Quinten COUCKE

- Born in Knokke-Heist - 15th December 1994
- Currently living in Zulte (9870)
- Curious and versatile researcher with an analytic 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 August 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)
  GLP/GMP experience, writing of SOPs

- Fall 2018: Research Assistant - KU Leuven
  Duties included: Optimizing a homebuilt confocal time resolved microscope
  Supervisor: Prof. J. Hofkens

- January 2019 – now : Researcher (PhD) - KU Leuven
  Researcher at Molecular imaging and Photonics (MIP) Lab
  Managing research projects, development of new state-of-the art microscopy solutions

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 protocol validation**
  - Having 5 years of experience building and adapting custom built confocal time-resolved microscopes from the ground up, I learned valuable and transferable skills on developing clear protocols and validating system performance. Additionally, I

took solo control over my research topic, and provided advancements within our field.

- Fluorescence microscopy & Förster Resonance Energy Transfer (FRET) applications
- Fluorescence Lifetime Imaging Microscopy (FLIM) using Phasor Analysis
- Troubleshooting of research obstructions
- Sample preparation involving fixations, FCS samples to check setup alignment (confocal volume), cell culture and transfections.
- **Experimental design & Project strategy**
- Fibroblast cell cultures (MEF), Isogenic metastatic and non-metastatic cancer cell lines

Publications

- Particle-based phasor-FLIM-FRET resolves protein-protein interactions inside single viral HIV-1 particles

First-Author, Publishing date: 2023-05-31, BioRxiv (pending Biophys. Reports)
Quinten Coucke; Nagma Parveen; Guillermo Solís Fernández; Chen Qian; Johan Hofkens; Zeger Debyser; Jelle Hendrix
DOI: https://doi.org/10.1016/j.bpr.2023.100122

- 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 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/10.1073/pnas.2216934120

- Navigating FRET Techniques for Biosensor Applications: A Tutorial

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

What am I searching for?

I am currently looking for a job in the Ghent region where I can use my problem-solving skills and my analytic mind in a biotech environment. Although my wide experience in fluorescence microscopy applications is an asset, I think the transferable knowledge and principles that I acquired are my main stronghold. Because of the diversity of operations in my PhD, I learned to teach myself on many topics and apply them in my research. I consider my potential to learn new things as valuable as the skills I'm now actively using.

I have a broad interest in many topics, in and outside of the biotech-scene. This is due to my eagerness to learn and drive to explore new techniques, methods or biotechnological questions.

I strongly believe the combination of the right employee and company is creates the biggest success. At Fujirebio I see a company using solid analytical approaches to solve important and challenging biotechnological questions for the future. I'm curious to learn how I can optimally contribute in this framework.

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