

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

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