An Infrastructure for Reproducible Exposomic Research

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Introduction

- Understanding effects of the modern environment on human health requires a complete picture of environmental exposures, behaviors, and socio-economic factors.
- Exposome: encompasses life-course of environmental exposures \& lifestyle beginning prenatally; complements the genome by providing a comprehensive description of exposure history\(^1\).
- Exposomic research requires integrating diverse data types to support different research use-cases.
- Data gaps and sparseness are common with exposure monitoring and challenge generation of sufficiently complete exposomes.
- Systematically using available data with an understanding of their limitations could enable research reproducibility.

Conclusion

- A generalizable and metadata-driven platform for integrating multi-scale and multi-omics data provides a robust pipeline for reproducible research data.
- Informs end-user not only of the specifics about the data but also its limitations.

Acknowledgements

PRISMS is supported by NIH/NIBIB US4EB021973. OpenFurther is supported by NCATS UL1TR001067, NCCR/NCATS ULRR025764, JUL1RR025764-0252, AHRQ R01 HS019862, DHHS 1D1BRH20425, US4EB021973, UU Research Foundation.

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References