African conversations on gene drives for malaria control & elimination
Gene drive technologies
Primary objective

Elicit opinions and recommendations of African key stakeholders regarding gene drive technologies and their application to malaria control & elimination efforts;

This will inform the develop of product profiles of gene drive-mosquito products currently in development.

First, we must listen!
Key stakeholders

- Research institutions
- Regulatory agencies
- Government ministries
- Academic institutions
- Media & advocacy groups
Step 1: Selection of countries and participants

Representation of malaria-situation in Africa

Step 2: Mixed methods approach:

Questionnaire & in-depth conversations to investigate baseline awareness and perceptions

Step 3: Bridge the knowledge gap

Culturally relevant instructive animations

Step 4: Dissemination & monitoring of the educational materials
25 countries represented

37 people contacted

192 survey respondents

18 in-depth discussion sessions
## Stakeholder statistics

<table>
<thead>
<tr>
<th>Stakeholder group</th>
<th>Academic institutions</th>
<th>Research institutions</th>
<th>Regulatory agencies</th>
<th>Government</th>
<th>Media groups</th>
</tr>
</thead>
<tbody>
<tr>
<td># Survey respondents</td>
<td>30</td>
<td>85</td>
<td>14</td>
<td>34</td>
<td>21</td>
</tr>
<tr>
<td># discussion sessions</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>3</td>
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</table>
## Stakeholder characteristics

<table>
<thead>
<tr>
<th>Category</th>
<th>Variable</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td>Male</td>
<td>113 (64.0%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>72 (36.0%)</td>
</tr>
<tr>
<td><strong>Stakeholder group</strong></td>
<td>Research institution</td>
<td>85 (44.3%)</td>
</tr>
<tr>
<td></td>
<td>Academic institutions</td>
<td>38 (19.8%)</td>
</tr>
<tr>
<td></td>
<td>Government</td>
<td>34 (17.7%)</td>
</tr>
<tr>
<td></td>
<td>Media/advocacy</td>
<td>21 (10.9%)</td>
</tr>
<tr>
<td></td>
<td>Regulatory agencies</td>
<td>14 (7.3%)</td>
</tr>
<tr>
<td><strong>Age group</strong></td>
<td>25 – 35</td>
<td>53 (27.6%)</td>
</tr>
<tr>
<td></td>
<td>36 – 45</td>
<td>87 (45.3%)</td>
</tr>
<tr>
<td></td>
<td>46 – 55</td>
<td>40 (20.8%)</td>
</tr>
<tr>
<td></td>
<td>&gt;56</td>
<td>12 (6.3%)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>PhD</td>
<td>102 (53.2%)</td>
</tr>
<tr>
<td></td>
<td>Msc/MPH/MBA</td>
<td>57 (29.7%)</td>
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<tr>
<td></td>
<td>BSc/BA</td>
<td>30 (15.6%)</td>
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<td>Diploma/certificate</td>
<td>2 (1.0%)</td>
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<tr>
<td><strong>Field of work</strong></td>
<td>Research</td>
<td>121 (63.0%)</td>
</tr>
<tr>
<td></td>
<td>Health care</td>
<td>28 (14.6%)</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>25 (13.0%)</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>16 (8.3%)</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>8 (4.2%)</td>
</tr>
</tbody>
</table>
Reported knowledge & awareness of gene drives (n = 192)

- Awareness of GMMs: 86.0% Aware, 14.0% Not aware
- How GMMs work: 82.9% Know, 17.1% Don't know
- Awareness of gene drives: 78.7% Aware, 21.3% Not aware
- How gene drives work: 70.3% Know, 29.7% Don't know
75.6% of the respondents deemed gene drives beneficial (n = 152)

- Effective in malaria control: 58.8%
- Sustainable in the long run: 35.5%
- Affordable overall: 35.5%
- Safer for humans and environment: 30.0%
65.3% of the respondents had concerns over gene drives (n = 152)

- Inadequate local technical expertise: 54.3%
- Safety: 32.5%
- Not affordable: 35.5%
- Not accepted by communities: 28.7%
Recommendations from stakeholders

Evidence of safety needed on:

- Control for mutations
- Control for invasiveness
- Ecosystem safety
- Prevention of re-infection

Ethics and regulations

- Explain risk assessment and management strategies
- Build and improve capacity of regulators
- Build and improve capacity of local scientists
- Addressed cross-border issues
- Build up on existing regulations of GM crops
- Public health-based regulations needed
Recommendations from stakeholders

Effectiveness & usefulness

- GD as stand-alone tool & in combination
- Feasibility of implementation demonstrated
- Variations in dominant vector species
- Consider tailor-made gene drives
- Invest resources in vector surveillance

Stakeholder engagement

- Top-down approach
- Active involvement of NMCPs & local influential groups
- Brand of the gene drives with relatable names
- Recognize & seek community members’ expertise
- Engagement public when there’s a clear product
- Transparency in communicating risks and benefits
95.5% of the respondents support adaptation or scaling up of gene drive technologies in their settings (n=152)
African Conversations

Thank you

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