

Summary:

This is a proposal from 42 partners from 33 institutes to form a NoE that will seek to integrate European malaria research that is directed towards a better understanding of the basic biology of the parasite, its vector and of the biology of the interactions between the parasite and both its mammalian host and vectors. All the member institutes and researchers have demonstrated both their excellence and their ability to contribute to a successful network. The structure of the proposed network significantly evolves prior concepts of network structure introducing new modes of research that have recently emerged. Comprising of 4 research clusters the core activities will include molecular cell biology of the parasite, host immunity, vector biology and systems biology. One arm of the network activities will be concerned with the timely and effective translation of research respecting the IP rights of partner institutes. The network will also contribute significantly to the production of the next generation of malaria researchers through the operation of an expanded European PhD School for malaria research based at EMBL, students enjoying two supervisors based in different member states. Bespoke training courses for PhD students and network personnel will be offered throughout the duration of the network to maximise individual potential. To create a long term benefit from network activities a limited programme of post-doctoral fellowships within the network will be established. Furthermore, individual career mentoring facilities will continue to guide and engage network graduates. New members will be affiliated on a competitive basis with an emphasis on young, emerging Principle Investigators. In an attempt to extend the reach of the Network activities, the Network will develop an exchange programme with the Australian Malaria Research in the form of OzEMalaR that will foster bilateral research projects. This initiative may also be extended to other suitable malaria research networks and married to individual outreach activities such as presenting the network and its research at international meetings such as those organised by the Multilateral Initiative on Malaria (MIM). Through the establishment of an umbrella Foundation and active lobbying of government and non-government funding agencies as well as the establishment of a charitable profile the network will strive to become self-determining.

Problem:

Malaria remains an enormous public health problem in the tropical regions of the world, despite decades of endeavour fully effective vaccines have not been developed and the repertoire of effective drugs is diminishing due to parasite resistance. These shortcomings are due in no small measure due to our continuing lack of fundamental understanding of the biology of the parasite and its interactions with its host and vector, the female Anopheles mosquito. The region most affected by malaria is sub-Saharan Africa where more than 1 million deaths occur each year due to infection with *Plasmodium falciparum*.

Aim:

This network will undertake basic biological investigations of the host parasite and vector parasite interactions in collaboration with partner laboratories in Africa and India. The aims are numerous but include:

- The pursuit of excellence in the investigation of malaria parasite biology and parasite interactions with host and vector.
- Harmonisation and integration of basic malaria research across the European economic region and improvement of participants interactions with researchers in disease endemic regions with a view to establishing long lasting joint research efforts.

- Training of the next generation of European and African malaria researchers will take place within the context of a European Malaria Graduate Research School (EMGRS) working in partnership with the participating institutions.
- Generation of interfaces of communication of the Network with applied research entities (academic, Governmental, NGO and industrial) that can exploit network generated knowledge for the production of malaria treatments.

Expected results:

- A greatly improved understanding of the biology of the malaria parasite integrated with a deeper knowledge of its evolving interactions with both host and vector
- The establishment of the EMGRS as an internationally recognised endeavour that produces graduates capable of forming the next generation of malaria researchers
- The establishment of a Legal Entity that will seek to continue the network initiated activities beyond this funding cycle

Potential applications:

Transfer of network-generated knowledge to the appropriate bodies for its exploitation in directly translatable research leading to the generation of measures to reduce the disease burden of malaria in the disease endemic regions of the world.

Project web-site: www.evimalar.org

Key words: Malaria, Africa, Anopheles, Plasmodium, Mosquito, Host-Pathogen interactions, Integrative Biology, Network, Translation

Coordinator:

Name:	Andrew Waters
Institution address:	Division of Infection & Immunity Faculty of Biological Life Sciences University of Glasgow GBRC Building 120 University Place Glasgow G12 8TA United Kingdom
Email:	Waters@bio.gla.ac.uk

Partners

Principal Investigators (PI)

Institutional Address

PI e-mail addresses

European partners

Part.1 : University of Glasgow (UoG)

RT 1: Waters
RT 2: Muller

120 University Place, G12 8TA, Glasgow, UK

waters@bio.gla.ac.uk
sm162g@udcf.gla.ac.uk

Part. 2 : Institut Pasteur, [IP]

RT 3: Scherf
RT 4: Puijalon

25, 28 rue du Docteur Roux, 757242 Paris Cedex 15, France

ascherf@pasteur.fr
omp@pasteur.fr

RT 5: Menard	rmenard@pasteur.fr
Part. 3 : National Institute for Medical Research, [NIMR] RT 6: Blackman RT 7: Holder RT 8: Langhorne	The Ridgeway, Mill Hill, London NW7 1AA, UK mblackm@nimr.mrc.ac.uk aholder@nimr.mrc.ac.uk jlangho@nimr.mrc.ac.uk
Part. 4 : University of Leiden [LUMC] RT 9: Janse	PO Box 9600, RC Leiden, The Netherlands C.J.Janse@lumc.nl
Part. 5 : University of Nijmegen [KUN] RT 10: Sauerwein	Comeniuslaan 46525 HP Nijmegen, The Netherlands r.sauerwein@mmb.umcn.nl
Part. 6 Biomedical Primate Research Center [BPRC] RT 11: Kocken	Lange Kleiweg 139, 2288 GJ Rijswijk, the Netherlands Kocken@bprc.nl
Part. 7 : University of Oxford, [UOXF + H4]. RT 12: Roberts RT 13: Newbold RT 14: Marsh/Williams Done	University Offices, Wellington Square, Oxford, OX1 2JD, UK david.roberts@ndcls.ox.ac.uk CNewbold@hammer.imm.ox.ac.uk twilliams@kilifi.kemri-welcome.org
Part. 8 : Centre National de la Recherche Scientifique [CNRS] RT 15: Vial RT 16: Levashina	Campus Gérard-Mégie, 3 rue Michel-Ange - F-75794, France vial@univ-montp2.fr E.Levashina@ibmc.u-strasbg.fr
Part 9: Institut National de la Sante et de la Recherche Medicale (INSERM) RT 17: Doerig	1, Avenue Oscar Lambret. 59000 Lille, France
Part 10 : University of Heidelberg, [UKHD] RT 18: Lanzer RT 20: M. Meissner RT 21: F. Frischknecht	Grabengasse 1, 69117 Heidelberg, Germany michael_lanzer@med.uni-heidelberg.de Markus.Meissner@med.uni-heidelberg.de Freddy.Frischknecht@med.uni-heidelberg.de
Part. 11 : Swedish Institute for Infectious Disease Control (SMI) RT 22: Wahlgren	Smittskyddsinstitutet (SMI), 171 82 Solna, Sweden Mats.Wahlgren@mtc.ki.se
Part. 12 : University of Stockholm [SU] RT 23: Troye-Blomberg	SE-106 91 Stockholm, Sweden marita@imun.su.se
Part. 13 : Istituto Superiore di Sanita [ISS] RT 24: Ponzi RT 25: Alano	299 Viale Regina Elena, 00161 - Rome (I), Italy marta.ponzi@iss.it alano@iss.it
Part. 14 University of Rome [UR] RT 26: Modiano	Piazzale Aldo Moro 5, 00185 Rome, Italy david.modiano@uniroma1.it
Part. 15: Imperial College of Science, Technology & Medicine [IC] RT 27: Sinden	Exhibition Road, London SW7 2AZ, UK r.sinden@imperial.ac.uk

RT 28: Kafatos

f.kafatos@imperial.ac.uk

**Part. 16 :The Wellcome Trust Sanger
Institute, [WTSI]**

RT 29: Berriman

RT 30: Billker

RT 31: Kwiatkowski

Genome Campus, Hinxton, Cambridge CB10 1SA

mb4@sanger.ac.uk

o.billker@imperial.ac.uk

Dominic.Kwiatkowski@paediatrics.ox.ac.uk

**Part. 17 : Foundation for Research and
Technology-Hellas. Institut of Molecular
Biology and Biotechnology [FORTH-IMBB]**

RT 32: Louis

Nikolaou Plastira 100, GR-70013, Heraklion, Crete, Greece

louis@imbb.forth.gr

Part. 18: University of Geneva, (Unige)

RT 33: Soldati

24 rue du Général-Dufour, CH - 1211 Genève 4, Switzerland

dominique.soldati-favre@medecine.unige.ch

**Part. 19: Liverpool School of Tropical
Medicine (LSTM)**

RT34/Urban

RT 35: A. Craig

Pembroke Place, Liverpool, L3 5QA

BUrban@kilifi.kemri-wellcome.org

agcraig@liverpool.ac.uk

Part. 20: Philipps University of Marburg (PUM)

RT 36: K. Lingelbach

Biegenstr. 10, 35032 Marburg, Germany

lingelba@staff.uni-marburg.de

Part. 21: University of Torino (Unito)

RT 37: P. Arese

C.So Svizzera, 185 - 10149 Turin, Italy

paolo.arese@unito.it

**Part. 22: Centre for Medical Parasitology
University of Copenhagen (CMP)**

RT 38: L. Hviid

Nørregade 10, Postboks 2177, 1017 Copenhagen, Denmark

lars.hviid@rh.hosp.dk

**Part. 23: L'institut de Recherche pour
le Developpement (IRD)**

RT 39: D. Fontenille

**Le Sextant 44, bd de Dunkerque, CS 90009, 13572 Marseille
Cedex 02, France**

fontenil@mpl.ird.fr

**Part. 24: London School of Hygiene &
Tropical Medicine (LSHTM)**

RT 40: E. Riley

Keppel St, London, WC1E 7HT, UK

Eleanor.Riley@lshtm.ac.uk

**Part. 25: Instituto de Medicina
Molecular (IMM)**

RT 41: M. Mota

Av. Professor Egas Moniz 1649-028 Lisbon, Portugal

mmota@fm.ul.pt

**Part 26: Bernhardt Nocht Institute For
Tropical Medicine (BNITM)**

RT 42: V. Heussler

Bernhard-Nocht-Strasse 74, D-20359 Hamburg, Germany

heussler@bni-hamburg.de

DER partners

Part. 27: Makerere University, Uganda [MUK]

RT 43 : Kironde

P.O. Box 7072, Kampala, Uganda.

kironde@starcom.co.ug

Part. 28: University of Khartoum, Sudan [IEDK]

RT 45: Ibrahim

Gamma Ave, Khartoum, Sudan

mibrahim@iend.org

Part. 29: University of Ibadan, Nigeria (Uoi) RT 46: Amodu	Ibadan, Oyo, Nigeria amkemi@hotmail.com
Part. 30: International Centre for Genetic Engineering and Biotechnology (ICGEB) RT 47: Chitnis	Aruna Asaf Ali Marg, 110067 New Delhi, India cchitnis@icgeb.res.in
Part. 31: The Biotechnology Centre, University of Yaounde I (BTC) RT 48: Mbacham	B.P. 337 Yaounde - Cameroon wfmbacham@yahoo.com
Part. 32: European Molecular Biology Laboratory (EMBL) RT 49: Irving	Meyerhofstraße 1, 69117 Heidelberg, Germany irving@embl.de
Part 33 University of Melbourne, (UNIMELB) RT 50: McFadden	Victoria 3010, Australia gim@unimelb.edu.au
Part 34 Max Planck Institute Berlin, (MPG) RT 50: Matuschewski	Charitéplatz 1, D-10117 Berlin, Germany Kai.Matuschewski@med.uni-heidelberg.de