The Code In Between

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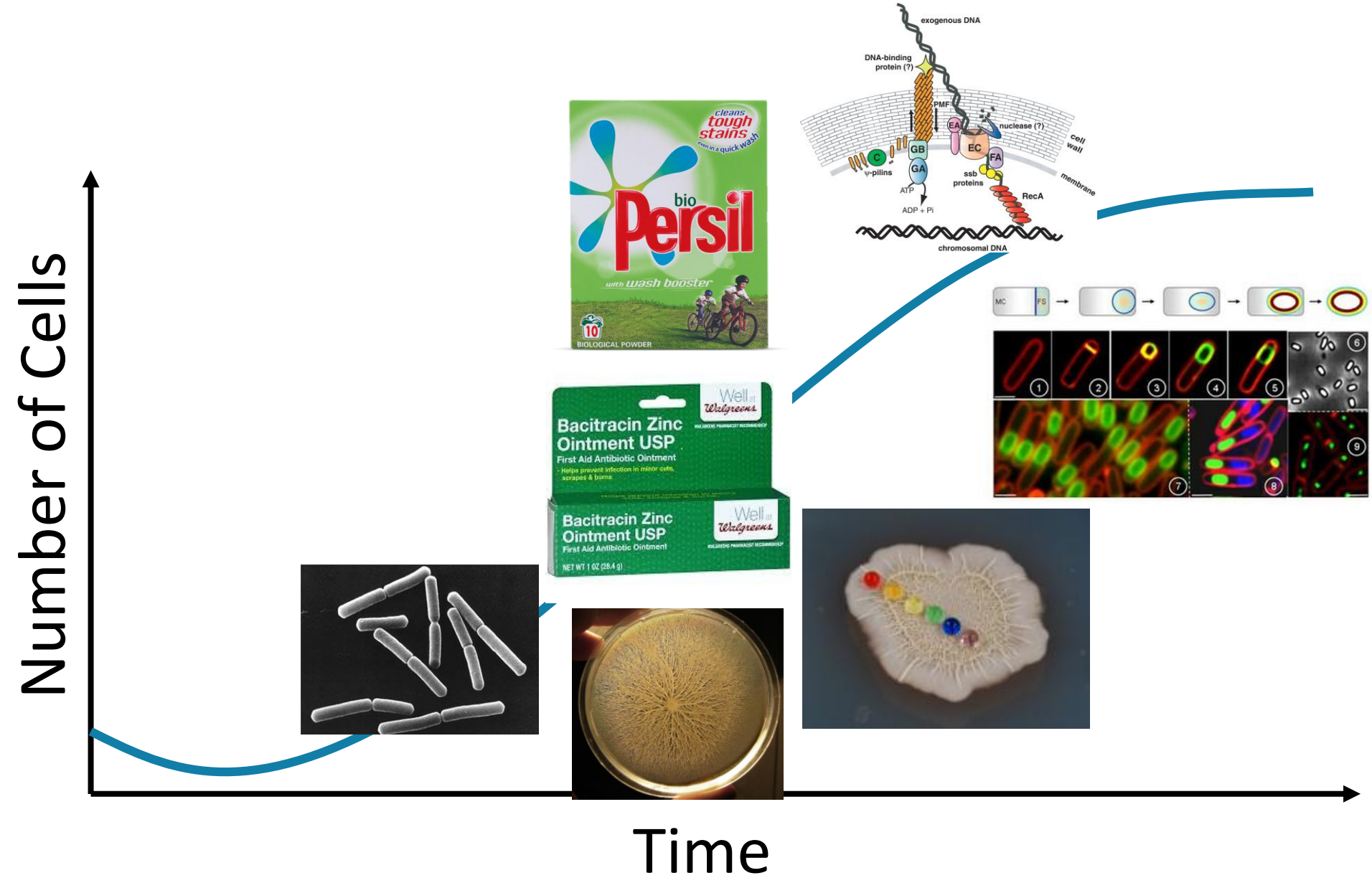
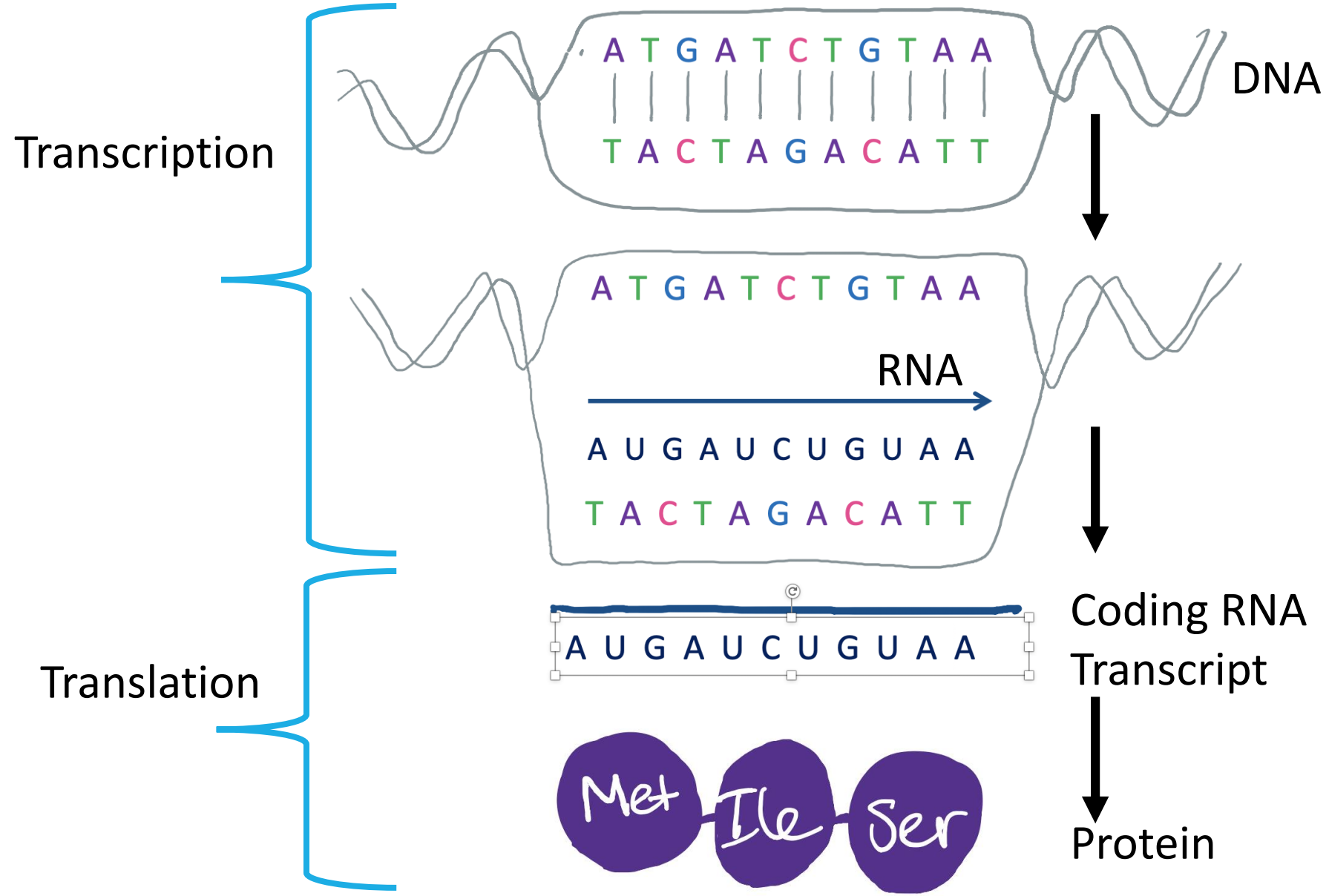
Bacteria live everywhere and to survive have to cope with changing environments

One bacterial cell – multiple states



Central Dogma of Molecular Biology



Genes are switched on and off like lightbulbs

Switching one gene off switches on genes need for the multiple states

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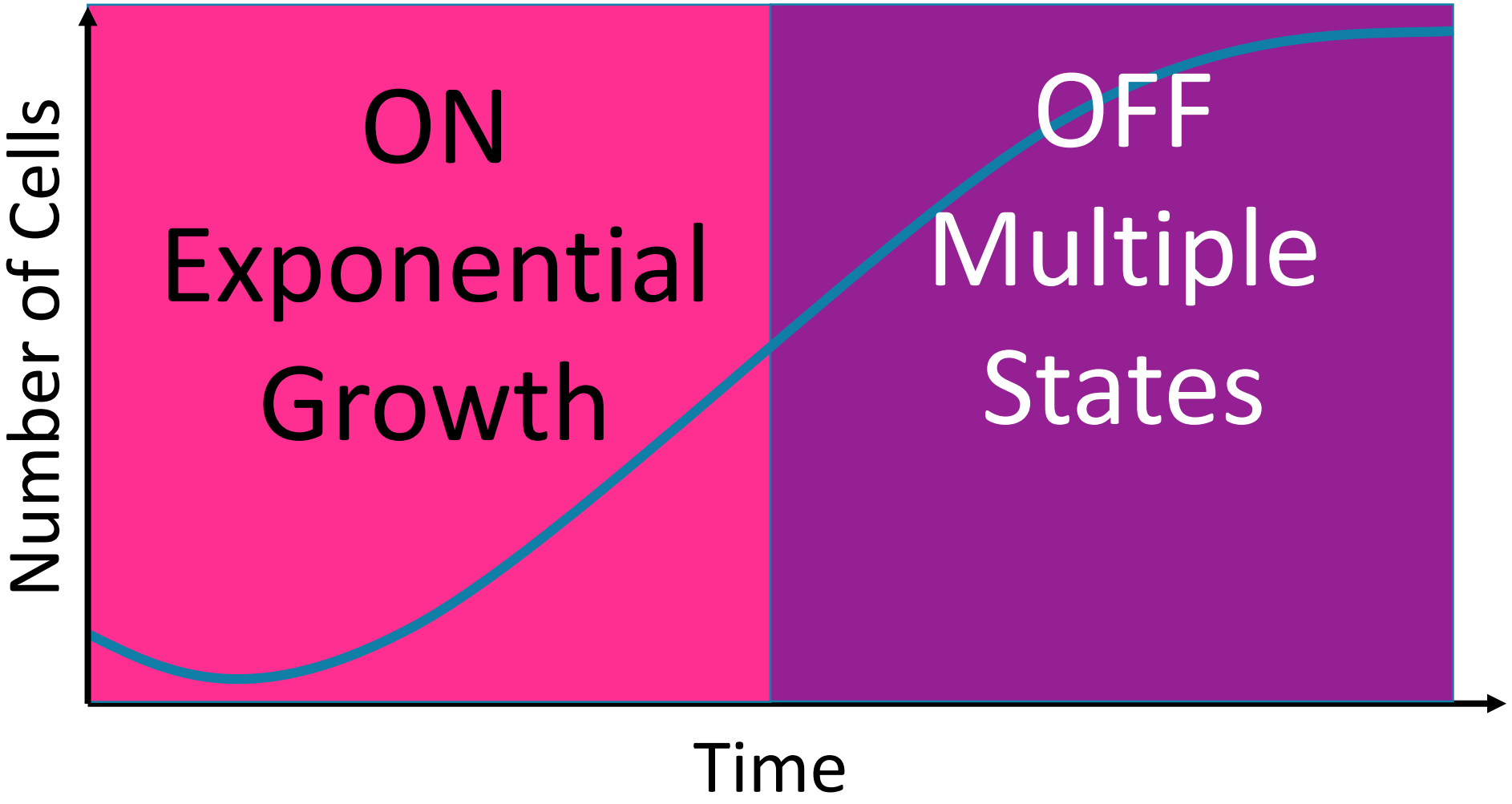
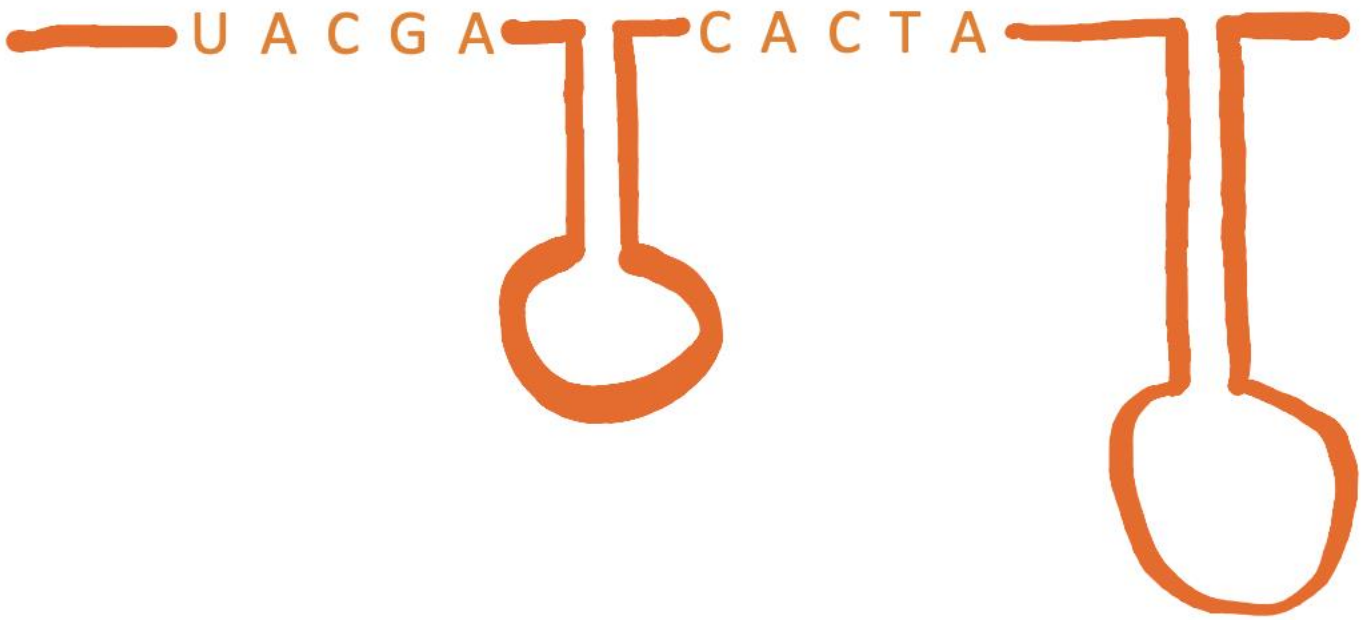


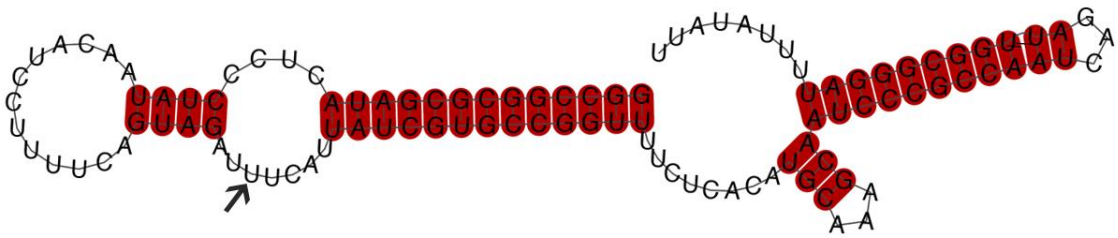
Technology advances allowed identification of new classes of RNA not coding for protein

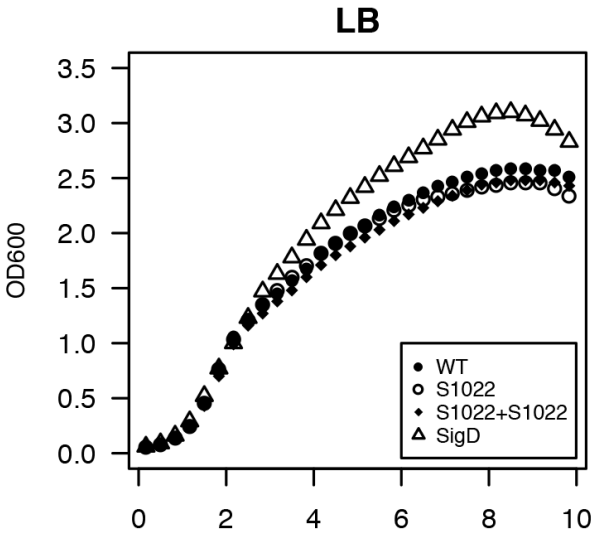
The code in between

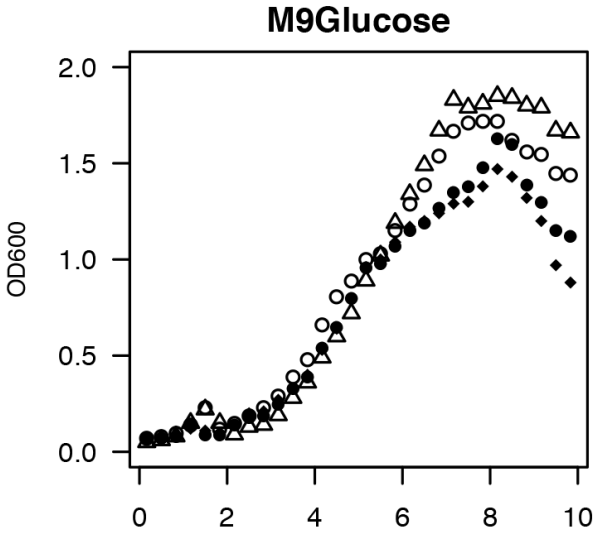


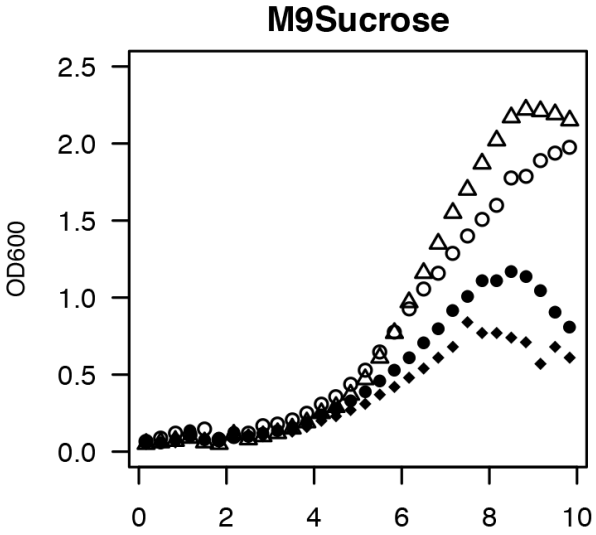
The code in between

Deleting sRNA S1022 increases growth









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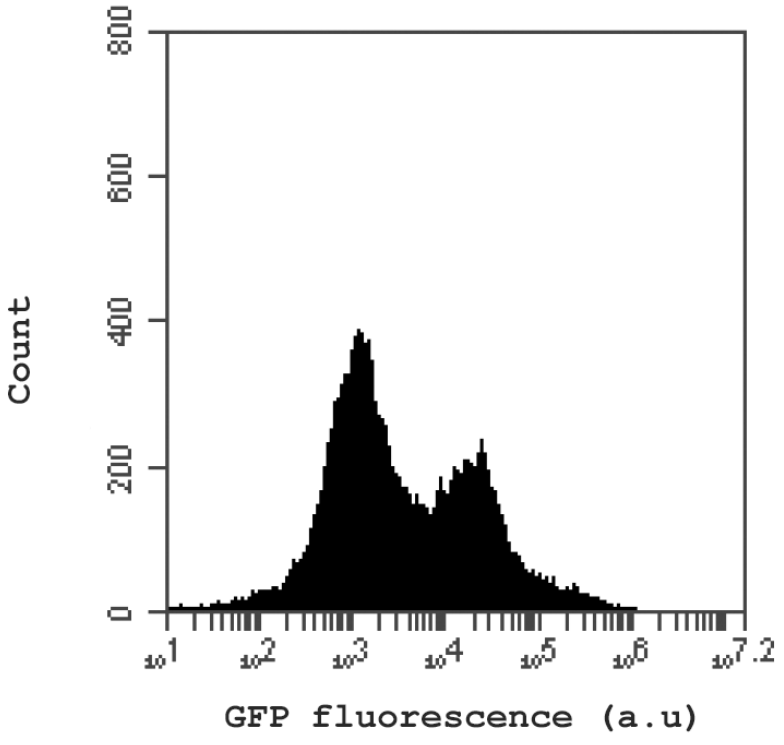
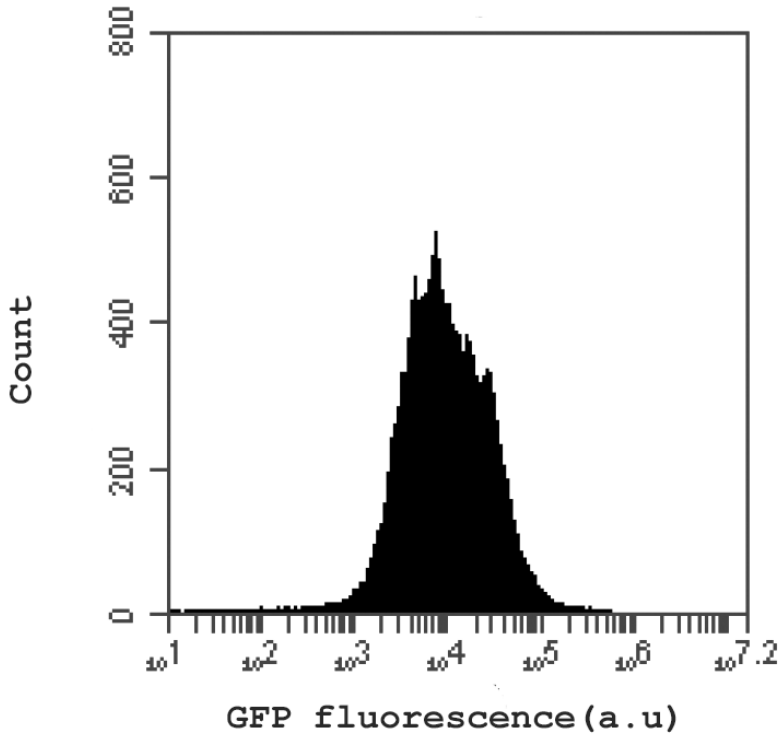
S1022 enables the population to bet hedge its growth condition



+ S1022



- S1022

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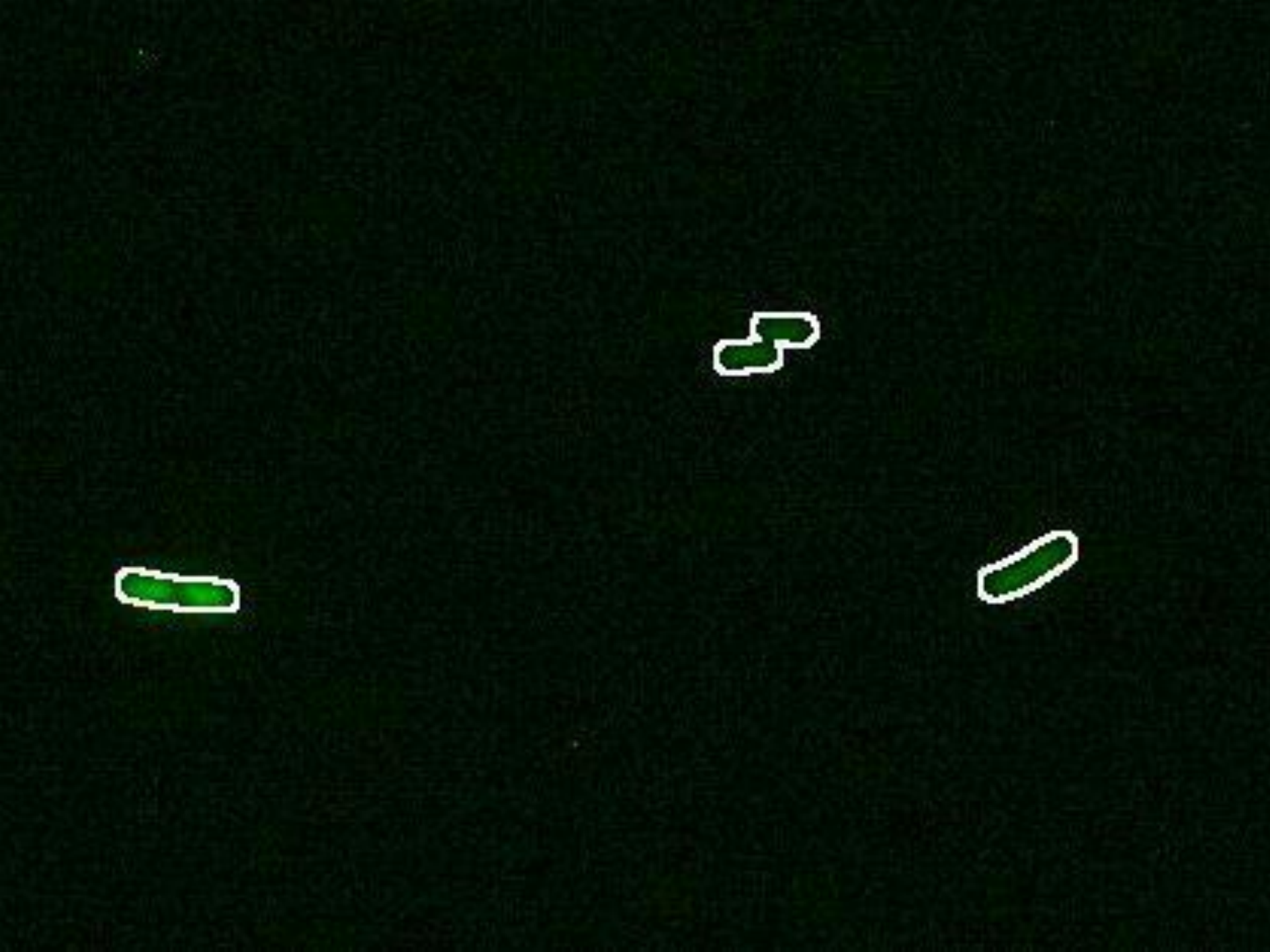

Summary and Outlook

- sRNAs provide the cell with fitness benefits
- Effects are often fast
- Important in infection conditions
- Biotech industry and synthetic biology
- Often species or even strain specific
- In Gram-positive bacteria they are understudied
- Use of global RNAseq studies paired with cutting edge molecular biology to identify the key players in non-coding RNA regulation and the roles it plays in the biology of Gram-positive bacteria

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BBSRC
bioscience for the future

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