# 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](https://quintencoucke.github.io/publication/IvanM)

Co-Author, Publishing date: 2020-01-01, bioRxiv (recently accepted at Communications Biology)

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

DOI: <https://doi.org/10.1101/2020.11.26.40018>

### [Quantification of FRET-induced angular displacement by monitoring sensitized acceptor anisotropy using a dim fluorescent donor](https://quintencoucke.github.io/publication/2021-05-01-quantification-of-fret-1)

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](https://quintencoucke.github.io/publication/HongboYuan)

Co-Author, Publishing date: 2022-08-22, bioRxiv (now accepted at PLOS, expected summer ’23)

Authors: Hongbo Yuan, Kaizheng Liu, Mar Cóndor, 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/10.1101/2022.08.24.505064>

* 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-though basics)
* ImageJ
* OneNote (reports of meetings, logbook, data sharing hub, project pages)
* Teams/Zoom/Skype
* Audacity, Leica LasX, FALCON, PicoQuant Sypmhotime64, 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:

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| Prof. Dr. Johan Hofkens   * [johan.hofkens@kuleuven.be](mailto:johan.hofkens@kuleuven.be) * <https://www.hofkenslab.com/> * head of [Division Photochemistry and Spectroscopy](https://www.kuleuven.be/wieiswie/en/unit/regional/50326883) * head of [Subdivision Single Molecules](https://www.kuleuven.be/wieiswie/en/unit/regional/50326890) |
| Prof. Dr. Susana Rocha   * [susana.rocha@kuleuven.be](mailto:susana.rocha@kuleuven.be) * Rocha Lab <https://susanarocha.github.io/> |
| Prof. Dr. Jelle Hendrix   * [jelle.hendrix@uhasselt.be](mailto:jelle.hendrix@uhasselt.be) * [Dynamic Bioimaging Lab](https://www.uhasselt.be/en/onderzoeksgroepen-en/dynamic-bioimaging-lab) * Manager van de core facility [Advanced Optical Microscopy Centre](http://www.uhasselt.be/AOMC) |
| Rik Nuyts   * [rik.nuyts@kuleuven.be](mailto: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 \*\*