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Propositions

Associated with the PhD thesis

Synthetic Biology Tools for Transcriptional Activation and Regulation of Biosynthetic Gene Clusters in Filamentous Fungi

by **László Mózsik**

- 1) High numbers of Biosynthetic Gene Clusters (BGCs) are buried in fungal genomes for which the products have not been identified, and that can be unearthed with the combined efforts of bioinformatics, chemistry, and synthetic biology (Chapter 1).
- 2) Synthetic transcription factors as transcriptional control devices are highly useful tools in the development of filamentous fungi as production hosts (Chapter 2).
- 3) Fungal shuttle vectors deploying CRISPR/Cas9 elements provide a simple, flexible, and sequence-specific tool for genome editing of filamentous fungi (Chapter 3).
- 4) CRISPRa can be used as a genome-editing-free, target-specific, transcriptional activation tool for silent genes in filamentous fungi (Chapter 4).
- 5) Standardized, characterized genetic parts are key elements for rapid and modular construction of novel genetic circuits (Chapter 5).
- 6) Modular toolkits allow rapid construction of protein fusions, transcription units, complete genetic circuits in a combinatorial manner (Chapter 5).
- 7) Fungi can fill crucial roles in a circular economy, with their capabilities in breaking down and transforming material
- 8) We are already remaking ourselves and our world, retracing the steps of the original synthesis –re-designing, recoding and reinventing nature itself in the process (George M. Church).
- 9) We don't stop playing because we grow old; we grow old because we stop playing (George B. Shaw).