Can Cutting-edge Biology Strengthen the BWC?

*Barriers and Opportunities*

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*Global Forum On Scientific Advances Important to the Biological and Toxin Weapons Convention*  
*Geneva, 2nd Dec 2019*
African Women for Biosciences (AWfB)

- Network of women with interest and passion in STI - women discussion the role of Biosciences in Kenya
- Initiated on April 2017
- A new platform – the African Women for Biosciences (AWfB), launched on May 10, 2018 in Nairobi
- Strengthen the capacity of African women to engage and participate in Biosciences and policy dialogue
Emerging Biotech Tools Relevant to BWC

**Gene Editing**
- Delete, insert or alter DNA gene targets e.g. Disease causing, pesticide control genes; CRISPR-Cas9 system; recent, faster, cheaper, more accurate and more efficient

**Synthetic Biology**
- Design and construction of new biological parts, devices and systems that do not exist in the natural world; designing novel biological systems

**Big Data**
- Cutting edge technologies have enabled rapid collection of data
What Influences Public Perceptions about New Bioscience Innovations?

Four factors:
- Trust
- Benefit
- Control
- Fairness

Ref: Risk Perception Theory
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<tr>
<th>Barriers</th>
<th>Opportunities</th>
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<tr>
<td>Genetic editing knowledge is limited to a few people = <strong>LOW TRUST</strong></td>
<td>Personnel and biological material inventories PLUS capacity-strengthening</td>
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<td>Experienced, Older generation, Brain drain</td>
<td>Mentorship opportunities</td>
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<td>Off target or incomplete targeting mutations = <strong>CONTROL</strong></td>
<td>Localized medium-to-long-term studies to determine effects</td>
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<td>Need of Up-to-date equipment/infrastructure = <strong>FAIRNESS</strong></td>
<td>Tech-transfer; license, regulate and monitor those who purchase such equipment</td>
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<td>Lack of benefit sharing</td>
<td>Training- on new technology, equipment (border, security and port personnel)</td>
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<td>Barriers</td>
<td>Opportunities</td>
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<td>Lack of buy-in of new technologies by diverse stakeholders</td>
<td>Stakeholder mapping and for effective engagement</td>
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<td>Weak legal and ethical guidelines</td>
<td>Public-private linkages in developing Legal and ethical guidelines</td>
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<td>Low (sometimes absence) of Protocol regulations</td>
<td>Establishment of IRBs</td>
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<td>Development of Protocol regulatory framework using best practices</td>
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<td>Funding limitations</td>
<td>Building collaborations</td>
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<td>High Disease burden- Biopiracy?</td>
<td>Rich pathogen population- used to advance technology with relevant policies in place</td>
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<td>A lot of data- Data base accessed through a common query</td>
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Kenya’s Achievement

• Established National CBRN Committee- Updating National Action Plans
• Developed a National Bio-risk Curriculum
• Biosafety Act Kenya (2009)
• Regulatory Bodies- NBA, IRB, NACOSTI established
• Biosecurity Bill – under development
• Strategic Trade Management Bill- under development
• Various Global Biorisk Trainings
Emerging Technologies: What Can We Do Differently?
Positioning Africa as a leader not a follower
### Emerging Technologies: What Can We Do Differently?

**Positioning Africa as a leader not a follower**

#### Regulations
- Evaluate new technologies on a case-by-case basis
- Incorporate regulations for tech’ into the existing regulatory frameworks

#### Policies
- Sector-wide-multidisciplinary policies – agriculture environment, health, industry
- Avoid setting up regulatory institutions every time there is a new technology
- Multi-representation in international conventions’ negotiations =Biosafety/BWC

#### Communication
- Build a community of Africa-led science communicators
- Desist from explaining process to the “SO WHAT?”
- Grassroots outreach
- Culture-sensitive
Summary

• Evidence-based policies supported by practical/facilitative regulatory framework not emotion-centered or based on risk perceptions

• Coordinated approach between relevant regulatory agencies across agriculture, health, environment and security

• Biosafety- key component in policy implementation

• Public sensitization about cutting-edge Biotechnology- Technical experts, Media, & other key stakeholders to enhance TRUST
A-S-A-N-T-E
(Thank you!)

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