



Supplementary Materials

## Numerical Analysis of the Influence of Porosity and Pore Geometry on Functionality of Scaffolds Designated for Orthopedic Regenerative Medicine

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**Figure S1.** Streamlines of growth medium velocity in a scaffold with pores geometry of triangular prism with a rounded profile and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.

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**Figure S2.** Streamlines of growth medium velocity in a scaffold with pores geometry of triangular prism with a flat profile and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S3.** Streamlines of growth medium velocity in a scaffold with pores geometry of cube and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S4.** Streamlines of growth medium velocity in a scaffold with pores geometry of octagonal prism and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S5.** Streamlines of growth medium velocity in a scaffold with pores geometry of sphere and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.

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**Figure S6.** WSS distribution in isometric and cross-section views in a scaffold with pores geometry of triangular prism with a rounded profile and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S7.** WSS distribution in isometric double cross-section view in a scaffold with pores geometry of triangular prism with a rounded profile and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S8.** WSS distribution in isometric and cross-section views in a scaffold with pores geometry of triangular prism with a flat profile and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S9.** WSS distribution in isometric double cross-section view in a scaffold with pores geometry of triangular prism with a flat profile and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S10.** WSS distribution in isometric and cross-section views in a scaffold with pores geometry of cube and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S11.** WSS distribution in isometric double cross-section view in a scaffold with pores geometry of cube and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S12.** WSS distribution in isometric and cross-section views in a scaffold with pores geometry of octagonal prism and various porosity: (a) 20% porosity; (b) 30% porosity; (c) 40% porosity; (d) 45% porosity; (e) 60% porosity; (f) 70% porosity; (g) 80% porosity.



**Figure S13.** WSS distribution in isometric double cross-section view in a scaffold with pores geometry of octagonal prism and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S14.** WSS distribution in isometric and cross-section views in a scaffold with pores geometry of sphere and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



**Figure S15.** WSS distribution in isometric double cross-section view in a scaffold with pores geometry of sphere and various porosity: (**a**) 20% porosity; (**b**) 30% porosity; (**c**) 40% porosity; (**d**) 45% porosity; (**e**) 60% porosity; (**f**) 70% porosity; (**g**) 80% porosity.



Porosity

**Figure S16.** Osteogenic cells diffusion intensity in granulation tissue inside scaffold with pores geometry of triangular prism with a rounded profile and various porosity.



**Figure S17.** Osteogenic cells diffusion intensity in granulation tissue inside scaffold with pores geometry of triangular prism with a flat profile and various porosity.

20%

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Day 1

Day 4

Day 8

Day 12

Day 16

Day 20

Day 24

Day 28





**Figure S18.** Osteogenic cells diffusion intensity in granulation tissue inside scaffold with pores geometry of cube and various porosity.



**Figure S19.** Osteogenic cells diffusion intensity in granulation tissue inside scaffold with pores geometry of octagonal prism and various porosity.



**Figure S20.** Osteogenic cells diffusion intensity in granulation tissue inside scaffold with pores geometry of sphere and various porosity.