Antibacterial and bioactive multilayer electrospun wound dressings based on hyaluronic acid and lactose-modified chitosan

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SUPPLEMENTARY MATERIAL

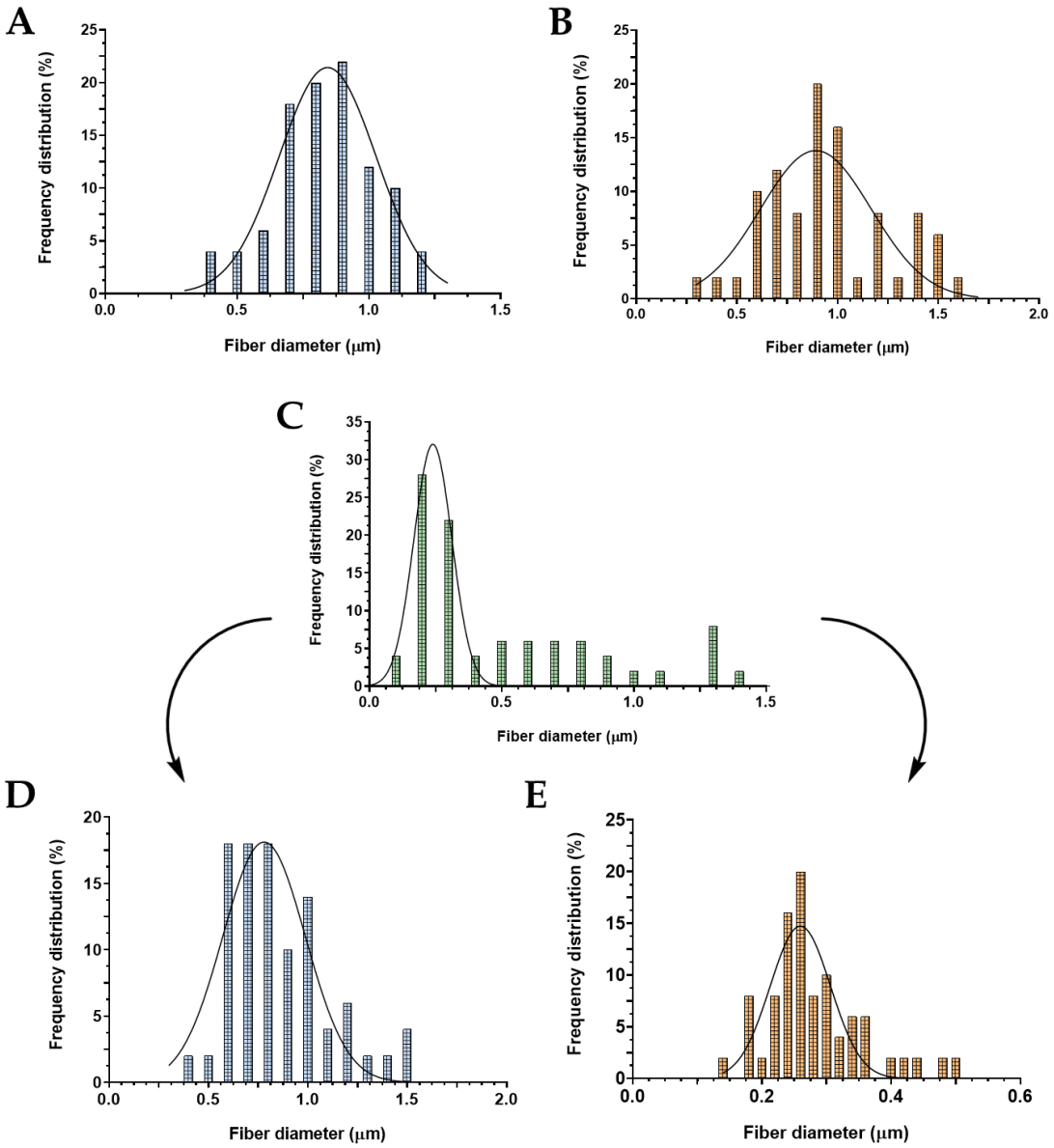

Figure S1. Dimensional analysis. Fiber diameter distribution in the (**A**) PCL, (**B**) **PCL coating**, and (**C**) **PCL bilayer** mats. In this last case, the inhomogeneous distribution is given by the dual contribution of the PCL (**D**) and polysaccharides (**E**).

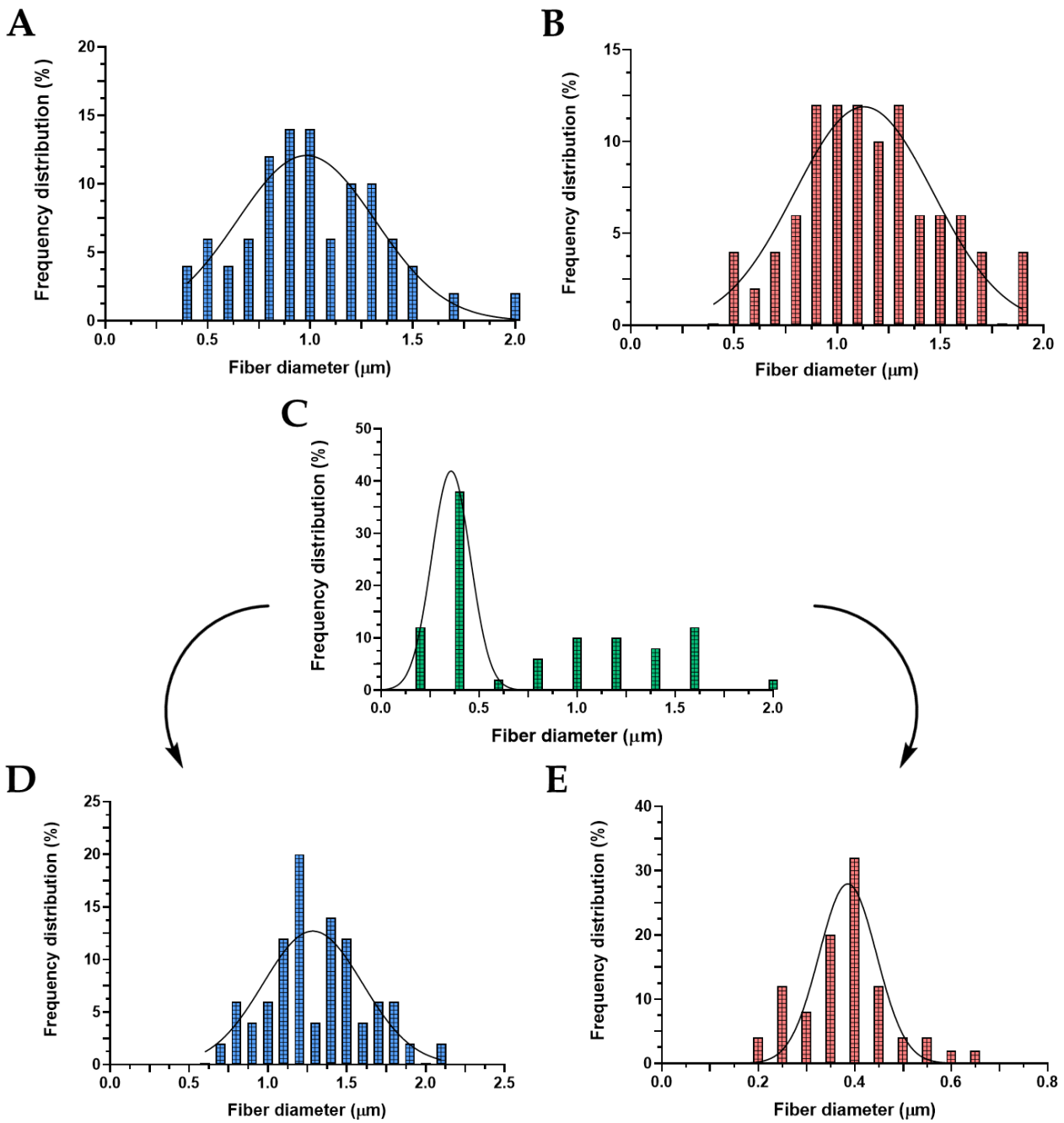

Figure S2. Dimensional analysis. Fiber diameter distribution in the (**A**) PCL/Rif, (**B**) **Rif coating**, and (**C**) **Rif bilayer** mats. In this last case, the inhomogeneous distribution is given by the dual contribution of the PCL/Rif (**D**) and polysaccharides (**E**).

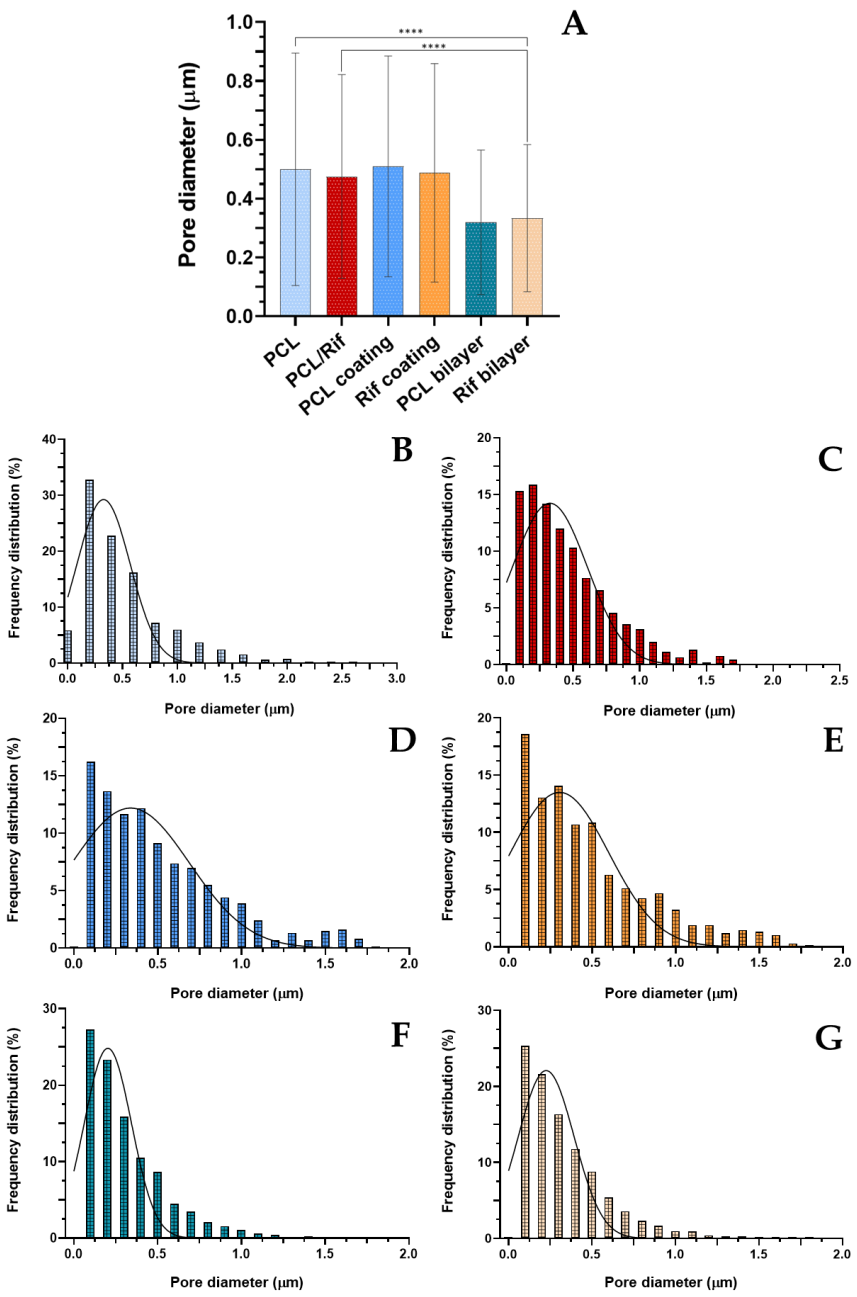

Figure S3. Membrane porosity. Dimensional analysis of the mean pore diameter (**A**) and pore diameter distribution in the PCL (**B**), PCL/Rif (**C**), **PCL coating** (**D**), **Rif coating** (**E**), **PCL bilayer** (**F**), and **Rif bilayer** (**G**) matrices. Statistical analysis was performed with Kruskal-Wallis test and Mann–Whitney test for two-groups comparison, applying Bonferroni's correction. Statistically significant differences are indicated as asterisks (*). **** = $p < 0.0001$.

Table S1. Membranes permeability. Water vapor transmission ability of plasma-treated PCL mats and of polysaccharide-enriched multilayer matrices (**PCL coating** and **PCL bilayer**) at 24 hours, 48 hours, and 72 hours. All the electrospun products retain an appropriate water vapor permeability, disclosing a midway behavior between the total evaporation (no cap) and the total occlusion (Parafilm).

	WVTR (g/m²h)		
	24 hours	**48 hours**	**72 hours**
No cap	75.34±3.21	301.72±12.91	687±23.76
Parafilm	0.14±0.13	0.53±0.51	1.23±1.14
PCL	20.34±1.39	80.06±5.18	182.31±11.66
PCL coating	18.72±1.43	74.57±5.61	170.35±11.57
PCL bilayer	17.52±0.19	69.84±0.28	159.99±0.78

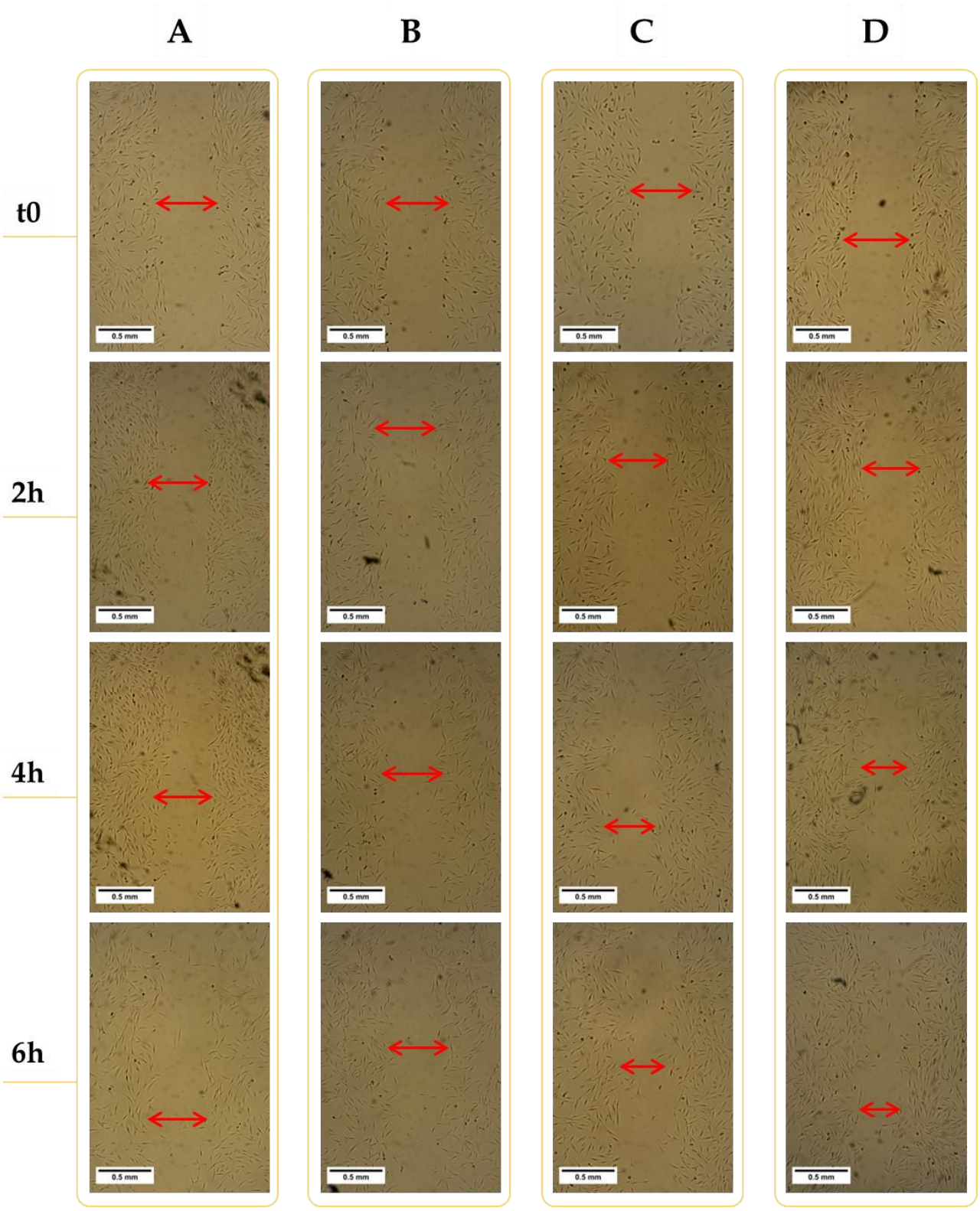

Figure S4. Scratch test assay. Wound healing assay on human dermal fibroblast, performed by following gap closure in time (from t0 to 6 h) in the presence of untreated cells (**A**) and PCL-treated cells (**B**) as well as in the case of polysaccharide-based multilayer matrices, namely **PCL coating** (**C**) and **PCL bilayer** (**D**). The red arrows mark the extension of the gap on the cell monolayer. The absence of red arrows indicates a complete wound closure.

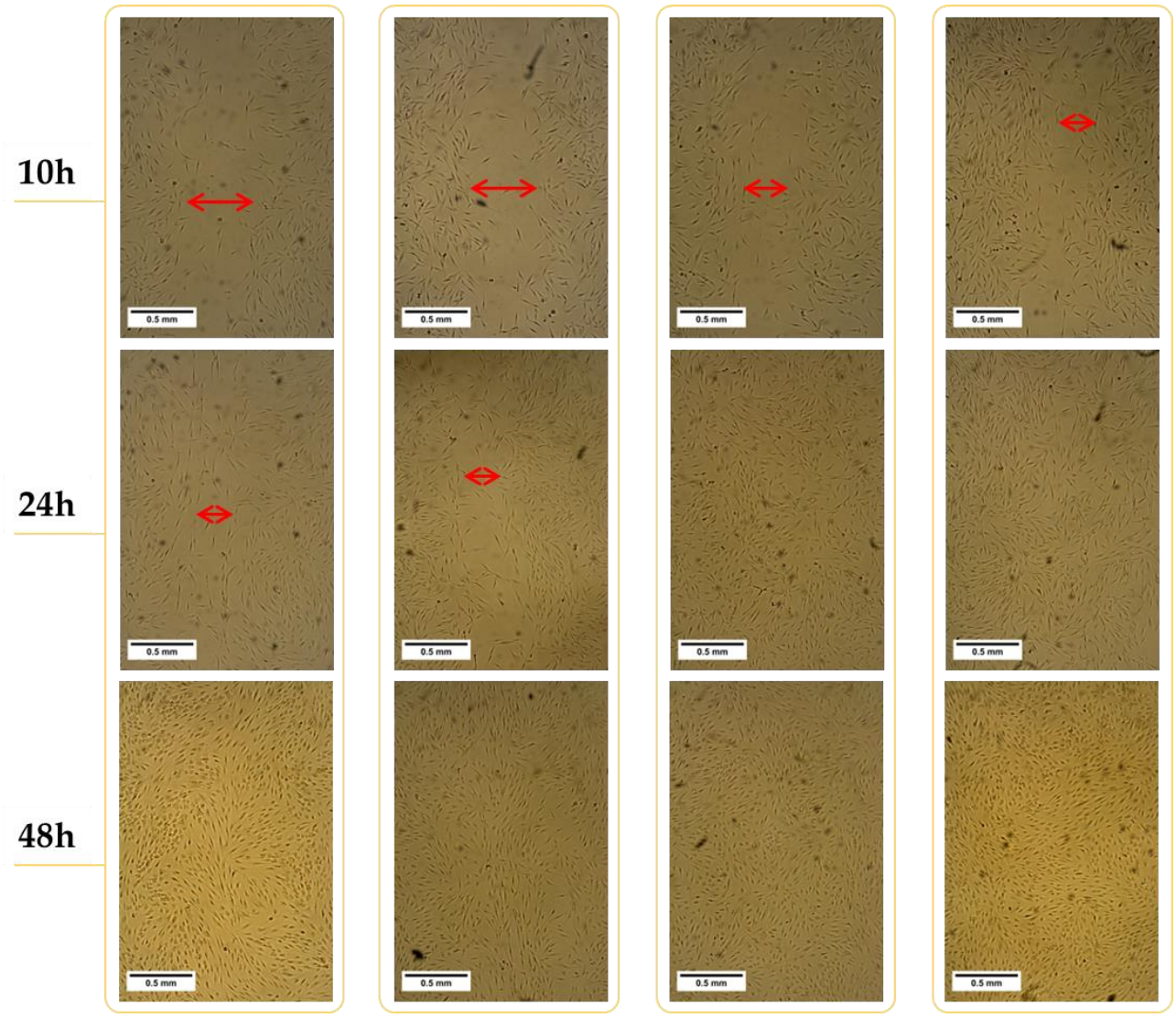

Figure S5. Scratch test assay. Wound healing assay on human dermal fibroblast, performed by following gap closure in time (from 10 h to 48 h) in the presence of untreated cells (**A**) and PCL-treated cells (**B**) as well as in the case of polysaccharide-based multilayer matrices, namely **PCL coating** (**C**) and **PCL bilayer** (**D**). The red arrows mark the extension of the gap on the cell monolayer. The absence of red arrows indicates a complete wound closure.