**Superbugs alert: no new drugs available!**

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Can you imagine a future where medical procedure, such as surgeries, would no longer be possible? Well, this is not too far from reality!

A group of superbugs, named ESKAPE – *Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa* and *Enterobacter species* – because they “escape” today’s medical treatments, are becoming a serious threat in hospital-acquired infections.

Nowadays, bacterial pathogens are resistant to many different antibiotics – the drugs that actively kill them – mostly due to their misuse and overuse over time. Already in 1945, Alexander Fleming, the discoverer of the first world antibiotic, warned that thanks to the benefits of these new drugs will start an era of abuses.

Moreover, the antibiotic crisis originates by a lack of new drugs development, a problem that regards us biologist researchers more closely. As a matter of fact, our society is in large need of antibiotics if it is to survive!

For the previously mentioned reasons, a key player in the lipid A – an essential component of the Gram-negative bacterial outer membrane – biosynthetic pathway has been recently identified as a promising drug target.

Our study focused on a widely conserved enzyme, named LpxH; through different biochemical, biophysical and crystallization techniques we tried to identify the enzyme’s weaknesses to different chemical compounds.

Even if we were able to optimize these procedures and to study in depth the structure of the enzyme, we could not gather any new information regarding potential drugs.

In the end, we hope that our results will be useful in the future for the development of the so-needed novel antibiotics.