

The Antibody Crisis

Fact Sheet

A curated primary literature and guidance on antibody reliability, focusing on reproducibility, validation, and economic impact of the Antibody Crisis.

Reproducibility and Economic Cost

- Baker, M. (2016). 1,500 scientists lift the lid on reproducibility. *Nature*, 533(7604), 452–454.

[Source ↗](#)

- Freedman, L. P., Cockburn, I. M., & Simcoe, T. S. (2015). *The economics of reproducibility in preclinical research*. *PLOS Biology*, 13(6), e1002165.

[Source ↗](#)

Antibody Crisis, Validation Standards, and Guidelines

- Bradbury, A. R.M., & Plückthun, A. (2015). *Reproducibility: Standardize antibodies used in research*. *Nature*, 518(7537), 27–29.

Paid Access

- Kahn, R. A., & Laflamme, C. (2024). *Antibody characterization is critical to enhance reproducibility in biomedical research*. *eLife*, 13, e100211.

[Source ↗](#)

- Uhlén, M., Bandrowski, A., Carr, S., Edwards, A., Ellenberg, J., Lundberg, E., et al. (2016). *A proposal for validation of antibodies*. *Nature Methods*, 13(10), 823–827.

[Source ↗](#)

Large-Scale Antibody Validation and Failure Rates

- Ayoubi, R., Laflamme, C., Shlaifer, I., Droit, A., Krockow, E. M., Ruddy, D., Virk, H. S., Kahn, R. A., & Chambers, C. R. (2023). *Scaling of an antibody validation procedure enables quantification of antibody performance at the proteome scale. eLife, 12, e91645.*

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- Björling, E., & Uhlén, M. (2008). *Antibodypedia, a portal for sharing antibody and antigen validation data. Molecular & Cellular Proteomics, 7(10), 2028–2037.*

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Antibodies, Misleading Figures, and Research Standards

- Bandrowski, A., Brush, M. H., Grethe, J. S., Haendel, M. A., Kennedy, D. N., Hill, S., et al. (2016). *The Resource Identification Initiative: A cultural shift in publishing. Journal of Comparative Neurology, 524(1), 8–22.*

[Source ↗](#)

- Laflamme, C., McKeever, P. M., Kumar, R., Schwartz, J. L., Chen, C. X., Cvetkovska, V., et al. (2019). *Implementing rigorous antibody validation to avoid misleading data.*

[Source ↗](#)

Market Size, YCharOS Data, and the Economic Cost of Bad Antibodies

- Biddle, M., Stylianou, P., et.al. (2024). *Improving the integrity and reproducibility of research that uses antibodies: A technical, data sharing, behavioral and policy challenge. mAbs, 16(1), 2323706.*

[Source ↗](#)

- Longworth, D., & Chalmers, A. (2022). *CiteAb for researchers and suppliers: How identifying product use is improving antibody selection. Information Services & Use, 42(3–4), 209–218.*

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Policy, Funder Expectations, and Reagent Identification

- Bandrowski, A., Brush, M. H., Grethe, J. S., Haendel, M. A., Kennedy, D. N., Hill, S., et al. (2016). *The Resource Identification Initiative: A cultural shift in publishing. Journal of Comparative Neurology*, 524(1), 8–22.

[Source ↗](#)

- National Institutes of Health. (2025). *Rigor and reproducibility guidance in grant applications.*

[Source ↗](#)

Fortis/Bethyl Antibody Six Pillar Validation

- Fortis Life Sciences. (2023). *Antibodies & antigens.*

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- Fortis Life Sciences. (2023). *Antibody validation.*

[Source ↗](#)

- Fortis Life Sciences. (2023). *Ensuring antibody specificity and reproducibility: The six pillars of antibody validation.*

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