

# **Spatial distribution of *Chloroflexus*-like bacteria in the hypersaline artificial microbial mat**

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An artificial microbial mat, grown in a mesocosm, originated from the Hypersaline Lake of “La Salada de Chiprana” (NE Spain) was examined with respect to its organism’s spatial distribution via high resolution methods. A special attention was given to the elucidative *Chloroflexus*-like bacteria, on which spatial distribution data is not available. We have characterized this thick (1cm) and developed mat for photopigments (HPLC) and obtained the general pigment distribution pattern. Furthermore, fiberoptic and photosynthetic microsensor measurements gave inner light attenuations and flux rates of oxygen within the different layers, respectively. Using fluorescence and spectral imaging we were able to detect characteristic pigmentation in the different layers. FISH probes targeting *Chloroflexus*-like bacteria confirmed the visualization techniques and showed a single hybridized layer below the cyanobacterial layer, as did the HPLC, fiberoptic microsensor and fluorescence imaging.

We conclude that *Chloroflexus*-like bacteria are located below the cyanobacterial layer and above the purple sulfur bacteria, and for the first time we are able to show it by different independent ‘state of the art’ techniques. These approaches can be important for rapid community investigations within a millimeter scale microniches.