Medicine / Pharma | Technology Offer

In vivo screening based on fluorescence to identify novel antimicrobial substances

Application and state of the art

Bacterial ribosomes are ribonucleoprotein particles, which consist essentially of 54 proteins and three ribosomal RNAs. The hierarchical and precisely controlled process creating ribosomes in living cells is known as ribosome assembly and is relatively little researched. In the eyes of many experts, the early processes in the creation of ribosomes offer attractive targets for antimicrobial agents. The systematic search for such substances is made more difficult by the fact that currently no suitable screening processes exist.

Innovation

Scientists at the University of Konstanz have recently succeeded in producing stable bacterial strains with ribosomal subunits incorporating fluorescent markers which have growth characteristics similar to wild type and which have an intact translation apparatus. The positioning of the fluorophores allows for disturbances in the ribosome assembly to be detected in vivo by a fluorescence-based readout process. The process has been optimized for use with multi-well plates and thus is suitable for use in high throughput screenings (HTS).

Market

The economic opportunity represented by a worldwide marketing of a fluorescence-based in vivo screening method for the identification of novel antimicrobial substances, which act on early steps in the ribosomal assembly, is considered substantial.

Advantages

- ✓ Simple in vivo screening process for the identification of novel antimicrobial agents
- ✓ Standardization of the process possible, e.g. suitable for HTS
- ✓ Possible novel active substances with reduced tendency for:
  - o Development of resistance
  - o Side-effects on mitochondrial ribosomes
- ✓ Great economic potential of the process due to the fact that many antibiotics currently available have become ineffective due to resistance

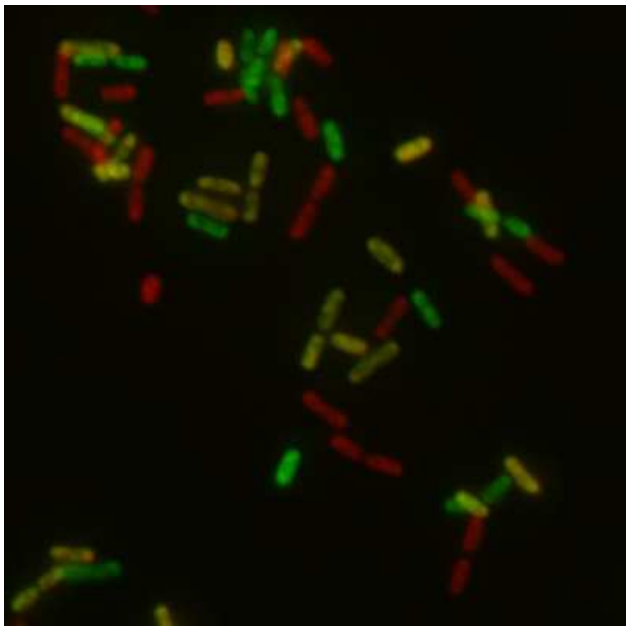

Figure 1: Bacterial cells whose small ribosomal subunits are marked with mCherry (red), whose large ribosomal subunits are marked with EGFP (green) as well as cells, which contain both types of subunits (yellow).

Technology transfer

The Technologie-Lizenz-Büro GmbH is charged with the commercialisation of this technology and is now offering suitable enterprises licenses for the use of this technology.

Patent portfolio

EP and PCT applications are pending.
The patent applications cover two distinct uses; for details, see technology offer “Fluorescence-based monitoring of the ribosomal activity to optimize yield from recombinant proteins”.

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