

Louis Coussement

Personal Data

Date of Birth 9th September 1993
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Marital status Common law (Rani Maertens, as of December 24, 2018)



Professional expertise & interest

Professional interests: Molecular understanding of (epi)genetic mechanisms, specifically DNA methylation related, and their health and evolutionary impact.

Main skill: Application of (statistical) omics methods for array and sequencing based (epi)genomics and transcriptomics, including complex designs and integration of different data types.

Languages: Dutch: fluent (mother tongue), English: very good, French: good, Spanish: basic (A2).

Computer languages: Very good knowledge of scripting in R, good knowledge of Python and latex, fair knowledge of Matlab, MySQL, bash, html and css.

Education

2016-present PhD. in Bioscience engineering - Ghent University

Anticipated graduation: September 2023

Doctoral thesis at Lab of Bioinformatics and Computational Genomics (BIOBIX), UGent. DNA methylation as driver of (epi)mutations with health and evolutionary consequences. Promoters: Prof. dr. ir. Tim De Meyer & Prof. dr. ir. Wim Van Criekinge

2014-2016 MSc. Bioscience engineering - Ghent University

Specialization: Cell- and Gene Biotechnology

Major: Biomedical Biotechnology

Grade: Magna cum laude

Master's thesis at Lab of Bioinformatics and Computational Genomics (BIOBIX), UGent.

Our aging genome: CpG-decay throughout human evolution.

Promoter: Prof. dr. ir. Tim De Meyer

2011-2014 BSc. Bioscience engineering - Ghent University

Specialization: Cell- and Gene Biotechnology

2009-2011 Sciences and Mathematics - Klein Seminarie Roeselare, 8800 Roeselare

2005-2009 Latin and Mathematics - Klein Seminarie Roeselare, 8800 Roeselare

Employment history

Sept 2016 - present - Assisting Academic Staff

As a teaching assistant of the courses Applied High Throughput Analysis and Genome Analysis, I guide students through the basics of different "omics" analysis. We show to use state-of-the-art tools and the statistical principles for a broad range of different data types (e.g. RNA-Seq, Infinium HumanMethylation arrays, ChIP-Seq, Variant calling). The educational part of this appointment is about 30%.

My main research is situated in the field of evolutionary molecular biology, characterizing CpG decay (under the influence of DNA methylation). Next to this, several collaborations were set up often integrating expression and DNA methylation data.

Feb 2021 - present - Freelance Bioinformatics Consultant

At the moment I am looking for additional challenges in the private sector to broaden my experience.

Okt 2015 - Sept 2016 - Tutor at Ecuadomo/Mysherpa

For two years I helped scholars in their humaniora or college with difficulties on mathematics or sciences.

Fellowships and Grants

FWO: grant for a long stay abroad (2022).

Honors and Awards

Feb 2021 - Google Hash Code competition: Competitor

I was a participant in the google hash code competition with a team of university colleagues (team name: NP-EZ, rank: 5273rd out of 9004). This is a team programming competition in which teams are challenged to solve some kind of optimization problem. Based on your solution a score function determines the rank of your team.

Okt 2020 - iGEM: Bronze medal

I was instructor to one of the two teams participating at the iGEM competition, a competition for synthetic biology project. With the "Bubbly" team, we presented an edible pearl with the goal of offering relief to patients with depression by modulating the intestinal microbiome (https://2020.igem.org/Team:UGent2_Belgium).

June 2018 - Biodesign challenge: Participant final summit

I was a member of the UGent team participating in the Biodesign Challenge (BDC). Upon initial selection, we were invited to present our work at the BDC summit in the renown MoMA in New York. The Biodesign Challenge is an educational program and competition, shaping the first generation of biodesigners. Challenging students and partnering them with scientists, artists, and designers to envision, create, and critique transformational applications in biotech (<http://www.aerolis.be/>).

March 2016 Mhealth Hackathon: Participant

I was a participant in the mhealth hackathon hosted at Pfizer branch in Brussels. The mhealth hackathon is a competition for mobile health solutions. Teams are formed at the beginning of the weekend and an idea must be pitched at the end of the weekend. Jury members were investors, officials of the Riziv (Belgian organisation for compensation of medical procedures) and staff of the state health department.

Scientific publications

Selection of key publications:

Diddens, J., **Coussement, L.***, Frankl-Vilches, C., Majumdar, G., Steyaert, S., Ter Haar, S. M., Galle, J., De Meester, E., De Keulenaer, S., Van Criekinge, W., Cornil, C. A., Balthazart, J., Van Der Linden, A., De Meyer, T. & Vanden Berghe, W. (2021). DNA methylation regulates transcription factor-specific neurodevelopmental but not sexually dimorphic gene expression dynamics in Zebra Finch telencephalon. *Frontiers in Cell and Developmental Biology*, 9, 503.

Roth, K., **Coussement, L.***, Knatko, E. V., Higgins, M., Steyaert, S., Proby, C. M., De Meyer, T., Dinkova-Kostova A. T. (2021). Clinically relevant aberrant Filip11 DNA methylation detected in a murine model of cutaneous squamous cell carcinoma. *EBioMedicine*, 67, 103383.

*co-first author

Other peer reviewed publications:

Current h-index: 2 (Google Scholar) / 1 (ISI Web of Science)

Coussement, L.*, Bolca, S., Van Criekinge, W., Trooskens, G., Mensaert, K., Poels, K., Roche, N., Blondeel, P., Godderis, L., Depypere H. & De Meyer, T. (2018). Exploratory analysis of the human breast DNA methylation profile upon soymilk exposure. *Scientific reports*, 8(1), 1-11.

Majumdar, G., Yadav, G., Hamaide, J., **Coussement, L.**, De Meyer, T., Verhoye, M., Vanden Berghe, W., Van Der Linden, A. & Balthazart, J. (2020). Molecular correlates of hypothalamic development in songbird ontogeny in comparison with the telencephalon. *The FASEB Journal*, 34(4), 4997-5015.

De Vos, S., Rombauts, S., **Coussement, L.**, Dermauw, W., Vuylsteke, M., Sorgeloos, P., Clegg J. S., Nambu Z., Van Nieuwerburgh E., Norouzitallab P., Van Leeuwen T., De Meyer T. Van Stappen G., Van de Peer Y., Bossier, P. (2021). The genome of the extremophile *Artemia* provides insight into strategies to cope with extreme environments. *BMC genomics*, 22(1), 1-26.

*co-first author

Conferences and meetings (presenting author)

Coussement, L. The Aging Genome: CpG Depletion Throughout Human Evolution. Oral presentation at the *Keystone Symposium: Epigenetics and Human Disease (X5)*, 17-21/03/2019, Banff, Canada.

Science popularization

Aug 2020 - present - ikhebeenvraag.be

Open platform on which everyone can ask science related question to researchers in a multitude of topics.

Peer review work

None to date

Services

Aug 2021 - present Tutor Master Thesis

I am tutor to the master disertation titled: “DNA methylation as regulator of transcription factor binding activivty by steric hindrance of the transcription factor binding site” by Jietse Verweirder (Promoter: Tim De Meyer).

Oct 2021 - present Tutor Bachelor Project

I am tutor to the bachelor project titled: “The future of our genome” (free translation from Dutch) by Margot Deltour, Bram Dolphen, Nele Vanhooren and Emma Vandevoorde (Promoter: Tim De Meyer).

Aug 2020 - June 2021 Tutor Master Thesis

I was tutor to the master disertation titled: “Evaluating Lamarckism: the search for directed epigenetically induced genetic variation” by Tristan Vanneste (Promoter: Tim De Meyer).

June 2020 Jury Bachelor thesis

I was jury member to the bachelor thesis titled: “Biotechnical solutions to water scarcity” by Luca Deroma, Shauny van Hoye, Marvi van Tongeren and Brent Vanvyaene (Promoters: prof. dr. ir. Marjan De Mey and Wim Van Criekinge).

References

Name	Prof. dr. Tim De Meyer
Department	Lab of Bioinformatics and Computational Genomics
Contact	Tim.DeMeyer@UGent.be