Experience from the ongoing Phagoburn clinical trial

Jérôme Gabard - CEO

- Sponsor of the first multicenter phage therapy trial
  - SME
  - Private equity. Last financial round March 2015: 2.6 M€
- Reminder : key objectives of PhagoBurn
  - Set up a robust phage Good Manufacturing Process that is identical from one phage to another:
    - at least within the same product
    - and at best for any phage cocktail
  - Check the safety and efficacy of two phage cocktails in a multicenter European high standards clinical trial
- Expected outcome
  - Open the way at last for phage therapy and get this therapeutic approach finally recognized.

Major pitfall of Phagoburn

Manufacturing

- Transferring an R&D manufacturing process from R&D to GMP scale is a challenge
  - The first plan was shooting for 12 months manufacturing for two clinical batches. Finally, it took us twice as much
- Manufacturing bacteriophages was more time consuming and complicated than expected
  - A product contains a dozen of active substances !
  - QC/QA is multiplied by 12 compared to the single active ingredient of an antibiotic
- Not all phages like to be produced in larger volumes
  - 2 phages out of 25 were removed because of a too limited yielding when scaling up

Major pitfall of Phagoburn

Regulatory

- The EMA-SME status is not equally recognized
  - So far: free of charge for ANSM, 1 200 € for Swissmedic and 12 500 € for AFMPS
  - Likely more when final bills are sent.
- Dealing with 3 agencies is a big effort for an SME
  - Divergences regarding our genuine GMP plan: a phage for topical application needs to be aseptic (like for iv)
  - Need a shared determination to exchange amid agencies
  - Woule a centralized regulatory process facilitate?
- Phages are “living” self propagating drugs
  - That nature triggers specific concerns : dose effect, multiplication in case of a sepsis, elimination
  - Some questions are raised that have never been asked for antibiotics: prophages, endotoxins…

Raised topics for the clinical trial

- Phage products are most often monospecific
  - Need to rethink treatment strategy: antibiotic experience doesn't apply
- Phages are a self-multiplying drug
  - Monitoring microbiological effect during trial course helps setting up the treatment regimen
- Diagnostic test mandatory before treatment
  - We should have done that for antibiotics
  - For phages, no question, it must be done: "phagogram"
- Impact on microbiote
  - The question is raised with phages, as we ever question it for antibiotics, although their impact is likely more potent
- Impact on environment
  - When trillions of phages are found naturally in water?

Conclusions

- Keep in touch with us on PhagoBurn
  - http://www.phagoburn.eu/
- Communication contact
  - Dr. François Ravat – Head of department – Saint Luc/Saint Jospeh Hospital
    +33 1 4 78 61 89 25
    fravat@ch-stjoseph-stluc-lyon.fr
- Coordinator contact
  - Patrick Jault – Head of department – Höpital d'Instruction des Armées Percy
    +33 1 41 46 82 00
    patrick.jault@santarm.fr
- Sponsor contact
  - Jérôme Gabard – CEO - Pherecydes Pharma
    +33 6 07 24 85 19
    jerome.gabard@pherecydes-pharma.com

- World Alliance Against Antibiotic Resistance (just released)
  - Phage Therapy – Back to the future (Gabard & Jault)
  - Could viruses help resolve the WW antibiotic crisis (De Vos & Pirnay)
    http://view.pagetiger.com/AMRControl2015