



LIGHTOX[®]

illuminating therapeutics
& research tools

Dr. David Chisholm
Chemistry Team Leader

lightox.co.uk

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Who are we?

North East

Based in Newcastle upon Tyne,
The Biosphere, Newcastle Helix

Light-based

Light-activated technology
for therapeutics and research
tools

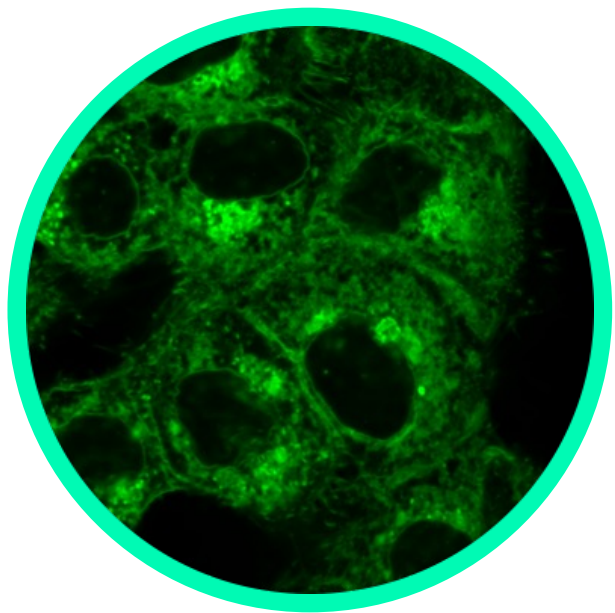
Spin out

Spun out in 2016 from
technology developed at
Durham University

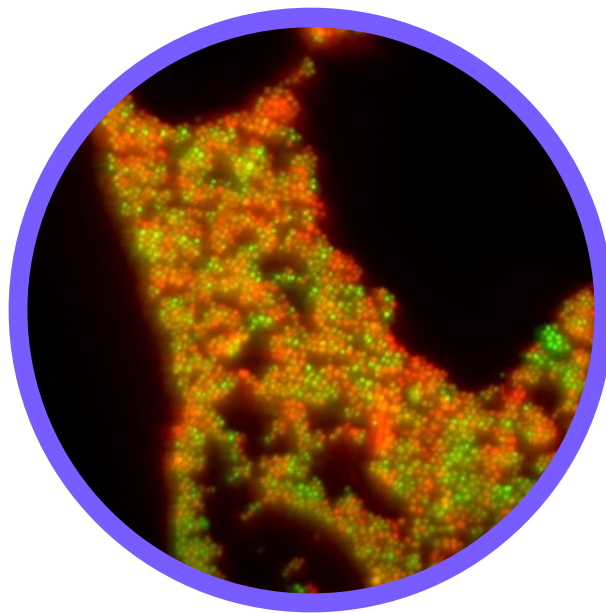
Our products



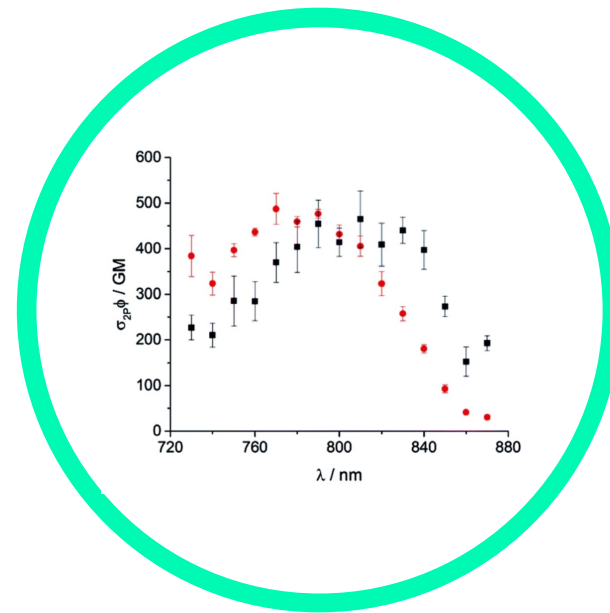
LightOx Probes



Imaging

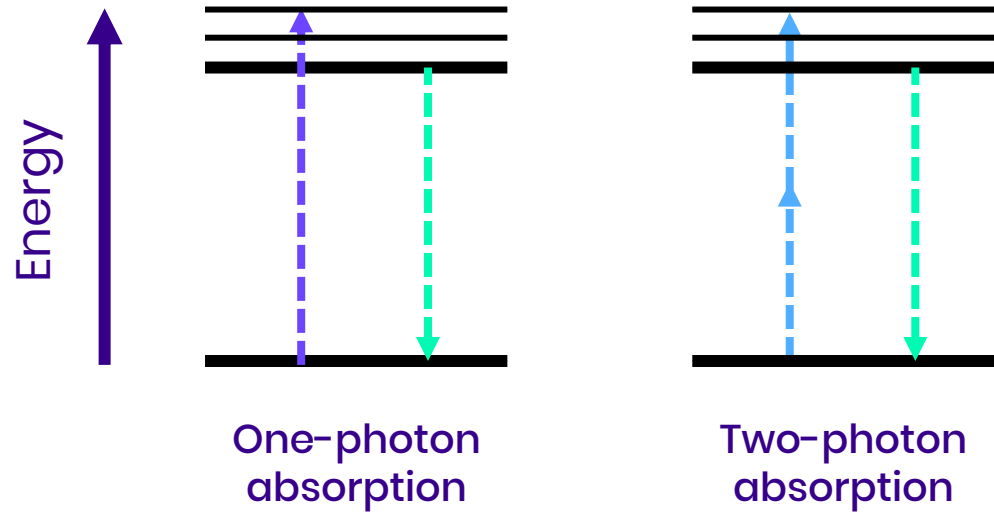


Assays

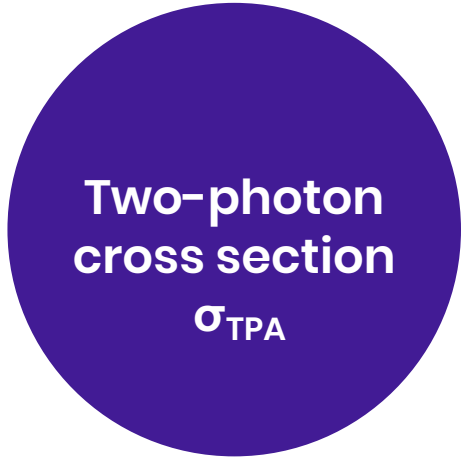


Two-photon
absorption

Two-photon absorption



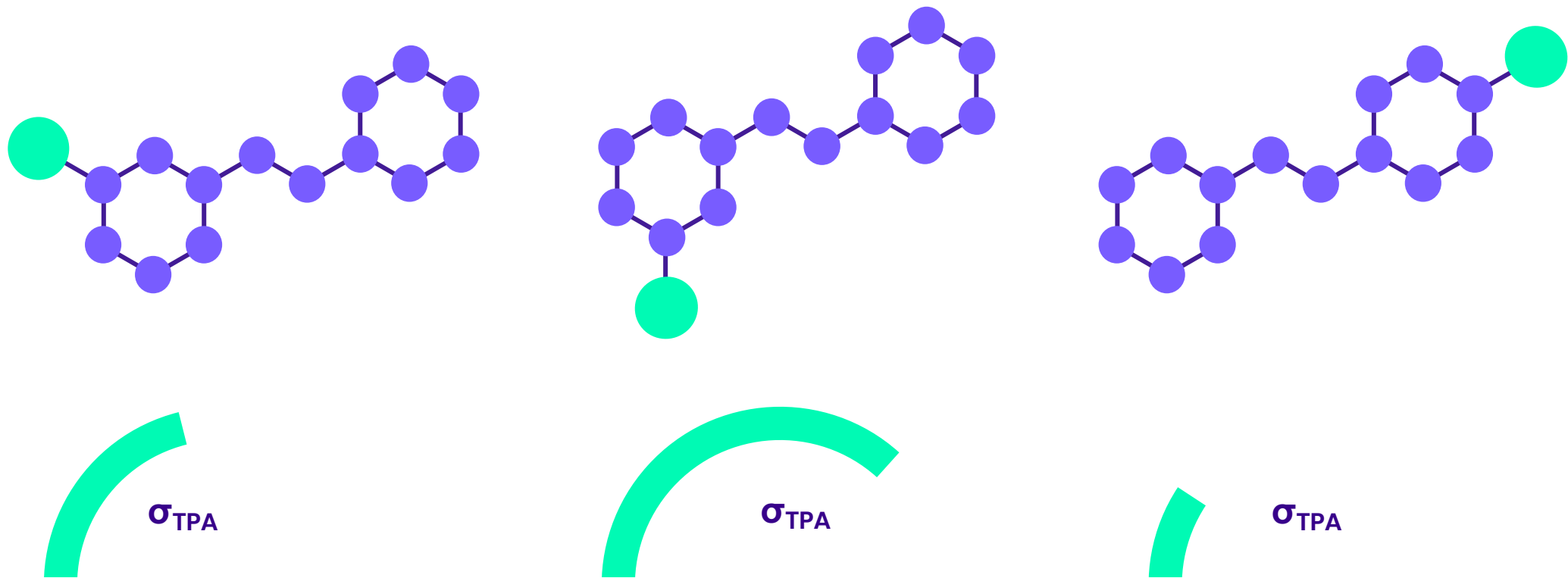
1. Reduced phototoxicity
2. Deeper tissue penetration
3. Improved 3D spatial resolution



σ_{TPA}
Other probes



σ_{TPA}
LightOx Probes



R&D need: Measure two-photon cross sections of LightOx Probes

A4I Analysis for Innovators

“Gain access to world-leading experts and cutting-edge facilities, techniques and technologies to solve an existing analysis or measurement problem facing your business”

A4i



Dr. Kathryn Welsby

IPI Group Leader



Prof. Stan Botchway

CLF Principal Investigator

A4i Project



Eva Dias

Research Chemist



Josh Hughes

LightOx PhD Student

Two-week secondment at CLF

Training on cutting-edge equipment

Support from Kathryn, Stan, Rosie

A4i Project



Eva Dias

Research Chemist

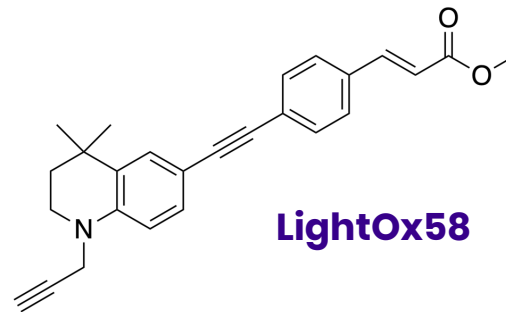
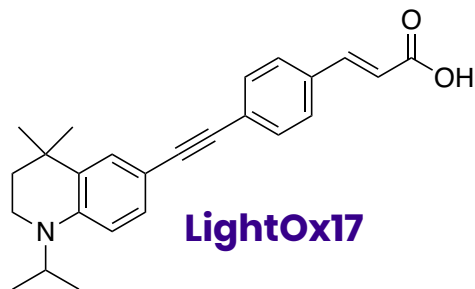


Josh Hughes

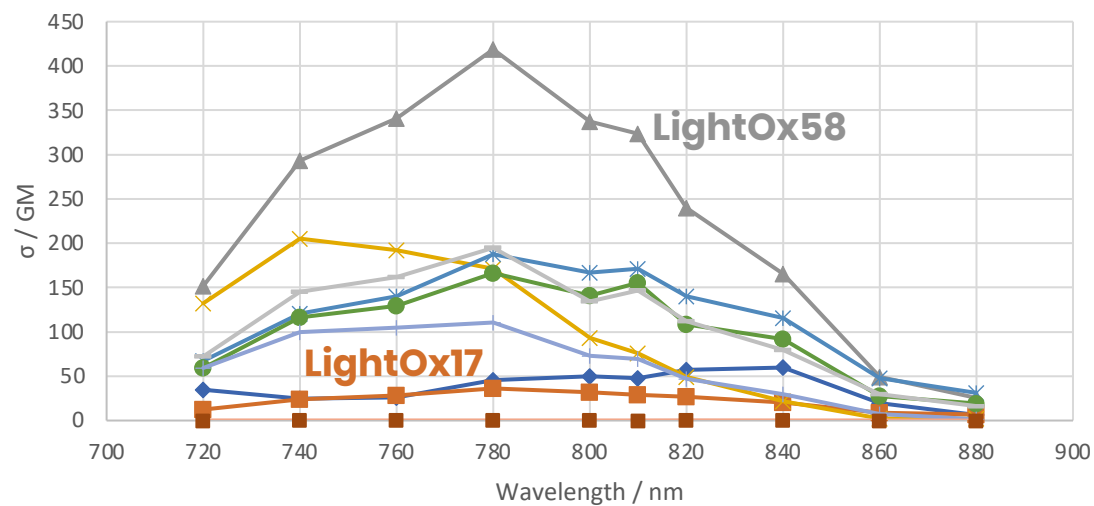
LightOx PhD Student

“Having complete access to cutting-edge equipment at the CLF really accelerated the project. We learnt so much from working with leading scientists like Stan and Kathryn.”

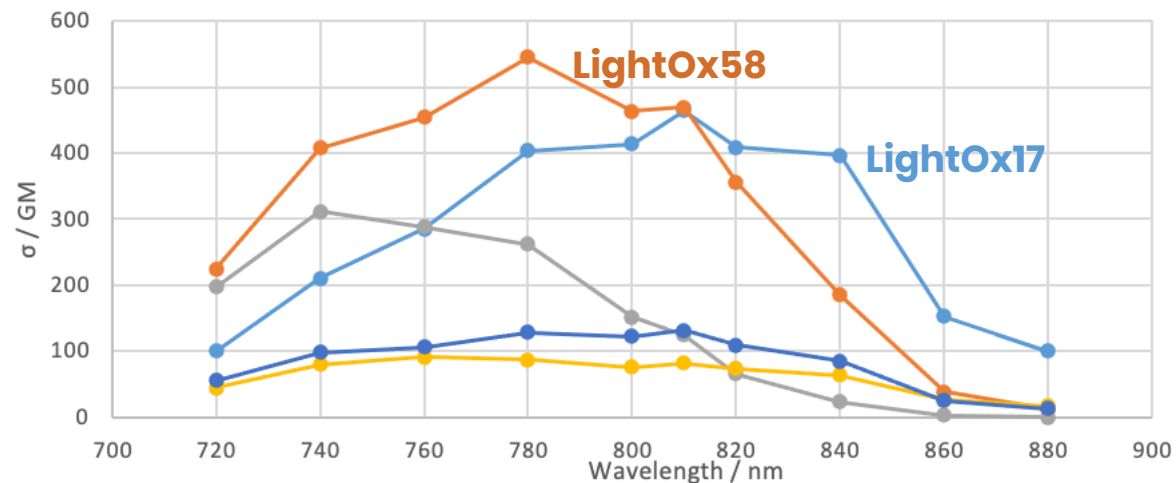
Results



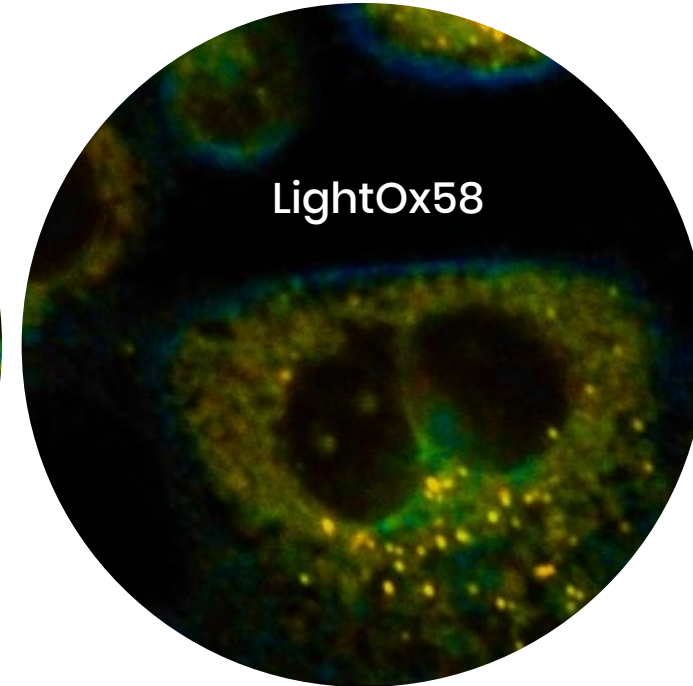
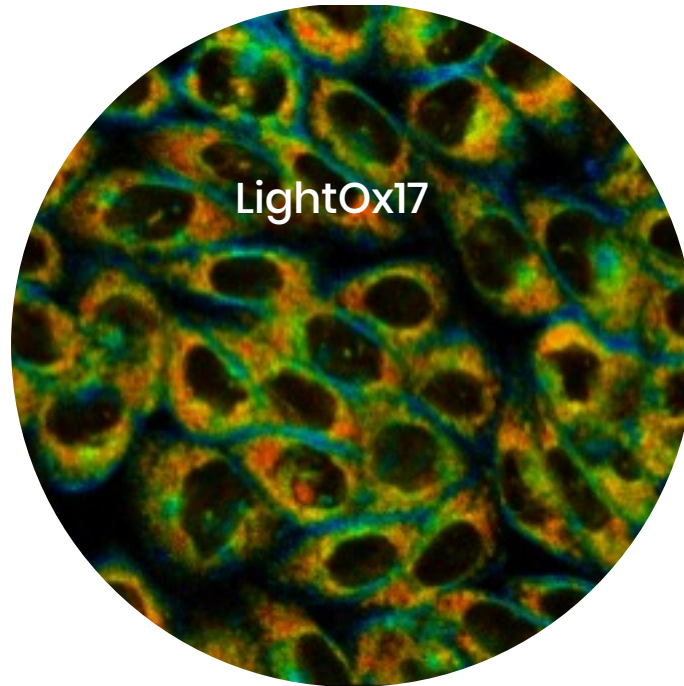
2 photon Cross section: Chloroform



2 photon Cross section: Toluene

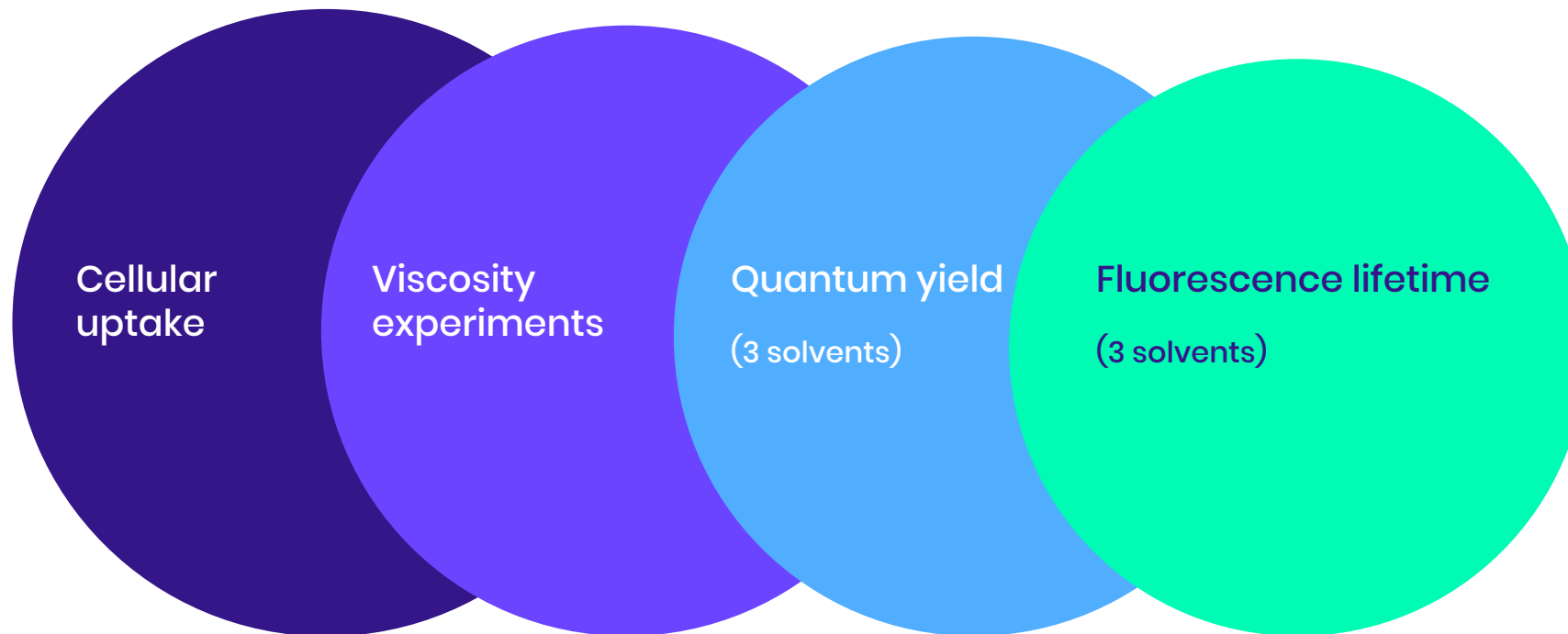


Further work



Fluorescence lifetime imaging (FLIM)

Further work



Outputs

Completed two-photon characterisation

Findings being drafted into manuscript for publication

Significantly improved understanding of our technology

Longer term

New partnership
with CLF

New
two-photon
probes on market
in 2023



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