

**UNIVERSITI SAINS MALAYSIA  
GERAN PENYELIDIKAN UNIVERSITI PENYELIDIKAN  
LAPORAN AKHIR**

**HEALTH AND SAFETY: GENETIC RELATEDNESS OF  
ENVIRONMENTAL EXPOSURE OF LESTOSPIRAL PRE- AND  
POST FLOOD: TOWARDS STRATEGIC PREVENTION OF  
LEPTOSPIROSIS**

**PENYELIDIK**

**DR. NABILAH BT. AWANG @ ISMAIL**

**PENYELIDIK BERSAMA**

**PROFESOR MADYA DR. CHAN YEAN YEAN  
PROFESOR MADYA DR. AZIAN HARUN  
PROFESOR MADYA DR. SITI ASMA HASSAN**

**2017**



KEMENTERIAN  
PENDIDIKAN  
MALAYSIA

**FINAL REPORT**  
**GERAN PENYELIDIKAN PENGURUSAN BENCANA BANJIR**  
Laporan Akhir Skim Geran Penyelidikan Fundamental (FRGS)  
Tahun 2015

**A RESEARCH TITLE:** Genetic Relatedness of Environmental Exposure of Leptospiral Pre- and Post-Flood: Towards Strategic Prevention of Leptospirosis

**YEAR:** 9 MONTHS

**THEME CODE:** 1.0  
(Please refer attachment)

**SUBTHEME CODE:** 7 HEALTH AND SAFETY

Please Tick (✓)

**PHASE:** 01: Pre-Disaster

02: During Disaster

03: Post-Disaster

**AREA:** 01: Preventive

02: Preparedness

03: Rescue and Recovery

04: Adaptation

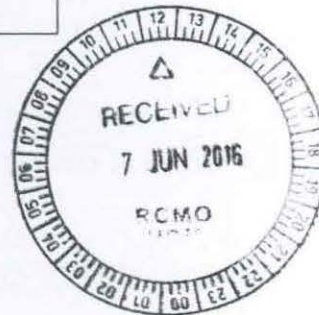
05: Mitigation

**START DATE:** 1 April 2015

**END DATE:** 30 April 2016

**PROJECT LEADER:** Dr Nabilah Ismail  
**I/C / PASSPORT NUMBER:** 710921-03-5520

**PROJECT MEMBERS:** 1. Prof Madya Dr Chan Yean Yean  
(including GRA/RA/RO) 2. Prof Madya Dr Azian Harun  
3. Prof Madya Dr Siti Asma Hassan



**PROJECT ACHIEVEMENT (Prestasi Projek)**

ACHIEVEMENT PERCENTAGE			
Project progress according to milestones achieved up to this period	0 - 50%	51 - 75%	76 - 100%
Percentage (please state #%)			/
RESEARCH OUTPUT			
Number of articles/ manuscripts/ books (Please attach the First Page of Publication)	Indexed Journal		Non-Indexed Journal
Conference Proceeding (Please attach the First Page of Publication)	International		National
			1
Intellectual Property (Please specify)			
Number and title of Policy Paper / SOP / Technology Solution (Please specify)	1. 2. 3.		

HUMAN CAPITAL DEVELOPMENT					
Human Capital	Number				Others (please specify)
	On-going		Graduated		
Citizen	Malaysian	Non Malaysian	Malaysian	Non Malaysian	
<b>No. PHD STUDENT</b>					
Student Fullname: IC / Passport No: Student ID:					
<b>No. MASTER STUDENT</b>					
Student Fullname: IC / Passport No: Student ID:					
<b>No. RA/RO</b>	1 RA				
Student Fullname: IC / Passport No: Student ID:	Mohd Yuszrin				
<b>Total</b>	1 RA				

**EXPENDITURE (Perbelanjaan) as Borang K1 (RMC)**

**C Budget Approved (Peruntukan diluluskan) : RM70,000.00**  
**Amount Spent (Jumlah Perbelanjaan) : RM68,860.00**  
**Balance (Baki) : RM1,140.00**  
**Percentage of Amount Spent : 98.37 %**  
**(Peratusan Belanja)**

**ADDITIONAL RESEARCH ACTIVITIES THAT CONTRIBUTE TOWARDS DEVELOPING SOFT AND HARD SKILLS**  
**(Aktiviti Penyelidikan Sampingan yang menyumbang kepada pembangunan kemahiran insaniah)**

International		
Activity	Date (Month, Year)	Organizer
(e.g : Course/ Seminar/ Symposium/ Conference/ Workshop/ Site Visit)		
National		
Activity	Date (Month, Year)	Organizer
(e.g : Course/ Seminar/ Symposium/ Conference/ Workshop/ Site Visit)		

E	<b>PROBLEMS / CONSTRAINTS IF ANY</b> ( <i>Masalah/ Kekangan sekiranya ada</i> )
	-
F	<b>RECOMMENDATION</b> ( <i>Cadangan Penambahbaikan</i> )
	-
G	<b>RESEARCH ABSTRACT – Not More Than 200 Words</b> ( <i>Abstrak Penyelidikan – Tidak Melebihi 200 patah perkataan</i> )
	<p>Leptospirosis is an important worldwide zoonotic disease caused by <i>Leptospira</i> spp. The presence of pathogenic <i>Leptospira</i> in the environment poses threats to human health. The aim of this study was to isolate and identify <i>Leptospira</i> spp. from selected environment in flood affected areas.</p> <p><b>Method:</b> Soil and water samples were collected about four to five months post massive flood in 2014 from selected sites in Kelantan. All samples were filtered and cultured according to previously described protocols. Molecular identification of the isolates was performed by partial sequences of 16S rRNA.</p> <p><b>Findings:</b> A total of 90 samples comprised of 45 soil and 45 water samples were collected. Based on dark field microscopic observations, 42.2% (38/90) cultures were positive for leptospire with characteristic morphology and motility. The most predominant isolates were pathogenic <i>Leptospira</i> including <i>Leptospira kmetyi</i>, <i>Leptospira interrogans</i> and <i>Leptospira kirschneri</i> which were detected in 26.3% (10/38), 5.3% (2/38) and 2.6% (1/38) of the isolates respectively. <i>Leptospira</i> species were not able to be genetically differentiated between pre- and post-flood because single locus 16S rRNA gene sequences has not allowed for intra species differentiation.</p> <p><b>Conclusion:</b> This study demonstrates the predominance of clinically significant pathogenic <i>Leptospira</i> in the environments which could pose health risks to the community.</p> <p><b>Keywords:</b> Isolation, <i>Leptospira</i>, environmental samples, flood, Kelantan</p>
	<p>Date : 1.6.2016 Tarikh</p> <p>Project Leader's Signature: Tandatangan Ketua Projek</p> 