CENTRE HIGHLIGHTS OF THE YEAR

The DNRF and NNF funded *Centre of Excellence for Bacterial Stress Response and Persistence* (BASP) was kicked off May 1st 2015. After some quiescence, Centre activities commenced – both with respect to scientific meetings, recruitment of staff and the implementation of new projects. Overall the year has been highly dynamic and productive, with many new, promising initiatives.

ACTIVITIES In August, the inaugural symposium was executed at Dragør Badehotel, with international keynote speakers and talks by invited collaborators, PhD students, postdoctoral Research Assistants (PDRAs) and Centre PIs. We concluded the conference by the first Scientific Advisory Board (SAB) meeting at which the Centre research plan was thoroughly discussed and future student exchanges planned. Other meetings organized by Centre members included the Research, Gender and Career symposium at the Science Faculty (BASP PI Sine Lo Svenningsen (SLS)), The Models of Life summer school and workshop at Krogerup Højskole (BASP PI Namiko Mitarai (NM)) and the "PhD – Day" at the Department of Biology (BIO), UCPH (Kathryn Jane Turnbull and Georgia Mary Hann). Centre participants travelled heavily and presented talks at international conferences and institutions and locally in Denmark. The Centre leader Kenn Gerdes (KG) gave a Divisional Lecture at the ASM General Meeting in New Orleans. The fall was also busy with teaching at all levels.

RESEARCH The Centre PIs published 27 papers in 2015, 16 of which were open access. We published in high-ranking journals, such as *Nature*, *Molecular Cell* and *PNAS*. The Centre also produced 35 conference proceedings. We obtained several important breakthroughs, two of which are illustrated below.

Figure 1. Løbner-Olesen's group discovered that activation of secondary replication origins remarkably rendered bacterial cells resistant to oxidative stress, raising the possibility that virulent *M. tuberculosis* strains with defective origins of replication (*oriC*) use a related mechanism to survive during infection.

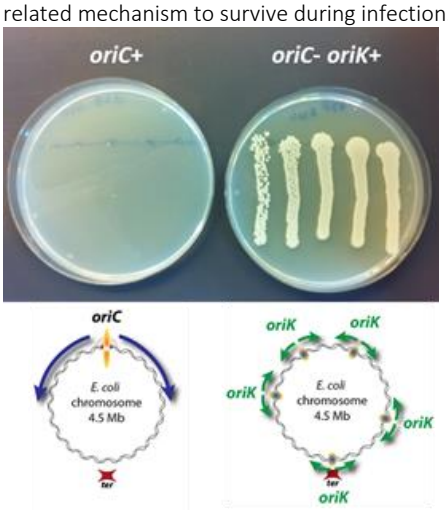
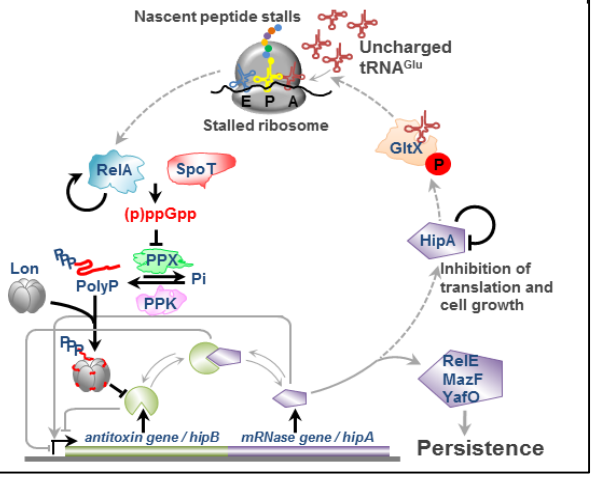


Figure Legend: Resistance to hydrogen peroxide. Wild type (*oriC*$^+$) and *ΔrnhA ΔoriC* cells (*oriC*$^-$ *oriK*$^+$) treated with oxidant (3 mM of H_2O_2) for 4 hours were tested for viability. Serial dilutions of bacterial cultures were deposited on solid agar medium post-treatment to determine survival.

Figure 2. In 2013, Gerdes' group showed that HipA stochastically induces bacterial antibiotic tolerance (persistence) by a mechanism that depends on alarmone (p)ppGpp. The group now shows that HipA-induced stochastic persistence also depends on toxin mRNases (Germain *et al*., 2015, ***PNAS***, 11, 5171).



EDUCATION AND OUTREACH The Centre produced 7 master and 4 bachelor students in 2015. Two master students were continued as PhD-students and 1 bachelor student was enrolled in a new combined 3 + 5 year master and PhD program. An externally financed PhD student from the Chinese CSC also joined the Centre. The Centre appeared with interviews in the press (KG was interviewed by the New York Times) and contributed with announcements about research on University Web pages. Finally NM was awarded the young scientists prize by the Japanese minister of Education.