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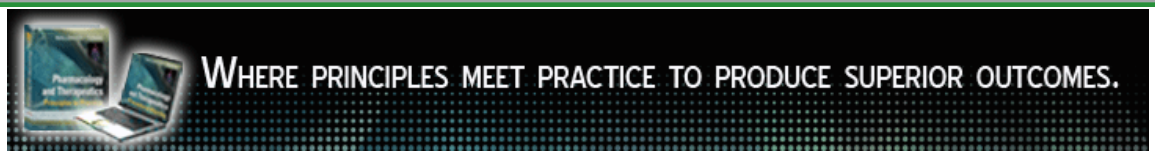

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Genomic filtering: an approach to discovering novel antiparasitics

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Genomic filtering is a rapid approach to identifying and prioritizing molecular targets for drug discovery. For infectious disease applications, comparative genomics filters allow the selection of pathogen-specific gene products, whereas functional genomics filters, such as RNA interference (RNAi), allow the selection of gene products essential for pathogen survival. The approach is especially applicable to antiparasitic drug discovery where the phylogenetic distance between parasite and host make the likelihood of drug cross-toxicity due to conservation of molecular targets greater than for more distantly related pathogens such as prokaryotes. This article discusses some of the inherent challenges of applying genomics to the early steps of drug discovery and describes one successful comparative and functional genomics filtering strategy that has been implemented to prioritize molecular targets and identify chemical leads for nematode control.

Article Outline

The challenge of specificity among metazoans
Comparative genomic approaches to improve specificity
Functional genomic approaches to target validation
Curation of validated targets for drug discovery prioritization
The Δ-12 desaturase target and novel nematicidal fatty acids
Tools needed to improve the genomic filtering approach
Conclusion
Acknowledgements
References

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