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Novel application of normalized pointwise mutual information (NPMI) to mine biomedical literature for gene sets associated with disease: use case in breast carcinogenesis

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**Novel application of normalized pointwise mutual information (NPMI) to mine biomedical literature for gene sets associated with disease: use case in breast carcinogenesis****Authors: Sean M. Watford<sup>1,2</sup>, Rachel G. Grashow<sup>3,4</sup>, Vanessa Y. De La Rosa<sup>3,5</sup>, Ruthann A. Rudel<sup>3</sup>, Katie Paul Friedman<sup>7</sup>, Matthew T. Martin<sup>6,7</sup>**

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**Keywords:**

Biomedical Literature; Data Integration; Genes; Breast Carcinogenesis; Chemical Exposures; Literature Mining

**Highlights (3-5 highlights, 85 characters including spaces maximum):**

- Biomedical text resources were integrated to identify gene-disease associations
- Normalized pointwise mutual information was used to identify and rank genes linked to key carcinogenic characteristics
- A relevant breast cancer gene set ranked higher than random gene sets
- Methods scale to include other biological and chemical concepts

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