





"Chemical induction strategies for biologically active secondary metabolites"



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Abstract:

The soil bacteria of the genus Streptomyces have provided us with a remarkable diversity of biologically active small molecules. This includes >70% of the antibiotics in clinical use as well as antifungal, anticancer, immune modulatory and other drugs. They produce these natural products through biochemical pathways known as their 'secondary' metabolism. Most were discovered through screens against bacteria conducted between 1950 and 1975. There are conflicting views on the diversity of natural products that remain to be discovered however it is clear that the streptomycetes genomes encode many more molecules than was previously appreciated. It is unclear whether the genes encoding the 'cryptic' natural products found in the sequenced genomes are simply not expressed in the laboratory or whether they have biological activities that provide no readout in the assays that have been used to date. My group is using chemical and genetic perturbation to activate secondary metabolic genes so that we can identify their products – we are identifying their biochemical targets using a variety of model organisms and genome-scale strategies. At present the diversity and number of unknown and structurally novel natural products is unclear however it is certain that there are many compounds with novel targets and likely that there are novel scaffolds to be discovered as well.

Host: Brenda Andrews