

THE ECF SIGMA FACTOR SIGR IS ESSENTIAL FOR CAULOBACTER  
CRESCENTUS SURVIVAL TO SINGLET OXYGEN EXPOSURE  
Lourenço, R.F. & Gomes, S.L.

Depto. de Bioquímica, Instituto de Química, Universidade de São Paulo, São Paulo

*Caulobacter crescentus* SigR belongs to ECF (extracytoplasmic function) subfamily of RNA polymerase sigma factors whose members regulate gene expression in response to different environmental stress conditions. An increase in SigR levels is seen when cells are exposed to singlet oxygen ( $^1\text{O}_2$ ) generated either by UVA irradiation or methylene blue in the presence of white light. Continued exposure to  $^1\text{O}_2$  is required to maintain this response, as SigR levels decrease when cells exposed to this reactive oxygen species (ROS) are placed in the dark. However, this decrease is not observed in cells lacking the ClpXP protease, suggesting its involvement in the post-transcriptional regulation of SigR. A *sigR* null mutant was constructed and shown to be sensitive to exposure to  $^1\text{O}_2$ . In addition, the *C. crescentus* SigR regulon was identified using genome-wide transcription profiling, comparing a wild-type strain with a strain overexpressing SigR. Thus, our data suggest that SigR levels increase when cells are exposed to  $^1\text{O}_2$ , resulting in the upregulation of genes that allow the cells to survive to oxidative damage generated by this ROS.

*Caulobacter crescentus*, SigR, singlet oxygen  
Supported by FAPESP, CNPq