Context

- The development of subunit vaccines to East Coast fever (ECF) faced the problem to develop a strong immune response able to fight the *T. parva* sporozoites.
- The Livestock CRP Group is working in developing new delivery systems based on nanoparticles to develop a protective immune response to ECF.

Soluble protein s-p67C, ILRI, Nairobi.

↓ Ab ↓ cells

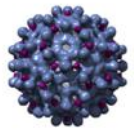
Not optimal

Silica vesicles (SV-p67C), University of Queensland, Australia.

↓ Ab ↑ cells

Very safe
Cheap and easy to produce

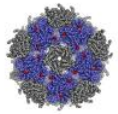
Chimeric VLPs (HBcAg-p67C), Institute Tropical Medicine, Belgium.



↑ Ab ↓ cells

Limitations to include other antigens

Self-assembled synthetic VLPs, Institute of Protein Design, Washington University, USA.



↑ Ab ↑ cells

No limitations on antigen size
High plasticity

NUTRITION & FOOD SECURITY

Nanoparticle platform to fight old foes. *T. parva* p67C antigen as a model

- Presenting the antigen in a multimeric array increases its immunogenicity.
- Protection is increased by using nanoparticles to deliver protective antigens.
- The technology could be applied for other antigens/diseases or to generate vaccines to multiple diseases using the same delivery system. E.g. TAHSSL bovine respiratory syncytial virus project.

RESEARCH PROGRAM ON Livestock

LIVESTOCK HEALTH

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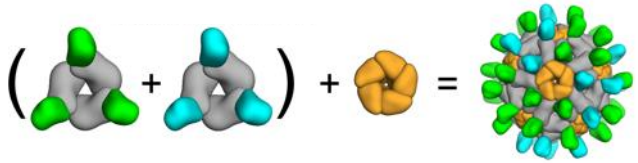
Our innovative approach

- Self-assembled synthetic VLPs increases the immune response to a poor model antigen, p67C.
- Self-assembled synthetic VLPs are highly plastic and other antigens could be included.



Outcomes

- Higher immune response to the model antigen, p67C.
- This technology could and will be applied to other disease, e.g. bovine-RSV under the TAHSSL platform.

Future steps

- Continue to apply this technology to continue improving the ECF subunit vaccine efficacy.
- Potential wide use of this technology to develop vaccines against other diseases we are working under the Livestock CRP, e.g. ECF, ASFV, PPR.

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