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**"Driver or passenger" : an integrated epidemiological and experimental perspective on the association between nontyphoidal salmonella infection and colon cancer**

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# STELLINGEN BEHOREND BIJ HET PROEFSCHRIFT GETITELD

## “DRIVER OR PASSENGER?”

*An integrated epidemiological and experimental perspective on the association between nontyphoidal Salmonella infection and colon cancer*

1. Under certain conditions, nontyphoidal *Salmonella* is able to promote colon carcinogenesis thanks to its tropism for cancer cells and the formation of more and larger colonies after infection of transformed versus predisposed cells. [this thesis]
2. The contribution of *Salmonella* to colon cancer development or progression cannot solely be attributed to the extent of exposure (infection pressure/frequency of infection) nor to the dose of infection. [this thesis]
3. *Salmonella* serovar- and further strain-related risk differentiation was minor, suggesting a dominant role for host-related factors and host-microbe interactions. [this thesis]
4. Outcomes of in vitro and in vivo experiments support an association between *Salmonella* infection and the development of cancer, whereas the epidemiological outcomes are relatively more difficult to interpret. [this thesis]
5. The growing interest in post-infectious disease burden associated with diseases like Lyme borreliosis, Long COVID and cancer-causing microorganisms (e.g. HPV, Helicobacter), challenges the generally prevailing dogma of some infections being a transient state of limited duration, thereby calling for a less skeptical attitude among scientists and clinicians as to improve our understanding of the possible long-term consequences of infectious diseases.
6. Exclusive reporting of overall colorectal cancer risk estimates rather than site-specific estimates for proximal colon, distal colon and rectum separately in epidemiological research on bacteria-mediated cancer development limits our opportunities to unravel putative associations.
7. When zooming in, each piece of the puzzle turns out to contain a new puzzle therein. Owing to the ever-growing diversity and volume of highly-detailed ‘omics’ data, the need for an interdisciplinary scientific approach combining epidemiological and experimental research is crucial to keep sight on the total picture and importance for public health.
8. “There’s no single food—or single microbe—that will make or break your gut microbiome.” (prof. T. Spector, King’s College London, 2021)
9. “The world as we have created it is a process of our thinking. It cannot be changed without changing our thinking.” - (Albert Einstein). The problems in the world we have created as a result of our current and past ways of thinking cannot be solved without a change in thinking.
10. There’s no such thing as a failed study when finding a null result. When designed well, there is only ever a failure to learn from them. (freely adapted from dr. J. Jachimowicz, Harvard Business School, 2018)