Developing the Target Product Profile for Gene Drive Mosquitoes

February 25-26, 2019

London Marriott Hotel County Hall

Agenda, Day 1: February 25, 2019 (Meals will be in *Queen Mary*; the main meeting room is *King George V*)

8:00-9:00	***REGISTRATION and BREAKFAST***	
9:00-9:30	***Introductions and goals of the meeting***	Stephanie James
9:30-10:00	***Proposed testing pathway for gene drive mosquitoes: Decision gate for moving to field trials***	Fredros Okumu
10:00-11:00	***Group Discussion: Modeling the toolkit for malaria elimination*** ➢ How do gene drive mosquitoes fit into the toolkit of products for malaria elimination/eradication? • How can models account for interactions with other malaria and vector control strategies? • What information do models need to make good predictions of the impact of gene drive mosquitoes? • Are there particular limitations of other vector control strategies that models should focus on in exploring the role of gene drive mosquitoes?	*Moderator*: Jaline Gerardin *Rapporteurs*: Karen Tountas David O'Brochta
11:00-11:30	***COFFEE/TEA***	
11:30-noon	***Review of TPPs/PPCs for malaria transmission-blocking tools***	Larry Slutsker
Noon-13:00	***Review of current draft TPPs for gene drive mosquitoes*** • Population replacement • Population suppression	 UCI Malaria Initiative Austin Burt
13:00-14:00	***LUNCH***	
14:00-18:00	***Group discussion: Assessing efficacy expectations for gene drive mosquitoes***	
14:00-15:30	<u>*Session 1*</u> ➢ What should we aim for in a first gene drive product? How is this informed by modeling? • What are the expectations of benefit for a first gene drive product? What would be considered minimally acceptable efficacy to justify releases in Africa? • How does this relate to different malaria transmission conditions in Africa? How might this inform selection of potential testing sites? • How might expectations for efficacy of gene drive mosquitoes change by the time a first gene drive candidate is ready for testing, as a result of ongoing malaria control and elimination efforts? How might this be taken into account in the TPP? ➢ Should availability of a remediation strategy be taken into account in the TPP criteria? • If so, how might modeling inform this?	*Moderator*: Azra Ghani *Rapporteurs*: Carolyn Buckee Nakul Chitnis
15:30-16:00	***COFFEE/TEA***	
16:00-18:00	<u>*Session 2*</u> ➢ How can modeling be used to predict the efficacy of gene drive mosquito products? • Do differences in existing models or models currently in development influence predictions? If so, how practically important is this and what should be done? • How do models take into account differences in products intended to reduce population size or change vector competence? Do downstream impact predictions depend on product characteristics? • What data is needed to adequately parameterize the models?	*Moderator*: John Marshall *Rapporteurs*: Andrea Beaghton David O'Brochta

	Session 2 (continued) ➢ How should criteria for durability of efficacy be determined? • How does this relate to malaria reduction goals? • Can the timescale for evolution of resistance to the drive or effector mechanism be predicted? What data would be required? • Can other potential changes in the mosquito or parasite be predicted? What data would be required?	
19:00	***GROUP DINNER**, 1212 Restaurant at the Royal Horseguards Hotel* *https://www.guoman.com/en/london/the-royal-horseguards/restaurants/1212.html*	

Agenda, Day 2: February 26, 2019 (Meals will be in *Queen Mary*; the main meeting room is *King George V*)

8:00-9:00	***REGISTRATION and BREAKFAST***	
9:00-10:30	***Group Discussion: Translating to TPP efficacy criteria*** ➢ How do malaria reduction goals translate to entomological and epidemiological criteria for gene drive mosquito products (transmission reduction, time to effect, duration of effect,…)? ➢ What realities need to be taken into account (other vector species and mosquito metapopulations, spatial ecology, immigration/emigration,…) in setting TPP goals for entomological and epidemiological efficacy? ➢ What geographic range should be considered (initial release site, regional, continent wide) in setting TPP goals? ➢ How might release design influence efficacy results? What release strategies should be modeled?	*Moderator*: Ace North *Rapporteurs*: Greg Lanzaro Karen Tountas
10:30-11:00	***COFFEE/TEA***	
11:00-12:30	***Group discussion: Setting consensus efficacy characteristics*** ➢ Are we currently able to agree on justifiable entomological and epidemiological efficacy criteria for a minimally acceptable product to bring to field testing? • Do these criteria differ for products intended to reduce vector population size or change vector competence? ➢ What are realistic efficacy criteria for an ideal gene drive mosquito product? Does it have to be perfect? • Do these criteria differ for products intended to reduce vector population size or change vector competence? ➢ If questions remain, what more needs to be done?	*Moderator*: Neil Ferguson *Rapporteurs*: Shaibal Dasgupta George Christophides
12:30-13:30	***LUNCH***	
13:30-15:00	***Group discussion: Relating efficacy criteria to measurable parameters*** ➢ How can efficacy criteria be translated to measurable parameters? (in the lab/insectary, in the field)? • Life history parameters • Construct biology	*Moderator*: Tony Nolan *Rapporteurs*: Geoff Turner Nikolai Windbichler
15:00-15:30	***COFFEE/TEA***	
15:30-17:00	***Group discussion: Cost goals for gene drive mosquito products***	
	Presentation - Current considerations	Michael Santos
	➢ How do cost goals relate to goals for durability of efficacy and potential use scenarios? ➢ Are we currently able to agree on justifiable cost criteria for gene drive mosquitoes? ➢ If questions remain, what more needs to be done?	*Moderator*: Michael Bonsall *Rapporteurs*: Camilla Beech Karen Tountas
17:00-17:30	***Final discussion and next steps***	Stephanie James