JOSHUA A. WELSH, PhD

Senior Staff Scientist | *Advanced Technology Group*

Waters Biosciences (Formerly BD Biosciences) | Milpitas, CA, USA
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KEY METRICS

- 46 peer-reviewed articles (citations: >19,000, h-index: 29)
- 3 granted patents (4 pending)
- 50 invited talks
- 17+ workshops & tutorials
- 18 trainees mentored

ABOUT ME

My interest in flow cytometry has been shaped by the ISAC community. Over the course of my career, I have contributed to community standardization frameworks such as MIFlowCyt-EV, developed software tools to help flow cytometry users calibrate their data and semi-automate conformance with reporting standards, led working groups such as the ISAC-ISEV-ISTH EV Flow Cytometry Working Group, and facilitated education and training through workshops, tutorials, and online resources. I have also been fortunate to be recognized as an ISAC Marylou Ingram Scholar (2019-2023).

I would like the opportunity to serve on the ISAC Council, representing Technology Innovation and Development. My career has recently transitioned from academic research at the U.S. National Institutes of Health to industry, where I now lead next-generation standardization initiatives for the FACSDiscover platform within the Advanced Technology Group at Waters Biosciences (formerly BD Biosciences). This combination of academic and industry experience, together with my previous ISAC involvement, has given me experience in technology development, standards, education, and community engagement that I believe would be valuable to the Society.

If elected, I would aim to advance ISAC's strategic priorities by supporting broader access to educational training, practical resources, and standards; strengthening communication around the value and impact of emerging technologies and community-led initiatives; and contributing to a representative and effective council through collaborative leadership, thoughtful discussion, and transparent communication. I would welcome the opportunity to help advance innovation, education, standardization, and community building across the Society.

ISAC EXPERIENCES & CONTRIBUTIONS

Marylou Ingram Scholar (2019 – 2023)
This five-year career development program recognizing scientific skills, research accomplishments, and leadership potential in cytometry provided me with opportunies to connect and learn from the ISAC community, and to contribute to the society through workshops, tutorials, and educational resources.

ISAC Data Committee Member (2020 – Present)
Currently a member of the next-generation FCS file format development.

ISAC-ISEV-ISTH EV Flow Cytometry Working Group Lead (2016 – 2024)
Organized and led an inter-society working group of ∼26 international researchers to standardize EV analysis and reporting. Lead-author of MIFlowCyt-EV and a comprehensive educational companion compendium. Built a community of 400+ users with online webinars and forums.

ISAC Journals (2015 – Present)
Associate Editor, Cytometry Part A (2024–Present) – Handling manuscripts on standardization and small particle analyses.
Associate Editor, Current Protocols in Cytometry (2020–2023) – Developed and edited protocols on flow cytometry standardization and EV analysis.
Author – 8 publications in ISAC journals.
Reviewer – Regular peer reviewer of ISAC journal manuscripts.

CYTO Conferences (2015 – Present)
Active participant since CYTO2018, with roles spanning poster and plenary presentations, tutorial co-organization, workshop facilitation, session chairing, and abstract reviewing. Highlights include invited Plenary Speaker at CYTO2023 (Montreal) and tutorial/workshop roles at CYTO2019, 2020, 2022, 2024, and 2026.

Standardization & Software (2017 – Present)
Developed FCMPASS, MPAPASS, and RPSPASS software packages which are used by >500 users across >37 countries for flow cytometry calibration and small particle analysis, as well as online calculators for % solids and ultracentrifugation. Led the development of MIFlowCyt-EV reporting framework and MISEV2023 guidelines.

Education & Mentoring (2013 – Present)
Delivered 17+ workshops and tutorials at CYTO, CDW, and international venues. Created interactive educational resources, video guides, and web-hosted tools for teaching flow cytometry concepts. Mentored 18 trainees across multiple career levels.

Societal Leadership Experience (2014 – 2025)
Member-at-large, ISEV Executive Board (2020–2024). Chair, Rigor & Standardization: EV Reference Materials Task Force (2019–2023). Lead author of MISEV2023 guidelines initiative (1000+ authors), Member, ISEV Nomination Committee (2026).

FOCUS AREAS

- Technology Innovation and Development
- Basic Research

Joshua A. Welsh

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Summary

Biomedical scientist with 12+ years of experience in developing instrumentation, software, and standardization frameworks for quantitative particle analysis. I have led the development of international reporting guidelines such as MISEV2023 and MIFlowCyt-EV, and made concerted efforts in generating comprehensive educational materials and training resources. These include comprehensive literature reviews, tutorials, workshops, and open-source software tools. In my current role within the Advanced Technology Group at Waters Biosciences, I am leading next-generation standardization for the FACSDiscover platform. I am eager to continue developing innovative solutions to advance the field of flow cytometry and particle analysis and bridge the gap between industry and academia.

Employment

Waters Bioscience (Formerly Becton Dickinson Biosciences) Aug 2023 – Present
Senior Staff Scientist Oct 2025 – Present
Staff Scientist II Dec 2024 – Oct 2025
Staff Scientist I Aug 2023 – Dec 2024
Supervisor: Peter Mage, PhD
Member of the Advanced Technologies Group working on next-generation flow cytometer research and development.

The Measuring Stick, Ltd Oct 2023 – Present
Director
Maintaining and developing FCMPASS software.

National Institutes of Health Jun 2017 – Jan 2024
Special Volunteer Aug 2023 – Jan 2024
Staff Scientist Mar 2023 – Jul 2023
Research Fellow Jun 2021 – Mar 2023
Visiting Postdoctoral Fellow Jun 2017 – Jun 2021
Supervisor: Jennifer C. Jones, MD PhD
In the Translational Nanobiology Section I developed a high-throughput, scalable, clinical pipeline for characterizing extracellular vesicles for their use as biomarkers. This work was highly interdisciplinary, requiring the development of assays, equipment, and standalone software. I led the planning, conducting, and analysis of experiments along with the writing of several manuscripts. I was also the day-to-day supervisor of numerous post-baccalaureate and summer student lab members.

University of Southampton Oct 2016 – Jun 2017
Senior Research Assistant
Supervisor: Nicola A. Englyst, PhD
Funded in-kind by Thermo Fisher Scientific to develop a high-sensitivity flow cytometry platform and standardization methods to characterize extracellular vesicles.

The Brilliant Club Jun 2014 – Jun 2015
Tutor
Designed and delivered an 8-week course to two classes of 14–15-year-old students from underprivileged backgrounds. Organized by the Brilliant Club to increase STEM diversity at top UK universities. One student's final project was published in the organization's journal following peer review.

University of Southampton Oct 2013 – Oct 2016
Lab Demonstrator, BIOL2010: The Flow of Genetic Information
Taught groups of 30 students weekly on bacterial transformation techniques and marked experimental write-ups.

Education

University of Southampton Oct 2013 – Jun 2017
Human Development & Health, Faculty of Medicine
Doctor of Philosophy

Supervisors: N. Englyst, PhD; J. Holloway, PhD; D. Smith, BMBS DM; J. S. Wilkinson, PhD
Thesis: *Flow cytometer optimisation and standardisation for the study of extracellular vesicles as translational biomarkers.*

University of Southampton Oct 2014 – Oct 2015
Human Development & Health, Faculty of Medicine
PCAP (module 1)

University of Leicester Oct 2010 – Jun 2013
School of Biological Sciences
BSc (Hons) Biological Sciences: Physiology with Pharmacology Grade 2.1

Publications — 40+ peer-reviewed articles

*corresponding author, $^{\tau}$co-first authorship

1. Bettin, B.A., Li, B., *et al.*, **Welsh, J.A.**, Nieuwland, R., van der Pol, E., **Calibration of flow cytometers enables reproducible measurements of extracellular vesicle concentrations and reference range establishment.** J Extracell Vesicles, 14(12): e70189. doi: 10.1002/jev2.70189.
2. Cavicchi, R.E., Ripple, D.C., Welsh, J.A., *et al.*, **Measuring the size of oil droplets in a flow cytometer using Mie resonances.** Cytometry Part A. 2024. doi: 10.1002/cyto.a.24912.
3. Kim J, Xu S, *et al.*, **Welsh JA**, Nolan JP, Chiu DT. **Comparison of EV characterization by commercial high-sensitivity flow cytometers and a custom single-molecule flow cytometer.** J Extracell Vesicles. 2024 Aug;13(8):e12498. doi: 10.1002/jev2.12498.
4. Nguyen, V.V.T., **Welsh J.A.**, Tertel, T., *et al.*, **Inter-laboratory multiplex bead-based surface protein profiling of MSC-derived EV preparations identifies MSC-EV surface marker signatures.** J Extracell Vesicles, 13, e12463. doi: 10.1002/jev2.12463.
5. **Welsh, J.A.**, Goberdhan D.C.I., O'Driscoll L., Théry C., Witwer K.W., **MISEV2023: An Updated Guide to EV Research and Applications.** J Extracell Vesicles. doi: 10.1002/jev2.12416.
6. **Welsh J.A.**, Goberdhan D., O'Driscoll, *et al.* (Théry C., Witwer K.W.), **Minimal information for studies of extracellular vesicles (MISEV2023): From basic to advanced approaches.** J Extracell Vesicles. doi: 10.1002/jev2.12404.
7. Nishio, K., Pasquet, L., *et al.*, **Welsh, J.A.**, *et al.*, **Lysosomal processing of sulfatide analogues alters target NKT cell specificity and subsequent immune responses in cancer.** J Clin Invest. doi: 10.1172/JCI165281.
8. Lucien F, *et al.*, **Welsh JA**, Witwer KW, Nieuwland R, **MIBlood-EV: Minimal Information to Enhance the Quality and Reproducibility of Blood Extracellular Vesicle Research.** J Extracell Vesicles. doi: 10.1002/jev2.12385.

9. Cook S., Tang V.A., Lannigan J., Jones J.C., **Welsh J.A.***, **Quantitative flow cytometry (qFCM) enables end-to-end optimization of cross-platform extracellular vesicle studies.** Cell Reports Methods. doi: 10.1016/j.crmeth.2023.100664.
10. Oliveira G., **Welsh J.A.**, *et al.*, **Human red blood cells release microvesicles with distinct sizes and protein composition that alter neutrophil phagocytosis.** J Extracell Biol. doi: 10.1002/jex2.107.
11. Pleet M.L., Cook S., Tang V.A., *et al.*, Jones J.C., **Welsh J.A.**, **Extracellular Vesicle Refractive Index Derivation Utilizing Orthogonal Characterization.** Nano Letters. doi: 10.1021/acs.nanolett.3c00562.
12. Pleet M.L.$^{\tau}$, **Welsh J.A.**$^{\tau}$, Stack E.H., *et al.*, Jones J.C.*, Jacobson S.*, **Viral Immune Signatures from Cerebrospinal Fluid Extracellular Vesicles and Particles in HAM and Other Chronic Neurological Diseases.** Front Immunol. doi: 10.3389/fimmu.2023.1235791.
13. Arce, J.E.$^{\tau}$, **Welsh J.A.**$^{\tau}$, Cook, S., *et al.*, **The NanoFlow Repository.** Bioinformatics. doi: 10.1093/bioinformatics/btad368.
14. **Welsh J.A.***, Arkesteijn G.J.A., *et al.*, van der Pol E.*, **EV Flow Cytometry Compendium.** J Extracell Vesicles. doi: 10.1002/jev2.12299.
15. Nolan, J.P., Chiu D., **Welsh J.A.**, **Rigor and reproducibility: status and challenges for single vesicle analysis.** Extracell Vesicles Circ Nucleic Acids. doi: 10.20517/evcna.2022.28.
16. Mateescu B., Jones J.C., *et al.*, **Welsh JA**, *et al.*, Laurent LC, **Phase 2 of extracellular RNA communication consortium charts next-generation approaches for extracellular RNA research.** iScience. doi: 10.1016/j.isci.2022.104653.
17. Moles R., *et al.*, **Welsh J.A.**, *et al.*, Franchini G., **NK cells and Monocytes modulate primary HTLV-1 infection.** PLoS Pathogens. doi: 10.1371/journal.ppat.1010416.
18. **Welsh J.A.***, Killingsworth B., Kepley J., *et al.*, Jones J.C.*, **MPA$_{PASS}$ software enables stitched multiplex, multi-dimensional EV repertoire analysis and a standard framework for reporting bead-based assays.** Cell Reports Methods. doi: 10.1016/j.crmeth.2021.100136.
19. Witwer, K.W., Goberdhan, D.C., O'Driscoll, L., Théry, C., **Welsh J.A.**, *et al.*, **Updating MISEV: Evolving the minimal requirements for studies of extracellular vesicles.** J Extracell Vesicles. doi: 10.1002/jev2.12182.
20. van der Pol E., **Welsh J.A.**, Nieuwland R.*, **Minimum information to report about a flow cytometry experiment on extracellular vesicles.** J Thromb Haemost. doi: 10.1111/jth.15540.
21. Killingsworth B., **Welsh J.A.**, Jones J.C.*, **EV Therapeutic Horizons as Viewed Across the Complex Landscape of Liquid Biopsies.** Front Cell Dev Biol. doi: 10.3389/fcell.2021.556837.
22. **Welsh J.A.**, Killingsworth B., Kepley J., Traynor T., McKinnon K., Savage J., Appel D., Aldape K., Camphausen K., Berzofsky J., Jones J.C.*, **A simple, high-throughput method of protein and label removal from extracellular vesicle samples.** Nanoscale. doi: 10.1039/D0NR07830A.
23. Maire C.L., *et al.*, **Welsh J.A.**, *et al.*, Ricklefs F.L.*, **Genome-wide methylation profiling of glioblastoma extracellular vesicle DNA allows tumor classification.** Neuro-Oncology. doi: 10.1093/neuonc/noab012.
24. **Welsh J.A.***, Tang V., van der Pol E., Görgens A., **MIFlowCyt-EV: The next chapter in the reporting and reliability of single extracellular vesicle flow cytometry experiments.** Cytometry Part A. doi: 10.1002/cyto.a.24268.
25. Burnie J., Tang V.A., **Welsh J.A.**, *et al.*, Guzzo C.*, **Flow virometry quantification of host proteins on the surface of HIV-1 pseudovirus particles.** Viruses. doi: 10.3390/v12111296.
26. Morales-Kastresana A.$^{\tau}$, **Welsh J.A.**$^{\tau}$, Jones J.C.*, **Detection and Sorting of Extracellular Vesicles and Viruses using nanoFACS.** Curr Protoc Cytom. doi: 10.1002/cpcy.81.

27. **Welsh J.A.**, Jenkins L.M., Kepley J., *et al.*, Jones J.C.*, **High-sensitivity protein gel electrophoresis label compatible with mass spectrometry.** Biosensors. doi: 10.3390/bios10110160.

28. de Rond L., Coumans F.A.W., **Welsh J.A.**, Nieuwland R., van Leeuwen T.G., van der Pol E., **Quantification of light scattering detection efficiency and background in flow cytometry.** Cytometry Part A. doi: 10.1002/cyto.a.24243.

29. **Welsh J.A.***, van der Pol E., Bettin B.A., *et al.*, Jones J.C.*, **Towards defining reference materials for extracellular vesicle refractive index, epitope abundance, size, and concentration.** J Extracell Vesicles. doi: 10.1080/20013078.2020.1816641.

30. **Welsh J.A.***, Jones J.C.*, **Small particle fluorescence and light scatter calibration using FCMPASS software.** Curr Protoc Cytom. doi: 10.1002/cpcy.79.

31. **Welsh J.A.***, Jones J.C.*, Tang V.A.*, **Fluorescence and light scatter calibration allow comparisons of small particle data in standard units across different flow cytometry platforms and detector settings.** Cytometry Part A. doi: 10.1002/cyto.a.24029.

32. Butement J.T., *et al.*, **Welsh J.A.**, *et al.*, Wilkinson J.S., **Monolithically-integrated cytometer for measuring particle diameter in the extracellular vesicle size range using multi-angle scattering.** Lab on a Chip. doi: 10.1039/C9LC01182J.

33. **Welsh J.A.***, van der Pol E., *et al.*, Jones J.C.*, **MIFlowCyt-EV: a framework for the standardized reporting of extracellular vesicle flow cytometry experiments.** J Extracell Vesicles. doi: 10.1080/20013078.2020.1713526.

34. Czechowska, K., *et al.*, **Welsh, J.A.**, *et al.*, Tárnok, A., **Cyt-Geist: Current and Future Challenges in Cytometry.** Cytometry Part A, 95: 1236–1274. doi: 10.1002/cyto.a.23941.

35. Clayton A., *et al.*, **Welsh J.A.**, Witwer K.W., *et al.*, Nieuwland R., **Considerations towards a roadmap for collection, handling, and storage of blood extracellular vesicles.** J Extracell Vesicles, 8:1. doi: 10.1080/20013078.2019.1647027.

36. **Welsh J.A.***, Horak P., Wilkinson J.S., Ford V., Jones J.C., Smith D.C., Holloway J.A., Englyst N.A., **FCM_{PASS} software aids extracellular vesicle light scatter standardisation.** Cytometry Part A. doi: 10.1002/cyto.a.23782.

37. Murillo O.D., *et al.*, **Welsh J.A.**, *et al.*, Måilosavljević A., **ExRNA Atlas analysis reveals distinct extracellular RNA cargo types present across human biofluids.** Cell. doi: 10.1016/j.cell.2019.02.018.

38. Görgens A., *et al.*, **Welsh J.A.**, *et al.*, Giebel B., **Optimisation of Imaging Flow Cytometry for the Analysis of Single Extracellular Vesicles by Using Fluorescence-tagged Vesicles as Biological Reference Material.** J Extracell Vesicles. doi: 10.1080/20013078.2019.1587567.

39. Morales-Kastresana A.$^{\tau}$, Musich T.$^{\tau}$, **Welsh J.A.**$^{\tau}$, *et al.*, Jones J.C.*, **High Fidelity Detection and Sorting of Nanoscale Vesicles in Viral Disease and Cancer.** J Extracell Vesicles. doi: 10.1080/20013078.2019.1597603.

40. Théry C.*, Witwer K.*, *et al.*, **Minimal information for studies of extracellular vesicles 2018 (MISEV2018): a position statement of the International Society for Extracellular Vesicles.** J Extracell Vesicles, 8:1, 1535750. doi: 10.1080/20013078.2018.1535750.

41. **Welsh J.A.**, Kepley J., Rosner A., Horak P., Berzofsky J., Jones J.C.*, **Prospective use of high-refractive index materials for single molecule detection in flow cytometry.** Sensors. doi: 10.3390/s18082461.

42. Wiklander OPB, *et al.*, **Welsh JA**, *et al.*, Görgens A., **Systematic Methodological Evaluation of a Multiplex Bead-Based Flow Cytometry Assay for Detection of Extracellular Vesicle Surface Signatures.** Front Immunol. 9:1326. doi: 10.3389/fimmu.2018.01326.

43. Clayton A., *et al.*, **Welsh J.A.**, Witwer K.W., *et al.*, Nieuwland R., **Summary of the ISEV workshop on extracellular vesicles as disease biomarkers.** J Extracell Vesicles, 7:1, 1473707. doi: 10.1080/20013078.2018.1473707.

44. **Welsh J.A.***, Scorletti E., Clough G.F., Englyst N.A., Byrne C.D., **Leukocyte extracellular vesicle concentration is associated with liver fibrosis severity in non-alcoholic fatty liver disease.** J Leukoc Biol. 2018; 1–9. doi: 10.1002/JLB.5A1217-501R.

45. Ramirez M.I., *et al.*, **Welsh J.A.**, *et al.*, Dias-Neto E., **Technical challenges of working with extracellular vesicles.** Nanoscale, 2017. doi: 10.1039/c7nr08360b.

46. **Welsh JA***, Holloway JA, Wilkinson JS, Englyst NA, **Extracellular Vesicle Flow Cytometry Analysis and Standardization.** Front Cell Dev Biol, 5:78. doi: 10.3389/fcell.2017.00078.

Book Chapters

1. Erdbrügger, U., van Royen, M.E., Verhaegh, G.W., Grange, C., Burger, D., Greig, M., **Welsh, J.A.**, Nyman, T.A., Llorente, A., Martens-Uzunova, E., Puhka, M., Barreiro, K.A., Ng, M.S.Y., **Analysis of Urinary Extracellular Vesicles.** In: Srivastava, A.K. (Ed.), *Extracellular Vesicles*, Springer US, pp. 115–166. doi: 10.1007/978-1-0716-4905-3_7.

2. Petrovich-Kopitman, E., **Welsh, J.A.**, Adutler-Lieber, S., Dayan, A., Porat, Z., **Quantification and characterization of extracellular vesicles by flow cytometry.** In: Torrecilhas, A.C. (Ed.), *Current Topics in Membranes*, Volume 96, Academic Press, pp. 277–315. doi: 10.1016/bs.ctm.2025.09.002.

Pre-prints

1. Tang V.A., *et al.*, **Welsh J.A.**, Jones J.C., Langlois M., **Engineered Retroviruses as Fluorescent Biological Reference Particles for Small Particle Flow Cytometry.** BioRxiv. doi: 10.1101/614461.

Intellectual Property — 3 granted patents

Granted Patents

1. **Optical Configuration Methods for Spectral Scatter Flow Cytometry**
   Lead Inventor: Joshua Welsh; **Co-Inventors:** Jay A. Berzofsky, Jennifer C. Jones
   U.S. Patent No. 10,876,955. Also granted in Japan (No. 6788148) and Europe (No. 3701246).

2. **Molecular NanoTags**
   Lead Inventor: Jennifer C. Jones; **Co-Inventors:** Jay A. Berzofsky, Aizea Morales-Kastresana, Ari Rosner, Joshua A. Welsh
   U.S. Patent No. 11,536,719 B2.

3. **Purification and Labeling of Extracellular Vesicles Using a Mixed Mode Resin Composition**
   Lead Inventor: Jennifer C. Jones; **Co-Inventors:** Jay A. Berzofsky, Katherine M. McKinnon, Joshua A. Welsh
   U.S. Patent No. 12,083,448 B2.

Software Solutions

I have developed multiple standalone and web applications in response to the needs of my laboratory work and the broader research field. Source code is available at github.com/joadwe.

Software

- **FCM$_{PASS}$** — Flow cytometry standardization and analysis software for semi-automatic calibration of light scatter and fluorescence parameters to standard units.
- **MPA$_{PASS}$** — High-throughput, stitched, multiplex analysis of extracellular vesicle phenotypes with powerful visualization tools.
- **RPS$_{PASS}$** — Automated Spectradyne calibration and gating software.

Online Calculators

- **Percent Solids to Particles per mL** — Convert percentage solids to particle concentration.
- **Flow Cell Model** — Model flow cell collection efficiency.
- **Snell's Law Model** — Calculate light refraction angles.
- **EV Centrifugation Simulation** — Calculate EV pelleting efficiency for different centrifuges and rotors.

Awards

Special Achievement Award 2024
International Society of Extracellular Vesicles — Awarded for leading the MISEV2023 initiative.

Federal Technology Transfer Award 2023
National Institutes of Health — Nominated for significantly contributing to the intellectual property of National Cancer Institute.

Federal Technology Transfer Award 2022
National Institutes of Health — Nominated for significantly contributing to the intellectual property of National Cancer Institute.

Outstanding Reviewer 2021 2022
Royal Society of Chemistry — One of seven reviewers recognized for outstanding peer review for Nanoscale Advances journal.

Top Cited Paper 2020–2021 2022
Wiley — For Fluorescence and light scatter calibration allow comparisons of small particle data in standard units across different flow cytometry platforms and detector settings (Cytometry Part A).

Top Cited Paper 2020–2021 2022
Wiley — For MIFlowCyt-EV: a framework for standardized reporting of extracellular vesicle flow cytometry experiments (J Extracell Vesicles).

Federal Technology Transfer Award 2021
National Institutes of Health — Nominated for significantly contributing to the intellectual property of National Cancer Institute.

Federal Technology Transfer Award 2020
National Institutes of Health — Nominated for significantly contributing to the intellectual property of National Cancer Institute.

Top Downloaded Paper 2018–2019 2020
Wiley — For FCM$_{PASS}$ software aids extracellular vesicle light scatter standardisation (Cytometry Part A).

ISAC Marylou Ingram Scholarship 2019–2023 2019
International Society for Advancement of Cytometry — Five-year career development program recognizing scientific skills, research accomplishments, and leadership potential in cytometry.

Outstanding Postdoctoral Fellow 2018
CCR Fellows and Young Investigator Colloquium — Nominated and selected from top 5 candidates.

Future of Science Fund Scholarship 2018
Keystone Symposia — Scholarship to attend the Single Cell Biology Meeting. Chosen by Timm Schroeder, PhD and Berthold Göbgens, DPhil.

Federal Technology Transfer Award 2018
National Institutes of Health — Nominated for 4 patents submitted in the preceding year.

Summer Research Mentor Award 2018
National Institutes of Health — Award to cover the salary of a summer intern.

2nd Prize for Best Oral Presentations 2017
UK Society for Extracellular Vesicles (UKEV).

Student Travel Award 2016
International Society for Advancement of Cytometry — To attend the cytometry development workshop and present a talk.

International Conference Attendance Fund 2016
University of Southampton — Faculty award to support travel to ISEV 2016.

Researcher Links / Newton Award 2016
British Council — UK-Brazil Extracellular Vesicle and Neglected Tropical Diseases Workshop.

Student Travel Award 2015
International Society for Advancement of Cytometry — To attend CYTO 2015 and present a talk.

International Conference Attendance Fund 2015
University of Southampton — Faculty award to support travel to ISEV 2015.

Researcher Links / Newton Award 2015
British Council — UK–Russia Researcher Links Workshop on extracellular vesicles.

Young Extraordinary Brits Award: Innovation 2014
Jack Wills — National competition recognizing significant contributions to STEM innovation.

Best Overall Final Year Experimental Project 2013
University of Leicester.

1st Year University Scholarship 2010
University of Leicester — Awarded for exceeding academic entry requirements.

Invited Talks

Academic

1. ***Next-generation flow cytometry standardization.*** NIST, USA, Apr 2025. Invited by Gregory Cooksey, PhD.
2. ***EVs: Getting started.*** UC Davis, USA, Feb 2025. Invited by Ameer Taha, PhD.
3. ***Small particle flow cytometry: The utility of assay agnostic metrics.*** Online Education Day, Feb 2025. Invited by ISEV GUSEV Task Force.
4. ***Mastering small particle flow cytometry.*** Weizmann Institute, Israel, Sep 2024. Invited by Ziv Porat.
5. ***MISEV2023.*** ISEV2024, May 2024. Invited by ISEV organizing committee.

6. ***EV Flow Cytometry Optimization and Calibration.*** University of Virginia, Mar 2024. Invited by Uta Erdbrügger, MD & Tanina Arab, PhD.
7. ***MISEV and ISEV Task Forces.*** University of Virginia, Mar 2024. Invited by Uta Erdbrügger, MD & Tanina Arab, PhD.
8. ***Characterizing the unseen: The rise of small particle flow cytometry.*** CYTO2023 Plenary, May 2023. Invited by CYTO2023 IOC.
9. ***Novel EV-related education materials.*** ISEV2023 Education Day, May 2023. Invited by ISEV2023 IOC.
10. ***ISEV-ISAC-ISTH Working Group Updates.*** ISEV2023, May 2023. Invited by ISEV2023 IOC.
11. ***MISEV, MIFlowCyt-EV, EV-TRACK: EV Reporting Standards.*** University College Dublin, Mar 2023. Invited by Alfonso Blanco, PhD.
12. ***EV standardization.*** ISEVxTech, Nov 2022. Invited by Randy Carney, PhD.
13. ***Developing Tools for an extracellular vesicle atlas.*** Oregon State University Grand Round, Oct 2022. Invited by Richelle L. Malott, MD & Terry Morgan, MD PhD.
14. ***Characterizing and optimizing flow cytometry platforms for small particle analysis.*** Trust for Education and Training in Cytometry, Sep 2022. Invited by Hemant Agrawall, PhD.
15. ***Characterizing EVs: Rigor & Reproducibility.*** ISCT, May 2022. Invited by Bernd Giebel, PhD.
16. ***Utilizing flow cytometry for multi-parametric analysis.*** EVs: Technologies & Biological Investigations, Dec 2021. Invited by Enal Razvi, PhD.
17. ***Making the most of your flow cytometer for small particle analysis.*** Flow Cytometry UK, Nov 2021. Invited by Derek Davies, BS & Rachael Walker, PhD.
18. ***Getting started with EV flow cytometry.*** Cornell Institute of Biotechnology, Sep 2021. Invited by Lydia Tesfa, PhD.
19. ***Flow Cytometry and EVs: from MIFlowCyt-EV to calibration.*** ISEV EV Club, Jul 2021. Invited by Kenneth Witwer, PhD.
20. ***Current Landscape of Single Extracellular Vesicle Flow Cytometry.*** ISTH 2021, Jul 2021.
21. ***ISEV-ISAC-ISTH EV Flow Cytometry Working Group Updates.*** ISEV2021 Satellite, May 2021.
22. ***Developing the toolkit to create an EV atlas.*** Canadian EV Network, Dec 2020.
23. ***The importance of orthogonal measurement techniques for EV quantification.*** SelectBio Webinar, Aug 2020. Invited by Jean-Luc Fraikin, PhD.
24. ***Developing a toolset to characterize EVs in a translational setting.*** 23rd US-Japan Cellular and Gene Therapy Conference, FDA, Mar 2020. *Cancelled — COVID-19*.
25. ***Towards evaluating the prognostic potential of extracellular vesicles.*** Institut Curie, Paris, Feb 2020. Invited by Clotilde Théry, PhD.
26. ***Towards evaluating the prognostic potential of extracellular vesicles.*** Pediatric Oncology Branch, NIH, Jan 2020. Invited by Rosandra Kaplan, MD.
27. ***EV Flow Cytometry: A multiplex to single EV analysis (MtSEA) pipeline.*** Flow Cytometry User Group, NIH, Dec 2019. Invited by William Telford, PhD.
28. ***Extracellular Vesicle Flow Cytometry.*** UC Davis, Dec 2019. Invited by Randy Carney, PhD.
29. ***FCM_{PASS} utilizes MIFlowCyt-EV framework criteria…*** ISEV Workshop, Ghent, 2019.

30. ***FCM$_{PASS}$ provides light scatter and fluorescence calibration tools.*** MADSSCi-NERLSCD, Philadelphia, Nov 2019. Invited by Joanne Lannigan, MS.
31. ***EV standardization.*** Tutorial, CYTO2019, Vancouver, Jun 2019. Invited by John Nolan, PhD.
32. ***Next Generation EV Studies for Cancer Research.*** 61st Danish Society for Flow Cytometry, Copenhagen, May 2019.
33. ***Next Generation EV Studies for Cancer Research.*** 19th CCR Fellows and Young Investigators Colloquium, Feb 2019.
34. ***Tools for EV analysis using flow cytometry.*** CytoFlex User Group, Bethesda, Dec 2018.
35. ***Tools for EV analysis using flow cytometry.*** Chesapeake Cytometry Consortium, Rockville, Nov 2018.
36. ***Development of hyperplexed EV phenotyping assays and software.*** Cytometry Development Symposium, San Diego, Nov 2018. Invited by John Nolan, PhD.
37. ***Developing tools for a multiplex-to-single EV analysis pipeline.*** Nanoscale Flow Cytometry for Cancer, Infection, and Disease, Ottawa, Oct 2018. Invited by Vera Tang, PhD & Marc-André Langlois, PhD.
38. ***Scatter-based reference materials.*** ISEV-ISAC-ISTH Satellite, Barcelona, May 2018. Invited by Marca Wauben, PhD.
39. ***Extracellular Vesicles.*** Vaccine Branch, NCI, NIH, Apr 2017. Invited by Jennifer Jones, MD PhD.
40. ***Extracellular Vesicles: My Journey as a Biologist, Physicist, & Engineer.*** University of Edinburgh, Sep 2016. Invited by Jean O'Donoghue, PhD.
41. ***Past, Present, & Future of Extracellular Vesicles.*** R&D Seminar, Thermo Fisher Scientific, Jun 2016. Invited by Michael Ward, PhD.
42. ***High-Resolution Flow Cytometry Analysis for EVs.*** University of Edinburgh, Mar 2016. Invited by Christopher Gregory, PhD.
43. ***Extracellular Vesicles.*** Thermo Fisher Scientific FAS Webinar, Mar 2016.
44. ***EVs: A new generation of translational biomarkers is dawning.*** Hong Kong University, Feb 2016. Invited by Joseph Kwan, PhD.

Industry

1. ***Building Tools to Decipher EV Cargo.*** RoosterBio, Apr 2023. Invited by Biji Mathew, PhD.
2. ***Meeting the needs of small particle flow cytometry users.*** Beckman Coulter FSE & TAS Seminar, Jul 2022. Invited by Maria Gentile, MS.
3. ***Developing tools for cross-platform single EV analysis.*** BD R&D Seminar, May 2022. Invited by Aaron Tyznik, PhD.
4. ***Building the tools for EV standardization and characterization using flow cytometry.*** Beckman Coulter, Sep 2021. Invited by Fanuel Messaggio, PhD.
5. ***Optimizing the Aurora Platform for sensitive, ergonomic and standardized small particle detection.*** Cytek Biosciences, May 2021. Invited by Joanne Lannigan, MS & Maria Jaimes, PhD.
6. ***Developing Tools for Multiplex to Single EV Analysis Pipelines.*** Cytek Biosciences Webinar, Oct 2020. Invited by Janelle Shook, MS MBA.
7. ***Past, Present, & Future of Extracellular Vesicles.*** R&D Seminar, Thermo Fisher Scientific, Jun 2016. Invited by Michael Ward, PhD.

8. ***Microvesicles in Health & Disease.*** R&D Seminar, Thermo Fisher Scientific, Dec 2014. Invited by Michael Ward, PhD.

Podcasts

1. ***The rEView podcast***, Oct 2024.
2. ***SNEV podcast***, Aug 2024.

Sponsorship

1. ***Navigating small particle flow cytometry***, SelectBio, Nov 2024.

Workshops & Tutorials

Tutorials

1. ***Characterizing a Flow Cytometer's Potential for Small Particle Detection.*** CYTO2024, Edinburgh, May 2024. Invited by CYTO organizing committee.
2. ***EV refractive index derivation.*** CDW2023, San Diego, Nov 2023. Invited by John Nolan, PhD.
3. ***Calibration methods for small particles.*** CYTO2020, 2020. Co-organizer with Edwin van der Pol, PhD; Joanne Lannigan, MS; John P. Nolan, PhD. *Converted to online webinar — COVID-19*.
4. ***EV Flow Cytometry.*** ISEV2020 Education Day, May 2020. Invited by ISEV2020 committee.
5. ***Applying scatter and fluorescence standardization to flow cytometric data of small particles.*** CYTO2019, Vancouver, 2019. Co-organizer with Vera Tang, PhD.
6. ***EV Light Scatter by Flow Cytometry.*** CDW2019, San Diego, Nov 2019. Invited by John Nolan, PhD.
7. ***Single EV Measurements: Instruments & Assays.*** CDW2019, San Diego, Nov 2019. Invited by John Nolan, PhD.
8. ***EV standardization.*** CYTO 2019, Vancouver, Jun 2019. Invited by John Nolan, PhD.
9. ***Methods for standardization of flow cytometers for nanoscale flow cytometry.*** CCMA, Edmonton, 2019. Co-organizer with Vera Tang, PhD.
10. ***Fundamentals of small particle scattering in flow cytometry.*** Cytometry Development Tutorials, San Diego, Nov 2018. Invited by John Nolan, PhD.

Workshop Presentations

1. ***EV flow cytometry.*** Tiny Packages with Big Impact, Charlottesville, 2026. Co-organizer with Mike Solga & Joanne Lannigan.
2. ***Small particle flow cytometry.*** Annual Flow Cytometry Course, Philadelphia, 2025. Co-organizer with Vera A. Tang, PhD.
3. ***EV flow cytometry.*** Tiny Packages with Big Impact, Charlottesville, 2025. Co-organizer with Mike Solga & Joanne Lannigan.
4. ***Small particle flow cytometry.*** Annual Flow Cytometry Course, Madison, 2024. Co-organizer with Vera A. Tang, PhD.
5. ***EV flow cytometry.*** Tiny Packages with Big Impact, Charlottesville, 2024. Co-organizer with Mike Solga & Joanne Lannigan.

6. ***Small particle flow cytometry.*** Annual Flow Cytometry Course, San Diego, 2023. Co-organizer with Vera A. Tang, PhD & Joanne Lannigan.
7. ***Small particle flow cytometry.*** Annual Flow Cytometry Course, Madison, 2022. Co-organizer with Vera A. Tang, PhD.
8. ***MIFlowCyt-EV framework — a standard framework for conducting and reporting small particle research.*** CYTO2020, 2020. Co-organizer with Joanne Lannigan, MS; John P. Nolan, PhD. *Cancelled — COVID-19*.
9. ***EV Multiplex Analysis.*** CDW2019, San Diego, Nov 2019. Invited by John Nolan, PhD.
10. ***Picking Apart Multiplex Analysis.*** Cytometry Development Symposium, San Diego, 2018.
11. ***MESF Regression.*** Cytometry Development Workshop, San Diego, 2018.
12. ***EVs as biomarkers of liver fibrosis severity in NAFLD.*** ISEV Workshop, Birmingham, 2017.
13. ***Multi-wavelength modelling of nanoFACS and its comparison to current flow cytometers.*** Cytometry Development Workshop, San Diego, 2017.
14. ***EV Detection Development and Standardization.*** EV Workshop, São Paulo, 2016.
15. ***Leukocyte microvesicles as fibrosis biomarkers in non-alcoholic liver disease.*** EV Workshop, São Paulo, 2016.
16. ***Flow Cytometry SSC Collection Angle Can Be Deduced Using Acquisition of Reference Beads with Known Refractive Index.*** Cytometry Development Workshop, San Diego, 2016.
17. ***Flow Cytometry Detection of Extracellular Vesicles: Limitations and Advances.*** EV Workshop, Moscow, 2015.

Professional Positions & Contributions to International Societies

Associate Editor | Cytometry Part A — 2024 – Present
Handling editor for manuscripts on standardization and small particle analyses.

Associate Editor | Current Protocols in Cytometry — 2020 – 2023
Evaluated, suggested, reviewed, and edited protocols for inclusion.

ISAC-ISEV-ISTH EV Flow Cytometry Working Group

Lead — 2016 – 2024
Member — 2016 – Present
Organized, led calls, and maintained website and social media for the inter-society working group of ˜26 international researchers seeking to standardize EV analysis and reporting. First authored one position paper (MIFlowCyt-EV) and one educational compendium. Hosted and co-organized an educational webinar series during COVID-19. Built a community of 400+ small particle flow cytometry users.

International Society of Extracellular Vesicles (ISEV)

Member — 2014 – 2025
Chair, Rigor & Standardization: EV Reference Materials Task Force — 2019 – 2023
Member-at-large, ISEV Executive Board — 2020 – 2024
Co-organizer, MISEV2022 — 2021 – 2024

International Society for Advancement of Cytometry (ISAC)

Member — 2014 – Present
ISAC Data Committee — 2020 – Present
Marylou Ingram Scholar 2019–2023. Nominated for ISAC Board Secretary in 2023.

Higher Education Academy

Associate Fellow 2015 – Present

Professional Activities

Nominations Committee 2026
ISEV — Invited by ISEV Board.

Abstract Reviewer 2024
CYTO 2025 — Invited by organizing committee.

Panelist — Single vs. Bulk EV Analysis Debate 2024
ISEV 2024 — Invited by organizing committee.

Panelist — Meet the Experts Session 2024
ISEV 2024 — Invited by organizing committee.

Abstract Reviewer 2024
CYTO 2024 — Invited by organizing committee.

International Organizing Committee 2022
ISEVxTech 2022 — Co-organizer of the ISEV Technology and Methods summit.

Facilitator — Nanoparticle Cytometry Sessions 2021
CYTO 2021 (virtual) — Invited by organizing committee.

Award Committee 2021
ISEV 2021 (virtual) — Invited by organizing committee.

Chair — EV Characterization Session 2021
ISEV 2021 (virtual) — Invited by organizing committee.

Moderator — Resolving the Small Stuff 2020
CCMA Webcast, Feb 2021 — Invited by Vera Tang, PhD.

Chair — Extracellular & Oceanic Cytometry 2020
CYTO 2020 (virtual) — Invited by Pratip Chattopadhyay, PhD & Joni Moore, PhD.

Chair — New Sorting News II 2019
CYTO 2019, Vancouver — Invited by Pratip Chattopadhyay, PhD & Andrea Cossarizza, MD PhD.

Panelist 2019
61st Annual Danish Society for Flow Cytometry Meeting, Kongens Lyngby.

Chair — ISEV-ISAC-ISTH Satellite & Developments in EV-Flow Cytometry 2019
ISEV 2019, Kyoto — Invited by Marca Wauben, PhD & IOC.

Moderator — ISAC Webinar 2019
Fluorescent Retroviruses as Reference Particles — Invited by Vera Tang, PhD.

Panelist — EV Flow Cytometry Standardization 2018
ISEV-ISAC-ISTH Satellite, Barcelona — Invited by Marca Wauben, PhD.

Ad Hoc Reviewer 2015 – Present
Peer-reviewed over 80 scientific articles. More information here.

Mentoring Experience

Mentored 18 trainees (2013–2022) across multiple levels including masters students, undergraduate researchers, summer interns, and NIH postbaccalaureate fellows. Mentees have progressed to medical programs (Columbia, Georgetown, University of Maryland, CWRU), graduate studies (MIT, Johns Hopkins), data science positions, and clinical careers in the US, UK, and Australia.

Conference Abstracts

1. **Welsh J.A**, van der Pol E., Arkesteijn G.J.A., Bremer M., Brisson A., Coumans F., Dignat-George F., Duggan E., Ghiran I., Giebel B., Görgens A., Hendrix A., Lacroix R., Lannigan J., Libregts S.F.W.M, Lozano-Andrés E., Morales-Kastresana A., Robert S., Rond L., Tertel T., Tigges J., Wever O., Yan X., Nieuwland R., Wauben M.H.M., Nolan, J.P., Jones J.C., ***MIFlowCyt-EV: a framework for the standardized reporting of extracellular vesicle flow cytometry experiments.***, ISEV2020, May 2020 (Oral & Poster)
2. Killingsworth B., Traynor T., **Welsh J.A.**, Dakica A, Savage J, Camphausen K, Jones J.C., ***Characterization of EVs using orthogonal techniques identifies discrete EV populations from a mouse dendritic cell line***, ISEV2020, May 2020 (Oral)
3. Traynor T., Killingsworth B., **Welsh J.A.**, Dakica A, Savage J, Camphausen K, Jones J.C., ***Multiplex analysis of renal cell carcinoma cell extracellular vesicles to identify potential clinically relevant markers***, ISEV2020, May 2020 (Oral)
4. **Welsh J. A.**, Tang V., Cook S., Killingsworth B., Traynor T., Dakic A., Jones J.C., ***FCM_{PASS} v3 software is a tool allowing EV sizing using flow cytometry and provides a method of reporting flow cytometry fluorescence and light scatter data in standard units.***, ASEMV2019, October 2019 (Oral)
5. **Welsh J. A.**, Kepley J., Jones J.C., ***Development of a scalable extracellular vesicle subset characterization pipeline***, ISEV2019, April 2019 (Oral & Poster)
6. **Welsh J. A.**, Jones J.C., ***A software suite allowing standardized analysis and reporting of fluorescent and scatter measurements from flow cytometers***, ISEV2019, April 2019 (Oral & Poster)
7. **Welsh J. A.**, Kepley J., Jones J.C., ***Development of a scalable extracellular vesicle subset characterization pipeline***. SelectBIo, January 2019 (Poster)
8. **Welsh J. A.**, Kepley J., McKinnon K., Berzofsky J.A., Jones J.C., ***Development of software tools for a multiplex-to-single extracellular vesicle characterisation pipeline.*** ASEMV, October 2018 (Oral)
9. Kepley J., **Welsh J. A.**, McKinnon K., Berzofsky J.A., Jones J.C., ***Identifying membrane labels compatible with bead-based assays.*** ASEMV, October 2018 (Oral)
10. **Welsh J.A.**, Kepley J., McKinnon K., Berzofsky J., Jones J.C. ***Development of multiplex-to-single EV analysis (MtSEA) pipeline for EV subset studies***, Extracellular Vesicles and Infections Meeting, June 2018 (Oral)
11. **Welsh J.A.**, Kepley J., McKinnon K., Berzofsky J., Jones J.C. ***Multiplex Bead Assay Analysis of Extracellular Vesicles.***, ISEV 2018, May 2018 (Oral)
12. **Welsh J. A.**, Horak P., Wilkinson J. S., Jones J.C., Ford V.J., Smith D., Holloway J. A., Englyst N. A., ***An accessible method of flow cytometer scatter standardization for EV analysis.*** ISEV 2018, May 2018 (Poster)
13. **Welsh J. A.**, Horak P., Wilkinson J. S., Jones J.C., Smith D., Holloway J. A., Englyst N. A., ***Nanobead analysis allows flow cytometer collection half-angle approximation that can be used for scatter standardization.*** CYTO 2018, April 2018 (Poster)
14. McKinnon K., Brown S., **Welsh J.A.**, Galli V., Washington-Parks R., Masison C., Franchini G., Jones J.C., ***Development and implementation of 26-color staining panel to phenotype an Adult T-cell lymphoma/leukaemia patient with an abscopal response to radiation therapy.*** CYTO, April 2018 (Poster)

15. Görgens A, Wiklander O, Bostancioglu B, Felldin U, Zickler A, Murke F, **Welsh J A** et al, ***Systematic methodological evaluation of a multiplex bead-based flow cytometry assay for detection of extracellular vesicle surface signatures***, CYTO, April 2018 (Poster)

16. van der Pol, E., Coumans, F.A.W., de Rond, L., **Welsh J.A.**, Mousset X., Nieuwland, R., van Leeuwen, T.G. ***Quantification of scattering background and efficiency to standardize detection of nanoparticles by flow cytometry.*** CYTO, April 2018 (Poster)

17. Ford V.J., Smith D., **Welsh J. A.**, Englyst N. A., ***Predicting Excessive Post-Operative Blood Loss In Cardiac Surgical Patients Using Platelet Microvesicles.***, ASiT 2018, April (Oral)

18. **Welsh J.A.**, Horak P., Jones J.C., Smith D.C., Holloway J.A., Wilkinson J.C., Englyst N.A., ***An Accessible Method of Flow Cytometer Scatter Standardisation for EV Analysis.***, UKEV, December 2017 (Oral)

19. Jones, J., **Welsh J.A.**, Savage J., Marte J., Gulley J., Conlon K., Waldmann T., Camphausen K., Berzofsky J., ***Pipeline for High Throughput Analysis of Exosomes in Biofluids.***, AACR-NCI-EORTC International Conference: Molecular Targets and Cancer Therapeutics, October 2017 (Poster)

20. J. C. Jones, J. Savage, J. Kepley, **J.A. Welsh**, A. H. Kesarwala, J. A. Berzofsky, and K. A. Camphausen. ***Development of a Multiplex-To-Single Exosome Analysis (MT-SEA) Pipeline to Characterize Exosomes Associated with Tumor Progression and Responses to Treatment.***, Astro, September 2017 (Poster)

21. **Welsh J.A.**, Morales-Kastresana A., Musicsh T., Jones J.C., et al, ***Profiling EV Subsets and Cargo to Enable Adaptive Tumor- Immuno-therapies.***, SelectBio, September 2017 (Oral)

22. **Welsh J.A.**, Horak P., Wilkinson J.S., Smith D., Holloway J.A., Englyst N.A., ***Novel Extracellular Vesicle Assay Combined with Mie Scatter Allows Differentiation Between Apoptotic Vesicles.***, Microvesicles and Residual Platelets. CYTO, June 2016 (Poster)

23. **Welsh J.A.**, Clough G, Holloway J A, Scorletti E, Calder P C, Byrne C D, Englyst N A, ***Sizing the small, smaller and smallest: extracellular vesicles as fibrosis biomarkers in non-alcoholic fatty liver disease.***, Faculty of Medicine Conference, June 2016 (Oral)

24. **Welsh J.A.**, Scorletti. E., Clough G.F., Byrne C.D., Englyst N.A., ***Leukocyte microvesicle as fibrosis biomarkers in nonalcoholic fatty liver disease.***, ISEV, May 2016 (Oral)

25. **Welsh J.A.**, Horak P., Wilkinson J.S., Smith D., Holloway J.A., Englyst N.A., ***New Horizons in flow cytometry: new technology and methods for detection of microvesicles.***, HEIF Conference, April 2016, (Oral & Poster)

26. **Welsh J.A.**, Duffield M J, McMillan H E, Clough G, Holloway J A, Scorletti E, Calder P C, Byrne C D, Englyst N A, ***Endothelial microvesicle phenotypes in individuals with non-alcoholic fatty liver disease are associated with fasting glucose, liver fibrosis and inflammation.***, Diabetes UK, Mar 2016 (Poster)

27. **Welsh J.A.**, Holloway J A, Wilkinson, Smith D A, Englyst N A, ***Mie Theory as a Flow Cytometer Standardisation Tool for Extracellular Vesicles.***, UKEV Forum, Dec 2015 (Poster)

28. **Welsh J.A.**, Holloway J A, Wilkinson, Smith D A, Englyst N A, ***A Comparison of Extracellular Vesicle Probe Effectiveness Using Simultaneous Labeling.***, International Society of Advanced Cytometry, June 2015 (Oral)

29. **Welsh J.A.**, Holloway J A, Wilkinson, Smith D A, Englyst N A, ***A New Fluorescent Probe for Identifying Microvesicles.***, International Society of Extracellular Vesicles, April 2015 (Oral & Poster)

30. **Welsh J.A.**, Holloway, J A, Wilkinson J S, Smith D A, Englyst, N A. ***Optimising flow cytometers for microvesicle analysis.***, UK Extracellular Vesicle Forum. December 2014 (Oral)

31. Brittain R, **Welsh J.A.**, Tempo J, Schofield J, Holloway J, Englyst N, Smith D. ***Platelet microparticles in cardiopulmonary bypass surgery.***, Anaesthetic Research Society, London, October 2014 (Poster)

Educational Resources

I have found that developing interactive visualization resources is critical for teaching the complex, interdisciplinary topics in which I specialize. I also believe it is our duty as scientists to make research findings accessible beyond formal peer-reviewed publication.

- Written protocols and video how-to guides for implementing the software I have developed and published.
- Hands-on workshop cheat-sheets for teaching flow cytometry at workshops or to students.
- Videos explaining complex topics such as light scattering properties of nanoparticles.
- Interactive web-hosted figures for understanding how flow cytometry optics influence measurement.
- Informal concept breakdowns using minimal scientific nomenclature for broad accessibility.

References

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