Discussion Worksheet Outcomes

What research goals or questions could be addressed through a pre-competitive research consortium?

1. Prescriber tools
   - Decision trees
   - Appropriate use for prevention purposes
   - Clinical guidelines, case studies, rapid diagnostics and additional data (PK, PD, MICs, and clinical effectiveness) to support veterinary decision-making
   - Antimicrobial susceptibility testing and breakpoint setting
   - Use of vet diagnostic lab antimicrobial sensitivity testing (AST) reports by practitioners to choose Abx
   - HACCP-like guidelines for specific scenarios/commodities

2. Innovations
   - Rapid diagnostics: specialized, fast, easy/advanced sampling, ideally pen-side or animal-side
   - Alternatives--- phages, probiotics, etc.
   - Cecal isolates→ what’s in there? Genome sequencing
   - Vaccines (especially “one shot vaccines”)
   - Immunopotentiators
   - How do you to bring alternatives to the farmer/veterinarian?

3. Epidemiological/Biological Questions
   - How to avoid unintended effects in the gut
   - Animals as an amplifier of human MDR bacteria?
   - A better understanding of immunology, especially in poultry
   - Development of common metrics
   - Impact of early life treatments
   - If antibiotic use is reduced, what are the impacts on animal health and welfare, and how does that impact food safety & economics of production?
   - How to best quantify impact on animal health in welfare, and human health
   - How quickly can resistance change?
   - How does ABF production impact resistance/resistome?
• Could resistance genes be deleted?
• Co-selection not well-understand
• Microbiome: host, environment, disruption (not just due to antibiotics treatment)
• Mitigation processes to further minimize contamination of food animal products with bacteria or other microbes
• Waste (manure, water, etc.) management interventions/ mitigations
• Are there ways to inactivate drugs in the gut?

4. Economics and behavioral sciences
• Why are antibiotics are used, or not used, in different scenarios?
• How do you incentivize behavior change?
• Determine best practices (quality assurance programs are an example) and economic impacts of best management practices
• Possibly compare and contrast companion animal and livestock prescriber behavior
• Outreach to producers to help understand benefits of recommended changes
• Use Ag extension services to educate public

5. Other considerations regarding coalition-building
• Ensure a One Health approach and collaboration
• Timeline & Priorities
• Focus on resistance itself, rather than just reducing antibiotics
• Drug labels are old and guidance may need to be updated. Do they work as intended?
• How can social media/influencers be used to advance the effort?
• Refer to EU RONAFARI report (Reduction of Need for Antibiotics in Food Animals) for potential approaches
• Use risk assessment approach to align all research
• Utilize existing public-private partnerships if possible
• Consider existing models of consortiums that have been effective
• Focus on the most immediate impact to demonstrate results. For example, diagnostics is a faster way to show reduction in use, so anything that can be done to facilitate point-of-care diagnostic information
• Organization, governance, “membership” requirements, management, operations, expectations and funding need to be outlined to engage participants.
• What is the “win” or “incentive” for an institution and its faculty to participate or for a company to support it? Confidentiality, patents, etc. also come into play.