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THE ROLE OF POLYMERASE CHAIN REACTION TECHNIQUES FOR ASSESSING LYMPHATIC FILARIASIS TRANSMISSION

Report of a workshop cosponsored by the World Health Organization and
DBL-Centre for Health Research and Development, University of Copenhagen

Copenhagen, Denmark

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ABBREVIATIONS

ABR	annual biting rate
ADL	adenolymphangitis
AIBR	annual infective biting rate
ATP	annual transmission potential
CDC	Centers for Disease Control (USA)
CMFL	community microfilaria load
DANIDA	Danish International Development Agency
DBL	Danish Bilharziasis Laboratory
DEC	diethylcarbamazine citrate
EU	European Union
GPELF	Global Programme to Eliminate Lymphatic Filariasis
GPS	Global Positioning System
ICT	immunochromatographic test
IHRD	Institute for Health Research and Development
IU	implementation unit
L3	third-stage larva
LF	lymphatic filariasis
LQA	lot quality assurance
MDA	mass drug administration
MF	microfilaria(e)
MoH	Ministry of Health
MX	molecular xenomonitoring
NIH	National Institute of Health (USA)
MLE	maximum likelihood estimator
NPELF	National Programme to Eliminate Lymphatic Filariasis
NTD	neglected tropical disease
OCP	Onchocerciasis Control Programme
PBS	phosphate buffered saline
PCR	polymerase chain reaction
PELF	Programme to Eliminate Lymphatic Filariasis
PNG	Papua New Guinea
PMG	Programme Managers' Guidelines (WHO)
qPCR	quantitative PCR
RFV	recently fed vector
SEARO	South-East Asia Regional Office (WHO)
TAG	Technical Advisory Group
TDR	Special Programme for Research and Training in Tropical Diseases (UNICEF/UNDP/World Bank/WHO)
UMP	uniformly most powerful

1. INTRODUCTION

1.1. Rationale for the meeting

An international workshop entitled "Lymphatic Filariasis: Use of PCR in Monitoring Transmission" was held on 7-10 November 2006. The purpose of the meeting was to discuss and standardize the use of PCR as a tool for monitoring the success or failure of mass drug administration (MDA) programmes and to aid in determining when MDA programmes can be terminated.

The specific objectives of the meeting were to:

- prepare a standardized protocol for infection monitoring by mosquito dissection, including a mosquito-sampling strategy;
- prepare a standardized protocol for infection monitoring by PCR analysis of mosquitoes, including a mosquito-sampling strategy;
- examine and list the criteria that should be used to determine when significant transmission has ceased in an endemic area;
- prepare a standardized sampling protocol to be used in determining that significant transmission has ceased in an endemic area.

The detection of lymphatic filarial parasites in mosquitoes by PCR and its potential use as a monitoring and evaluation tool in the Global Programme to Eliminate Lymphatic Filariasis (GPELF) has been discussed for several years[1,2,3,4,5]. During the TDR Scientific Working Group meeting on Lymphatic Filariasis (LF) in Geneva, May 2005, and at the subsequent meeting of the Technical Advisory Group (TAG-6) of the GPELF in Geneva, September 2005[6,7], it was emphasized that the use of PCR in molecular xenomonitoring (MX) should be evaluated as a possible tool to monitor progress of the GPELF. Members of the TAG indicated a need to streamline the available PCR technology to make it more useful and easier to implement on a global scale.

It was recommended that available expertise be brought together for a three-day meeting to review the PCR methodology and to make recommendations for