

List of Extramural, Collaborative and Sponsored Research Projects Undertaken

1. "A Pilot study to estimate malaria incidence using sampling methods" in collaboration with NAMP/ IRMS and State Governments (1980-83) funded by ICMR.
2. "A laboratory and field study of malathion resistance in *An. culicifacies*" in collaboration with NAMP (1980-85) funded by WHO/TDR.
3. "To study the impact of residual insecticidal spray operations in areas with varying degrees of resistance and its relationship to the malaria transmission" in collaboration with NAMP and State Governments (1981-83) funded by ICMR.
4. "A Pilot study to assess the impact of antimalaria operations on the morbidity (duration of febrile illness)" in collaboration with NAMP/State Governments (1982-83) funded by ICMR.
5. "Studies on cell biology, ultrastructural and electron cytochemistry of the human malaria parasite *Plasmodium vivax* and *Plasmodium falciparum*" in collaboration with Delhi University, Delhi (1982-85) funded by DBT.
6. "Seroepidemiology of human malaria-Multicentric trials" (1983-85) funded by ICMR.
7. "Incrimination of *An. culicifacies* using immuno-radiometric assay" (1984-86) funded by International Agency for Funding under Gandhi-Regan Science and Technology Initiative in collaboration with New York University School of Medicine, USA.
8. "Impact of Deltamethrin (K-othrine) spraying in areas with DDT and HCH resistant *An. culicifacies*" in collaboration with NAMP (1985) funded by ICMR/NAMP.
9. "Field trials of Deltamethrin (K-othrine) in Razapur PHC, District Ghaziabad" (1986-88) funded by NAMP.
10. "Evaluation of *Bacillus sphaericus* in laboratory and field" (1986-87) funded by WHO/TDR.
11. "Science & Technology Project on Integrated Vector Control of Malaria, Filariasis and other Vector-borne Diseases" (1986 onwards) funded by ICMR and Dept. of Health, Ministry of Health & Family Welfare, Govt. of India.
12. "Applied field research on malaria" (1987-89) funded by SIDA.
13. "Transmission dynamics of *Plasmodium falciparum*" (1987-90) funded by WHO/TDR.
14. "Tribal Health" (1988) funded by UNDP/WHO.

15. "Malaria Parasite Bank" (1992 onwards) funded by DBT (1992-97) and ICMR (1997 onwards).
16. "Establishment of the culture system for exo-erythrocytic stage malarial parasites" (1992-94) funded by Indo-French Centre, Delhi.
17. "Multicentric field trials with *Bacillus sphaericus* and *Bacillus thuringiensis* var. *israelensis* (1993-94) funded by ICMR/NAMP.
18. "Field evaluation of an antigen dipstick test for falciparum malaria" (1994) funded by WHO-SEARO.
19. "A comparative field study on malaria transmission by the use of insecticide-impregnated bednets vs. DDT residual spraying" (1995) funded by WHO/TDR.
20. "Ecological adaptations of malaria vectors in different climatic zones and their epidemiological implications" (1996-97) funded by WHO through NAMP.
21. "Community acceptance of insecticide-treated mosquito nets (ITMNs) trial in tribal area of Keonjhar district" (1996-98) funded by British Council Division, U.K.
22. "Malaria prevalence among pregnant women and children in malaria endemic tribal area of Orissa" (1997-98) funded by CARE-India.
23. "The information modelling of malaria distribution process in India under ILTP of cooperation in Science and Technology between India and Russia" (1998-2000) funded by DST.
24. "Molecular analysis of cytoadherence phenotype and invasion pathways of Indian isolates of *P. falciparum*" in collaboration with ICGB, New Delhi (1998-2001) funded by ICMR.
25. "Molecular markers for the identification of members of *Anopheles culicifacies* complex", Indo-Sri Lanka under bilateral collaboration in Science and Technology (1998-2001) funded by DBT.
26. "Bioenvironmental control of mosquitoes in Mormugao Port Trust, Vasco-da-Gamma, Goa" (2001-02) funded by Mormugao Port Trust, Goa.
27. "Evaluation of ICT Malaria Pf/Pv test kit for diagnosis of malaria" (1999-2000) funded by Becton Dickinson, U.S.A.
28. "Phase II evaluation of Bifenthrin 10% WP and Fipronil 80% WDG indoor residual spraying for malaria vector control in India" (1999-2000) funded by WHOPEs, WHO, Geneva.
29. "Phase II evaluation of mosquito nets treated with Bifenthrin SC and ME formulations vis-à-vis Lambda-cyhalothrin CS formulation for control of *Anopheles culicifacies*, a major vector of malaria in District Sonapat, Haryana state, India" (1999-2000) funded by WHOPEs, WHO, Geneva.
30. "A randomized, double blind comparative study of Azithromycin vs. Chloroquine as treatment of uncomplicated *P. vivax* and *P. falciparum* malaria at Delhi, Jabalpur and Sonapur" (1999-2001) sponsored by Pfizer.
31. "Study on the vector bionomics and evaluation of the sensitivity of malaria parasites to antimalarials in Surat City" (1999-2001) funded by DFID, U.K.
32. "Impact of residual spraying of Reldan 40% EC against DDT and HCH resistant malaria vector *An. culicifacies* in malaria endemic villages of District Ghaziabad (U.P.), India" (1999-2002) sponsored by Denocil.
33. "Impact of residual spraying of Bendiocarb 80% WP (Carbamate) against DDT and HCH resistant malaria vector *An. culicifacies* in malaria endemic villages of District Ghaziabad (U.P.), India" (1999-2002) sponsored by Hoechst Schering Agro Evo Ltd.
34. "Laboratory and field evaluation of Hilmilin against mosquitoes" (1999-2002) sponsored by Hindustan Insecticides Ltd.
35. "Bio-efficacy and operational feasibility of *Alpha Cypermethrin* (Fendona) impregnated mosquito nets/curtains to control rural and urban malaria" (1999-2002) sponsored by CYNAMID Agro Ltd.
36. "Population genetic analysis of *Anopheles culicifacies* species A" (1999-2003) funded by WHO/TDR (Molecular Entomology), Geneva.
37. "Field research on situation analysis in some selected districts and towns in the context of Roll Back Malaria Initiative" (2000-01) funded by WHO-SEARO, New Delhi.
38. "Phase III evaluation of Bifenthrin 10% WP and Deltamethrin 25% WG indoor residual spraying for malaria vector control in India" (2000-02) funded by WHOPEs, WHO, Geneva.

39. "Molecular characterization of pyrethroid resistance in *An. culicifacies*" (2000-02) funded by Wellcome Trust, U.K.
40. "Application of remote sensing in identifying and mapping sandfly distribution in endemic and nonendemic Kala-azar foci in Bihar (RMRI, Patna)" (2000-03) funded by ICMR Task Force.
41. "Application of RS and GIS for decision support in malaria control" (2000-03) funded by ICMR Task Force.
42. "Delineation of breeding habitats and landscape features suitable for *An. culicifacies* abundance using satellite remote sensing data" (2000-03) funded by ICMR Task Force.
43. "Multicentric field trials with *Bacillus thuringiensis* var. *israelensis* serotype H-14 against mosquitoes in Haldwani (Uttaranchal), Shahjahanpur (U.P.) and Vasco-da-Gama (Goa)" (2001) sponsored by Wockhardt.
44. "Efficacy of Azithromycin + Chloroquine combination in the treatment of uncomplicated *P. falciparum* malaria cases at Jabalpur and Sonapur" (2001) sponsored by Pfizer.
45. "Primary screening of herbal products for antimalarial activity" (2001) sponsored by DRDO, Tezpur, Assam.
46. "Operational evaluation of the stability of Iodine in double fortified salt-A multicentric study" (2001-02) funded by ICMR.
47. "Evaluation of the impact of DDT and malathion indoor residual spraying being used in malaria and Kala-azar control programmes on the disease prevalence-A multicentric study" (2001-02) funded by ICMR Task Force.
48. "Comparative evaluation of bio-efficacy and persistence of mosquito nets treated with deltamethrin tablet formulation (K-O Tab[®]) against malaria vectors *Anopheles culicifacies* and *An. stephensi*" (2001-02) sponsored by Aventis Crop Science, Mumbai.
49. "Assessment of therapeutic efficacy of: (a) chloroquine in uncomplicated vivax malaria; Mumbai, Chennai and U.P.; and (b) chloroquine and SP combination for uncomplicated falciparum malaria in Assam, Tripura and Orissa" (2001-02) funded by WHO-SEARO, New Delhi.
50. "Evaluation of the impact of DDT and malathion indoor residual spraying being used in malaria and Kala-azar control programmes on the disease prevalence" (2001-02) funded by ICMR.
51. "Laboratory and field evaluation of Teknar HP-D (*Bacillus thuringiensis* var. *israelensis*)" (2001-03) sponsored by Margo Bio-controls Pvt. Ltd.
52. "Mosquito control in Bangalore City, Bangalore" (2001-03) funded by Mahanagara Palike, Bangalore.
53. "Field evaluation of Triflumuron (IGR) against larvae of mosquito vectors" (2001-03) sponsored by Bayer.
54. "Process development for production of a recombinant malaria vaccine based on *Plasmodium vivax* duffy binding protein" in collaboration with ICGB-NIH (2001-03) funded by DBT.
55. "Ecological adaptations of malaria vectors in different climate zones and their ecological and epidemiological implications, Enhanced Malaria Control Project" (2001-04) funded by NAMP, New Delhi.
56. "Evaluation of ICT Malaria Pf test kit" (2002) funded by Binax Inc., USA.
57. "Field evaluation of mosquito larvicide and pupicide Agnique MMF in different urban habitat against malaria vector *An. stephensi*" (2002) funded by WHOPEP, WHO, Geneva.
58. "Laboratory (Phase-I) evaluation of phenthoate against urban malaria vectors *An. stephensi* and *Culex quinquefasciatus*" (2002) sponsored by EID PARRY.
59. "To develop strategy for integrated control of vectors of malaria in District Sagar, Madhya Pradesh" (2002-03) funded by WHO-SEARO.
60. "Operational feasibility of use of larvivorous fishes for control of malaria in a high-risk area of Karnataka state, India" (2002-03) funded by WHO-SEARO.
61. "To develop strategy for integrated control of vectors of malaria, Japanese encephalitis and dengue in Karnataka" (2002-03) funded by WHO-SEARO
62. "To develop strategy for integrated control of vectors of malaria and dengue in northern Gujarat" (2002-03) funded by WHO-SEARO.

63. "Extended evaluation of Deltamethrin 25% WG for malaria vector control" (2002-03) sponsored by Aventis Crop Science, Mumbai.
64. "Extended evaluation of Bifenthrin 10% WP for malaria vector control" (2002-03) sponsored by FMC, Bangalore.
65. "Comparative evaluation of bio-efficacy and persistence of mosquito nets treated with deltamethrin tablet formulation against malaria vectors *An. fluviatilis* and *An. culicifacies* and its impact on malaria transmission in malaria endemic tribal area of Sundergarh district" (2002-03) sponsored by Aventis Crop Science, Mumbai.
66. "Impacts of climate change on malaria in India" (2002-03) funded by Ministry of Environment.
67. "Therapeutic efficacy of chloroquine in *P. vivax* malaria" (2002-03) funded by WHO-SEARO.
68. "Molecular characterization of *Anopheles fluviatilis* complex: Development of species-specific diagnostic markers and microsatellite markers" ICMR Genomics (2002-04) funded by ICMR.
69. "Genetic polymorphism of T-helper cell epitopic regions of circumsporozoite protein of *Plasmodium falciparum* isolates from India: Relevance for vaccine development" (2002) funded by CSIR.
70. "Assessment of the impact of Sardar Sarovar Narmada Water Resources Development Project (SSP) on communicable diseases with particular reference to mosquito-borne diseases partially, Sardar Sarovar Narmada Nigam Limited, Govt. of Gujarat" (2002-05) funded by the Govt. of Gujarat.
71. "Prospecting for botanical pesticides: An all India coordinated research project" (2002-05) funded by DBT.
72. "Genetic diversity of *P. falciparum* and *P. vivax* in India: Development of molecular markers" ICMR Genomics (2002-05) funded by ICMR.
73. "Development of GMP-grade recombinant malaria vaccine(s) and preparation of field trial site for the vaccine trials" (2000-07) funded by DBT.

Abbreviations	of	Funding/Collaborating Agencies
CARE	-	Cooperative American Relief Everywhere
CSIR	-	Council of Scientific and Industrial Research
DBT	-	Department of Biotechnology
DFID, U.K.	-	Department for International Development, U.K.
DRDO	-	Defence Research and Development Organization
DST	-	Department of Science & Technology
ICGEB	-	International Centre for Genetic Engineering & Biotechnology
ICMR	-	Indian Council of Medical Research
ILTP	-	Integrated long-term project
IRMS	-	Institute for Research in Medical Statistics
NAMP	-	National Anti Malaria Programme
RMRI	-	Rajendra Memorial Research Institute
SIDA	-	Swedish International Development Agency
UNDP	-	United Nations Development Programme
WHO	-	World Health Organization
WHO/TDR	-	WHO/Tropical Disease Research
WHO/SEARO	-	WHO/South East Asian Regional Organization
WHOPES	-	WHO Pesticide Evaluation Scheme