opnMe by Boehringer Ingelheim

opn2EXPERTS – Serum: A suitable matrix to study equine allergies?

Based upon serum samples supplied by us, how would you propose to improve our understanding of the pathologic mechanisms underlying equine insect bite hypersensitivity?

Answers to this question including a proposal for collaboration can only be considered if they arrive no later than January 28, 2021 11:59 pm PST.

Boehringer Ingelheim

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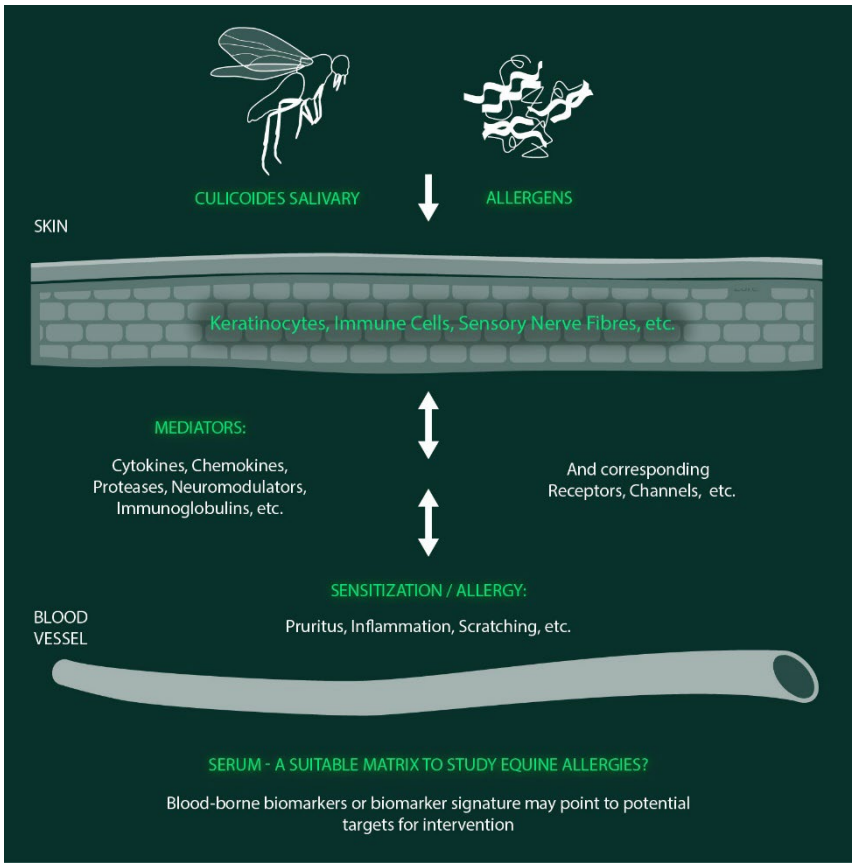
What is the context of the problem that we would like to solve?

Insect bite hypersensitivity (IBH) is a seasonally recurrent, IgE-mediated strongly pruritic allergic dermatitis in horses. It is triggered predominantly by salivary allergens of biting midges of the genus *Culicoides* (Cul). It is the most common skin disease of horses, with a prevalence of 3 to 60%, depending on breed, family and geography. The pathogenesis is still not completely understood[1].



Current treatment focuses mostly on symptom relief through treatments such as corticosteroids, as well as avoidance of insect contact with insecticides or blankets, but is seldom satisfactory. Thus, there is a significant unmet medical need and the strong desire to discover new ways to treat IBH.

Boehringer Ingelheim Animal Health (BI-AH) pursues animal health & well-being, innovation and sustainability. BI-AH has performed clinical studies and banked serum samples of allergic (IBH) and non-allergic horses. To the best of our knowledge, there are only a few biobanks dealing with veterinary samples, and none so far have collected IBH-related samples. All samples have been obtained in longitudinal studies performed in Germany. The studies have been approved or registered with the appropriate German federal authorities. Samples were collected with standardized protocols.

Serum samples:

Study A	Study B
IBH (mild – severe) & non-allergic horses, no treatment:	IBH horses (mild – severe), placebo treatment:
Several hundreds of serum samples from IBH (n=25) & non-allergic horses (n=20) collected at one study site across the seasons. Mostly 2 aliquots (á 0.5 mL) available.	Serum samples from 20 IBH horses collected longitudinally along one spring / summer at four study sites. Mostly 3 aliquots (á 1 mL) available.

In addition to the above-mentioned well characterized equine blood samples, some recombinantly produced *Culicoides* allergens are also available.

Allergens (expressed in yeast - mg amounts) / Gen Bank Acc. No
Cul o2 / KC339672 Cul o3 / KC339673 Cul o7 / KC339677 Cul n4 / HM145952 Cul n8 / HM145956

Some pathomechanisms of IBH likely resemble canine or human atopic dermatitis[2]. Recently the term "liquid biopsy" has been established, summarizing a variety of analyses, e.g. metabolomics, proteomics, lipidomics, cell free DNA, miRNA, that can be performed in blood samples. Can blood-borne biomarkers or biomarker signatures be found, that may point to potential targets for intervention in IBH?

By making our internal serum samples available via this opn2EXPERTS question, we hope to trigger innovative approaches to improve our understanding of the pathologic mechanisms underlying equine insect bite hypersensitivity.

What potential solutions could be in scope?

Research groups eligible for this opn2EXPERTS call should be in possession of and need to remain in compliance with all necessary permits, approvals, licenses and other authorizations required by applicable (local) legislation for the handling of biological samples, in particular equine blood samples.

Boehringer Ingelheim can help with additional details if required, e.g., for import permits or fulfilling Nagoya protocol requirements.

The following potential approaches to answer our question include, but are not limited to the following:

- Anything that can be investigated in / with serum
- "Translational approaches" – in this case: Do pathomechanisms known in, e.g., canine or human atopy hold true in horses?

What potential solutions would be out of scope?

- Proposals that are considered primarily fee for service
- Proposals that do not focus on equine insect bite hypersensitivity

What benefits do we offer to you in exchange for having submitted a solution?

If your project is selected, you will have the opportunity to directly collaborate with the Translational Veterinary Science team of Boehringer Ingelheim Animal Health.

The access to the well-characterized equine blood samples will include access to additional meta-data (e.g. demographics, laboratory values, clinical severity / dermal scoring etc.).

In addition to the outlined in-kind funding and depending on the nature of your proposal, there may be additional funding available of up to 20,000 euros in total per selected project. Your funding request and rationale should be outlined in your proposal.

An agreement for the transfer and use of the material will need to be established mutually. It will provide full transparency about each partner's rights & obligations. As part of the agreement it will be acknowledged that you will be the owner of any potential new intellectual property; however, Boehringer Ingelheim will have a right of first refusal.

To maintain the highest degree of awareness in this open innovation environment, we plan to announce recipient(s) publically and feature them on opnMe.com and our social media channels. We would guide you through this process and as part of it we would kindly ask for your prior consent, should our scientific jury select your submission.

What are the key success criteria on which we base our selection for the best answer?

We are seeking research collaboration proposals that contain:

- A well-structured proposal outlining a new and compelling scientific idea
- A novel, testable working hypothesis distinct from those previously published
- Framing the questions and the innovation aspects which includes a well thought-through project plan

- Proven track record in the required field of expertise
- Outlining the technical feasibility of the innovative proposed approach
- A well-structured experimental plan that will be used to test the hypothesis, and potentially existing data
- Ability to implement the outlined solution as part of a scientific collaboration project including access to a laboratory

What information should be included in your answer submission?

Please use our answer submission template to provide a 2-3 page non-confidential proposal (available for download on the following site).

If confidential data exists that would strengthen the proposal, please indicate that information is available to share under a Confidential Disclosure Agreement (CDA). If we find the non-confidential concept proposal sufficiently interesting, we will execute a CDA for confidential discussions.

Anticipated Project Phases or Project Plan

Phase 1	Please complete your submission by **January 28, 2021 11:59 pm PST** the very latest
Phase 2	Our review of all proposals will be completed by March 15, 2021
Phase 3	Potential collaboration starting date late Q2/2021

Submitting a collaboration proposal

- Check the outline of the opn2EXPERTS Equine Allergy question on opnMe.
- Alternatively, you may click the "Download your answer submission template" banner to access the collaboration submission template.
- Follow the instructions to upload your submission document (requires login or registration).
- The upload allows you to attach additional application files if desired.
- You will be able to access your final submitted collaboration proposal in your personal dashboard and follow its review status.
- Please also visit the FAQ section on opnMe.com to learn more about our opn2EXPERTS program.

References

- Schaffartzik A., Hamza E., Janda J., Crameri R., Marti E., Rhyner C. Equine insect bite hypersensitivity: What do we know? *Review paper* **2012**, 147, 1-3. DOI: 10.1016/j.vetimm.2012.03.017, PubMed.
- Langan S. M., Irvine A. D., Weidinger S. Atopic dermatitis. *Review paper* **2020**, 396, 345-360. DOI: 10.1016/S0140-6736(20)31286-1, PubMed.