

Quinten COUCKE



- Born in Knokke-Heist - 15th December 1994
- Currently living in Zulte (9870)
- Curious and versatile researcher with a mind for technology and the future

Education

- B.S. in Biochemistry and Biotechnology, KU Leuven division Kortrijk (KULAK), 2012-2016
- M.S. in Biochemistry, KU Leuven, 2016-2018
Master thesis: "Studying multimerization of Integrase during HIV infection using a FLIM-based FRET phasor analysis"
 - Supervisor: Prof. Dr. J. Hendrix
 - Co-supervisor: Prof. Dr. J. Hofkens
- Ph.D in Biochemistry, KU Leuven, 2018-2023 (expected June 2023)
"The application of phasor analysis for FLIM-FRET biosensors"
 - Supervisor: Prof. Dr. J. Hofkens
 - Co-supervisor: Prof. Dr. S. Rocha

Work experience

- February to June 2018: Intern (R&D)
Nelson Labs NV (A Sotera Health Company)
Duties included: Development of automated gas chromatography protocols
Supervisor: Prof. F. De Smedt (Director of Lab Operations)
- Summer 2018: Research Assistant (R&D)
Nelson Labs NV (A Sotera Health Company)
Duties included: Development of automated gas chromatography protocols
Supervisor: Prof. F. De Smedt (Director of Lab Operations)
- Fall 2018: Research Assistant
KU Leuven
Duties included: Optimizing a homebuilt confocal time resolved microscope
Supervisor: Prof. J. Hofkens

Skills

- Teamwork focused
 - A PhD learned me to optimize experimental work and interlaboratory collaborations with fellow researchers. I found a transparent environment with clear communication key and will always work with the team in mind.
- Problem Solving and microscopy protocol validation
 - Having 5 years of experience building and adapting custom built confocal time-resolved microscopes I learned valuable and transferable skills on developing clear protocols and validating performance of such systems
- Fluorescence microscopy
- Förster Resonance Energy Transfer (FRET) applications
- Fluorescence Lifetime Imaging Microscopy (FLIM) using Phasor Analysis

- Troubleshooting and alignment of custom microscopes (experience with Thorlabs setup equipment)
- Sample preparation involving fixations, FCS samples to check setup alignment (confocal volume), cell culture and transfections

Publications

- [Sub-millisecond conformational dynamics of the A2A adenosine receptor revealed by single-molecule FRET](#)

Co-Author, Publishing date: 2023-03-01, Communications Biology

Authors: 'Ivan Maslov, Oleksandr Volkov, Polina Khorn, Philipp Orekhov, Anastasiia Gusach, Pavel Kuzmichev, Andrey Gerasimov, Aleksandra Luginina, Quinten Coucke, Andrey Bogorodskiy, Valentin Gordeliy, Simon Wanninger, Anders Barth, Alexey Mishin, Johan Hofkens, Vadim Cherezov, Thomas Gensch, Jelle Hendrix, Valentin Borshchevskiy'

DOI: <https://doi.org/10.1038/s42003-023-04727-z>

- [Quantification of FRET-induced angular displacement by monitoring sensitized acceptor anisotropy using a dim fluorescent donor](#)

Co-Author, Publishing date: 2021-05-05, Nature Communications

Authors: 'Danai Laskaratou, Guillermo Solís Fernández, **Quinten Coucke**, Eduard Fron, Susana Rocha, Johan Hofkens, Jelle Hendrix & Hideaki Mizuno'

DOI: <https://doi.org/10.1038/s41467-021-22816-7>

- [Synthetic fibrous hydrogels as a platform to decipher cell-matrix mechanical interactions](#)

Co-Author, Publishing date: 2023-03-03, PNAS

Authors: Hongbo Yuan, Kaizheng Liu, Mar Córdor, Jorge Barrasa-Fano, Boris Louis, Johannes Vandaele, Paula de Almeida, **Quinten Coucke**, Wen Chen, Egbert Oosterwijk, Chenfen Xing, Hans Van Oosterwyck, Paul H. J. Kouwer, Susana Rocha'

DOI: <https://doi.org/10.1073/pnas.2216934120>

- [Navigating FRET Techniques for Biosensor Applications: A Tutorial](#)

First-Author, manuscript in preparation, expected at MAF journal summer '23

- [Particle-based phasor-FLIM-FRET resolves protein-protein interactions inside single viral HIV-1 particles](#)

First-Author, manuscript in preparation, expected May '23

Workshops

- NanoMacro Microscopy Workshop 5-7 sept 2018, Hasselt (attended & gave workshop)
- Organizer and presenter of the 'Feel the Force summer school' 2021. This was a 3 day intensive course to force measuring with biosensors and TFM. I was organizer, gave a plenary lecture on phasor-FLIM and in addition provided small group hands-on classes at the microscope. This event was supported by the Arenberg Doctoral School (ADS) of KU Leuven

Conference presentations

- Pacifichem 2021 conference (online-only conference due to COVID-19 regulations)
<https://pacifichem.org/>
"Phasor for FLIM-FRET analysis of intracellular vinculin tension sensors"
- Plenary session on FRET analysis for biosensors at the 2021 'Feel the Force summer school' at KU Leuven
(<https://www.kuleuven.be/english/summer-schools/feeltheforce/home>)
"Analysis of FRET Data using Intensity and FLIM methods"
- Open presentation for the chemistry department
"Phasor analysis for FLIM-FRET biosensor data:
a case study of HIV-Integrase oligomerization and vinculin tension sensors"

Conference poster presentations

- Dutch Biophysics 2018 Veldhoven, The Netherlands
- Satellite Workshop of the DGfB biannual meeting "Advanced Fluorescence Spectroscopy and Imaging" 2018 Düsseldorf, Germany
- 25th PicoQuant 'Single Molecule, Spectroscopy and Super-resolution Microscopy in the Life Sciences' meeting 3-6 sept 2019 Berlin, Germany
- Let there Be ...Light – Frans De Schryver Symposium – October 2019 Leuven
- EACR tumor microenvironment 2020 - March 2020, Lisbon, Portugal

Software packages

- Illustrator
- Adobe Acrobat
- Microsoft Office applications
- Matlab (plotting, scripts and (image) data analysis)
- Python (self-thought basics)
- ImageJ
- OneNote (reports of meetings, logbook, data sharing hub, project pages)
- Teams/Zoom/Skype
- Audacity, Leica LasX, FALCON, PicoQuant Sympyhotime64, GitHub

Languages

- French (basic)
- English (very good)
- Dutch (first language)

Teaching

- Advanced Fluorescence, a course by Prof. J. Hofkens (KU Leuven)

Course on the in-depth application of fluorescence spectroscopy and imaging. The course covers a broad range of imaging techniques from basics to advanced: Confocal vs widefield imaging STORM, PALM, TIRF, FLIM, STED, Additionally students are introduced to optics, calculating fluorescence quantum yields and determining FRET efficiencies. As a master topic this course keeps a focus on research applied cases.

References:

Prof. Dr. Johan Hofkens

- johan.hofkens@kuleuven.be
- <https://www.hofkenslab.com/>
- head of [Division Photochemistry and Spectroscopy](#)
- head of [Subdivision Single Molecules](#)

Prof. Dr. Susana Rocha

- susana.rocha@kuleuven.be
- Rocha Lab <https://susanarocha.github.io/>

Prof. Dr. Jelle Hendrix

- jelle.hendrix@uhasselt.be
- [Dynamic Bioimaging Lab](#)
- Manager van de core facility [Advanced Optical Microscopy Centre](#)

Rik Nuyts

- rik.nuyts@kuleuven.be
- Expert microscopy operator at Molecular Imaging and Photonics, Nanocenter Leuven)

Extracurricular activities/hobbies:

- Long distance running, hiking and cycling
- Photography
- “Kom op tegen kanker 1000km” cycling for cancer research (2018/2019)
- Fixing broken equipment and handiwork

Current job scope:

** Currently open for job opportunities in the Ghent region **