**This page shows some of the applications of the collected riboswitches. We listed four kinds of applications, ‘Developing new antibacterials’, ‘Synthetic Biology’, ‘Building biosensors’ and ‘Gene therapy’ as shown in the following tables. The representatives of FMN riboswitch-specific antibacterial compounds are presented, as shown in the figure below.**

**FMN**

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**Schematic representation of the FMN riboswitch as new antibacterials target. Different antibacterial compounds bind to the FMN riboswitch and abolish the expression of the downstream genes (left). The chemical structure and KD of the antibacterial compounds is also indicated (right).**

**Developing new antibacterials：**

Riboswitches can affect bacterial homeostasis, development, pathogenicity, and antibiotic resistance at the transcriptional or translational level and generate complex three-dimensional structures with well-defined small-molecule binding sites. These features make them attractive targets for antimicrobial therapy.

**Synthetic Biology：**

Re-engineered riboswitches that no longer respond to cellular metabolites, but that instead can be controlled by synthetic molecules, are potentially useful gene regulatory tools for use in synthetic biology and biotechnology fields.

**Building biosensors：**

Due to riboswitches inherent ability to both detect a specifi c metabolite with great sensitivity and specifi city and to transduce this information into a detectable signal,they have great potential as molecular sensors. The design of riboswitch-based sensors is very fl exible and a number of creative features and adjustments can be made to enhance their sensing capabilities.

**Gene therapy：**

Riboswitches regulate gene expression by inducing (ON-switches) or repressing (OFF-switches) gene expression. Take ON-switches for example, in their native form, cause the degradation of the mRNA, thus stopping gene expression. Therefore, riboswitches can be used as a powerful tool to control gene expression in gene therapy.