



## Jonas Dominique J Van Belleghem

Postdoctoral Research Fellow, Infectious Diseases

### Bio

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#### BIO

During my PhD research at Ghent University I studied the interaction between bacteriophages and the human immune response. It is known that the oral administration of phages to animals results in the translocation of phages to systemic tissues, whereby phages are able to cross cell monolayers. This suggests that mammals have mechanisms for the uptake and delivery of phages that may allow intestinal phages to elicit innate and adaptive immune responses.

If phages are present everywhere, the question can be asked whether they interact with our immune system. More specifically do they have anti-inflammatory properties. Otherwise how can they work systemically? These are questions I was trying to answer during my PhD, under the supervision of Prof. Mario Vaneechoutte and Prof. Rob Lavigne. We found that our studied phage have indications that they induce an immune response. Not only do the phages that we studied induce pro-inflammatory properties, we have indications that they might induce anti-inflammatory responses as well.

During my research I developed a profound interest in phage biology and phage therapy, more specifically in the interaction between phages and the mammalian host. I'm amazed by the possibilities of science, and fascinated by what is still to be discovered.

I'm looking forward to further elucidate the interaction of phages with the human immune response, and the potential impacts this could have on phage therapy or human health.

#### PROFESSIONAL EDUCATION

- Doctor of Science, Universiteit Gent (2017)

#### LINKS

- Personal site: <https://sites.google.com/view/jonasvanbelleghem>

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Phage Biology/Immunology.

#### Publications

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#### PUBLICATIONS

- **Bacteriophage trigger antiviral immunity and prevent clearance of bacterial infection.** *Science (New York, N.Y.)*

- Sweere, J. M., Van Belleghem, J. D., Ishak, H., Bach, M. S., Popescu, M., Sunkari, V., Kaber, G., Manasherob, R., Suh, G. A., Cao, X., de Vries, C. R., Lam, D. N., Marshall, et al  
2019; 363 (6434)
- **Interactions between Bacteriophage, Bacteria, and the Mammalian Immune System** *VIRUSES-BASEL*  
Van Belleghem, J. D., Dabrowska, K., Vaneechoutte, M., Barr, J. J., Bollyky, P. L.  
2019; 11 (1)
  - **Interactions between Bacteriophage, Bacteria, and the Mammalian Immune System.** *Viruses*  
Van Belleghem, J. D., Dabrowska, K., Vaneechoutte, M., Barr, J. J., Bollyky, P. L.  
2018; 11 (1)
  - **Pro- and anti-inflammatory responses of peripheral blood mononuclear cells induced by Staphylococcus aureus and Pseudomonas aeruginosa phages.** *Scientific reports*  
Van Belleghem, J. D., Clement, F., Merabishvili, M., Lavigne, R., Vaneechoutte, M.  
2017; 7 (1): 8004
  - **Phage Therapy for Limb-threatening Prosthetic Knee Klebsiella pneumoniae Infection: Case Report and In Vitro Characterization of Anti-biofilm Activity.** *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*  
Cano, E. J., Caffisch, K. M., Bollyky, P. L., Van Belleghem, J. D., Patel, R., Fackler, J., Brownstein, M. J., Horne, B., Biswas, B., Henry, M., Malagon, F., Lewallen, D. G., Suh, et al  
2020
  - **Comparison of procedures for RNA-extraction from peripheral blood mononuclear cells.** *PloS one*  
Rodriguez, A., Duyvejonck, H., Van Belleghem, J. D., Gryp, T., Van Simaey, L., Vermeulen, S., Van Mechelen, E., Vaneechoutte, M.  
2020; 15 (2): e0229423
  - **Pf Bacteriophage and Their Impact on Pseudomonas Virulence, Mammalian Immunity, and Chronic Infections.** *Frontiers in immunology*  
Secor, P. R., Burgener, E. B., Kinnersley, M., Jennings, L. K., Roman-Cruz, V., Popescu, M., Van Belleghem, J. D., Haddock, N., Copeland, C., Michaels, L. A., de Vries, C. R., Chen, Q., Pourtois, et al  
2020; 11: 244
  - **The Heparan Sulfate Mimetic PG545 Modulates T Cell Responses and Prevents Delayed-Type Hypersensitivity.** *Frontiers in immunology*  
Koliesnik, I. O., Kuipers, H. F., Medina, C. O., Zihlsler, S., Liu, D., Van Belleghem, J. D., Bollyky, P. L.  
2020; 11: 132
  - **Development of a qPCR platform for quantification of the five bacteriophages within bacteriophage cocktail 2 (BFC2).** *Scientific reports*  
Duyvejonck, H., Merabishvili, M., Pirnay, J., De Vos, D., Verbeke, G., Van Belleghem, J., Gryp, T., De Leenheer, J., Van der Borgh, K., Van Simaey, L., Vermeulen, S., Van Mechelen, E., Vaneechoutte, et al  
2019; 9 (1): 13893
  - **Interactions between Bacteriophage, Bacteria, and the Mammalian Immune System** *Phage Therapy: A Practical Approach*  
Van Belleghem, J., Dabrowska, K., Vaneechoutte, M., Barr, J.  
2019
  - **Macrophages and innate immune memory against Staphylococcus skin infections.** *Proceedings of the National Academy of Sciences of the United States of America*  
Van Belleghem, J. D., Bollyky, P. L.  
2018
  - **A comparative study of different strategies for removal of endotoxins from bacteriophage preparations** *JOURNAL OF MICROBIOLOGICAL METHODS*  
Van Belleghem, J. D., Merabishvili, M., Vergauwen, B., Lavigne, R., Vaneechoutte, M.  
2017; 132: 153-159
  - **Stability of bacteriophages in burn wound care products.** *PloS one*  
Merabishvili, M., Monsere, R., van Belleghem, J., Rose, T., Jennes, S., De Vos, D., Verbeke, G., Vaneechoutte, M., Pirnay, J. P.  
2017; 12 (7): e0182121
  - **Haemophilus influenzae biofilm formation in chronic otitis media with effusion** *EUROPEAN ARCHIVES OF OTO-RHINO-LARYNGOLOGY*  
Van Hoecke, H., De Paep, A., Lambert, E., Van Belleghem, J. D., Cools, P., Van Simaey, L., Deschaght, P., Vaneechoutte, M., Dhooge, I.  
2016; 273 (11): 3553-3560