

## **Malaria Policy Advisory Group (MPAG)**

All 17 MPAG members participating in the meeting updated their declaration of interest in advance of the meeting, which were assessed by the WHO Secretariat. Thirteen members reported interests, which are summarized below. Five MPAG members have reported relevant interests and three (Evelyn Ansah, Abdoulaye Djimde and Azra Ghani) recused themselves from the discussion and decision-making regarding the malaria vaccine session. It was assessed that the remaining members could fully participate in all sessions.

All the reported interests are summarized below:

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### **1. Professor Evelyn Ansah, University of Health & Allied Sciences, Ghana**

- Research Support – Ghana Co-Investigator on funding from PATH for the Health Utilization Study on a qualitative assessment of the pilot implementation of RTS,S. This interest was assessed as non-personal, specific and financially significant.\*

### **2. Professor Graham Brown, Professor Emeritus, University of Melbourne Division, Australia**

- Consulting – United Nations Office of Project Services (UNOPS) to review the malaria program in Cambodia (2017). He was asked to review the programme, identify bottlenecks in implementation and make recommendations to overcome them. This interest is assessed as personal, non-specific and financially significant.\*
- Consulting – WHO/Global Malaria Programme contract to write the interim draft of the Executive Summary of Strategic Advisory Group on malaria eradication (SAGme) report (2019). This interest is assessed as personal, non-specific and financially significant.\*
- Public Statements and Positions – Presentation at an Australian government enquiry into side-effects of 8-amino-quinolines such as primaquine and tafenoquine in defence force Personnel. This interest is assessed as personal, non-specific and non-financially significant.\*
- Interest – Personally knows many researchers engaged in malaria research into drugs and vaccines (no commercial interest). And attended a Sanaria Vaccine Symposium in 2018. This interest is assessed as non-personal, non-specific and non-financially significant.\*

### **3. Professor Thomas Burkot, Australian Institute of Tropical Health and Medicine, James Cook University, Cairns, Queensland**

1. Consulting with Global Good Fund to provide technical advice on trials of a vector control product (improved housing) and developed a vector control strategy while on a fellowship with them from 2017-18 and multiple short contracts up to 2019. This interest is assessed as personal, non-specific and financially significant.\*
2. Consulting work with PATH to provide technical advice on writing grants to support the design and evaluation of vector control product trials of Attractive Toxic Sugar Bait (ATSBs). This consultancy work began in 2017 and is current. This interest is assessed as personal, non-specific and financially significant.\*
3. Research support to the Global Good Fund for field trials of malaria diagnostics. The support spanned from 2016 to 2018. This interest is assessed as personal, non-specific and financially significant.\*

### **4. Professor Gabriel Carrasquilla, Director, ASIESALUD, Colombia**

- Research support from GSK to ASIESALUD, a company for research epidemiology, public health and environment that conducts projects in Colombia and other Latin American countries for which he is the Director and he acted as the principal investigator on:
  - 1) The assessment of the introduction of packed cell volume (PCV) in Colombia; and
  - 2) The assessment of the introduction of Pertussis Vaccine for pregnant women in Bogota, Colombia.

Both contracts ended in December 2018. These interests are assessed as non-personal, non-specific and financially significant.\*

**5. Professor Maureen Coetzee, Director, Wits Research Institute for Malaria, University of the Witwatersrand, South Africa**

4. Research support – South African Research Chairs Initiative award (ended in 2018) provided by the South African Department of Science & Technology which is a government department that plays no role in malaria control. This interest is assessed as non-personal, non-specific and financially significant.\*

**6. Professor Umberto D'Alessandro, Director, Medical Research Council Unit, The Gambia**

5. Consulting – was a member of the external scientific advisory board of the Medicines for Malaria Venture (MMV) and participated in meetings in September 2017 and October 2018 in Geneva, Switzerland. This interest is assessed as personal, non-specific and non-financially significant.\*
6. Research support - principal investigator in a clinical trial on the safety and efficacy of pyronaridine-artesunate (Pyramax) in asymptomatic malaria-infected individuals. The Medical Research Council Unit (MRC), The Gambia, received funding from Medicines for Malaria Venture (MMV) for this work in 2018-2019. This interest is assessed as non-personal, non-specific and financially significant.\*
7. Non-monetary support - Donation of dihydroartemisinin-piperaquine for a cluster randomized trial on mass drug administration by Guilin Pharma in 2018. This interest is assessed as non-personal, non-specific and non-financially significant.\*
8. Non-monetary support - Travel and accommodation for a meeting on DHAPQ in September 2017 in Shanghai, China sponsored by Guilin Pharma. This interest is assessed as personal, non-specific and non-financially significant.\*

**7. Professor Abdoulaye Djimde, Head, Molecular Epidemiology Drug Resistance Unit, University of Mali, Mali**

9. Consulting - Both interests are assessed as personal, non-specific and non-financially significant.\*
  1. Honoraria - speaking engagement at a Symposium organized by Shin Poong on *“Future & Perspective of Pyramax (pyronaridine-artesunate) in the fight against malaria”*.
  2. Honoraria - Speaking engagement at the Multilateral Initiative on Malaria Conference (MIM) from 15 to 20 April 2018 in Dakar, Senegal. He was invited by Novartis to speak about *“Responding to the emergence of multi-drug resistance”* at their Symposium.
- Research support
  1. DELTAS Africa – Professor Djimde is the Principal Investigator for Developing Excellence in Leadership and Genetics Training for Malaria Elimination (DELGEME) with funding from the Wellcome Trust (2016 – 2021). This interest is assessed as non-personal, non-specific and financially significant.\*
  2. PAMGEN study funded by the African Academy of Sciences looking at genetic interactions between human populations and malaria parasites in different environmental settings across Africa (2018 – 2022). non-personal, non-specific and financially significant.\*
  3. WANECAMII – Professor Djimde is the Principal Investigator of the West African Network for Clinical Trials of Antimalarial Drugs with funding from EDCTP (2019 – 2024). This interest is assessed as non-personal, non-specific and financially significant.\*
  4. Clinical evaluation of ASAQ+Atovaquone-Proguanil tri-therapy for malaria treatment in African children funded by EDCTP (2019-2023). This interest is assessed as non-personal, non-specific and financially significant.\*

5. Funding from the Medical Research Centre, UK for using single-cell RNAseq to deeply investigate human malaria parasite transmission dynamics (2020- 2021). This interest is assessed as non-personal, non-specific and financially significant.\*
6. MalariaGEN Resource Center - Software Development Support (2021-2022). This interest is assessed as non-personal, non-specific and financially significant.\*
7. RTS,S – SMC trial – sub-investigator on trial which contributed minimal salary support through the London School of Tropical Medicine & Hygiene. Co-author on: Chandramohan D, Zongo I, Sagara I, Cairns M, Yerbanga RS, Diarra M, Nikièma F, Tapily A, Sompoudou F, Issiaka D, Zoungrana C, Sanogo K, Haro A, Kaya M, Sienou AA, Traore S, Mahamar A, Thera I, Diarra K, Dolo A, Kuepfer I, Snell P, Milligan P, Ockenhouse C, Ofori-Anyinam O, Tinto H, **Djimde A**, Ouédraogo JB, Dicko A, Greenwood B. Seasonal Malaria Vaccination with or without Seasonal Malaria Chemoprevention. *N Engl J Med*. 2021 Sep 9;385(11):1005-1017. doi: 10.1056/NEJMoa2026330. Epub 2021 Aug 25. PMID: 34432975. This interest is assessed as non-personal, specific and financially significant.\*

#### **8. Professor Azra Ghani, Infectious Diseases Epidemiology, Imperial College, UK**

- Consulting – WHO European Office support related to COVID-19 vaccination introductions (current). This interest is assessed as personal, non-specific and non-financially significant.\*
- Consulting – HSBC Panel discussion on the COVID-19 pandemic (current). This interest is assessed as personal, non-specific and non-financially significant.\*
- Consulting – to support a COVID-19 steering group at GSK. This interest is assessed as personal, non-specific and non-financially significant.\*
- Research support – Service contract to Imperial College from the Global Fund on different projects related to modelling impact estimates for malaria including global scenarios that incorporate RTS,s from 2016 to 2019 and in 2021. This interest is assessed as non-personal, specific and financially significant.\*
- Research support - Academic grant funding from multiple organizations for work on malaria and COVID-19 research including Bill & Melinda Gates Foundation (BMGF), MVI, MMV, IVCC, MRC, Wellcome Trust, NIH over three years (current). Included data analysis and modelling of public health impact of routine implementation and assessment of seasonal implementation related to RTS,s. This interest is assessed as non-personal, specific and financially significant.\*
- Charity trustee (non-monetary) - Malaria No More, UK (current). This interest is assessed as personal, non-specific and non-financially significant.\*
- Advisory – Moderna Epidemiology Advisory Board related to COVID-19 vaccines (February 2021). This interest is assessed as personal, non-specific and non-financially significant.\*

#### **9. Professor Caroline Jones, Senior Social Scientist, KEMRI-Wellcome Trust Research, Kenya**

- Research support - Senior social scientist on the project funded by UNITAID called the “Broad One Health Endectocide-based Malaria Intervention in Africa (BOHEMIA)”. This clinical trial of ivermectin mass drug administration (MDA), which runs from February 2019 to February 2023, is being conducted in Mozambique and Tanzania. Professor Jones is the lead social scientist and is investigating community and local stakeholder perceptions and responses to ivermectin MDA for malaria control. It aims to understand the local context and possible influences on uptake. This interest is assessed as non-personal, non-specific and financially significant.\*
- Research support - Senior social scientist on a household-randomized controlled trial which is multi-organization grant with Department for International Development (DFID) UK, MRC, Wellcome Trust Global Health trials grant on “*Can improved housing provide additional*

*protection against clinical malaria over current best practice?” from 2014 to 2019. This interest is assessed as non-personal, non-specific and financially significant.\**

- Research support - Senior social scientist on a Wellcome Trust Collaborative award on improving the efficacy of malaria prevention in Insecticide Resistant Africa from 2016 to 2019. Financially significant, personal in nature, not related to a topic for decision.
- Research support – Mentor for post-doctorate student on the study conducted in collaboration with PATH entitled “*Dynamics of health care utilization strategies in the context of RTS,S/AS01 vaccine introduction: a qualitative longitudinal study in Kenya*” (2018-2020). The institution received support for the post-doc who has now left the institution. This interest is assessed as non-personal, specific and non-financially significant.\* Although specific to the malaria vaccine, the interest was assessed as that of the post-doc, not Professor Jones as the mentor.

**10. Professor S. Patrick Kachur, Columbia University Medical, Center Heilbrunn Department of Population and Family Health, Columbia University Mailman School of Public Health, USA**

- Consultant - Consultancy with the Clinton Health Access Initiative (June 2020 – current) providing technical assistance for developing and completing malaria surveillance assessments in collaboration with WHO/GMP and national malaria control programs in multiple countries. This interest is assessed as personal, non-specific and financially significant.\*
- Advisory - Advisory roles on the Zanzibar Malaria Elimination Advisory Committee and the Board of Directors of Medical Care Development, Inc. This interest is assessed as personal, non-specific and non-financially significant.\*

**11. Doctor Fedros Okumu, Director of Science, Ifakara Health Institute, Tanzania**

- Employment – with Ifakara Health Institute. This interest is assessed as non-personal, non-specific and financially significant.\*
- Consulting – for WHO Vector Control Product Prequalification as a consultant assessor ending in December 2020. This interest is assessed as personal, non-specific and financially significant.\*
- Research support – grants received from the Bill & Melinda Gates Foundation; WHO-TDR programme; Wellcome Trust; Foundations of the National Institutes of Health, USA; Africa Research Excellence Fund; UKRI/EPSRC, UK; Rudolf Geigy Foundation, Switzerland; Hanako Foundation, Singapore; The Royal Society, London; The British Academy, London, UNITAID, Medical Research Council, UK; Swiss National Science Foundation, USAID, Innovative Vector Control Consortium, Grand Challenges, Canada, Scottish Funding Council and Consortium for Advanced Research Training in Africa. All grants were awarded to Ifakara Health Institute and are assessed as non-personal, non-specific and financially significant.\*
- Patent Applications held by Ifakara Health Institute and assessed as non-personal, non-specific and non-financially significant.\*
  - a) World Intellectual Property Organization. Patent number WO 2010/101462-A2: *Behavior modifying odorant mixture for malaria mosquitoes* (Joint patent by Ifakara Health Institute, TZ and Wageningen University, The Netherlands):  
<https://patents.google.com/patent/WO2010101462A2/en>
  - b) World Intellectual Property Organization. Patent number WO 13187690.6-1656: *A complex of structures for delivering pesticidal agents to arthropods*. (Joint patent by Ifakara Health Institute, TZ & In2Care Holding B.V, The Netherlands):  
<https://patents.google.com/patent/EP2859794A1/en?q=A&q=complex&q=structures&q=delivering&q=pesticidal+agents&q=arthropods&oq=A+complex+of+structures+for+delivering+pesticidal+agents+to+arthropods>

- Expert opinions: contributed to the following assessed as personal, non-specific and non-financially significant.\*
  - a) Currently serves as a member of the Malaria Strategic Advisory Panel for the Bill & Melinda Gates Foundation
  - b) Contributed in Research and Draft team for Africa Union on: African Union High Level Panel on Emerging Technologies (2018): Gene Drives for Malaria Control and Elimination in Africa. <https://www.nepad.org/publication/gene-drives-malaria-control-and-elimination-africa>
  - c) Contributed as a co-chair of malERA Refresh Consultative Panel on Tools for Malaria Elimination. (2017). malERA: An updated research agenda for diagnostics, drugs, vaccines, and vector control in malaria elimination and eradication. PLoS Med. 2017 Nov 30;14(11):e1002456.doi: 10.1371/journal.pmed.1002456. eCollection 2017 Nov. Review: <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002455>
  - d) Contributed as a member of this panel: James S, Collins FH, Welkhoff PA, Emerson C, Godfray HCJ, Gottlieb M, Greenwood B, Lindsay SW, Mbogo CM, **Okumu FO**, Quemada H, Savadogo M, Singh JA, Tountas KH, Touré YT (2018). Pathway to Deployment of Gene Drive Mosquitoes as a Potential Biocontrol Tool for Elimination of Malaria in Sub-Saharan Africa: Recommendations of a Scientific Working Group†. Am J Trop Med Hyg. **2018** Jun;98(6\_Suppl):1-49. doi: 10.4269/ajtmh.18-0083. <https://pubmed.ncbi.nlm.nih.gov/29882508/>

## 12. Doctor Aranxta Roca Feltrer, Malaria Consortium

- Employment with the Malaria Consortium (non-profit organization). This interest is assessed as personal, non-specific and financially significant.\*
- Research grants from the Bill & Melinda Gates Foundation on surveillance strengthening in Mozambique. This interest is assessed as non-personal, non-specific and financially significant.\*

## 13. Professor Dyann Wirth, Richard Pearson Strong Professor and Chair, Harvard T.H. Chan School of Public Health, USA

Research grant support to Harvard University received from the following organizations (all current):

- National Institute of Health, USA – Principal Investigator or Co-PI on four grants on new drug discovery and drug resistance (DHODH/mitochondrial targets, ProRS and targeting parasites in mosquitoes, and ACT resistance). This interest is assessed as non-personal, non-specific and financially significant.\*
- Bill & Melinda Gates Foundation – Genetic epidemiology of malaria and Rethinking malaria global leaders initiative. This interest is assessed as non-personal, non-specific and financially significant.\*
- PATH – Principal Investigator for Mal095 using RTS,S to look at the issue of allele specific immunity. This interest is assessed as non-personal, specific and financially significant.\* Although related to the malaria vaccine, this work is to understand gaps in immunity provided by RTS,S and will inform the development of future malaria vaccines. This research is not being considered as evidence for the decision on the malaria vaccine and the work will continue regardless of the outcome.
- Educational support to Harvard University for the Eradication of Malaria Leadership course provided by BMGF, JC Flowers Foundation, Sumitomo Corporation and ExxonMobil. This interest is assessed as non-personal, non-specific and financially significant.\*

Advisory roles (assessed as personal, non-specific and non-financially significant\*):

- Medicines for Malaria Venture (MMV) Expert Scientific Advisory Committee (ESAC); honorarium and travel provided
- Board of Trustees of the Marine Biological Laboratories, Wood Hole, MA; no honorarium or travel expenses received.
- Warren Alpert Foundation Scientific Advisory Committee for the annual award; honorarium received.
- PATH/PMI Insights initiative which is a collaborative body of global experts on malaria research and policy to increase access and information to forward the goal of malaria elimination.

### **Due diligence (internet search)**

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Nothing significant was found that was not already declared by MPAG members.

\* According to WHO's Guidelines for Declaration of Interests (WHO expert), an interest is considered "personal" if it generates financial or non-financial gain to the expert, such as consulting income or a patent. "Specificity" states whether the declared interest is a subject matter of the meeting or work to be undertaken. An interest has "financial significance" if the honoraria, consultancy fee or other received funding, including those received by expert's organization, from any single vaccine manufacturer or other vaccine-related company exceeds 5,000 USD in a calendar year. Likewise, a shareholding in any one vaccine manufacturer or other vaccine-related company in excess of 1,000 USD would also constitute a "significant shareholding".

The above stated conflicts were made available for public notice and comment 1 week prior to the MPAG meeting to provide information on interests or biases relating to potential conflicts of MPAG members. No comments were received.