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Evolutionary Biology

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Born in 1982 in Lommel, Belgium
Studied Biosciences at the University of Helsinki, and Logic, History, Philosophy of Science, and Biology at the University of Ghent

FELLOWSHIP
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ARBEITSVORHABEN

The Evolutionary Fundament of Emergent Infectious Disease: How Diseases Shape Society

The advances of modern medicine have lulled mankind into the belief that the threats of infectious disease have now been minimized. Although the 20th century was the age of antibiotic victory, it has also witnessed the emergence or reemergence of novel, devastating pandemics. Emerging pathogens not only threat public health, but also cause costly mass mortality in livestock (Nipah virus infecting pigs), crops (mosaic viruses in tomatoes), and wild populations (chytridiomycosis may drive a third of the world's amphibians into extinction). Although epidemiological and phylodynamic models have been pivotal in describing and understanding outbreaks, the underlying processes remain poorly understood. I intend to develop a theory of functional epidemiology in which epidemiological modeling, the evolutionary history of pathogens, and adaptive dynamics within hosts are combined to provide a holistic view of the evolution of infectious diseases. I will review key features of emergent diseases obtained from comparisons of zoonotic diseases and their ancestral strains in the reservoir. To gain insights into the long-term evolution of diseases, I will explore the abundant information on disease dynamics hidden in the visual arts, literature, and history. Finally, I will attempt to place infectious diseases within an ethical framework. I will focus on questions such as: What is the rationale behind current treatment practice, and is it compatible with the stance of current science? What are the ethical implications of vaccination programs and the trend to reject them? Is it ethically sound to refrain from treatment to prevent the spread of resistance at the cost of prolonging illness? What are the consequences of domestication and agriculture, knowing that the concentration of identical genotypes may facilitate disease emergence?

Recommended Reading

Peña-Miller, R., D. Laehnemann, G. Jansen, A. Fuentes-Hernandez, P. Rosenstiel, H. Schulenburg, and R. Beardmore (2013). "When the most potent combinations of antibiotics select for the greatest bacterial load: the smile-frown transition." PLoS Biol 11: e1001540.
Masri, L., R. D. Schulte, N. Timmermeyer, S. Thanisch, L. L. C. Crummenerl, G. Jansen, N. C. Michiels, and H. Schulenburg (2013). "Sex differences in host defence interfere with parasite-mediated selection for outcrossing during host-parasite coevolution." Ecol Lett 16: 461-466.

PUBLIKATIONEN AUS DER FELLOWBIBLIOTHEK

Jansen, Gunther (Oxford,2017)

Alternative evolutionary paths to bacterical antibiotic resistance cause distinct collateral effects

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1812812051

Jansen, Gunther (Washington, DC,2015)

Opinion : control vs. eradication ; applying infectious disease treatment strategies to cancer

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1726277852

Jansen, Gunther (London,2015)

Cancer across the tree of life : cooperation and cheating in multicellularity

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1041108044

Jansen, Gunther (2014)

Resistance is mobile : the accelerating evolution of mobile genetic elements encoding resistance

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Jansen, Gunther (Oxford,2013)

Experimental evolution as an efficient tool to dissect adaptive paths to antibiotic resistance

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Experimental evolution as an efficient tool to dissect adaptive paths to antibiotic resistance

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Jansen, Gunther (2013)

When the most potent combination of antibiotics selects for the greatest bacterial load : The smile-frown transition ; supporting information

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When the most potent combination of antibiotics selects for the greatest bacterial load : The smile-frown transition

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Jansen, Gunther ([Verlagsort nicht bekannt],2013)

Sex differences in host defence interfere with parasitemediated selection for outcrossing during host–parasite coevolution /Leila Masri, Rebecca D. Schulte, ..., Gunther Jansen, ...

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=755269675

Jansen, Gunther (2011)

Plankton-caught zoeal stages and megalopa of the lobster shrimp Axius serratus (Decapoda: Axiidae) from the Bay of Fundy, Canada, with a summary of axiidean and gebiidean literature on larval descriptions

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=767780795