

# Dennis Claessen, PhD

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**Research keywords:** cell wall-deficiency, morphogenesis, development, actinomycetes, antibiotics, amyloids, extracellular matrix, antimicrobial resistance, evolution, synthetic biology, bacterial cell biology

## CURRENT POSITION

2015 – present **Associate Professor** (with *ius promovendi*)  
Department of Microbial Biotechnology, Institute of Biology, Faculty of Science,  
Leiden University, Leiden. The Netherlands (full-time, tenured)

## PREVIOUS POSITIONS

2010 – 2015 **Assistant Professor (Tenure Track)**  
Department of Microbial Biotechnology, Institute of Biology, Faculty of Science,  
Leiden University, Leiden. The Netherlands

2008 – 2010 **Post-doctoral Research Fellow (Marie Curie Reintegration Fellow)**  
Department of Microbial Physiology, Groningen Biomolecular Sciences and  
Biotechnology Institute (GBB), University of Groningen, Groningen, the Netherlands  
Mathematics and Natural Sciences

2006 – 2007 **Post-doctoral Research Fellow (Marie Curie Long Term Research Fellow)**  
in the laboratory of Prof. Jeff Errington (FRS) at the Institute of Molecular Biosciences,  
Newcastle University, Newcastle-upon-Tyne, United Kingdom

2005 – 2006 **Post-doctoral Research Fellow (EMBO Long Term Research Fellow)**  
in the laboratory of Prof. Jeff Errington (FRS) at the Sir William Dunn School of  
Pathology, University of Oxford, Oxford, United Kingdom

## EDUCATION

1999 – 2004 **PhD in Mathematics and Natural Sciences (*cum laude, highest distinction*)**  
University of Groningen, Groningen, the Netherlands.  
*Dissertation title:* "Structural proteins involved in morphological differentiation in  
streptomycetes"  
*Advisors:* Prof. L. Dijkhuizen and Prof. H.A.B. Wösten

1995 – 2004 **Combined BSc/MSc in Molecular Microbiology (*cum laude, highest distinction*)**  
University of Groningen, Groningen, the Netherlands.  
Topics: microbiology, mathematics, molecular biology, genetics, statistics,  
(bio)chemistry, electron microscopy

## GRANTS, FELLOWSHIPS AND AWARDS

2017	<b>NWO ALW Open Programme</b> (co-applicant): “Experimental evolution of complex cells” (€340K)
2017	<b>NWO-STW Biotechnology and Safety Programme</b> (co-applicant): “Transmission of antimicrobial resistance genes and engineered DNA from transgenic biosystems in nature” (€750K)
2014	<b>Award for Best Teacher of the Faculty of Science</b> (Leiden University, €2,500)
2014	<b>NWO-ALW Wetenschappelijke Bijeenkomsten:</b> “Bacterial Cell Envelope Forum 2015” (€5,000)
2013	<b>NWO Medium</b> (co-applicant): “A national facility for high-throughput flow cytometry of large-size particles, tissues and model organisms” (€500K)
2013	<b>VIDI (NWO-STW) Research Grant</b> (5 years): “Less is more: reduced mycelial heterogeneity for improved production of enzymes and antibiotics” (€800K)
2011	<b>Academische Jaarprijs:</b> “Antibiotica Gezocht!” (€100K)
2011	<b>TTI Groene Genetica</b> (co-applicant): “Agrobacterium-mediated protein therapy: a non-GMO approach for creating crop diversity”. (€500K)
2009	<b>Partnership Programme in Science</b> (United Kingdom – The Netherlands): “Contradiction in terminis: gene regulation by structural proteins?” (€1,750)
2008	<b>Marie Curie Reintegration Grant:</b> “Cellulose: a key component essential for development and attachment of <i>Streptomyces coelicolor</i> ?” (€45K)
2006 – 2007	<b>Marie Curie Intra-European Fellowship</b> (2 years): “Basic cohesion: molecular basis for chromosome cohesion in sporulating cells of <i>Bacillus subtilis</i> ” (€150K)
2005 – 2006	<b>EMBO Long Term Fellowship</b> (2 years): “Basic cohesion: molecular basis for chromosome cohesion in sporulating cells of <i>Bacillus subtilis</i> ” (€50K)
2005	<b>NWO ALW Open Programme</b> (co-applicant): “Constructing a bacterial skyscraper: from gene regulation to cell wall proteins” (€250K)
2005	<b>VAAM</b> (German Society for Microbiology) <b>Thesis Award</b> (€1,600)
2003	<b>Prof. Marion Mordarski Poster Award</b> in Biotechnology (International Symposium on the Biology of Actinomycetes, Melbourne, Australia)
1999	<b>Unilever Research Award.</b> (€2,500)

## SUPERVISION OF TECHNICIANS, PHD STUDENTS AND POST-DOCS

2019 – present	<b>Supervisor</b> of technician Noortje Dannenberg (NL)
2018 – present	<b>Supervisor</b> of PhD student Thomas van Dijk (NL)
2018 – present	<b>Supervisor</b> of PhD student Renee Kapteijn (NL)
2018 – present	<b>Co-supervisor</b> (with Prof. G.P. van Wezel) of Post-doc Dr. Le Zhang (China)
2018 – present	<b>Co-supervisor</b> (with Prof. A. Kros and Dr. D.E. Rozen) of Post-doc Dr. Shraddha Shitut (India)
2017 – present	<b>Supervisor</b> of PhD student Xiaobo Zhang (China)
2016 – present	<b>Supervisor</b> of PhD student Eveline Ultee (NL)
2015 – present	<b>Supervisor</b> of PhD student Zheren Zhang (China)
2014 – 2015	<b>Supervisor</b> of Post-doc Dr. Joost Willemse (NL)
2013 – present	<b>Supervisor</b> of PhD student/Post-doc Karina Ramijan (Costa Rica)
2013 – 2018	<b>Supervisor</b> of PhD student Boris Zacchetti (Italy)
2011 – 2016	<b>Supervisor</b> of PhD student Marloes Petrus (NL)
2006 – 2007	<b>Supervisor</b> of technician Suzanne Tran (UK)
2005 – 2010	<b>Co-supervisor</b> (with Prof. H.A.B Wösten and Prof. L. Dijkhuizen) of PhD student Wouter de Jong (NL)

## TEACHING EXPERIENCE

- 2018 – present **Figurehead** of the Honours program Beta and Life Science (Leiden University)
- 2017 – present **Teacher** Advanced Genetics and Biotechnology (lectures and assignments, MSc level, 3 ECTS)
- 2017 – present **Coordinator** of the Master programme “Molecular Genetics and Biotechnology” (MSc level, 120 ECTS, Leiden University)
- 2016 – present **Coordinator** and supervisor of the iGEM Leiden teams (BSc and MSc Honours course, interdisciplinary, 18 ECTS, **winner “Therapeutics Track” in 2018**)
- 2014 **Award for Best Teacher of the Faculty of Science** (Leiden University)
- 2014 **BKO Certificate** (Higher Education Teaching Qualification)
- 2014 – present **Teacher** Junior Science Lab (lectures for children)
- 2014 – present **Member of the exam committees** for the MSc specialisations Science Based Business and Science Communication & Society (Leiden University)
- 2012 – 2017 **Teacher** 2<sup>nd</sup> years course Microbial Ecology and Evolution (practicals, BSc level, 6 ECTS)
- 2012 – present **Teacher** Global Regulatory Networks in Bacteria (lectures and assignments, MSc level, 6 ECTS)
- 2012 – present **Coordinator** of the minor programme “Molecular Biotechnology” (BSc level, 30 ECTS)
- 2012 – present **Teacher** Exploitation of Natural Products (lectures, BSc level, 6 ECTS)
- 2012 – present **Teacher** Biotechnology: from Gene to Bio-based Product (lectures, BSc level, 6 ECTS)
- 2012 – present **Coordinator and Teacher** Molecular Design: Biotechnology-oriented Engineering of Life (lectures and practicals, BSc level, 12 ECTS)
- 2011 – 2016 **Guest lecturer** Molecular Genetics and Genomics (lectures, BSc level, 5 ECTS, University of Groningen)
- 1999 – present **Supervisor** of >50 bachelor and master students in Groningen, Oxford, Newcastle and Leiden
- 1995 – 1999 **Teaching assistant** in more than 10 (under)graduate courses (biostatistics, microbiology, bioinformatics)

## COMMISSIONS OF TRUST

- 2019 – present Mentor for PanaceaStars (Biotech Start-Up Companies; Oxford, UK)
- 2018 – present Member of the program committee for NWO-Life
- 2018 – present Figurehead of the Honours program Beta and Life Science (Leiden University)
- 2018 Ad hoc reviewer for the Polish National Science Centre grant proposals
- 2017 – present Board member of BioTechDelft (<http://biotechnologycourses.nl/about-biotechdelft/>)
- 2017 – 2018 Committee member for NWO-Veni (DO) Grant Proposals
- 2016 Committee work for NWO-STW Open Technology Program proposals
- 2015 – present Section editor for BMC Biotechnology
- 2013 – present Board member of the Royal Dutch Society for Microbiology (KNVM)
- 2008 Ad hoc reviewer for BBSRC grant proposals
- 2004 – present Ad hoc reviewer for: *mBio*, *Molecular Microbiology*, *Frontiers in Microbiology*, *Scientific Reports*, *eLife*, *Microbiology (SGM)*, *FEMS Microbiology Reviews*, *Applied Microbiology and Biotechnology*, *Antonie van Leeuwenhoek*, *Applied and Environmental Microbiology*, *Studies in Mycology*, *PLOS One*, *Journal of Bacteriology*.

### PhD examination and/or reading committee

- June 2019 Markus Fröjd, Lund University
- March 2019 Helena Shomar, TU Delft
- March 2019 Lizah van der Aart, Leiden University
- November 2018 **Boris Zacchetti, Leiden University (promotor)**
- September 2018 Peter Raus, Leiden University
- December 2016 Dino van Dissel, Leiden University
- February 2016 **Marloes Petrus, Leiden University (co-promotor)**
- Mei 2015 Le Zhang, Leiden University
- June 2014 Giulia Mangiameli, Leiden University
- November 2013 Martijn Rolloos, Leiden University
- June 2013 Jerre van Veluw, Utrecht University
- November 2012 Magdalena Anna Świątek, Leiden University
- November 2011 Esmeralda Jurado Jácome, Leiden University
- September 2010 **Wouter de Jong, University of Groningen (co-promotor)**

## CONFERENCE ORGANIZATION

- 2020 **Organiser and Chair** of the Bacterial Cell Envelope Platform Meeting (Leiden, The Netherlands)
- 2019 **Co-organiser and Session Chair** at NWO Life
- 2018 – present **Member of the program committee** for NWO-Life (May 2019)
- 2018 **Session Chair** “General microbiology” at the KNVM Scientific Spring Meeting (Papendal, The Netherlands)
- 2016 **Organiser** of the Fall Meeting of the KNVM Division “General and Molecular Microbiology” (Leiden, The Netherlands).
- 2015 **Organiser and Chair** of the Bacterial Cell Envelope Platform Meeting (Leiden, The Netherlands)
- 2014 **Organiser** of the masterclass at the KNAW Colloquium “50 years Fts: The A-Z of bacterial cell division” (Amsterdam, The Netherlands)
- 2013 **Organiser and Session Chair** “Bacterial growth” at the KNVM Scientific Spring Meeting (Papendal, The Netherlands)
- 2012 **Organiser and Session Chair** “Differentiation in microbial multicellular communities” at the KNVM Scientific Spring Meeting (Papendal, The Netherlands)
- 2011 **Co-organiser and Session Chair** “Morphogenesis in bacteria” at the KNVM Scientific Spring Meeting (Papendal, The Netherlands)
- 2009 **Co-organizer** of the “Get Connected” Meeting (University of Groningen/UMCG).
- 2003 **Member of the organising committee** for the International Meeting on the Biology of Bacteria producing Natural Compounds (Haren, The Netherlands).

## INVITED SEMINARS AND CONFERENCE PRESENTATIONS

- 2019 6<sup>th</sup> Molecular Microbiology Meeting (Newcastle-upon-Tyne, UK)
- 2019 14<sup>th</sup> International Symposium on the Genetics of Industrial Microorganisms (Pisa, Italy)
- 2019 Cell Biology of Prokaryotes (Bad Staffelstein, Germany)
- 2018 KNVM Fall Meeting of the Microbial Biotechnology Division (Delft, the Netherlands)
- 2018 KNVM Fall Meeting of the Mycology Division (Utrecht, the Netherlands)
- 2018 Gordon Research Conference on Microbial Stress Responses (South Hadley USA)
- 2017 Department of Biology, Lund University (Lund, Sweden)
- 2017 AMZA Meeting (Amsterdam, the Netherlands)
- 2017 Instituto de Tecnologia Química E Biológica António Xavier (Lisbon, Portugal)
- 2017 5<sup>th</sup> International Symposium of the SFB766 (Tübingen, Germany)
- 2017 18<sup>th</sup> International Symposium on the Biology of Actinomycetes (Jeju, South-Korea)
- 2016 Belgian Interdisciplinary Biofilm Research Group (Liege, Belgium)
- 2015 KNVM Scientific Spring Meeting (Papendal, the Netherlands)
- 2014 17<sup>th</sup> International Symposium on the Biology of Actinomycetes (Kusadasi, Turkey)
- 2013 Institut für Geowissenschaften (Jena, Germany)
- 2013 MOSA Conference (Maastricht, the Netherlands)
- 2013 1<sup>st</sup> China-Europe Symposium “The Biology of Actinomycete Antibiotic Production” (Beijing, China)
- 2013 SGM Spring Conference (Manchester, United Kingdom)
- 2012 Gordon Research Conference on Bacterial Cell Surfaces (West Dover, USA)
- 2012 11<sup>th</sup> European Conference of Fungal Genetics (Marburg, Germany)
- 2010 John Innes Centre Research Visit (Norwich, UK)
- 2009 Biology of Streptomyces Meeting (Münster, Germany)
- 2009 15<sup>th</sup> International Symposium on the Biology of Actinomycetes (Shanghai, China)
- 2008 VAAM Meeting (Berlin, Germany)
- 2008 162<sup>nd</sup> SGM Spring Conference (Edinburgh, United Kingdom)
- 2007 14<sup>th</sup> Conference on Functional Genomics of Gram-Positive Microorganisms (Pisa, Italy)
- 2005 Thesis Award Lecture VAAM Meeting (Göttingen, Germany)
- 2005 2<sup>nd</sup> ASM Conference on Prokaryotic Development (Vancouver, Canada)

## OUTREACH ACTIVITIES/MEDIA ATTENTION

- 2019 Interview with the Mare for the anticipated follow-up of our iGEM 2016 project (<https://www.mareonline.nl/wetenschap/let-op-giftige-grond/>)
- 2019 Video interview for KNCV Eye-openers (Summer 2019)
- 2019 Coordinator of the Leiden iGEM Team 2019
- 2019 Blog about our *Nature Communications* paper by Roberto Kolter for “Small Things Considered” (<https://schaechter.asmblog.org/schaechter/2019/02/escape-from-the-wall.html>)
- 2019 Interview and Press release by Leiden University accompanying our *Nature Communications* paper on cell wall-deficient cells (<https://www.universiteitleiden.nl/en/news/2018/12/bacteria-under-stress-can-live-without-cell-wall>)
- 2018 Invited Blog on the Nature Research Microbiology Community: <https://naturemicrobiologycommunity.nature.com/channels/346-behind-the-paper/posts/41618-stress-induced-cell-wall-deficiency>
- 2018 Coordinator of the Leiden iGEM Team 2018 (<http://2018.igem.org/Team:Leiden>). Winner of the Therapeutics track at the iGEM Jamboree.
- 2016 Interview for the Life Science Magazine LABinsights concerning our participation in the iGEM competition (<https://www.labinsights.nl/artikel/2016/LB2016-5p30.pdf>)
- 2016 Coordinator of the 2016 Leiden iGEM Team (<http://2016.igem.org/Team:Leiden>)
- 2014 Award for Best Teacher of the Faculty of Science (Leiden University): <https://www.universiteitleiden.nl/en/news/2015/01/'discoverer-of-the-year'-best-dissertation-and-education-award-2014>)
- 2014 Interview for the Life Science Magazine “Lab Times” ([http://www.labtimes.org/labtimes/funding/funding/2014\\_06b.lasso](http://www.labtimes.org/labtimes/funding/funding/2014_06b.lasso)).
- 2014 – present Teacher Junior Science Lab (lectures for children)
- 2012 Portrait in EC Publication “From face to face – Portraits of Marie Curie Fellows”
- 2012 Interview for WEET Magazine for our work related to the “Academische Jaarprijs”.
- 2012 Interview for Quest (popular Dutch scientific journal).
- 2011 Winner Academische Jaarprijs
- 2011 Coordinator of “Team Leiden” for the Academische Jaarprijs (<http://antibioticagezocht.leidenuniv.nl/antibiotica-gezocht>)
- 2011 Radio interview (Q-Music) for our work related to the “Academische Jaarprijs”.
- 2011 Interviews with newspapers for our work related to the “Academische Jaarprijs”.
- 2003 Television interview for Adams Appel (TV Noord/TV Drenthe) for our discovery of functional amyloid-like proteins in *Streptomyces coelicolor* (available via <http://tinyurl.com/adamsappel>).
- 2003 International press release by Cold Spring Harbor Laboratory for our discovery of functional amyloid-like proteins in *Streptomyces coelicolor*
- 2003 Interview national radio (VPRO) for our discovery of functional amyloid-like proteins in *Streptomyces coelicolor*.

## PAST AND CURRENT COLLABORATIONS

University of Leiden	Prof. Dr. Ariane Briegel; cryoEM
University of Leiden	Prof. Dr. Gilles P. van Wezel; actinobacterial biology
University of Leiden	Dr. D.E. Rozen; microbial ecology and evolution
University of Leiden	Prof. Dr. Alexander Kros; cell-cell fusion
University of Leiden	Prof. Dr. Doris Heinrich; microfluidics
University of Leiden	Dr. Erik Vijgenboom; surface-associated glycans
University of Leiden	Dr. Remus T. Dame; DNA organisation
University of Leiden	Dr. Joost Willemse; imaging
University of Leiden	Dr. Arthur F.J. Ram; bacteria-fungi interactions
SINTEF	Dr. Dino van Dissel; surface-associated glycans
DuPont	Dr. Sharief Barends; fermentation improvement
TU Delft	Prof. Dr. Marc van Loosdrecht; DNA transmission
TU Delft	Dr. David Weissbrodty; DNA transmission
Newcastle University	Prof. Dr. Jeff Errington; wall-deficient cells
Scripps Institute	Prof. Paul Jensen; marine actinomycetes
DTU Bioengineering	Prof. Dr. Ákos T. Kovács; functional amyloid proteins
J. Craig Venter Institute	Prof. Dr. John Glass; DNA transplantation
VU Medical Centre Amsterdam	Prof. Dr. Wilbert Bitter; <i>Mycobacterium</i> genetics
Chinese Academy of Sciences Beijing	Prof. Dr. Sarah Perrett; functional amyloid proteins
University of Melbourne	Prof. Dr. Sally Gras; functional amyloid proteins
University of Groningen	Dr. Gert Oostergetel; cryoEM
University of Groningen	Prof. Dr. Oscar P. Kuipers; multicellularity, persisters
University of Groningen	Prof. Dr. Lubbert Dijkhuizen; surface-associated glycans
University of Essex	Dr. Jon A.R. Worrall; surface-associated glycans
Utrecht University	Prof. Dr. Han A.B. Wösten; heterogeneity
University of Dundee	Dr. David H. Edwards; <i>Bacillus subtilis</i> GpsB protein
MPI of Terrestrial Microbiology	Prof. Dr. Lotte Søgaard-Andersen; multicellularity
University of Oviedo	Dr. Angel Manteca; programmed cell death
University of Surrey	Prof. Dr. Colin P. Smith; microarrays

## SELECTED PUBLICATIONS

1. K. Ramijan, E. Ultee, J. Willemse, Z. Zhang, J.A.J. Wondergem, A. van der Meij, D. Heinrich, A. Briegel, G.P. van Wezel and D. Claessen (2018). Stress-induced formation of cell wall-deficient cells in filamentous actinomycetes. **Nature Communications** 9 (1), 5164
2. B. Zacchetti, H.A.B. Wösten and D. Claessen (2018). Multiscale heterogeneity in filamentous microbes. **Biotechnology Advances** 36 (8), 2138-2149.
3. B. Zacchetti, J. Willemse, B. Recter, D. van Dissel, G.P. van Wezel, H.A.B. Wösten and D. Claessen (2016). Aggregation of germlings is a major contributing factor towards mycelial heterogeneity of *Streptomyces*. **Scientific Reports** 6, 27045.
4. M.L.C. Petrus, E. Vijgenboom, A.K. Chaplin, J.A.R. Worrall, G.P. van Wezel and D. Claessen (2016) The DyP-type peroxidase DtpA is a Tat-substrate required for GlxA maturation and morphogenesis in *Streptomyces*. **Open Biology** 6 (1), 150149.
5. D. Claessen and G.P. van Wezel (2014). Off the wall. **eLife** 3, e05427.
6. D. Claessen, D.E. Rozen, O.P. Kuipers, L. Søgaard-Andersen and G.P. van Wezel (2014). Bacterial solutions to multicellularity: a tale of biofilms, filaments and fruiting bodies. **Nature Reviews in Microbiology** 12 (2), 115-124.
7. W. de Jong, H.A.B. Wösten, L. Dijkhuizen and D. Claessen (2009). Attachment of *Streptomyces coelicolor* is mediated by amyloidal fimbriae that are anchored to the cell surface via cellulose. **Molecular Microbiology** 73 (6), 1128-1140.
8. D. Claessen, R. Emmins, L.W. Hamoen, R.A. Daniel, J. Errington and D.H. Edwards (2008). Control of the cell elongation-division cycle by shuttling of PBP1 protein in *Bacillus subtilis*. **Molecular Microbiology** 68 (4), 1029-1046.
9. M.F.B.G. Gebbink, D. Claessen, B. Bouma, L. Dijkhuizen and H.A.B. Wösten (2005). Amyloids: a functional coat for microorganisms. **Nature Reviews in Microbiology** 3 (4), 333-341.
10. D. Claessen, R. Rink, W. de Jong, J. Siebring, P. de Vreugd, F.G.H. Boersma, L. Dijkhuizen and H.A.B. Wösten (2003). A novel class of secreted hydrophobic proteins is involved in aerial hyphae formation in *Streptomyces coelicolor* by forming amyloid-like fibrils. **Genes & Development** 17 (14), 1714-1728.

## PUBLICATIONS (42)

1. E. Ultee, K. Ramijan, R.T. Dame, A. Briegel and **D. Claessen** (2019). Stress-induced adaptive morphogenesis in bacteria. *Advances in Microbial Physiology* 74, in press.
2. K. Ramijan, E. Ultee, J. Willemse, Z. Zhang, J.A.J. Wondergem, A. van der Meij, D. Heinrich, A. Briegel, G.P. van Wezel and **D. Claessen** (2018). Stress-induced formation of cell wall-deficient cells in filamentous actinomycetes. *Nature Communications* 9 (1), 5164<sup>1</sup>.
3. B. Zacchetti, H.A.B. Wösten and **D. Claessen** (2018). Multiscale heterogeneity in filamentous microbes. *Biotechnology Advances* 36 (8), 2138-2149.
4. B. Zacchetti, A. Andrianos, D. van Dissel, E.M. de Rooter, G.P. van Wezel and **D. Claessen** (2018). Micro-encapsulation extends mycelial viability of *Streptomyces lividans* 66 and increases enzyme production. *BMC Biotechnology* 18 (1), 13.
5. J. Willemse, F. Büke, D. van Dissel, S. Grevink, **D. Claessen** and G.P. van Wezel (2018). SPARTICLE, an algorithm for the analysis of filamentous microorganisms in submerged cultures. *Antonie van Leeuwenhoek* 111 (2), 171-182.
6. B. Zacchetti, P. Smits and **D. Claessen** (2018). Dynamics of pellet fragmentation and aggregation in liquid-grown cultures of *Streptomyces lividans*. *Frontiers in Microbiology* 9, 943.
7. D. van Dissel, J. Willemse, B. Zacchetti, **D. Claessen**, G.B. Pier and G.P. van Wezel (2018). Production of poly-β-1,6-N-acetylglucosamine by MatAB is required for hyphal aggregation and hydrophilic surface adhesion by *Streptomyces*. *Microbial Cell* 5 (6), 269-279.
8. A. Dragoš, A.T. Kovács and **D. Claessen** (2017). The role of functional amyloids in multicellular growth and development of Gram-positive bacteria. *Biomolecules* 7 (3), E60.
9. W. Yang, J. Willemse, E.B. Sawyer, F. Lou, W. Gong, H. Zhang, S.L. Gras, **D. Claessen** and S. Perrett (2017). The propensity of the bacterial rodlin protein RdlB to form amyloid fibrils determines its function in *Streptomyces coelicolor*. *Scientific Reports* 7, 42876.
10. K. Ramijan, G.P. van Wezel and **D. Claessen** (2017). Genome sequence of the filamentous actinomycete *Kitasatospora viridifaciens*. *Genome Announcements* 5 (6), e01560-16.
11. Z. Zhang, **D. Claessen** and D.E. Rozen (2016). Understanding microbial divisions of labour. *Frontiers in Microbiology* 7, 2070.
12. B. Zacchetti, J. Willemse, B. Recter, D. van Dissel, G.P. van Wezel, H.A.B. Wösten and **D. Claessen** (2016). Aggregation of germlings is a major contributing factor towards mycelial heterogeneity of *Streptomyces*. *Scientific Reports* 6, 27045.
13. L. Zhang, J. Willemse, **D. Claessen** and G.P. van Wezel (2016). SepG coordinates sporulation-specific cell division and nucleoid organization in *Streptomyces coelicolor*. *Open Biology* 6 (4), 150164.
14. M.L.C. Petrus, E. Vijgenboom, A.K. Chaplin, J.A.R. Worrall, G.P. van Wezel and **D. Claessen**. (2016) The DyP-type peroxidase DtpA is a Tat-substrate required for GlxA maturation and morphogenesis in *Streptomyces*. *Open Biology* 6 (1), 150149.
15. C. Wu, B. Zacchetti, A.F.J. Ram, G.P. van Wezel, **D. Claessen** and Y.H. Choi. (2015) Expanding the chemical space for natural products by *Aspergillus-Streptomyces* co-cultivation and biotransformation. *Scientific Reports* 5, 10868.
16. D. van Dissel, **D. Claessen**, M. Roth and G.P. van Wezel. (2015) A novel locus for mycelial aggregation forms a gateway to improved *Streptomyces* cell factories. *Microbial Cell Factories* 14, 44.
17. A.K. Chaplin, M.L.C. Petrus, G. Mangiameli, M.A. Hough, D.A. Svistunenko, P. Nicholls, **D. Claessen**, E. Vijgenboom and J.A.R. Worrall. (2015) GlxA is a new structural member of the radical copper oxidase family and is required for glycan deposition at hyphal tips and morphogenesis of *Streptomyces lividans*. *Biochemical Journal* 469 (3), 433-444.
18. **D. Claessen** and G.P. van Wezel (2014). Off the wall. *eLife* 3, e05427.
19. M.D. van Dissel, **D. Claessen**<sup>2</sup> and G.P. van Wezel (2014). Morphogenesis of *Streptomyces* in submerged cultures. *Advances in Applied Microbiology* 89, 1-45.
20. G. Girard, J. Willemse, H. Zhu, **D. Claessen**, K. Bukarasam, M. Goodfellow and G.P. van Wezel (2014). Analysis of novel *kitasatosporae* reveals significant evolutionary changes in conserved developmental genes between *Kitasatospora* and *Streptomyces*. *Antonie van Leeuwenhoek* 106 (2), 365-380.
21. M.L.C. Petrus and **D. Claessen** (2014). Pivotal roles for *Streptomyces* cell surface polymers in morphological differentiation, attachment and mycelial architecture. *Antonie van Leeuwenhoek* 106 (1), 127-139.
22. D. Ekkers, **D. Claessen**<sup>3</sup>, F. Galli and E.T. Stamhuis (2014). Surface modifications using the

<sup>1</sup> Highlighted by A. Du Toit (2019). Living without the cell wall. *Nature Reviews in Microbiology* 17, 65; Featured in the popular *Small Things Considered* blog in February 2019: "Escape from the wall" (Robert Kolter): <https://schaechter.asmblog.org/schaechter/2019/02/escape-from-the-wall.html>

<sup>2</sup> Co-senior author

<sup>3</sup> Shared first and corresponding author

- Streptomyces coelicolor* chaplin proteins. Applied Microbiology and Biotechnology 98 (10), 4491-4501.
23. M.L.C. Petrus, G.J. van Veluw, H.A.B. Wösten and **D. Claessen** (2014). Sorting of *Streptomyces* cell pellets using a complex object parametric analyzer and sorter. Journal of Visualized Experiments 84, e51178.
  24. **D. Claessen**, D.E. Rozen, O.P. Kuipers, L. Søgaard-Andersen and G.P. van Wezel (2014). Bacterial solutions to multicellularity: a tale of biofilms, filaments and fruiting bodies. Nature Reviews in Microbiology 12 (2), 115-124.
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<sup>6</sup> This cover story paper has been cited more than 300 times (Google Scholar, February 2019)



### PREPRINTS AND INVITED PAPERS (3)

#### *Preprints and invited papers*

1. K. Ramijan, Z. Zhang, G.P. van Wezel and **D. Claessen** (2019). Genome rearrangements and megaplasmid loss in the filamentous bacterium *Kitasatospora viridifaciens* are associated with protoplast formation and regeneration. bioRxiv 629089; doi: <https://doi.org/10.1101/629089>
2. Z. Zhang, F. de Barse, M. Liem, A. Liakopoulos, Y.H. Choi, **D. Claessen**<sup>7</sup> and D.E. Rozen (2019). Antibiotic production is organized by a division of labour in *Streptomyces*. bioRxiv 560136; doi: <https://doi.org/10.1101/560136>
3. **D. Claessen** and J. Errington (2019). Cell wall-deficiency as a coping strategy for stress. Invited review for Trends in Microbiology.

### BOOKS, OR CONTRIBUTION TO BOOKS (3)

1. S.L. Gras and **D. Claessen** (2014). Functional amyloid fibrils: lessons from microbes. Book chapter in "Natural products analysis: instrumentation, methods, and applications" (Wiley). Editors: Havlicek and Spizek. p. 573-600. ISBN 9781118466612
2. **D. Claessen** and L. Dijkhuizen (2011). Streptomyceten – van antibiotica tot Alzheimer. Book chapter in "De microcanon". ISBN 9789085713272
3. **D. Claessen** (2004). Structural proteins involved in morphological differentiation of streptomycetes. PhD Thesis, University of Groningen. ISBN 9036721342

### PATENTS AND PATENT APPLICATIONS (1)

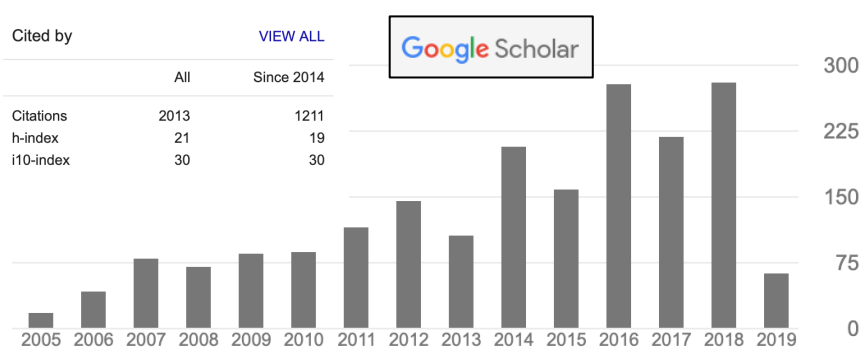
1. H.A.B. Wösten, **D. Claessen**, O.G. Faber, W.G. Meijer and L. Dijkhuizen (2001). Protein capable of self-assembly at a hydrophobic-hydrophilic interface, method of coating a surface, method of stabilizing a dispersion, method of stabilizing a protein containing solution and a method of purifying a protein. WO 01/74864.

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## IMPACT AND CITATION ANALYSIS

Dr. Claessen is an NWO Vidi Laureate with a strong expertise in the role of the cell wall in bacterial growth and development, and he recently expanded this research theme to the biology of cell wall-deficient cells. All microbial cell biology expertise groups in Leiden, including that of the applicant, are organized in the Centre for Microbial Cell Biology, which includes the labs of Prof. Gilles van Wezel (cell division and antibiotics discovery in actinomycetes), Prof. Ariane Briegel (chemotaxis and electron cryotomography), Dr. Wiep Klaas Smits (*Clostridium* pathogenicity), and Dr. Remus Dame (chromosome structure). This Centre provides optimal resonance between the groups and maximal exploitation of the available infrastructure to develop innovative cross-boundary technology platforms. The majority of funding in the Claessen lab is obtained from the Netherlands Organisation for Scientific Research (NWO, Domain of Applied and Engineering Sciences). Most notably, Claessen received the prestigious **VIDI grant** for studying heterogeneity in filamentous actinomycetes. Previously, Claessen was awarded prestigious fellowships from EMBO and Marie Curie (2005-2007, 2009). In total, Claessen attracted more than 2.5 ME. The most important output indicators in his field are articles in peer-reviewed journals as a first or corresponding/last author. Claessen has over 40 publications in peer-reviewed journals, including Nature Communications, Nature Reviews in Microbiology (2x), Genes & Development, Open Biology (2x), Trends in Microbiology (2x), Molecular Microbiology (5x), Scientific Reports (3x), Frontiers in Microbiology and eLife.



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