



# Julia Gala de Pablo

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 Serendipity Lab Member  Member of the Society of Applied Spectroscopy  Member of the Coblentz Society

## Postdoctoral Research Fellow

I am currently a Research Fellow in Genomics and Neuroscience in Lukacs Lab, School of Biomedical Sciences (University of Leeds, UK), doing single-cell analysis and genetics techniques to identify novel human mechanoreceptors. Prior to this, I was a Postdoctoral Fellow for the Japanese Society for the Promotion of Science (JSPS) at the University of Tokyo (Japan) on FT-CARS cell cytometry. My PhD used Raman confocal microspectroscopy and Microfluidics towards a new single-cell analysis system at the University of Leeds (UK).

My main research interests are on single-cell biophysics and single-cell analysis, working in the interface between physics and biochemistry. I am experienced in single cell microscopy, Raman spectroscopy, flow cytometry, cell sorting and single-cell biology, including iron beam and transposon mutagenesis and Next generation sequencing. I have extensive experience in cell culture, using multiple adherent and non-adherent human cell lines, bacteria, microalga and yeast. I am also experienced on Soft lithography Rapid prototyping techniques (SU8 and PDMS) and working in a clean room environment. I have teaching experience with more than 310 h of demonstrating and marking experience to BSc physics students, and previous experience supervising MSc students.

## Education

10/2015–09/2019 **Ph.D. in Physics** (EPSRC): *Biochemical Phenotyping of Live Single cells using Raman Confocal Spectroscopy*. Molecular and Nanoscale Physics Group, University of Leeds. Supervisors: Stephen Evans, Sally Peyman, David Bonthron.

2010–2015 **B.Sc. in Biochemistry**. University Complutense of Madrid. Average: 8.76/10

2009–2014 **B.Sc. in Physics** (Fundamental Physics). University Complutense of Madrid. Average: 7.94/10

## Research Appointments

01/2022–ongoing **Research Fellow in Genomics and Neuroscience** | Lukacs Lab (University of Leeds, UK): *Single cell analysis to uncover novel mechanoreceptors*. **Supervisor:** Viktor Lukacs (v.lukacs@leeds.ac.uk)

11/2019–11/2021 **JSPS Standard Postdoctoral Fellow** | Goda Lab (University of Tokyo, Japan): *Biological Applications of FT-CARS based flow cytometry*. **Supervisors:** Kotaro Hiramatsu (hiramatsu@chem.s.u-tokyo.ac.jp) and Keisuke Goda (goda@chem.s.u-tokyo.ac.jp).

03/2019–06/2019 **Research Assistant** | MNP (University of Leeds, UK): *Oral Biofilm on a chip: Raman on a chip tracking of biofilm disruption and drug delivery using microbubbles*. **Supervisor:** Stephen D. Evans (s.d.evans@leeds.ac.uk).

## Honors and Awards

### Research Funding and Travel Awards

Sep 2021 SAS Travel Grant for SciX2021 (Rhode Island) - **750\$** (£541)  
2019 RSC International Travel Grant - ICAVS10 2019 (Auckland, New Zealand) - **£800**  
2019 C.R. Barber Trust Travel Grant - ICAVS10 2019 (Auckland, New Zealand) - **£300**  
2018 IoP Biological Physics Travel Grant -  $\mu$ TAS2018 - **£300**  
2018 RSC Faraday Division Travel Grant - Bionano (Austria) - **£265**  
Mar 2016 Single Cell Biology Conference Bursary (Cambridge) - **£218**

### Invited Speaker

Sep 2022 Invited speaker for CONTRAST workshop (University of Exeter)  
Sep 2021 Invited speaker for SciX2021 (Rhode Island)  
Jun 2018 Invited Speaker for SPEC2018 (Glasgow)

## Poster and Dissemination prizes

Sep 2022	Highly Commended Flash Talk - FBS Postdoctoral Symposium, University of Leeds (UK)
Sep 2021	Best Presentation Award - Quantum Life 2021 (Tokyo/Online)
Dec 2020	Silver Poster Prize - Serendipity symposium (Shizuoka, Japan)
Dec 2019	Bronze Poster Prize - Serendipity kick-off symposium (Tokyo, Japan)
Jun 2018	2nd Runner Poster Prize - SPEC2018 (Glasgow) - <b>£100</b>
Jan 2018	<i>The Analyst</i> Poster Prize - Microfluidics for Analytical Chemistry 2018 (Southampton) - <b>£50</b>
Jan 2018	Selected for STEM for Britain 2018 (British Parliament). Interview in BBC Radio Leeds.






## Placements and Scholarships

2019-2021	KAKENHI Grant-in-aid JSPS (University of Tokyo, Japan) - <b>2,200,000¥</b> (£16,700)
2019-2021	JSPS Fellowship (University of Tokyo, Japan)
2015-2019	EPSRC PhD grant
2013-2014	Collaboration Scholarship (UCM, Madrid) - <b>2,000€</b> (£1,790)
2013	Summer Research Placement (U. of Leeds) - <b>£1,400</b>
2012	Erasmus Mundus Scholarship (UCM/U. of Leeds) - <b>3,948€</b> (£3,520)

## Research Skills

<b>Microscopy</b>	Confocal fluorescence Scanning Microscopy (Leica SP8), Fluorescence Microscopy, Bright Field ultrafast microscopy (Nikon, Andor), Microscope design and alignment.
<b>Spectroscopy/Photonics</b>	Raman Confocal Microspectroscopy (Renishaw inVia) on live single cells, tissue and biofilms. Raman on-a-chip. Fourier Transform - Coherent Anti-Stokes Raman Scattering (in House) for single cells cytometry and sorting.
<b>Single-cell analysis</b>	Fluorescence activated cell sorter. Cell transfection. Transposon transfection. Electroporation. PCR. Covaris. DNA sequencing. cDNA sequencing. Genetic analysis pipeline.
<b>Mammalian Cell culture</b>	BioLab Coordinator. Adherent cell lines: HEK293, HT29, SW480, SW620, HTC116, HUVECs; non-adherent cell lines: U266 and HL60.
<b>Microbiology</b>	<i>Escherichia coli</i> , oral biofilm ( <i>A. naeslundii</i> , <i>S. salivarius</i> , <i>F. nucleatum</i> , <i>P. gingivalis</i> , <i>P. intermedia</i> ). Microalgae: <i>Euglena gracilis</i> , <i>Chlorella vulgaris</i> , <i>Chromochloris zofingensis</i> , <i>Haematococcus pluvialis</i> .
<b>Microfabrication/Microfluidics</b>	Direct Writing System (DMO Durham), Mask Aligner, Spin coater, SU8 2025/2075, Mask preparation, Chromium etching and evaporation. Glass-silicon devices fabrication. Anodic bonding. DRIE. Sand-blasting. Acoustic focusing. Soft lithography techniques: PDMS, cell trapping, gradient generation, temperature and gas controlled stage. Autocad and Clewin. COMSOL simulations.
<b>Multivariate Data Analysis</b>	Principal Components Analysis, Linear Discriminant Analysis, Support Vector Machines, Discrimination Trees (Matlab). Fourier Analysis.
<b>FACS</b>	Long lived plasma cells from patient's Bone Marrow. <i>Euglena</i> microalgae cells.
<b>Image Analysis</b>	Contour detection on flickering of single red and white blood cells (Matlab).

## First Author Publications

1. J. Gala de Pablo, M. Lindley, K. Hiramatsu, A. Isozaki, K. Goda. 2023. "Label-free live microalgal starch screening via Raman flow cytometry." **Algal Research** 70, 102993 
2. J. Gala de Pablo, M. Lindley, K. Hiramatsu, K. Goda. 2021. "High Throughput Raman Flow Cytometry and Beyond." **Accounts of Chemical Research** 54, 2132-2143  
3. J. Gala De Pablo, D. Chisholm, C.A. Ambler, S.A. Peyman, A. Whiting, S.D. Evans. 2020. "Detection and Time-Tracking Activation of a Photosensitiser on Live Single Colorectal Cancer Cells Using Raman Spectroscopy." **The Analyst** 145, 5878-5888 
4. J. Gala de Pablo, F.J. Armistead, S.A. Peyman, D. Bonthron, M. Lones, S. Smith, S.D. Evans. 2018. "Biochemical Fingerprint of Colorectal Cancer Cell Lines Using Label-Free Live Single-Cell Raman Spectroscopy." **Journal of Raman Spectroscopy** 49, 1323-32 
5. J. Gala de Pablo; D. Chisholm, A. Steffen, A.K. Nelson, C. Mahler, T.B. Marder, S.A. Peyman, J.M. Girkin, C.A. Ambler, A. Whiting, S.D. Evans. 2018. "Tandem Fluorescence and Raman (fluoRaman) Characterisation of a

## Co-authored Publications

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1. R. Kinigawa, J. Gala de Pablo, Y. Wang, K. Hiramatsu, K. Goda. 2023. "Label-free multiphoton imaging flow cytometry." **Cytometry Part A**. [🔗](#)
2. R. Nishiyama, K. Hiramatsu, S. Kawamura, K. Dodo, K. Furuya, J. Gala de Pablo, S. Takizawa, W. Min, M. Sodeoka, K. Goda. 2023. "Color-scalable flow cytometry with Raman tags." **PNAS Nexus**. [🔗](#)
3. M. Lindley, J. Gala de Pablo, W.J. Peterson, A. Isozaki, K. Hiramatsu, K. Goda. 2022. "High Throughput Raman activated cell sorting in the fingerprint region." **Advanced Materials Technology**. [🔗](#)
4. L. Liu, P. Martinez Pancorbo, T.H. Xiao, S. Noguchi, M. Marumi, J. Gala de Pablo, S. Karhadkar, K. Hiramatsu, H. Segawa, T. Itoh, J. Qu, K. Takei, K. Goda. 2022. "Highly scalable, wearable surface-enhanced Raman spectroscopy." **Advanced Optical Materials** 10 (17), 2200054 [🔗](#)
5. W. Peterson, J. Gala de Pablo, M. Lindley, K. Hiramatsu, K. Goda. 2022. "Ultrafast impulsive Raman spectroscopy across the THz-fingerprint region." **Advanced Photonics** 4 (1), 016003 [🔗](#)
6. M. Lindley, J. Gala de Pablo, R. Kinigawa, K. Hiramatsu, K. Goda. 2021. "Highly sensitive Fourier-transform coherent anti-Stokes Raman scattering spectroscopy via genetic algorithm pulse shaping." **Optics Letters** 46, 4320-4323 [🔗](#)
7. C.K. Kirkby, J. Gala de Pablo, E. Tinkler-Hundal, H.M. Wood, S.D. Evans, N.P. West. 2021. "Developing a Raman spectroscopy-based tool to stratify patient response to pre-operative radiotherapy in rectal cancer." **The Analyst** 146, 581-589 [🔗](#)
8. M.L. Gosztyla, L. Kwong, N. Murray, C.E. Williams, N. Behnke, P. Curry, K.D. Corbett, K. DSouza, J. Gala de Pablo, J. Gicobi, M. Javidnia, N. Lotay, S.M. Prescott, J.P. Quinn, Z.M.G. Rivera, M.A. Smith, K.T.Y. Tang, A. Venkat, M.A. Yamoah. 2021. "Responses to 10 Common Criticisms of Anti-Racism Action in STEMM." **PLOS Computational Biology** 17, e1009141 [🔗](#)
9. F.J. Armistead, J. Gala De Pablo, H. Gadêlha, S.A. Peyman, S.D. Evans. 2020. "Physical Biomarkers of Disease progression: on-chip Monitoring of changes in Mechanobiology of colorectal cancer cells." **Scientific Reports** 10, 1-10 [🔗](#)
10. F.J. Armistead, J. Gala De Pablo, H. Gadêlha, S.A. Peyman, S.D. Evans. 2018. "Cells under Stress: An Inertial-Shear Microfluidic Determination of Cell Behaviour." **Biophysical Journal** 116(6) 1127-1135 [🔗](#)
11. L. Hunter, J. Gala De Pablo, A.C. Stammers, N.H. Thomson, S.D. Evans, J. Shim. 2020. "On-chip pressure measurements and channel deformation after oil absorption." **SN Applied Sciences** 2, 1501 [🔗](#)
12. D.C. Green, M.A. Holden, M.A. Levenstein, Z. Shuheng, B.R.J Johnson, J. Gala de Pablo, A. Ward, S.W. Botchway, F.C. Meldrum. 2018. "Controlling the Fluorescence and Room-Temperature Phosphorescence Behaviour of Carbon Nanodots with Inorganic Crystalline Nanocomposites." **Nature Communications** 10, 206 [🔗](#)
13. L. Liu, P. Martinez Pancorbo, T. Xiao, S. Noguchi, M. Marumi, S. Karhadkar, J. Gala de Pablo, K. Hiramatsu, H. Segawa, T. Itoh, J. Qu, K. Takei, K. Goda. 2022. "Highly scalable, wearable surface-enhanced Raman spectroscopy." **Advanced Optical Materials** 10(17) 2200054 [🔗](#)
14. A.H. Churchman, V. Mico, J. Gala de Pablo, S.A. Peyman, S. Freear, S.D. Evans. 2018. "Combined Flow-Focus and Self-Assembly Routes for the Formation of Lipid Stabilized Oil-Shelled Microbubbles." **Microsystems & Nano-engineering** 4, 17087 [🔗](#)

## Scientific Meetings Organization

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|---------------|--|
| 15-16/12/2020 | <b>Serendipity Symposium 2020 - Session Chair.</b> Shizuoka, Japan. Organization of the Poster session for the Serendipity Symposium 2020. <i>Meeting Size:</i> 60 people  |
| 16-17/06/2020 | <b>Serendipity Twitter Workshop 2020 - Committee Chair</b> (Online). Organization of a 2 day scientific meeting via twitter, with both poster presentations and talks. <i>Meeting Size:</i> 80 people. #SerendipityWorkshop, #SerendipityKeynote, #SerendipityPoster |
| 03-04/08/2018 | <b>MNP Group Seminar.</b> Yorkshire Dales, UK. Organization of a 2 day scientific meeting in the Yorkshire Dales, with multiple talks and team building activities. <i>Meeting Size:</i> 40 people   |

01/07/2018 **Postgraduate symposium - Organization Committee.** University of Leeds, UK. Organization of a 1 day scientific meeting, where PhD students in different stages of their postgraduate studies gave talks, flash presentations or poster presentation. *Meeting Size:* 100 people

## Languages

- > Spanish: Mother tongue
- > English: Bilingual
- > French: Intermediate conversational skills
- > Japanese: Basic
- > German: Basic

## Software and Programming

- > Matlab (Image analysis, Chemometrics); Python (teaching); Maple (simulations).
- > Origin
- > Comsol: Multiphysics, Microfluidics.
- > Blender, Adobe Illustrator
- > AutoCAD, Clewin
- > Labview

## Teaching

- Feb-Aug 2023 **Bioscience MSc Research Project** U. of Leeds, UK. Supervision of an MSc student research project associated with module BIOL5392M. Student mentorship, guidance and evaluation. Includes supervising the student in their preparation for module BIOL5294M Research Project Preparation Module where they write a grant proposal associated with the Research Project.
- June-July 2022 **OD&PL Foundations in Teaching 2022-23** (online). U. of Leeds, UK. Gain the basic skills to recognise principles for effective teaching at the University of Leeds, plan and design teaching sessions, adapt teaching for online learning, providing feedback to students, and deliver an inclusive learning experience.
- 2019-2021 **Chemistry MSc students (2)** U. of Tokyo, Japan. Supervision of two MSc students in Goda-lab in their preparation for their MSc degree (2-year research degree).
- 2016-2018 **Demonstrator | Python Computing Laboratory** (120 h). Physics & Astronomy, U. of Leeds, UK. Demonstrator in Computing 1 PHYS1220 (2x30 h) and Computing 2 PHYS2320 (2x30 h). Guidance in the computer lab (basic and intermediate level computing). Marking of python code.
- 2017-2018 **Marker | Physics** (30 h). Physics & Astronomy, U. of Leeds, UK. Marking of assignments of Physics 3 - Thermodynamics PHYS2300 (30 h).
- 2015-2019 **Demonstrator | Physics Laboratory** (162.5 h). Physics & Astronomy, U. of Leeds, UK. Demonstrator in Physics Laboratory 2 PHYS1110 (51.5 h), Physics Laboratory 1 PHYS1260 (30 h), PHYS1060 (51 h) and PHYS3778 (30h). Guidance in the physics 1st-year lab (10 students per session). Report marking. Guidance with Scanning Tunnel Electron Microscopy (3rd-year undergraduates).

## Scientific Outreach and Engagement

- 21/09/2021 **JSPS Science Dialogue**, Chiba Municipal Chiba High School (100 15-17 yo students). Chiba, Japan.
- 2/12/2019 **SPiE outreach event**, Komaba Festival. Tokyo, Japan.
- 2017-2018 **Pint of Science**. Beautiful Mind co-Team Leader and Our Body Team member. Leeds, UK.
- 17/03/2018 **Royal Society of Chemistry** Science Engagement Demonstrator, British Science Week: *The Chemistry of Sweets*. Leeds City Museum, Leeds, UK.
- 2018 **STEM for Britain 2018** (British Parliament), engagement with members of the parliament. Interview in BBC Radio Leeds.
- 17/07/2017 2nd Annual **Physics and Astronomy Work Experience Week** for Year 12 students. University of Leeds, UK.
- 11/11/2017 **Institute of Physics** Science Engagement Demonstrator at the Otley Science Fair. Otley Courthouse Arts Centre, Otley, UK.

## Scientific Meetings

- 12-13/9/2022 **CONTRAST Workshop** (University of Exeter). Invited talk. *Raman spectroscopy and microfluidics for single-cell analysis*.
- 8/9/2022 **FBS Postdoctoral Symposium** (University of Leeds). Poster presentation and 3-min flash talk (silver prize). *Developing a mechano-stimulation platform using 3D-printing and open-source electronics*.



- 16-21/12/2021 **Pacificchem 2021** (Online). Poster presentation. *Label-free single-cell metabolic phenotyping by coherent vibrational flow cytometry*.
- 16/09/2021 **Quantum Life 2021** (Tokyo, Japan - Online). Oral presentation: *Vibrational Flow Cytometry for Quantum Life Science*. Best Presentation Prize.
- 26/09-01/10/2020 **SciX2021** (Providence Rhode Island, USA). Invited speaker. *High-throughput Raman flow cytometry for directed evolution*
- 15-16/12/2020 **Serendipity Symposium 2020** (Tokyo, Japan). Silver Poster Prize. *Vibrational flow cytometry on-a-chip: a label-free tool for metabolic phenotyping*
- 4-9/10/2020 **microTAS 2020** (Online). Poster Presentation: *Vibrational flow cytometry on-a-chip: a label-free tool for metabolic phenotyping*
- 30/07-01/08/2020 **ICONS 2020** (online).
- 17-18/06/2020 **Serendipity Workshop 2020** (Online, Twitter). Poster Presentation: *Vibrational flow cytometry on-a-chip: a label-free tool for metabolic phenotyping*. [🔗](#)
- 24-26/11/2019 **Biomedical Raman Imaging 2019** (Osaka, Japan). Poster Presentation: *Tracking the accumulation and activation of a Photosensitizer in live single colorectal cancer cells using Raman spectroscopy*.
- 14-15/11/2019 **Microfluidics and Organ-on-a-Chip Asia 2019** (Tokyo, Japan). Attendance.
- 9-11/11/2019 **Serendipity kickoff symposium** (Tokyo, Japan). Bronze Poster Prize: *Tracking the accumulation and activation of a Photosensitizer in live single colorectal cancer cells using Raman spectroscopy*.
- 21/05/2019 **Lab on a chip Symposium** (RSC, London, UK). Attendance.
- 11-19/11/2018 **microTAS 2018** (Kaohsiung, Taiwan). Poster Presentation: *On chip single-cell drug uptake tracking using microfluidic traps and Raman microspectroscopy*.
- 15-20/08/2018 **Bio-Nano Summer School** - Physical science, nanotechnology and life science (Hirschegg, Austria). Oral Presentation. Organised by the Universities of Siegen and Bath.
- 01/07/2018 Postgraduate symposium (University of Leeds, UK). Oral presentation.
- 10-15/06/2018 **10th conference SPEC 2018** (Glasgow, UK). Invited Speaker (Oral Presentation) and Poster Presentation. Wiley Poster Prize: *A Raman study on colorectal cancer progression: from classification to treatment*.
- 12/03/2018 **STEM for Britain** at the Portcullis House (British Parliament, London, UK). Poster Presentation in the Physics Section: *Shinning light in what colorectal cancer is made of*. Engagement with members of the parliament.
- 01/02/2018 **1st Microfluidics for Analytical Chemistry Conference** (National Oceanography Centre, Southampton, UK). The Analyst Poster Prize: *On-Chip Single Cell Phenotyping using microfluidic traps and Raman microspectroscopy*.
- 04-09/07/2017 **CLIRSPEC Summer School** (International Society of Clinical Spectroscopy, Windermere, UK). Attendance.
- 15-20/08/2016 **Bio-Nano Summer School**: Stimuli-responsive inter facial systems (Hirschegg, Austria). Oral Presentation: *On-chip single-cell phenotyping using Raman spectroscopy*. Organised by the Universities of Siegen and Bath
- 14-20/08/2018 **Inside Raman UK seminar and IRDG meeting** (Bristol, UK). Poster Presentation: *On-Chip Single Cell Phenotyping combining Raman with Dielectrophoresis and Deformability Cytometry*. Organised by Renishaw & IRDG.
- 15-20/08/2018 **Single Cell Biology** (Wellcome Genome Campus, Cambridge, UK). Poster Presentation: *Developing a Microfluidic Approach for the Sequential Isolation, Manipulation, Observation & Analysis of Single Cells using 3 orthogonal phenotypes*. Attendance bursary.
- 17-24/08/2013 **Bio-Nano Summer School** - From physical science to nanotechnology to life science: methods, techniques and hot research (Hirschegg, Austria). Oral Presentation. Organised by the Universities of Siegen and Bath.

## References

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