

## Discovery of novel bioactive natural products from *Streptomyces* driven by a bottom-up approach

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*Streptomyces* strains are a very potential source for bioactive natural products of great interest in the pharmaceutical industry such as antibiotics, anticancer chemotherapy, immunosuppressants, etc. About two thirds of all known antibiotics are produced by actinomycetes, mostly by *Streptomyces*. However, in recent years, the chances of discovering new and bioactive natural products from *Streptomyces* have decreased significantly. In general, the selection of antibiotic-producing *Streptomyces* was done by using an antagonist to test a number of microbial pathogens so that only strains that had the inhibitory ability were forwarded for further investigation, while strains that did not have the ability were discarded. For our research group, it is also interesting to explore further *Streptomyces* strains that do not produce antifungal compounds in producing new bioactive natural products such as anticancer and anti-inflammatory. Our hypothesis is that the bioactive natural products produced from this strain will be safe if the compound is developed as a drug, because of its low cytotoxicity to non-target cells. The bottom-up approach through genome sequencing has provided access to a large number of BGC bioactive natural products embedded in the *Streptomyces* genome. In addition, metabolomics studies provide a portfolio of the entire metabolite produced from the strain of interest. Therefore, in this presentation, we will present a bottom-up approach to accelerate the discovery of bioactive natural products especially anticancer from *Streptomyces* sp. GMY01 isolated from the sediments of the southern coast of Gunung Kidul, Yogyakarta by combining genomic mining and metabolomic approaches.