

Professor Jennifer Byrne

Career summary

- BSc (Hons 1, University Medal) (1988) PhD (1993), University of Queensland, Australia
- NHMRC CJ Martin Postdoctoral Fellow (1993-1997) (France, Australia)
- Group Leader (1998-2019), Deputy Unit Head (2004-2008), Unit Head (2009-2019), Children's Cancer Research Unit, The Children's Hospital at Westmead, Australia
- Deputy Director, Kids Cancer Alliance Translational Cancer Research Centre (2018-2019), Australia
- Conjoint Senior Lecturer (2003-2006), Conjoint Associate Professor (2007-2016), Academic Leader (2017-2019), Conjoint Professor (since 2017), The University of Sydney, Australia
- Director of Biobanking (since 2019), NSW Health Pathology, Australia

Contributions to field of research: Byrne first reported the existence of incorrectly identified nucleotide sequence reagents within pre-clinical cancer research publications. She recognised that nucleotide sequence reagents represent a class of verifiable reagent that are prone to acquiring errors. These insights, combined with the descriptions of nucleotide sequence reagents in hundreds of thousands of research publications, underpinned the creation of the first semi-automated tool Seek & Blastn to fact-check the published identities of nucleotide sequence reagents. This fact-checking capacity had been present in the biomedical literature for decades but had not been previously recognised or leveraged. Byrne has leveraged features of papers with wrongly identified sequences that they have discovered to inform international debate on the possibility of systematic research fraud within the pre-clinical research literature, and to advocate for improved post-publication error reporting and correction. Seek & Blastn is now used to screen manuscripts at multiple biomedical journals as well as COVID-19 preprints through the international ScreenIT Group.

International and national profile: Byrne is known for her research towards understanding human gene functions, cancer genetics, cancer predisposition in children, improving biobank operations and support of biomedical and health research, and error detection and correction within the biomedical literature. Byrne was included as one of Nature's 10 people who mattered in 2017 for her error detection research, which has also been highlighted by Nature News (2017, 2020, 2021 (twice)), Retraction Watch (2017 (twice), 2018, 2019, 2021), The Atlantic (2018), Undark Magazine (2018), Wall Street Journal (2020), The Scientist (2021), and Times Higher Education (2021). She wrote about the need for clearer scientific communication in The Conversation in 2018. Recent international speaking invitations include as a keynote speaker and panellist at the CRI-CONF Computational Research Integrity Conference (2021), and as an invited/ keynote speaker at the Singapore Research Ethics conference (2021), the Science Integrity Symposium in Germany (2022) and the Science Studies Colloquium, Denmark (2022). Byrne chaired the paper mill symposium at the 2022 World Conference on Research Integrity.

Research support: AUD\$15.7 million in funding as a chief investigator in the last 5 years, including National Health and Medical Research Council Ideas Grant APP1184263 as CIA "Prevalence and impact of fraudulent cancer research publications targeting the functions of human genes", AUD\$4M from the NSW Luminesce Alliance to support paediatric cancer predisposition screening (2019-2022), AUD\$1M from Frontier Health Medical Research to support the development of phage therapy in Australia (2021-2022)

Supervision and mentoring: Principal supervisor: 2 postdoctoral fellows, 11 PhD students, 10 Masters and Honours students, one current PhD student. Deputy Postgraduate Co-ordinator (2006-2011), multiple awards from the University of Sydney for outstanding postgraduate student teaching and supervision (2003, 2005 (two awards), 2011). Byrne has mentored candidates applying for level E promotion at the University of Sydney since 2019.

Current professional involvement (selected)

- Member, Steering Committee, Brain Cancer Biobanking Australia, since 2014
- Member, Victoria Cancer Biobank Scientific Advisory Board, since 2019
- Chair, Scientific Advisory Group, NSW Health Statewide Biobank, since 2019
- Member, ScreenIT Group, since 2020
- Asia Pacific Research Integrity Network Meeting Program Planning Board, since 2020
- Member, Education and Training Committee, International Society for Biological and Environmental Repositories, since 2021
- Member, Australian Brain Cancer Mission Strategic Advisory Group, since 2022
- Board member, Association for Interdisciplinary Meta-research & Open Science, since 2022

Journal editorial boards

- Subject Editor, International Journal of Biological Markers, since 2014
- Editor-in-Chief, Biomarker Insights (2019-2021)

Most relevant publications (from most recent)

1. Schulz, R., Barnett, A., Bernard, R., Brown, N.J.L., **Byrne, J.A.**, Eckmann, P., Kilicoglu, H., Prager, E.M., Salholz-Hillel, M., ter Riet, G., Vines, T., Vorland, C.J., Zhuang, H., Bandrowski, A., Weissgerber, T.L. (2022). Is the future of peer review automated? *BMC Research Notes* **15**: 1-5.
2. Park Y., West R.A., Pathmendra, P., Favier, B., Stoeger, T., Capes-Davis, A., Cabanac, G., Labbé, C., **Byrne, J.A.** (2022). Identification of human gene research articles with wrongly identified nucleotide sequences. *Life Science Alliance*. **5**: e202101203.
3. Parker, L., **Byrne, J.A.**, Goldwater, M., Enfield, N.J. (2021). Misinformation: an empirical study with scientists and communicators during the COVID-19 pandemic. *BMJ Open Science* **5**: e100188.
4. Weissgerber, T., Riedel, N., Kilicoglu, H., Labbé, C., Eckmann, P., ter Riet, G., **Byrne, J.**, Cabanac, G., Capes-Davis, A., Favier, B., Saladi, S., Grabitz, P., Bannach-Brown, A., Schulz, R., McCann, S., Bernard, R., Bandrowski, A. (2021). Automated screening of COVID-19 preprints: Can we help authors to improve transparency & reproducibility? *Nature Med.* **27**: 6-7.
5. **Byrne, J.A.**, Park, Y., West, R.A., Capes-Davis, A., Cabanac, G., Labbé, C. (2021). The thin ret(raction) line: biomedical journal responses to reports of incorrect non-targeting nucleotide sequence reagents in human gene knockdown publications. *Scientometrics*. **126**: 3513-3534.
6. **Byrne, J.A.**, Christopher, J. (2020). Digital magic, or the dark arts of the 21st century- how can journals and peer reviewers detect manuscripts and publications from paper mills? *FEBS Lett.* **594**: 583-89.
7. Labbé, C., Cabanac, G., West, R.A., Gautier, T., Favier, B., **Byrne, J.A.** (2020). Flagging errors in biomedical papers: to what extent does the leading publication format impede automatic error detection? *Scientometrics*. **124**:1139-1156.
8. Labbé, C., Grima, N., Gautier, T., Favier, B., **Byrne, J.A.** (2019). Semi-automated fact-checking of nucleotide sequence reagents in biomedical research publications: the Seek & Blastn tool. *PLOS ONE*. **14**: e0213266.
9. **Byrne, J.** (2019). We need to talk about systematic fraud. *Nature*. **566**: 9-10.
10. **Byrne J.A.**, Grima N, Capes-Davis A, Labbé C (2019). The possibility of systematic research fraud targeting under-studied human genes: causes, consequences and potential solutions. *Biomarker Insights*. **14**: 1-12.
11. **Byrne, J.A.**, Labbé, C. (2017). Striking similarities between publications from China describing single gene knockdown experiments in human cancer cell lines. *Scientometrics*. **110**: 1471-93.
12. **Byrne J.A.** (2016). Improving the peer review of narrative literature reviews. *Res Integrity Peer Rev.* **1**: 12.