Problem Formulation for the Use of Gene Drive Technology in Mosquitoes

May 25-27, 2016

Sheraton Reston Hotel | Reston, VA
Meeting Room: Conference Room 1

GOALS: This workshop will examine the basic principles of environmental risk assessment, the process of how environmental protection goals are translated into operation endpoints for risk assessment ("problem formulation"), and the application of this process to the use of gene drives for either population modification or population suppression in mosquito vectors. Goals are to develop a more informed understanding of plausible risks associated with the use of gene drive strategies to control mosquito-borne diseases, including ecological risks as well as risks to human health, and make recommendations about the research needed to provide information to address those risks. Results from the discussions will be submitted for publication.

Wednesday, May 25

07:30	**Registration and Breakfast**	*Conference Room 1*
08:30	Welcome and Introductions	Stephanie James
	Session 1: Scientific Background and Context	
08:45	Overview and Purpose of the Workshop	Andrew Roberts
09:00	Biology of *Anopheles* Mosquitoes	Frederic Tripet
09:30	What is Gene Drive?	Kevin Esvelt
10:00	Applications of Gene Drive Technology in Malaria Control: Population Suppression	Austin Burt
10:45	**Coffee Break**	
11:00	Applications of Gene Drive Technology in Malaria Control: Population Modification	Anthony James
11:45	Potential Benefits for Malaria Control	Phillip Eckhoff
12:15	**Lunch**	
	Session 2: Introduction to Problem Formulation	
13:15	What is Risk Assessment and Why Do We Do It	Andrew Roberts
14:00	Introduction to Problem Formulation	Alan Raybould
14:45	Problem Formulation Case Example: *Aedes aegypti* OX513A	Camilla Beech
15:30	**Coffee Break**	
15:45	Environmental Protection Goals and Priorities in a Sub Saharan Country	Willy Tonui
16:30	Presentation of Case Studies and Introduction of Exercises for Day 2	Andrew Roberts
17:30	Questions and Answers	All Participants
18:30	**Group Dinner**	

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Thursday, May 26

7:30	**Breakfast**	*Conference Room 1*
	Case Study Round Robin	
08:30	Review of Case Study Exercises and Agenda	Andrew Roberts
	Breakout sessions: Sheraton Conference Rooms 1, 2, 3, 4	
9:00	Case Study Session 1	
12:00	**Lunch**	
13:00	Case Study Session 2	
16:00	Preparation of Case Study Reports	
	(Dinner on your own)	

Friday, May 27

07:30	**Breakfast**	*Conference Room 1*
	Review of Case Study Results	
8:30	Presentation and Discussion of Case Study 1	
10:00	**Coffee Break**	
10:15	Presentation and Discussion of Case Study 2	
12:00	**Lunch**	
13:00	Identification of Consensus Conclusions	
	What are the relevant environmental protection goals related to the use of gene drives in mosquito populations?	
	What (if any) plausible risk scenarios can be identified in regard to each case study?	
	What information, or type of information, would be useful to address the likelihood of environmental harm for each case study?	
	Are there areas of research that could contribute to an improved understanding of the risks presented by the use of gene drive technology?	
15:00	**Coffee Break**	
	Post Workshop Discussion	
15:15	Applying the Workshop Results to the Use of Similar Methods to Control *Aedes aegypti* Transmission of Zika Virus	
17:00	Concluding Remarks and Adjourn	