



Universiteit  
Leiden  
The Netherlands

## Safeguarding genome integrity with small ubiquitin-like modifiers

Claessens, L.A.

### Citation

Claessens, L. A. (2024, June 27). *Safeguarding genome integrity with small ubiquitin-like modifiers*. Retrieved from <https://hdl.handle.net/1887/3765377>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/3765377>

**Note:** To cite this publication please use the final published version (if applicable).

**LIST OF PUBLICATIONS**

**Claessens LA**, Vertegaal ACO. SUMO proteases: from cellular functions to disease. *Trends Cell Biol.* 2024 Feb 6;S0962-8924(24)00002-3. doi: 10.1016/j.tcb.2024.01.002.

**Claessens LA**, Verlaan-de Vries M, de Graaf IJ, Vertegaal ACO. SENP6 regulates localization and nuclear condensation of DNA damage response proteins by group deSUMOylation. *Nat Commun.* 2023 Sep 22;14(1):5893. doi: 10.1038/s41467-023-41623-w. PMID: 37735495

Samra N, Jansen NS, Morani I, Kakun RR, Zaid R, Paperna T, Garcia-Dominguez M, Viner Y, Frankenthal H, Shinwell ES, Portnov I, Bakry D, Shalata A, Shapira Rootman M, Kidron D, **Claessens LA**, Wevers RA, Mandel H, Vertegaal ACO, Weiss K. Exome sequencing links the SUMO protease SENP7 with fatal arthrogyriposis multiplex congenita, early respiratory failure and neutropenia. *J Med Genet.* 2023 Jul 17:jmg-2023-109267. doi: 10.1136/jmg-2023-109267. Online ahead of print. PMID: 37460201

González-Prieto R, Eifler-Olivi K, **Claessens LA**, Willemstein E, Xiao Z, Talavera Ormeno CMP, Ovaa H, Ulrich HD, Vertegaal ACO. Global non-covalent SUMO interaction networks reveal SUMO-dependent stabilization of the non-homologous end joining complex. *Cell Rep.* 2021 Jan 26;34(4):108691. doi: 10.1016/j.celrep.2021.108691. PMID: 33503430

**Claessens LA**, Wesselius J, van Lummel M, Laban S, Mulder F, Mul D, Nikolic T, Aanstoot HJ, Koeleman BPC, Roep BO. Clinical and genetic correlates of islet-autoimmune signatures in juvenile-onset type 1 diabetes. *Diabetologia.* 2020 Feb;63(2):351-361. doi: 10.1007/s00125-019-05032-3. Epub 2019 Nov 21. PMID: 31754749

Jia Y, **Claessens LA**, Vertegaal ACO, Ovaa H. Chemical Tools and Biochemical Assays for SUMO Specific Proteases (SENPs). *ACS Chem Biol.* 2019 Nov 15;14(11):2389-2395. doi: 10.1021/acscchembio.9b00402. Epub 2019 Aug 5. PMID: 31361113

Liebelt F, Jansen NS, Kumar S, Gracheva E, **Claessens LA**, Verlaan-de Vries M, Willemstein E, Vertegaal ACO. The poly-SUMO2/3 protease SENP6 enables assembly of the constitutive centromere-associated network by group deSUMOylation. *Nat Commun.* 2019 Sep 4;10(1):3987. doi: 10.1038/s41467-019-11773-x. PMID: 31485003

Holm LJ, Krogvold L, Hasselby JP, Kaur S, **Claessens LA**, Russell MA, Mathews CE, Hanssen KF, Morgan NG, Koeleman BPC, Roep BO, Gerling IC, Pociot F, Dahl-Jørgensen K, Buschard K. Abnormal islet sphingolipid metabolism in type 1 diabetes. *Diabetologia.* 2018 Jul;61(7):1650-1661. doi: 10.1007/s00125-018-4614-2. Epub 2018 Apr 18. PMID: 29671030

Ahmadi AR, Lafranca JA, **Claessens LA**, Imamdi RM, IJzermans JN, Betjes MG, Dor FJ. Shifting paradigms in eligibility criteria for live kidney donation: a systematic review. *Kidney Int.* 2015 Jan;87(1):31-45. doi: 10.1038/ki.2014.118. Epub 2014 Apr 30. PMID: 24786706

## **CURRICULUM VITAE**

Laura Claessens was born on the 23<sup>rd</sup> of December 1992 in The Hague, the Netherlands. She graduated cum laude from her high school education at Hofstad Lyceum in 2010 and went on to study Biomedical Sciences in Leiden. During her studies, she did a bachelor internship at the department of Immunohematology and Blood Transfusion of the LUMC, where she studied the properties of HLA antibodies in kidney transplantation. During her master's, she did an internship at the department of Hematology of the LUMC, where she studied TCR $\alpha\beta$ -CD3 transfer into natural killer cells, and an internship at the department of microbial pathogenesis at Yale University in the United States, where she studied the targeting of a cellular protease essential for flavivirus replication. This is where she developed a keen interest in researching molecular mechanisms. She graduated cum laude from her master's and started a PhD in July 2016 at the department of Immunohematology and Blood Transfusion, where she studied type 1 diabetes autoimmunity. After some time, she decided to make a change and switch to her current PhD position starting September 2018 under the supervision of prof.dr. Alfred Vertegaal, where she studied the role of small ubiquitin-like modifier proteins in maintaining genome integrity. Laura is continuing her career as a postdoctoral researcher at the Wellcome Sanger Institute in the United Kingdom.

## ACKNOWLEDGEMENTS

First, I need to thank my promoter and supervisor Alfred for putting faith in me when I had just left another PhD position, and all the continued support throughout. Although there may have been times where it felt like we were not on the same page, or perhaps even the same book, here we are: almost 6 years later we at least ended up in the same book, this thesis.

Thank you to my co-promoter Peter ten Dijke, and David Baker and Sjaak Neefjes of my guidance committee for their advice and support.

Brett, it was in your lab at Yale University where I fell in love with molecular cell biology and where my ambition to pursue a PhD was further reinforced. I will always remember your passion for science. The world has lost a great person with you.

Thank you to all the people from the CCB who have helped me in any way and who I have spent great times with at work and also outside of work, you know who you are.

The SUMO wrestlers. I am so grateful to have spent the last five and a half years of my life with such great and supportive people. You are like family to me. Román, Matty, Ilona, Amina, Jessie, Fredrik, Nicolette, Daniel, Richa, Sumit, Nila, Edwin, thank you for everything. Thank you to my student Nienke for helping with my projects.

Matty, thank you for being a pillar in our group and the support you gave me both in the lab and outside of that. I wish you a happy retirement when that time comes, but I have a feeling you will continue to stick around for some time.

Jessie, Nicolette, Fredrik, Nila and Daniel, my fellow PhDs. Because of you, I never felt alone in this journey. We shared laughs and tears, spent lots of time together in the office, in the lab, on conferences and outside of work. I could not have wished for better people and am glad I got to experience this with you. I hope we will always stay in touch and continue to be part of each other's lives. I wish only the best for you. Nicolette and Nila, I am happy that I also get to share the very last day of this journey with you as my paranymphs, thank you.

Richa, we both started on the same day and sat next to each other both in the office and in the lab for four years. Thank you for the almost daily round-up conversations at the end of our days. With you, I never have to think twice about whether I am too much or not enough of something; I know you will always be there. I have missed you since the day you left the lab and I hope our friendship will survive however many miles or oceans separate us.

De Stefjes who were there with me on my first day of Biomedical Sciences. We might not all see each other that often anymore, but I am grateful that you have been this constant in my life where we try come together again as a group at special occasions in each other's lives. I hope we will continue to do this.

To all my international friends who have come into my life because of this academic journey, you keep opening up the world to me and broadening my horizon. Thank you for being so inclusive and for all the spontaneous plans and fun trips we go on.

Kimberly, thank you for being such a good friend. Talking with you and spending time with you always makes me a happier person. You empower me.

Maaike, thank you for sticking by my side during tough times and being so understanding. I hope we will continue to explore museums, food and movies together.

My family, in particular my dad, Josée, my brother and my mom. Thank you for your unconditional support and encouraging me in whatever choices I make in life. I know it would be impossible for me to disappoint you or to feel like I am not good enough in your eyes, and for that I am grateful.

So, thank you to everyone who showed up for me over the last few years and particularly this last year, how insignificant it may have seemed to you. The last stage of a PhD is already tough, but when my personal life got turned upside down at the same time, you showed me the value of having the right people around you. I owe achieving this milestone to every single one of you and strive to be this supportive and caring myself.