

Expert Consultation on Malaria Vaccine PfSPZ-LARC Research & Development

The NIAID/DMID’s mission is to support basic and applied research to better understand, treat, and ultimately prevent infectious diseases. This expert consultation is specifically to seek help guide strategic priorities for research and/or development of next generation whole *Plasmodium falciparum* (Pf) sporozoite vaccine (PfSPZ) candidates, especially genetically attenuated, late (liver stage) arresting replication competent (LARC) sporozoite vaccines (PfSPZ-LARC vaccines). The meeting will consider the context of current global malaria control and elimination strategies, the recently published WHO Preferred Product Characteristics (PPCs) and clinical development considerations for malaria vaccine (<https://www.who.int/publications/i/item/9789240057463>), and the status of the whole sporozoite vaccine research and development. We hope to understand what kind of knowledge gaps or unmet needs that the whole sporozoite vaccine strategy can address, what realistic product features and performance characteristics will be required to address unmet needs and ultimately malaria control and elimination. Through this consultation, we hope to gain a greater understanding of whole sporozoite vaccine R&D and map out future research agenda and realistic target product profiles (TPPs) for PfSPZ-LARC vaccine candidates using a PfSPZ-LARC2 vaccine (a PfSPZ-LARC with two gene deletion which has mei2 and LINUP gene deletion $\Delta mei2, \Delta LINUP$) as an illustration.

Objectives

- Review the WHO Preferred Product Characteristics (PPCs) and clinical development considerations for malaria vaccines;
- Evaluate research and development gaps for next generation malaria vaccines;
- Landscape current whole sporozoite vaccine R&D and outline lessons learned;
- Review, critique, and finalize draft TPPs for PfSPZ-LARC vaccine candidates;
- Identify priorities and opportunities for future research or product improvement/enhancement for PfSPZ-LARC vaccines.

Detailed Agenda: Expert Consultation on Malaria Vaccine PfSPZ-LARC Research & Development Location: NIAID/5601 Fishers Lane, Rm LD20, Rockville, MD 20852 June 5-6, 2024		
Day 1		
Title	Title	Title
	Opening Session: Setting the Stage	
08:30-09:00	Welcome and Introductions	Annie Mo John Pesce Glen McGugan
	Opening Remarks	Emily Erbeling
	Session I: Malaria Vaccine R&D Landscape Moderator: Scott Miller; Commentator: Edwin NKansah	
09:00-09:15	Lessons learned from First-Generation Malaria Vaccines And WHO PPC for Next-Generation Vaccines (15 mins)	Lindsey Wu

09:15-09:30	R&D for Next Generation Malaria Vaccines and Other Potential Prophylactic Interventions (15 mins)	Ashley Birkett
09:30-09:45	Overview of Whole Sporozoite Vaccines R&D (15 mins)	Miguel Prudêncio
09:45-10:05	Q&As and Discussion (20 minutes)	
Session II: PfSPZ Sporozoite Vaccine Development Update Moderator: Kirsten Lyke; Commentator: Ally Olotu		
10:05-10:20	Summary of PfSPZ Vaccine Development Status (15 mins)	Steve Hoffman
10:20-10:30	CMC and Product Characteristics (incl. manufacturing and CoA) (10 mins)	Kim Lee Sim
10:30-10:45	Break (15 mins)	
10:45-10:55	Addressing implementation issues: Cryopreservation/cold chain, DVI (or alternative route) (10 mins)	Eric James, Thomas Richie
10:55-11:05	Regulatory Pathway, Business Development Strategies, Potential Market Niche (incl. proposed user cases) (10 mins)	Tooba Murshedkar, Thomas Richie
11:05-11:35	Q&As and Discussions (30 mins)	
Session III: PfSPZ-LARC Vaccines and TPPs for PfSPZ-LARC2		
(I): PfSPZ-LARC Vaccines Overview: Moderator: James McCarthy; Commentator: Ashley Birkett		
11:35-11:50	PfΔmei2 (PfSPZ-GA2) Vaccine Clinical and CMC Update (15 mins)	Robert Sauerwein
11:50-12:00	PfSPZ-LARC2 Vaccine Discovery (incl. data to support LARC2 development) (10 mins)	Stefan Kappe
12:00-12:10	PfSPZ-LARC2 Vaccine CMC and Process Development (10 mins)	Kim Lee Sim
12:10-12:20	PfSPZ-LARC2 Vaccine Overall PDP and CDP (incl. planned trials) (10mins)	Thomas Richie
12:20-13:20	Lunch	
13:20-14:00	Q&As and Discussion (40 mins)	
(II). PfSPZ-LARC2 Vaccine for Traveler's Market Moderator: Jerry Sadoff; Commentator: Scott Miller		
14:00-14:15	Travelers Market (Unmet Needs and Competitive Advantage of a Vaccine) (15 mins)	Martin Grobusch
14:15-14:30	Proposed Target Product Profile & Clinical Development Plan...Shortest Route to First Licensed Indication (15 mins)	Andrea Kreidenweiss
14:30-14:45	Commercialization Plan and Competitive Advantage (15 mins)	Steve Hoffman
14:45-15:25	Q&As and Discussion (40 mins)	
15:25-15:40	Break	

	<u>(III). PfSPZ-LARC2 Vaccine for Women of Child-bearing Potential (WOCBP)</u> Moderator: Miriam Laufer; Commentator: Hellen Barsosio	
15:40-15:55	Available Interventions for WOCBP (15 mins)	Miriam Laufer
15:55-16:10	TPP and Clinical Development Plan (15 mins)	Patrick Duffy
16:10-16:25	Unmet Needs, Commercialization Plan, and Competitive Advantage of PfSPZ-LARC2 Vaccine (15 mins)	Thomas Richie
16:25-17:05	Q&As and Discussion (40 mins)	
17:05-17:30	Summarization of Day 1 Sessions [Session I, II, III (I & II)]	Moderators & Commentators
17:30	Adjourned of Day 1	

Day 2		
Time	Title	Presenter
	Session III: PfSPZ-LARC Vaccines and TPPs for PfSPZ-LARC2 (continued from Day 1)	
	<u>(IV). PfSPZ-LARC2 Vaccine for Pediatrics</u> Moderator: Edwin Asturias; Commentator: Lorraine Soisson	
08:45-09:00	Available interventions for African Pediatrics and Unmet Needs (15 mins)	Ally Oluto
09:00-09:15	TPP and Clinical Development Plan (15 mins)	Matthew Laurens
09:15-09:30	Unmet Needs, Commercialization Plan, and Competitive Advantage of PfSPZ-LARC2 Vaccine (15 mins)	Steve Hoffman
09:30-10:10	Q&As and Discussion (40 minutes)	
	<u>(V). PfSPZ-LARC2 for Malaria Control and Elimination</u> Moderator: Kent Kester; Commentator: Bernard Nahlen	
10:10-10:20	Available interventions for Malaria Control and Elimination (10 mins)	Pedro Alonso
10:20-10:30	Proposed TPP for a Vaccine for Malaria Control and Elimination (10 mins)	Jean-Luc Bodmer
10:30-10:45	TPP and Clinical Development Plan (15 mins)	Thomas Richie
10:45-11:00	Unmet Needs, Commercialization Plan, and Competitive Advantage of PfSPZ-LARC2 Vaccine (15 mins)	Pete Billingsley
11:00-11:15	Break	
11:15-11:55	Q&As and Discussion (40 mins)	

Session IV: Whole Sporozoite Vaccine Research: Reflection & Perspectives Moderator: Miguel Prudencio; Commentator: Meta Roestenberg		
11:55-12:05	Process Improvement for SPZ Production: Manufacturability (e.g., in vitro culture, increased infectivity, etc.) and Others (10 mins)	Steve Hoffman
12:05-12:15	CHMI Models (10 mins)	Melissa Kapulu
12:15-12:25	Liver Stage Development Biology (10 mins)	Stefan Kappe
12:25-12:35	Understanding Targets and Mechanisms of Immune Protection in the Liver (10 mins)	Brandon Wilder
12:35-13:05	Q&As and Discussion (30 min)	
13:05-13:25	Summarization of Day 2 Sessions Session III (III, IV, V), Session IV	Moderators and Commentators
13:25-13:30	Closing Remarks and Meeting Adjourned	Annie Mo & Lee Hall