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: 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

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: 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:

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 **