compare the performance of self-collected and healthcare worker-collected (operator-collected) samples, and the acceptability of the different sampling methods. **Methods/principal findings:** A cross-sectional study was conducted involving 211 women living in 2 villages in the Maswa district of North-western Tanzania. Urine, self-collected and operator-collected cervical-vaginal swabs were obtained from participants. A questionnaire was administered, focusing on the comfortability in undergoing different diagnostic procedures. Prevalence of urinary schistosomiasis, as assessed by eggs in urine, was 8.5% (95%CI 5.1-13.1). DNA was pre-isolated from genital swabs and transported at room temperature to Italy for molecular analysis. Prevalence of active schistosomiasis, urinary schistosomiasis, and FGS were 10.0% (95% CI 6.3-14.8), 8.5% (95%CI 5.1-13.1), and 4.7% (95%CI 2.3-8.5), respectively. When real-time PCR was performed after a pre-amplification step, the prevalence of active schistosomiasis increased to 10.4% (95%CI 6.7-15.4), and FGS to 5.2% (95%CI 2.6-9.1). Of note, more cases were detected by self-collected than operator-collected swabs. The vast majority of participants (95.3%) declared that they were comfortable/very comfortable about genital

self-sampling, which was indicated as the preferred sampling method by 40.3% of participants.

Conclusions/significance: The results of this study show that genital self-sampling followed by pre-amplified PCR on room temperature-stored DNA is a useful method from both technical and acceptability point of views. This encourages further studies to optimize samples processing, and identify the best operational flow to allow integration of FGS screening into women health programmes, such as HPV screening.

The Existing Drug Nifuroxazide as an Antischistosomal Agent: In Vitro, In Vivo, and In Silico Studies of Macromolecular Targets.

Roquini V, Mengarda AC, Cajas RA, Martins-da-Silva MF, Godoy-Silva J, Santos GA, Espírito-Santo MCC, Pavani TFA, Melo VA, Salvadori MC, Teixeira FS, Rando DGG, de Moraes J.

06-06-2023

Microbiol Spectr.

<https://pubmed.ncbi.nlm.nih.gov/37409934/>

Schistosomiasis is a parasitic disease that afflicts approximately 250 million people worldwide. There is an urgent demand for new antiparasitic agents because praziquantel, the only drug available for the treatment of schistosomiasis, is not universally effective and may derail current progress toward the WHO goal of eliminating this disease as a public health problem by 2030. Nifuroxazide (NFZ), an oral nitrofurantoin antibiotic, has recently been explored to be repurposed for parasitic diseases. Here, *in vitro*, *in vivo*, and *in silico* studies were conducted to evaluate the activity of NFZ on *Schistosoma mansoni*. The *in vitro* study showed significant antiparasitic activity, with 50% effective concentration (EC₅₀) and 90% effective concentration (EC₉₀) values of 8.2 to 10.8 and 13.7 to 19.3 µM, respectively. NFZ also affected worm pairing and egg production and induced severe damage to the tegument of schistosomes. *In vivo*, a single oral dose of NFZ (400 mg/kg of body weight) to mice harboring either prepatent or patent *S. mansoni* infection significantly reduced the total worm burden (~40%). In patent infection, NFZ achieved a high reduction in the number of eggs (~80%), but the drug caused a low reduction in the egg burden of animals with prepatent infection. Finally, results from *in silico* target fishing methods predicted that serine/threonine kinases could be one of the potential targets for NFZ in *S. mansoni*. Overall, the present study revealed that NFZ possesses antischistosomal properties, mainly in terms of egg burden reduction in animals with patent *S. mansoni* infection. **IMPORTANCE** The increasing recognition of the burden imposed by helminthiasis, associated with the limited therapeutic arsenal, has led to initiatives and strategies to research and develop new drugs for the treatment of schistosomiasis. One of these strategies is drug repurposing, which considers low-risk compounds with potentially reduced costs and shorter time for development. In this study, nifuroxazide (NFZ) was evaluated for its anti-*Schistosoma mansoni* potential through *in vitro*, *in vivo*, and *in silico* studies. *In vitro*, NFZ affected worm pairing and egg production and induced severe damage to the tegument of schistosomes. *In vivo*,

a single oral dose of NFZ (400 mg/kg) to mice harboring either prepatent or patent *S. mansoni* infection significantly reduced the total worm burden and egg production. *In silico* investigations have identified serine/threonine kinases as a molecular target for NFZ. Collectively, these results implied that NFZ might be a potential therapeutic candidate for the treatment of schistosomiasis.

Laboratory associated zoonotic parasitic infections: a review of main agents and biosecurity measures.

Sini MF, Tamponi C, Mehmood N, Dessi G, Ariu F, Carta C, Coghetto A, Pentcheva P, Gabrielli S, Scala A, Varcasia A.

30-06-2023

J Infect Dev Ctries.

<https://pubmed.ncbi.nlm.nih.gov/37406067>

Schistosoma mansoni infection alters the host pre-vaccination environment resulting in blunted Hepatitis B vaccination immune responses.

Muir R, Metcalf T, Fourati S, Bartsch Y, Kyosiimire-Lugemwa J, Canderan G, Alter G, Muyanja E, Okech B, Namatovu T, Namara I, Namuniina A, Ssetaala A, Mpendo J, Nanvubya A, Kitandwe PK, Bagaya BS, Kiwanuka N, Nassuna J, Biribawa VM, Elliott AM, de Dood CJ, Senyonga W, Balungi P, Kaleebu P, Mayanja Y, Odongo M, Connors J, Fast P, Price MA, Corstjens PLAM, van Dam GJ, Kamali A, Sekaly RP, Haddad EK.

05-07-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37406029/>

Dimerization, host-parasite communication and expression studies of an Echinococcus granulosus 2DBD nuclear receptor.

Blanco V, Mozzo B, Alvite G.

03-07-2023

Parasitol Res.

<https://pubmed.ncbi.nlm.nih.gov/37395819/>

Nuclear receptors (NRs) are ligand-modulated transcription factors that regulate various biological processes, such as metabolism, development and reproduction. Although NRs with two DNA-binding domains (2DBD) were identified in *Schistosoma mansoni* (Platyhelminth, Trematoda) more than fifteen years ago, these proteins have been poorly studied. 2DBD-NRs could become attractive therapeutic targets to combat parasitic diseases such as cystic echinococcosis since this type of protein is absent in vertebrate hosts. Cystic echinococcosis is a worldwide zoonosis caused by the larval stage of the parasitic platyhelminth *Echinococcus granulosus* (Cestoda) that generates an important public health problem and a significant economic loss. Recently, our research group identified four 2DBD-NRs in *E. granulosus*, named Eg2DBDα, Eg2DBDα.1 (an isoform of Eg2DBDα), Eg2DBDβ, and Eg2DBDγ. This work demonstrated that

Eg2DBD α .1 forms homodimers through the E and F regions, whereas its interaction with EgRXR β a could not be detected. In addition, the stimulation of Eg2DBD α .1 homodimerization by intermediate host serum was shown, suggesting that at least one lipophilic molecule from bovine serum could bind to Eg2DBD α .1. Finally, Eg2DBDs expression studies in the protoscolex larval stage were performed, indicating that Eg2dbdy is not expressed, whereas Eg2dbd α has the highest expression level followed by Eg2dbd β and Eg2dbd α .1 in decreased order. Overall, these findings provide new insights into the mechanism of action of Eg2DBD α .1 and its potential role in host-parasite communication.

Anti-angiogenic and anti-proliferative activity of ziziphus leaf extract as a novel potential therapeutic agent for reducing hepatic injury in experimental hamster schistosomiasis.

Alghamdi T, Salem DA, El-Refaei MF.

20-06-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37339146/>

How do disease control measures impact spatial predictions of schistosomiasis and hookworm? The example of predicting school-based prevalence before and after preventive chemotherapy in Ghana.

Kulinkina AV, Farnham A, Biritwum NK, Utzinger J, Walz Y.

16-06-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37327211/>

Background: Schistosomiasis and soil-transmitted helminth infections are among the neglected tropical diseases (NTDs) affecting primarily marginalized communities in low- and middle-income countries. Surveillance data for NTDs are typically sparse, and hence, geospatial predictive modeling based on remotely sensed (RS) environmental data is widely used to characterize disease transmission and treatment needs. However, as large-scale preventive chemotherapy has become a widespread practice, resulting in reduced prevalence and intensity of infection, the validity and relevance of these models should be re-assessed. **Methodology:** We employed two nationally representative school-based prevalence surveys of *Schistosoma haematobium* and hookworm infections from Ghana conducted before (2008) and after (2015) the introduction of large-scale preventive chemotherapy. We derived environmental variables from fine-resolution RS data (Landsat 8) and examined a variable distance radius (1-5 km) for aggregating these variables around point-prevalence locations in a non-parametric random forest modeling approach. We used partial dependence and individual conditional expectation plots to improve interpretability of results. **Principal findings:** The average school-level *S. haematobium* prevalence decreased from 23.8% to 3.6% and that of hookworm from 8.6% to 3.1% between 2008

and 2015. However, hotspots of high-prevalence locations persisted for both infections. The models with environmental data extracted from a buffer radius of 2-3 km around the school location where prevalence was measured had the best performance. Model performance (according to the R² value) was already low and declined further from approximately 0.4 in 2008 to 0.1 in 2015 for *S. haematobium* and from approximately 0.3 to 0.2 for hookworm. According to the 2008 models, land surface temperature (LST), modified normalized difference water index, elevation, slope, and streams variables were associated with *S. haematobium* prevalence. LST, slope, and improved water coverage were associated with hookworm prevalence. Associations with the environment in 2015 could not be evaluated due to low model performance. **Conclusions/significance:** Our study showed that in the era of preventive chemotherapy, associations between *S. haematobium* and hookworm infections and the environment weakened, and thus predictive power of environmental models declined. In light of these observations, it is timely to develop new cost-effective passive surveillance methods for NTDs as an alternative to costly surveys, and to focus on persisting hotspots of infection with additional interventions to reduce reinfection. We further question the broad application of RS-based modeling for environmental diseases for which large-scale pharmaceutical interventions are in place.

Efficacy, safety, and palatability of arpraziquantel (L-praziquantel) orodispersible tablets in children aged 3 months to 6 years infected with *Schistosoma* in Côte d'Ivoire and Kenya: an open-label, partly randomised, phase 3 trial.

N'Goran EK, Odiere MR, Assandé Aka R, Ouattara M, Aka NAD, Ogutu B, Rawago F, Bagchus WM, Bödding M, Kourany-Lefoll E, Tappert A, Yin X, Bezuidenhout D, Badenhorst H, Huber E, Dälken B, Haj-Ali Saflo O.

Jul-2023

Lancet Infect Dis.

<https://pubmed.ncbi.nlm.nih.gov/36893784/>

Background: WHO has underlined the need for a child-friendly treatment for schistosomiasis, a prevalent parasitic disease in low-income and middle-income countries. After successful phase 1 and 2 trials, we aimed to evaluate the efficacy, safety, palatability, and pharmacokinetics of arpraziquantel (L-praziquantel) orodispersible tablets for preschool-aged children. **Methods:** This open-label, partly randomised, phase 3 study was conducted at two hospitals in Côte d'Ivoire and Kenya. Children with a minimum bodyweight of 5 kg in those aged 3 months to 2 years and 8 kg in those aged 2-6 years were eligible. In cohort 1, participants aged 4-6 years infected with *Schistosoma mansoni* were randomly assigned (2:1) to receive a single dose of oral arpraziquantel 50 mg/kg (cohort 1a) or oral praziquantel 40 mg/kg (cohort 1b) using a computer-generated randomisation list. Cohorts 2 (aged 2-3 years) and 3 (aged 3 months to 2 years) infected with *S. mansoni*, and the first 30 participants in cohort 4a (aged 3 months to 6 years) infected with *Schistosoma haematobium*, received a single

dose of oral arpraziquantel 50 mg/kg. After follow-up assessments, arpraziquantel was increased to 60 mg/kg (cohort 4b). Laboratory personnel were masked to the treatment group, screening, and baseline values. *S. mansoni* was detected using a point-of-care circulating cathodic antigen urine cassette test and confirmed using the Kato-Katz method. The primary efficacy endpoint was clinical cure rate at 17-21 days after treatment in cohorts 1a and 1b, measured in the modified intention-to-treat population and calculated using the Clopper-Pearson method. This study is registered with ClinicalTrials.gov, NCT03845140. **Findings:** Between Sept 2, 2019, and Aug 7, 2021, 2663 participants were prescreened and 326 were diagnosed with *S. mansoni* or *S. haematobium*. 288 were enrolled (n=100 in cohort 1a, n=50 in cohort 1b, n=30 in cohort 2, n=18 in cohort 3, n=30 in cohort 4a, and n=60 in cohort 4b), but eight participants received antimalarial drugs and were excluded from the efficacy analyses. The median age was 5.1 years (IQR 4.1-6.0) and 132 (47%) of 280 participants were female and 148 (53%) were male. Cure rates with arpraziquantel were similar to those with praziquantel (87.8% [95% CI 79.6-93.5] in cohort 1a vs 81.3% [67.4-91.1] in cohort 1b). No safety concerns were identified during the study. The most common drug-related treatment-emergent adverse events were abdominal pain (41 [14%] of 288 participants), diarrhoea (27 [9%]), vomiting (16 [6%]), and somnolence (21 [7%]). **Interpretation:** Arpraziquantel, a first-line orodispersible tablet, showed high efficacy and favourable safety in preschool-aged children with schistosomiasis.

Trachome

Current Status of Trachoma Among Underserved Population of India: Results from the National Trachoma Rapid Assessment Survey 2014-17.

Vashist P, Manna S, Senjam SS, Gupta V, Gupta N, Wadhvani M, Grover S, Bhardwaj A.

05-07-2023

Ophthalmic Epidemiol.

<https://pubmed.ncbi.nlm.nih.gov/37408313/>

The Gambia Trachomatous Trichiasis Surveys: Results from Five Evaluation Units Confirm Attainment of Trachoma Elimination Thresholds.

Kanyi S, Hydara A, Sillah A, Mpyet C, Harte A, Bakhtiari A, Willis R, Jimenez C, Aboe A, Bailey R, Harding-Esch EM, Solomon AW, Joof BM.

03-07-2023

Ophthalmic Epidemiol.

<https://pubmed.ncbi.nlm.nih.gov/37401113/>

Introduction: Trichiasis is present when in-turned eyelashes touch the eyeball. It may result in permanent vision loss. Trachomatous trichiasis (TT) is caused by multiple rounds of inflammation associated with conjunctival *Chlamydia trachomatis* infection. Surveys have been designed to estimate the prevalence of TT in evaluation units (EUs) of trachoma-endemic countries in order to help develop appropriate programme-level plans.

In this study, TT-only surveys were conducted in five EUs of The Gambia to determine whether further intensive programmatic action was required. **Methods:** Two-stage cluster sampling was used to select 27 villages per EU and ~25 households per village. Graders assessed the TT status of individuals aged ≥15 years in each selected household, including the presence or absence of conjunctival scarring in those with TT. **Results:** From February to March 2019, 11595 people aged ≥15 years were examined. A total of 34 cases of TT were identified. All five EUs had an age- and gender-adjusted prevalence of TT unknown to the health system <0.2%. Three of five EUs had a prevalence of 0.0%. **Conclusion:** Using these and other previously collected data, in 2021, The Gambia was validated as having achieved national elimination of trachoma as a public health problem. Trachoma is still present in the population, but as its prevalence is low, it is unlikely that today's youth will experience the exposure to *C. trachomatis* required to precipitate TT. The Gambia demonstrates that with political will and consistent application of human and financial resources, trachoma can be eliminated as a public health problem.

Baseline, Impact and Surveillance Trachoma Prevalence Surveys in Burundi, 2018-2021.

Bucumi V, Muhimpundu E, Bio Issifou AA, Akweyu S, Burn N, Willems J, Niyongabo J, Elvis A, Koizan G, Harte A, Boyd S, Willis R, Bakhtiari A, Jimenez C, Burgert-Brucker C, Kollmann KM, Solomon AW, Harding-Esch EM, Gashikanyi RM.

03-07-2023

Ophthalmic Epidemiol.

<https://pubmed.ncbi.nlm.nih.gov/37401094/>

Purpose: Trachoma is an eye disease caused by the bacterium *Chlamydia trachomatis* (Ct). It can lead to permanent vision loss. Since 2007, Burundi has included trachoma elimination as part of its fight against neglected tropical diseases and blindness. This study presents the results of trachoma baseline, impact and surveillance surveys conducted in Burundi between 2018 and 2021. **Methods:** Areas were grouped into evaluation units (EU) with resident populations of between 100,000 and 250,000 people. Baseline surveys were conducted in 15 EUs, impact surveys in 2 EUs and surveillance surveys in 5 EUs; in each survey, 23 clusters of about 30 households were included. Consenting residents of those households were screened for clinical signs of trachoma. Access to water, sanitation and hygiene (WASH) was recorded. **Results:** A total of 63,800 individuals were examined. The prevalence of TF in 1-9-year-olds was above the elimination threshold of 5% in a single EU at baseline, but fell below the threshold in subsequent impact and surveillance surveys. The prevalence of TT was below the 0.2% elimination threshold in ≥15-year-olds in all EUs surveyed. A high proportion (83%) of households had access to safe drinking water, while only a minority (~8%) had access to improved latrines. **Conclusion:** Burundi has demonstrated the prevalence levels necessary for trachoma elimination status. With continued effort and the maintenance of existing management plans, trachoma elimination in Burundi is within reach.

Trachoma prevention practice and associated factors among mothers having children aged under nine years in Andabet district, northwest Ethiopia, 2022: A multi-level analysis.

Asmare ZA, Assefa NL, Abebe D, Nigatu SG, Alimaw YA.
30-06-2023

PLoS Negl Trop Dis.

<https://pubmed.ncbi.nlm.nih.gov/37390045/>

Trématodoses d'origine alimentaire (clonorchiose, opisthorchiose, fasciolose et paragonimose

Endoparasite loads and the efficacy of conventional anthelmintics against gastrointestinal nematodes in captive European bison.

Gałązka M, Klich D, Filip-Hutsch K, Olech W, Anusz K, Pyziel AM.

19-06-2023

Int J Parasitol Parasites Wildl.

<https://pubmed.ncbi.nlm.nih.gov/37415923/>

Although little information exists on the efficacy of deworming in wild ruminants, gastrointestinal nematodes have been found to demonstrate increasing drug resistance. The spread of drug-resistant strains may be increased by transmission among livestock and susceptible wildlife species, thus posing a potential threat to endangered species, such as the European bison. The aim of the study was twofold: to identify the parasite loads in captive European bison with the use of coprological techniques, and to test the influence of other nearby ungulates on the richness of bison parasitofauna. Additionally, the efficacy of deworming procedures against gastrointestinal nematodes in bison was evaluated. The survey was based on a coprological investigation of 285 fecal samples from 156 European bison in 15 enclosures. The parasitofauna of the captive European bison was consistent with those of free-ranging populations. The highest prevalence was noted for *Eimeria* spp. oocysts (60.7%), strongyle eggs (50.9%), *Fasciola hepatica* eggs (13.1%), *Dictyocaulus viviparus* larvae (12.3%) and *Trichuris* sp. Eggs (9.47%). Moreover, the close proximity of other ungulate species resulted in a higher diversity of parasite species. In all cases, deworming with albendazole, fenbendazole and ivermectin proved to be ineffective against strongylids and *Trichuris* sp. The results of fecal egg count reduction test (FECRT) ranged from 37.2 to 99.6% (95% CI <90%) for albendazole; values >95% (95% CI = 41-100) were noted for fenbendazole, and FECRT ranged from 63.2 to 97.5 (95% CI = 0-99) for ivermectin. As the results of anthelmintic treatment are

unsatisfactory, it seems justified to continue study in this area. Our study is the first large-scale attempt to evaluate the efficacy of anthelmintics in captive European bison. The potential sharing of parasite species between bison and other ungulates should also be further investigated from the perspective of minimizing the risk of the spread of drug-resistant parasite strains.

The regulatory roles of *Fasciola hepatica* GSTO1 protein in inflammatory cytokine expression and apoptosis in murine macrophages.

Xifeng W, Jiahua Z, Ningxing L, Guowu Z, Yunxia S, Xuepeng C, Jun Q, Xianzhu X, Qingling M.

01-07-2023

Acta Trop.

<https://pubmed.ncbi.nlm.nih.gov/37399980/>

Fascioliasis, a global zoonotic parasitic disease, is mainly caused by *Fasciola hepatica* (F. hepatica) parasitizing in the livers of hosts, mainly humans and herbivores. Glutathione S-transferase (GST) is one of the important excretory-secretory products (ESPs) from F. hepatica, however, the regulatory roles of its Omega subtype in the immunomodulatory effects remain unknown. Here, we expressed F. hepatica recombinant GSTO1 protein (rGSTO1) in *Pichia pastoris* and analyzed its antioxidant properties. Then, the interaction between F. hepatica rGSTO1 and RAW264.7 macrophages and its effects on inflammatory responses and cell apoptosis were further explored. The results revealed that GSTO1 of F. hepatica owned the potent ability to resist oxidative stress. F. hepatica rGSTO1 could interact with RAW264.7 macrophages and inhibit its cell viability, furthermore, it may suppress the production of pro-inflammatory cytokines IL-1 β , IL-6 and TNF- α , but promote the expression of anti-inflammatory cytokine IL-10. In addition, F. hepatica rGSTO1 may down-regulate the ratio of Bcl-2/Bax, and increase the expression of pro-apoptotic protein caspase-3, thereby eliciting the apoptosis of macrophages. Notably, F. hepatica rGSTO1 inhibited the activation of nuclear factor- κ B (NF- κ B) and mitogen-activated protein kinases (MAPKs p38, ERK and JNK) pathways in LPS-activated RAW264.7 cells, exerting potent modulatory effects on macrophages. These findings suggested that F. hepatica GSTO1 can modulate the host immune response, which provided new insights into the immune evasion mechanism of F. hepatica infection in host.

Tetraspanins from *Opisthorchis viverrini* stimulate cholangiocyte migration and inflammatory cytokine production.

Ruangsuwast A, Smout MJ, Brindley PJ, Loukas A, Laha T, Chaiyadet S.

12-06-2023

bioRxiv.

<https://pubmed.ncbi.nlm.nih.gov/37398394/>

Local outbreak of spontaneous pneumothorax secondary to

paragonimosis in southwestern Ontario dogs.

Charlebois PR, Bersenas AM, Yiew XT, Weese JS, Peregrine AS.

Jul-2023

Can Vet J.

<https://pubmed.ncbi.nlm.nih.gov/37397693/>

Three dogs were diagnosed with spontaneous pneumothorax and referred to the Ontario Veterinary College Health Sciences Centre for management. The 3 dogs were diagnosed with secondary spontaneous pneumothorax due to paragonimosis. The diagnosis was made by visualization of adult trematodes during surgical exploration with histopathological confirmation in 1 dog, and detection of trematode eggs *via* fecal sedimentation in the other 2 dogs. Two of the dogs developed unusual additional lesions, including hemoabdomen, muscle abscess, and abdominal adhesions. These were suspected to be secondary to aberrant fluke larval migration. All 3 dogs lived within a relatively small geographical area of Ontario and were hospitalized between December 2021 and March 2022. Each dog survived to discharge with surgical or medical management of the pneumothorax and treatment with a prolonged course of fenbendazole. Key clinical message: Paragonimosis should be considered as a differential diagnosis for canine spontaneous pneumothorax in areas where *Paragonimus kellicotti* is, or may be, endemic, or in dogs that have travelled to endemic areas - particularly if the patient has a history of cough or potential exposure to freshwater crayfish. Routine anthelmintic treatment does not prevent infection and standard fecal floatation methods may not detect the eggs. Therefore, diagnostic testing should include a fecal sedimentation test and thoracic radiographs to screen for *P. kellicotti*.

Acute edematous pancreatitis caused by Fasciola hepatica infection: A rare case report.

Huy DQ, Khai NX, Minh NT, Tien TD, Yen TH, Duc NM.

16-06-2023

Radiol Case Rep.

<https://pubmed.ncbi.nlm.nih.gov/37388531/>

Intestinal helminth infections and associated risk factors among adults in the Lao People's Democratic Republic.

Phonekeo S, Kounnavong S, Vonglokhom M, Siengsounthone L, Homsana A, Gummin S, Vounatsu P, Nittiyant P, Worawichawong S, Aekplakorn W, Odermatt P, Sayasone S.

30-06-2023

Infect Dis Poverty.

<https://pubmed.ncbi.nlm.nih.gov/37386528/>

Subtly Increased Focal FDG Activity in the Liver Due to Paragonimiasis.

Dai J, Wang H, Wang H, Tian R.

01-08-2023

Clin Nucl Med.

<https://pubmed.ncbi.nlm.nih.gov/37290448/>

A 32-year-old man underwent 18 F-FDG PET/CT to evaluate suspicious hepatic metastases, which were revealed by ultrasonography and MRI. The FDG PET/CT images demonstrated only one focus of subtly increased activity in the liver without abnormality elsewhere. The pathological result from hepatic biopsy was consistent with *Paragonimus westermani* infection.

Detection of Human Paragonimiasis by ELISA Using Recombinant Paragonimus westermani Cysteine Protease 7.

Andrade-Gomes LG, Zuniga MJ, Dolz G, Solano-Campos F.

30-05-2023

Am J Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/37253437/>

Paragonimiasis is an important but neglected foodborne trematodiasis caused by *Paragonimus mexicanus* in Costa Rica. Immunological techniques for diagnosing this parasitosis in humans do not exist in Central America. The objective of the present study was to use recombinant *Paragonimus westermani* cysteine protease 7 to standardize an ELISA for the detection of antibodies against *Paragonimus* spp. Human sera positive for *P. westermani*, *P. mexicanus*, or *Paragonimus* spp., human sera infected with other helminths, as well as sera of healthy humans without parasitic infections, were analyzed. The sensitivity of the ELISA was 92.9%, and the specificity was 91.9%. This report is the first to describe the development of an ELISA for the diagnosis of *Paragonimus* spp. in Costa Rica and Central America. Using this ELISA in the health system of Costa Rica is recommended to detect infections.

Comparison of a Urine Antigen Assay and Multiple Examinations with the Formalin-Ethyl Acetate Concentration Technique for Diagnosis of Opisthorchiasis.

Worathith C, Techasen A, Duenngai K, Intuyod K, Kopolrat KY, Sithithaworn J, Loilome W, Crellen T, Haswell MR, Sithithaworn P.

22-05-2023

Am J Trop Med Hyg.

<https://pubmed.ncbi.nlm.nih.gov/37217166/>

Detection of worm antigen in urine is a sensitive diagnostic method for opisthorchiasis, particularly for light-intensity infections; however, the presence of eggs in feces is essential for validating results from the antigen assay. To address the issue of low sensitivity of fecal examination, we modified the protocol for the formalin-ethyl acetate concentration technique (FECT) and compared it against urine antigen measurements for detection of the parasite *Opisthorchis viverrini*. First, we optimized the FECT protocol by increasing the number of drops for examinations from the standard two drops to a maximum of eight. We were able to detect additional cases after examination of ≥ 3 drops, and the prevalence of *O. viverrini* saturated after examination of ≥ 5 drops. We then compared the optimized FECT protocol (examining five

drops of suspension) against urine antigen detection for the diagnosis of opisthorchiasis in field-collected samples. The optimized FECT protocol detected *O. viverrini* eggs in 25 of 82 individuals (30.5%) who had positive urine antigen tests but were fecal egg negative by the standard FECT protocol. The optimized protocol also retrieved *O. viverrini* eggs in 2 of 80 antigen-negative cases (2.5%). In comparison with the composite reference standard (combined FECT and urine antigen detection), the diagnostic sensitivity of examining two and five drops of FECT and the urine assay was 58.2, 67, and 98.8%, respectively. Our results show that multiple examinations of fecal sediment increase the diagnostic sensitivity of FECT and thus provide further support for the reliability and utility of the antigen assay for diagnosis and screening of opisthorchiasis.

Massive hepatic trematodosis in 5 juvenile bald eagles.

McDermott KA, Greenwood SJ, Conboy GA, Franzen-Klein DM, Wünschmann A.

Jul-2023

J Vet Diagn Invest.

<https://pubmed.ncbi.nlm.nih.gov/37204007/>

Trypanosomes (trypanosomiasis et maladie de Chagas)

Humans as blood-feeding sources in sylvatic triatomines of Chile unveiled by next-generation sequencing.

San Juan E, Araya-Donoso R, Sierra-Rosales C, Correa JP, Quiroga N, Campos-Soto R, Solari A, Llewellyn M, Bacigalupo A, Botto-Mahan C.

06-07-2023

Parasit Vectors.

<https://pubmed.ncbi.nlm.nih.gov/37415248/>

Identification of the glycosylphosphatidylinositol-specific phospholipase A2 (GPI-PLA2) that mediates GPI fatty acid remodeling in *Trypanosoma brucei*.

Ji Z, Nagar R, Duncan SM, Sampaio Guthrie ML, Ferguson MAJ.

04-07-2023

J Biol Chem.

<https://pubmed.ncbi.nlm.nih.gov/37410820/>

The biosynthesis of glycosylphosphatidylinositol (GPI) anchored proteins (GPI-APs) in the parasitic protozoan *Trypanosoma brucei* involves fatty acid remodeling of the GPI precursor molecules before they are transferred to protein in the endoplasmic reticulum. The genes encoding the requisite phospholipase A2 and A1 activities for this remodeling have thus far been elusive. Here, we identify a gene, Tb927.7.6110, that encodes a protein that is both necessary and sufficient for GPI-phospholipase A2 (GPI-PLA2) activity in the procyclic form of the parasite. The

predicted protein product belongs to the alkaline ceramidase, PAQR receptor, Per1, SID-1, and TMEM8 (CREST) superfamily of transmembrane hydrolase proteins and shows sequence similarity to Post-GPI-Attachment to Protein 6 (PGAP6), a GPI-PLA2 that acts after transfer of GPI precursors to protein in mammalian cells. We show the trypanosome Tb927.7.6110 GPI-PLA2 gene resides in a locus with two closely related genes Tb927.7.6150 and Tb927.7.6170, one of which (Tb927.7.6150) most likely encodes a catalytically inactive protein. The absence of GPI-PLA2 in the null mutant procyclic cells not only affected fatty acid remodeling but also reduced GPI anchor sidechain size on mature GPI-anchored procyclic glycoproteins. This reduction in GPI anchor sidechain size was reversed upon the re-addition of Tb927.7.6110 and of Tb927.7.6170, despite the latter not encoding GPI precursor GPI-PLA2 activity. Taken together, we conclude that Tb927.7.6110 encodes the GPI-PLA2 of GPI precursor fatty acid remodeling, and that more work is required to assess the roles and essentiality of Tb927.7.6170 and the presumably enzymatically inactive Tb927.7.6150.

Structural basis of gRNA stabilization and mRNA recognition in trypanosomal RNA editing.

Liu S, Wang H, Li X, Zhang F, Lee JKL, Li Z, Yu C, Hu JJ, Zhao X, Suematsu T, Alvarez-Cabrera AL, Liu Q, Zhang L, Huang L, Aphasizheva I, Aphasizhev R, Zhou ZH.

07-06-2023

Science.

<https://pubmed.ncbi.nlm.nih.gov/37410820/>

In *Trypanosoma brucei*, the editosome, composed of RNA-editing substrate-binding complex (RESC) and RNA-editing catalytic complex (RECC), orchestrates guide RNA (gRNA)-programmed editing to recode cryptic mitochondrial transcripts into messenger RNAs (mRNAs). The mechanism of information transfer from gRNA to mRNA is unclear owing to a lack of high-resolution structures for these complexes. With cryo-electron microscopy and functional studies, we have captured gRNA-stabilizing RESC-A and gRNA-mRNA-binding RESC-B and RESC-C particles. RESC-A sequesters gRNA termini, thus promoting hairpin formation and blocking mRNA access. The conversion of RESC-A into RESC-B or -C unfolds gRNA and allows mRNA selection. The ensuing gRNA-mRNA duplex protrudes from RESC-B, likely exposing editing sites to RECC-catalyzed cleavage, uridine insertion or deletion, and ligation. Our work reveals a remodeling event facilitating gRNA-mRNA hybridization and assembly of a macromolecular substrate for the editosome's catalytic modality.

Development of novel PEX5-PEX14 protein-protein interaction (PPI) inhibitors based on an oxopiperazine template.

Marciniak M, Mróz P, Napolitano V, Kalel VC, Fino R, Pykacz E, Schliebs W, Plettenburg O, Erdmann R, Sattler M, Popowicz GM, Dawidowski M.

25-06-2023

Eur J Med Chem.

<https://pubmed.ncbi.nlm.nih.gov/37406382/>

From contigs towards chromosomes: automatic improvement of long read assemblies (ILRA).

Ruiz JL, Reimering S, Escobar-Prieto JD, Brancucci NMB, Echeverry DF, Abdi AI, Marti M, Gómez-Díaz E, Otto TD.

05-07-2023

Brief Bioinform.

<https://pubmed.ncbi.nlm.nih.gov/37406192/>

Meningeal regulation of infections: A double-edged sword.

Eme-Scolan E, Arnaud-Paroutaud L, Haidar N, Roussel-Queval A, Rua R.

04-07-2023

Eur J Immunol.

<https://pubmed.ncbi.nlm.nih.gov/37402972/>

In the past 10 years, important discoveries have been made in the field of neuroimmunology, especially regarding brain borders. Indeed, meninges are protective envelopes surrounding the CNS and are currently in the spotlight, with multiple studies showing their involvement in brain infection and cognitive disorders. In this review, we describe the meningeal layers and their protective role in the CNS against bacterial, viral, fungal, and parasitic infections, by immune and nonimmune cells. Moreover, we discuss the neurological and cognitive consequences resulting from meningeal infections in neonates (e.g. infection with group B *Streptococcus*, cytomegalovirus, ...) or adults (e.g. infection with *Trypanosoma brucei*, *Streptococcus pneumoniae*, ...). We hope that this review will bring to light an integrated view of meningeal immune regulations during CNS infections and their neurological consequences.

Repurposing of rabeprazole as an anti-*Trypanosoma cruzi* drug that targets cellular triosephosphate isomerase.

García-Torres I, De la Mora-De la Mora I, López-Velázquez G, Cabrera N, Flores-López LA, Becker I, Herrera-López J, Hernández R, Pérez-Montfort R, Enríquez-Flores S.

J Enzyme Inhib Med Chem. 2023 Dec

<https://pubmed.ncbi.nlm.nih.gov/37401012/>

Trypanosoma cruzi is the causative agent of American trypanosomiasis, which mainly affects populations in Latin America. Benznidazole is used to control the disease, with severe effects in patients receiving this chemotherapy. Previous studies have demonstrated the inhibition of triosephosphate isomerase from *T. cruzi*, but cellular enzyme inhibition has yet to be established. This study demonstrates that rabeprazole inhibits both cell viability and triosephosphate isomerase activity in *T. cruzi* epimastigotes. Our results show that rabeprazole has an IC₅₀ of 0.4 µM, which is 14.5 times more effective than benznidazole. Additionally, we observed increased levels of methyl-glyoxal and advanced glycation end products after the inhibition of cellular triosephosphate isomerase by rabeprazole. Finally, we demonstrate that the

inactivation mechanisms of rabeprazole on triosephosphate isomerase of *T. cruzi* can be achieved through the derivatization of three of its four cysteine residues. These results indicate that rabeprazole is a promising candidate against American trypanosomiasis.

Unique interactions and functions of the mitochondrial small Tims in *Trypanosoma brucei*.

Quiñones Guillén LS, Gonzalez FS, Darden C, Khan M, Tripathi A, Smith JT, Cooley A, Paromov V, Davis J, Misra S, Chaudhuri M.

bioRxiv. 2023 May 31

<https://pubmed.ncbi.nlm.nih.gov/37398442/>

Trypanosoma brucei is an early divergent parasitic protozoan that causes a fatal disease, African trypanosomiasis. *T. brucei* possesses a unique and essential translocase of the mitochondrial inner membrane, the TbTIM17 complex. TbTim17 associates with 6 small TbTims, (TbTim9, TbTim10, TbTim11, TbTim12, TbTim13, and TbTim8/13). However, the interaction pattern of the small TbTims with each other and TbTim17 are not clear. Here, we demonstrated by yeast two-hybrid (Y2H) analysis that all six small TbTims interact with each other, but stronger interactions were found among TbTim8/13, TbTim9, and TbTim10. Each of the small TbTims also interact directly with the C-terminal region of TbTim17. RNAi studies indicated that among all small TbTims, TbTim13 is most crucial to maintain the steady-state levels of the TbTIM17 complex. Co-immunoprecipitation analyses from *T. brucei* mitochondrial extracts also showed that TbTim10 has a stronger association with TbTim9 and TbTim8/13, but a weaker association with TbTim13, whereas TbTim13 has a stronger connection with TbTim17. Analysis of the small TbTim complexes by size exclusion chromatography revealed that each small TbTim, except TbTim13, is present in ~70 kDa complexes, which could be heterohexameric forms of the small TbTims. However, TbTim13 is primarily present in the larger complex (>800 kDa) and co-fractionated with TbTim17. Altogether, our results demonstrated that TbTim13 is a part of the TbTIM complex and the smaller complexes of the small TbTims likely interact with the larger complex dynamically. Therefore, relative to other eukaryotes, the architecture and function of the small TbTim complexes are specific in *T. brucei*.

Molecular detection of novel *Anaplasma* sp. and zoonotic hemopathogens in livestock and their hematophagous biting keds (genus *Hippobosca*) from Laisamis, northern Kenya.

Mwaki DM, Kidambasi KO, Kinyua J, Ogila K, Kigen C, Getange D, Villinger J, Masiga DK, Carrington M, Bargul JL.

06-06-2023

Open Res Afr.

<https://pubmed.ncbi.nlm.nih.gov/37396343/>

Vitamin B12 blocked Trypanosoma brucei rhodesiense-driven disruption of the blood brain barrier, and normalized nitric oxide and malondialdehyde levels in a mouse model.

Oula JO, Mose JM, Waiganjo NN, Chepukosi KW, Mitalo NS, Isaac AO, Nyariki JN.

29-06-2023

Parasitol Int.

<https://pubmed.ncbi.nlm.nih.gov/37390918/>

Infection with *Trypanosoma brucei rhodesiense* (T.b.r) causes acute Human African Trypanosomiasis (HAT) in Africa. This study determined the effect of vitamin B12 on T.b.r -driven pathological events in a mouse model. Mice were randomly assigned into four groups; group one was the control. Group two was infected with T.b.r; group three was supplemented with 8 mg/kg vitamin B12 for two weeks; before infection with T.b.r. For group four, administration of vitamin B12 was started from the 4th days post-infection with T.b.r. At 40 days post-infection, the mice were sacrificed to obtain blood, tissues, and organs for various analyses. The results showed that vitamin B12 administration enhanced the survival rate of T.b.r infected mice, and prevented T.b.r-induced disruption of the blood-brain barrier and decline in neurological performance. Notably, T.b.r-induced hematological alteration leading to anaemia, leukocytosis and dyslipidemia was alleviated by vitamin B12. T.b.r-induced elevation of the liver alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase and total bilirubin as well as the kidney damage markers urea, uric acid and creatinine were attenuated by vitamin B12. Vitamin B12 blocked T.b.r-driven rise in TNF- α and IFN- γ , nitric oxide and malondialdehyde. T.b.r-induced depletion of GSH levels were attenuated in the presence of vitamin B12 in the brain, spleen and liver tissues; a clear indication of the antioxidant activity of vitamin B12. In conclusion, treatment with vitamin B12 potentially protects against various pathological events associated with severe late-stage HAT and presents a great opportunity for further scrutiny to develop an adjunct therapy for severe late-stage HAT.

Cyanotriazoles are selective topoisomerase II poisons that rapidly cure trypanosome infections.

Rao SPS, Gould MK, Noeske J, Saldivia M, Jumani RS, Ng PS, René O, Chen YL, Kaiser M, Ritchie R, Francisco AF, Johnson N, Patra D, Cheung H, Deniston C, Schenk AD, Cortopassi WA, Schmidt RS, Wiedemar N, Thomas B, Palkar R, Ghafar NA, Manoharan V, Luu C, Gable JE, Wan KF, Myburgh E, Mottram JC, Barnes W, Walker J, Wartchow C, Aziz N, Osborne C, Wagner J, Sarko C, Kelly JM, Manjunatha UH, Mäser P, Jiricek J, Lakshminarayana SB, Barrett MP, Diagana TT.

30-06-2023

Science.

<https://pubmed.ncbi.nlm.nih.gov/37384702/>

Ulcère de Buruli

[Overview of infectious and non-infectious diseases in French Guiana in 2022].

Epelboin L, Abboud P, Abdelmoumen K, About F, Adenis A, Blaise T, Blaizot R, Bonifay T, Bourne-Watrin M, Boutrou M, Carles G, Carlier PY, Carod JF, Carvalho L, Couppié P, De Toffol B, Delon F, Demar M, Destoop J, Douine M, Droz JP, Elenga N, Enfissi A, Franck YK, Fremery A, Gaillet M, Kallel H, Kpangon AA, Lavergne A, Le Turnier P, Maissonobe L, Michaud C, Mutricy R, Nacher M, Naldjinan-Kodbaye R, Oberlis M, Odonne G, Osei L, Pujo J, Rabier S, Roman-Laverdure B, Rousseau C, Rousset D, Sabbah N, Sainte-Rose V, Schaub R, Sylla K, Tareau MA, Tertre V, Thorey C, Viallette V, Walter G, Zappa M, Djossou F, Vignier N.

17-02-2023

Med Trop Sante Int.

<https://pubmed.ncbi.nlm.nih.gov/37389381/>

Source of many myths, French Guiana represents an exceptional territory due to the richness of its biodiversity and the variety of its communities. The only European territory in Amazonia, surrounded by the Brazilian giant and the little-known Suriname, Ariane 6 rockets are launched from Kourou while 50% of the population lives below the poverty line. This paradoxical situation is a source of health problems specific to this territory, whether they be infectious diseases with unknown germs, intoxications or chronic pathologies. Some infectious diseases such as Q fever, toxoplasmosis, cryptococcosis or HIV infection are in common with temperate countries, but present specificities leading to sometimes different management and medical reasoning. In addition to these pathologies, many tropical diseases are present in an endemic and / or epidemic mode such as malaria, leishmaniasis, Chagas disease, histoplasmosis or dengue. Besides, Amazonian dermatology is extremely varied, ranging from rare but serious pathologies (Buruli ulcer, leprosy) to others which are frequent and benign such as agouti lice (mites of the family Trombiculidae) or papillitis. Envenomations by wild fauna are not rare, and deserve an appropriate management of the incriminated taxon. Obstetrical, cardiovascular and metabolic cosmopolitan pathologies sometimes take on a particular dimension in French Guiana that must be taken into account in the management of patients. Finally, different types of intoxication are to be known by practitioners, especially due to heavy metals. European-level resources offer diagnostic and therapeutic possibilities that do not exist in the surrounding countries and regions, thus allowing the management of diseases that are not well known elsewhere. Thanks to these same European-level resources, research in Guyana occupies a key place within the Amazon region, despite a smaller population than in the surrounding countries. Thus, certain pathologies such as histoplasmosis of the immunocompromised patient, Amazonian toxoplasmosis or Q fever are hardly described in neighboring countries, probably due to under-diagnosis linked to more limited resources. French Guiana plays a leading role in the study of these diseases. The objective of

this overview is to guide health care providers coming to or practicing in French Guiana in their daily practice, but also practitioners taking care of people returning from French Guiana.

Assessing the cost-effectiveness of integrated case management of Neglected Tropical Diseases in Liberia.

Godwin-Akpan TG, Diaconu K, Edmiston M, Smith JS Jr, Sosu F, Weiland S, Kollie KK.

BMC Health Serv Res. 2023 Jun 29;

<https://pubmed.ncbi.nlm.nih.gov/37386431/>

Background: In 2017, Liberia became one of the first countries in the African region to develop and implement a national strategy for integrated case management of Neglected Tropical Diseases (CM-NTDs), specifically Buruli ulcer, leprosy, lymphatic filariasis morbidities, and yaws. Implementing this plan moves the NTD program from many countries' fragmented (vertical) disease management. This study explores to what extent an integrated approach offers a cost-effective investment for national health systems.

Methods: This study is a mixed-method economic evaluation that explores the cost-effectiveness of the integrated CM-NTDs approach compared to the fragmented (vertical) disease management. Primary data were collected from two integrated intervention counties and two non-intervention counties to determine the relative cost-effectiveness of the integrated program model vs. fragmented (vertical) care. Data was sourced from the NTDs program annual budgets and financial reports for integrated CM-NTDs and Mass Drug Administration (MDA) to determine cost drivers and effectiveness.

Results: The total cost incurred by the integrated CM-NTD approach from 2017 to 2019 was US\$ 789,856.30, with the highest percentage of costs for program staffing and motivation (41.8%), followed by operating costs (24.8%). In the two counties implementing fragmented (vertical) disease management, approximately US\$ 325,000 was spent on the diagnosis of 84 persons and the treatment of twenty-four persons suffering from NTDs. While 2.5 times as much was spent in integrated counties, 9-10 times more patients were diagnosed and treated.

Conclusions: The cost of a patient being diagnosed under the fragmented (vertical) implementation is five times higher than integrated CM-NTDs, and providing treatment is ten times as costly. Findings indicate that the integrated CM-NTDs strategy has achieved its primary objective of improved access to NTD services. The success of implementing an integrated CM-NTDs approach in Liberia, presented in this paper, demonstrates that NTD integration is a cost-minimizing solution.

A human model of Buruli ulcer: The case for controlled human infection and considerations for selecting a *Mycobacterium ulcerans* challenge strain.

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