

Prof.dr. Stanley Brul Chair Molecular Biology and Microbial Food Safety

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**EXPERTISE:** Biochemistry; Molecular Biology; Molecular stress physiology of (micro)organisms;

'Microbiome' studies relevant to beneficial and pathogenic microorganisms, in particular Bacilli.

**SCIENTIFIC CAREER:**

1990-1994 Post-doc Microbiol., Univ. Nijmegen & Dutch Science Council NWO-NATO-Talent stipendium for a stay @ Rockefeller Univ. lab. Miklos-Muller and

Christian De Duve.

1994-1997 Food Preservation project. manager, Unilever R&D, NL &UK.

1997-2002 Preservation program & Technology Platform man., Unilever R&D, NL & UK.

2000-2002 Professor of Industrial Microbiology, endowed chair at SILS, UvA.

2002-2007 0,4 FTE Senior Scientist Preservation, Food Microbiology, Unilever R&D, NL & UK.

2002-2007 0,6 FTE Professor Molecular Biology and Microbial Food Safety, MBMFS-SILS, UvA.

2007-present Professor Molecular Biology and Microbial Food Safety, MBMFS-SILS, UvA.

**ACADEMIC POSITIONS:** 0,6 FTE Research head of laboratory MBMFS, Master track coordinator Medical Biochemistry & Biotechnology (formerly known as Biochemistry & Metabolic Disease), Biomedical Sciences, FNWI & AMC; 2002-present; Director of the College of Life Sciences (1400 students Science Faculty UvA) & bachelor Biomedical Sciences culty & AMC (present).

**ACADEMIC SERVICES:** Editorial boards: International Journal of Molecular Sciences; Food Microbiology; Innov. Food Sci. & Emerg. Technol.; FEMS Yeast; Frontiers in Microbiology; Int. J. Mol. Science; Guest editor special issue Current Opinion Food Science (2016); Guest editor International Journal of Food Microbiology (2017). Referee for: PNAS, Nature, Curr. Opinion Microbiology, ASM & FEMS Journals, PLoS-Biology, J. Proteome Research, Proteomics.

Evaluation panels: NWO, BBSRC, IWT, EU. Co-evaluator of the Dutch Technology Institute (TNO) Life Science Program (2005). Evaluator of the Australian Food Safety Centre (Tasmania, Melbourne, Sydney, Brisbane) (2007). Chair of the education evaluation committee of the five biomedical sciences bachelor & master courses in Flanders (2013). Chair of the research evaluation committee of the Fungal Biodiversity Centre of the Netherlands Royal Dutch Academy of Sciences (2014). Regular Evaluator of Dutch Food Safety Authority policy documents. Member of the Expert panel Institutional Science review Institute Food Research Norwich (IFR, UK). Expert Science Advisor Gut Health Food Safety program Quadram Institute UK (2015). Expert member of the evaluation Ci.

Chemistry of the BSc & MSc programs at the Univ. Utrecht (2018). Chair of the new program audit Int. BioScience, Leiden Univ. (2018). Chair of the international institutional review committee of the Life Science program Wageningen Univ. (~8000 students; 2018/2019). Member of the TNO Master Tropical Medicine, Institute for Tropical Medicine, Antwerp (2019), Chair site-visit panel "ontwikkelingsgericht visiteren" Wageningen University Biology program (2020).

Member of the Dutch national Biology Council (2022) who prepared the sector portrait and sectorplan for new investments in Biology. Member of the Dutch European council Horizon 2020. Board member of scientific & related organizations: 2009-present chair of the Dutch Institute for Biology (NIBI). 2010-Former president (2003-2009) and Federation European Microbiological

Societies (FEMS) representative of the Royal Dutch Society for Microbiology (2009-2017). Co-organizer FEMS 2015 Congress of European microbiologists in Maastricht. Member of the Agri-Food cluster of the Amsterdam Economic Board.

**AWARDS/PRIZES/MAJOR MBMFS GRANTS:** Unilever Research Prize lecture (1998); Distinguished Research Fellow University Tasmania (2007); Lecturer at the Unilever Research Prize Symposium 2017. Unilever Innovation Fund Grant Novel Food Preservation (1 M€ 2002-2007); EET grant Food Preservation (2.5 M€; 2002-2006); STW grant Bacterial Spore germination (0.8 M€; 2003-2007); Casimir grant Bacterial Spore inactivation (0.22 M€ ; 2007-2009); STW grant Targeted Inhibition Bacterial Spores (0.3 M€; 2010-2014); Dutch Food Safety Authority grants antibiotic resistance (1,1M€; 2011-2015 & 2014-2018; 2016-2020); TNO grants microbial food safety and fungal growth optimization (0.3 M€;2012-2016); Nanonext participation in Food Stability project (0.15 M€; 2011-2015); EFRO grant on valorization of bioactive compounds from algae; various Erasmus Mundus PhD fellowships; various CSC fellowships (ongoing); MBMFS hosted Macgillavry fellow Budovskaya 2011-2016 (0.8 M€; focused on Aging); Dutch National Science Council (ALW) The Molecular Basis of Endospore Heterogeneity (0.25 M€; 2017-2020) POP 3 'Verduurzamen gewasteelt met microwieren' (0.25 M€; 2018-2021). Dutch National Science Council (Closed Cycles) (0.25 M€ 2018-2022); Funding / Grants with co-PI's from Research Priority Areas Systems Biology of Host-Microbe Interactions & Urban Mental Health (1 M€; 2020-2024). Grants with co-PI from the Dutch Food Safety Authority 1.6 M euro (2014-2028). The [Holomicrobiome initiative](#) (co-applicant) National Growth Fund reservation 200M euro (June 2023).

**OUTPUT:** Publications (Google scholar): Total number of publications: ~200. Total citations: 11992; **Most cited: 1148 (2002), 1450 (1999); H-index 56 (36 from 2018); i10 index 143 (105 from 2018).**

#### **New Result:**

Liu, S. Huang, Y., Jensen, S., Laman, P., Kramer, G., Zaat, S.A.J. and Brul, S. 2023. Molecular physiological characterization of the dynamics of persister formation in *Staphylococcus aureus*. <https://doi.org/10.1101/2023.06.21.545909> (under revision at ASM's AAC).

#### **Selected publications, see otherwise: [Pubmed-Brul](#)**

Yu, B., Kanaan, J., Shames, H., Wicander, J., Aryal, M., Li, Y., Korza, G., Brul, S., Kramer, G., Li, Y.Q., Nichols, F.C., Hao, B., Setlow, P. 2023. Identification and characterization of new proteins crucial for bacterial spore resistance and germination. *Front. Microbiol.* 14, 1161604, <https://doi.org/10.3389/fmicb.2023.1161604>

Van Leeuwen, P.T., Brul, S., Zhang, J. And Wortel, M.T. 2023. Synthetic microbial communities (SynComs) of the human gut: design, assembly, and applications. *FEMS Microbiol. Rev.* 47 (2): fuad012.

Wang, Y., Vischer, N.O.E., Wekking, D., Boggian, A., Setlow, P. and Brul, S. 2022. Visualization of SpoVAEa protein dynamics in dormant spores of *Bacillus cereus* and dynamic changes in their germinosomes and SpoVAEa during germination. *Microbiology Spectrum* 10 (3): e00666-22

Wen, J., Vischer, N.O.E., de Vos, A.L., Manders, E.M.M., Setlow, P. and Brul, S. 2022. Organization and dynamics of the SpoVAEa protein and its surrounding inner membrane lipid, upon germination of *Bacillus subtilis* spores. *Scientific Reports* 12, 4944.

Reemst, K., Tims S., Yam, K.Y., Mischke, M., Knol, J., Brul, S., Schipper, L. and Korosi, A. 2022, The role of the gut microbiota in the effects of early-life stress and dietary fatty acids on later-life central and metabolic outcomes in mice. *mSystems* 7(3):e0018022.

Weglarz-Tomczak E., Tomczak, J.M. and Brul S. 2021. M2R: a python add-on to cobrapy for modifying human genome-scale metabolic reconstruction using the gut microbiota models. *Bioinformatics* doi: 10.1093/bioinformatics/btab060

Swarge, B. Abhyankar, W., Jonker, M., Hoefsloot, H., Kramer, G.J., Setlow, P., Brul, S., and de Koning, L.J. 2020. Integrative analysis of proteome and transcriptome dynamics during *Bacillus subtilis* spore revival. *mSphere* 00463-20.

Hoeksema, M., Jonker, M.J., Bel, K., Brul, S. and Ter Kuile, B.H. 2018. Genome rearrangements in *Escherichia coli* during de novo acquisition of resistance to a single antibiotic or two antibiotics successively. *BMC Genomics* 19: 973.

**Supervision & external examiner of PhD theses:** Number of PhD students supervised to date: 27 (2000-2022); ~100+ PhD theses examined (Netherlands, Belgium, Norway, UK, France, Germany).

**IP Valorisation:** Recent patent WO2019243587 Use of green microalgae to improve plant growth (total 10 patents); Keijser, B.J.F. 2007. Control of Preservation by Biomarkers. EP 05077246.6.

#### **Selected Congresses and seminars:**

9th European Spore Conference, April 2018, London, UK. 'Omics', germinosome visualization and antimicrobial resistance of bacterial spores.

8th European Congress for Microbiologists, July 2019, Glasgow, UK, Mechanisms of bacterial spore germination and outgrowth.

Mind Mood & Microbes, May 2021, Banda, T, et al..... **Brul, S.**, Korosi, A. and Lok, A. The effect of early life stress on the gut microbiome across species @ <https://www.mindmoodmicrobes.org/>.

Dutch Neuroscience Meeting, June 2021, Korenblik V, et al. **Brul, S.** and Lok, A. Using multiple imputation to handle missing data concerning childhood trauma. @ <https://dnm21.azuleon.org/>.

Beneficial Microbes Congress, November 2022. Amsterdam, The Netherlands. Korenblik, V. Korosi, A., Brul, S., Lok, A., Bockting, C. Study protocol: Effects of butyrate on affective patterns, microbiome composition and depressive symptoms in young adults – a randomized clinical trial <https://beneficialmicrobes2022.org/programme.php>.

10th European Spore Conference, April 2023, Cambridge, UK. Visualizing spore germination protein complexes in action in bacterial endospores.