Brucellosis Vaccine Prize Awards US $1m to Animal Health Innovators Globally

As the final two Milestone 1 Brucellosis Vaccine Prize winners were announced, Peter Jeffries, Chief Executive of the Global Alliance for Livestock Veterinary Medicines (GALVmed), discussed the next stage of the competition, as well as GALVmed's wider developmental work.

The Brucellosis Vaccine Prize competition was launched late in 2016. Can you tell us a little about which stage the competition is currently at?

We have just completed Phase 1 – and the response rate has been incredible. We have been very pleasantly surprised with the quality and quantity of applications, with 39 applications in this first phase.

Of the 39 initial applications, the judging panel considered 20 to be suitable to go through to Phase 2. Ten US $100,000 prizes have been awarded to winners from all over the world – in fact, from five continents; North and South America, Europe, Asia and Africa.

Only ten prizes could be awarded, unfortunately, but we've encouraged the other ten who didn't receive prizes to continue and they remain eligible for one of the four US $1 million Milestone 2 prizes.

How has the partnership with AgResults worked?

AgResults is a multilateral payment-by-results fund designed to incentivise agricultural innovation. Our partnership with them has been a tremendous success. AgResults provides funding for the initiative, the overarching knowledge of a variety of projects in the agricultural space and brings the funders together towards that – and GALVmed is the implementing partner for this project, responsible for overseeing the assessment and progress of the development of the vaccines, for which the prize money will be awarded.

The competition aims to incentivise the development of a new vaccine for *Brucella melitensis* in small ruminants across the developing world. Why was this focus chosen?

The prize was considered to be necessary or beneficial because the current brucellosis vaccines are really somewhat limited and reproductive diseases are increasingly recognised as being a constraint to livestock production, particularly in sub-Saharan Africa and at a smallholder level. So the intention is to come up with a much safer vaccine; current vaccines can be unsafe for the animal but also for the administrator, so we're looking for improved safety – and, associated with that, improved efficiency and an acceptable price for the livestock owner.

Is the competition still open for entry?

Yes – it's perfectly possible for an organisation to enter the competition at this stage. All Phase 1 prizes have been awarded, but new entrants can apply all the way through to the award of the final prize – and in fact for a short period afterwards, for the Best in Class prize. So, we would welcome further applicants who are able to follow the rules of the prize to put their entry in.

The competition remains open and we very much hope that further organisations will still consider entering for the chance to be considered for a Milestone 2 prize of US $1 million.

What are the judging criteria for Milestone 2? What would applicants have to provide in order to be considered for a US $1m prize?

To be considered for one of the four US $1 million Phase 2 prizes, applicants have to be able to demonstrate proof of principle of improved safety and improved efficacy in line with the specified criteria, together with the ability to scale up the technology in a way that will allow commercial manufacture of the vaccine. This may oblige academic organisations, for example, to partner with a commercial company by the time we get to the award of the Milestone 2 prizes.

What would be the potential impact of a new vaccine, if one were to be developed that met the required criteria?

It would be likely to have a significant impact. It is increasingly reported that reproductive disease is a major productivity restraint to livestock reproduction in all areas, but particularly in smallholder farmers in South Asia and Sub-Saharan Africa. In addition to that, brucellosis is zoonotic – it transfers from animals to man and therefore has a major impact on people as well. So a new vaccine would mean improved productivity and reduced levels of abortions in livestock – and fewer cases of disease being transferred to humans.

Which types of organisation are eligible to submit entries?

We welcome all qualified organisations. There may be a concern that, for example, an academic institution isn't able to fully develop and manufacture a vaccine, and that's probably valid – but what we are looking for is novel approaches and novel technologies. Academic organisations can then partner up with those commercial companies that have identified the opportunity associated with that particular approach – and those links can be established via the online partner portal on the Brucellosis Vaccine Prize site.

Larger animal health companies may be interested in the academic institutions because by and large they like to limit the amount of risk; they are very happy that an academic partner will take a project through to a certain point. Then they will review and pull it into their own programmes if suitable.

So, by all means we welcome all applicants; it's the quality of the technology that will win the day.

Is this innovative competition model likely to be rolled out in other projects in the future?

The initiative so far is considered a success and there's every hope that we might repeat or do something similar in the future with other targets in mind, so that's an encouraging sign. In addition, the donors are increasingly recognising the importance of the private sector in establishing successful business models for entering into new markets, including sub-Saharan Africa and to a lesser extent south Asia; the goal is to find a solution for everybody – the local farmers who have better access to products, and the commercial

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companies who can generate business models. What GALVmed does and hopes to do is reduce the risk of that initial entry into the market. The AgResults Brucellosis Vaccine Prize has been a tremendous success and we're optimistic that the model that's been used in this prize will be repeated in other similar areas in animal health.

How can people find out more or apply for the competition?
Organisations should visit www.brucellosisvaccine.org for more information and to submit an entry.

In terms of GALVmed's wider remit, could you tell me about your other work?
GALVmed is involved in three main areas: firstly, we are involved in vaccine development, particularly to meet the needs of smallholder farmers. This involves the adaptation of existing products utilising new technologies and their subsequent registration, so often we pick up other people's research and try and convert that into a registered product.

The second area is market development, so often even though there's a good product in existence, it isn't available reliably. In other cases there may be a limited knowledge of the impact of the disease – and we work at a local level to try and build an understanding of the ability and value of controlling the diseases.

Then, thirdly, we work in policy, working with national governments to improve the efficiency of vaccine registration, for example to improve availability for organisations which are able to deliver the vaccines at field level and in developing industry associations to assist lobby groups for industries working with government.

There are plenty of barriers which make it difficult for us to succeed in the market and of course we are working to overcome those. Vaccine availability is a problem which could be due to: a lack of foreign exchange or lack of ability to import the vaccine; it could be due to problems with getting vaccines registered – and sometimes it's as a result of a lack of funds available to purchase the vaccine at village level.

Can you tell us anything about forthcoming or current projects?
We're hopeful that there will be more initiatives similar to the competition; under the AgResults banner it has been a great success so far, and there are discussions going on to look at some new targets to identify how a prize mechanism might usefully be applied to them.

GALVmed is funded by the Bill & Melinda Gates Foundation and by the UK government's Department for International Development. We have just started a new programme with them called VITAL, with new targets and new objectives for meeting the needs of smallholder farmers. This is our third phase of funding and each of the steps we've worked through has taken the products on to have greater impact. GALVmed is very focused on impact and wants to see change at village level; to deliver this we have a set of new programmes across vaccine development, market development and to a lesser extent policy work, all of which will be measured by our monitoring and evaluation team.

How do you decide which projects to take on?
GALVmed is primarily focused on fourteen livestock diseases and involved to a greater or lesser degree with all of those. We try to work with the best people in any particular field, so we define our strategy and the targets that we are working on and then work with these experts to build an understanding of all the work that's going on in the particular disease areas.

Why is there such a focus on livestock?
Livestock is critically important to many people in the world; it is estimated that 900 million people rely on livestock as their primary source of income and GALVmed is there to make sure that those people's needs are met. Historically, livestock has been significantly underfunded and we're really pleased with the evidence of positive impact we see with increased funding coming to the livestock sector – in health, genetics and productivity improvement through the funding of the donors. We very much hope to continue and expand our focus in our key area of expertise, which is the control of livestock disease.

What's next for GALVmed?
In our next phase, our focus is going to be on developing combination vaccines, because we believe that the ability to reach a reliable diagnosis is often missing, so a combination vaccine allows the disease syndrome to be controlled more effectively. We work with the best people we can in those areas to identify the way forward; increasingly we work with commercial companies because the expertise in vaccine development, and even market understandings, lies with the private sector.

Interview conducted by Gwynneth Clay

Gwynneth Clay

Pilot Manager Lead for the Brucellosis Vaccine Prize Initiative at GALVmed. A pharmacologist with more than 20 years' experience across animal and human health product development management, Gwynneth has worked with GALVmed for four years, supporting projects focused on the development of improved vaccines and sustainable animal health distribution channels for smallholder farmers.