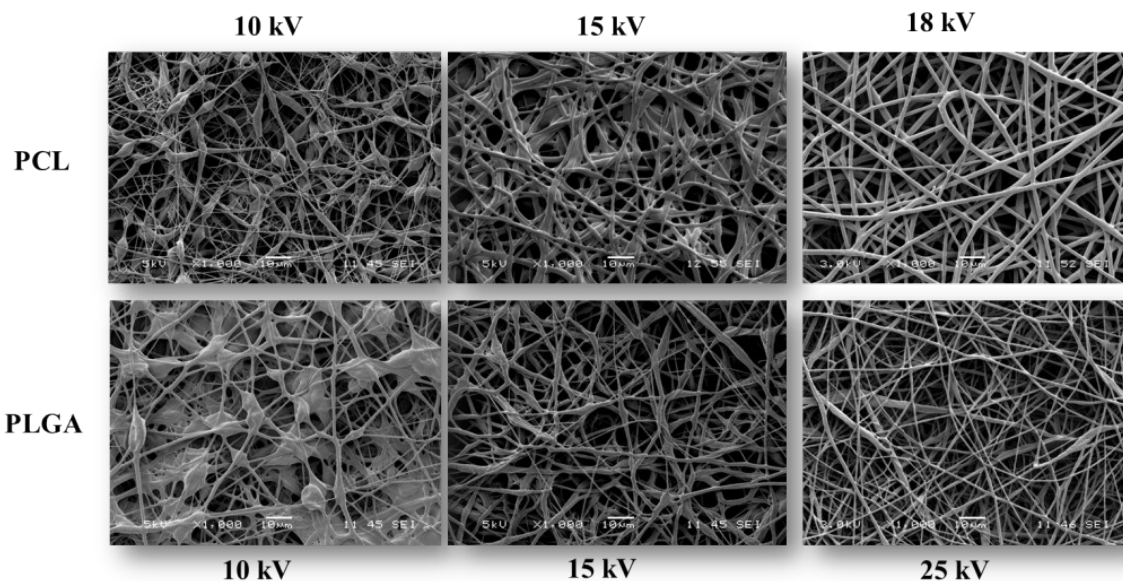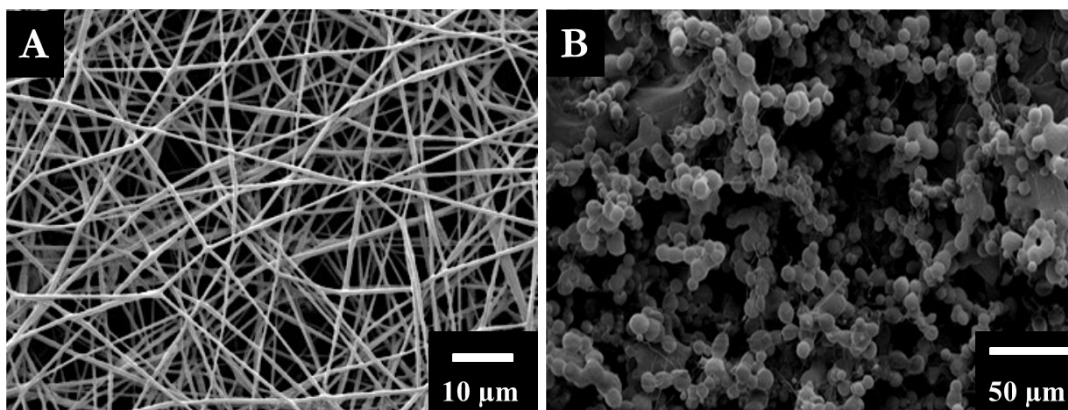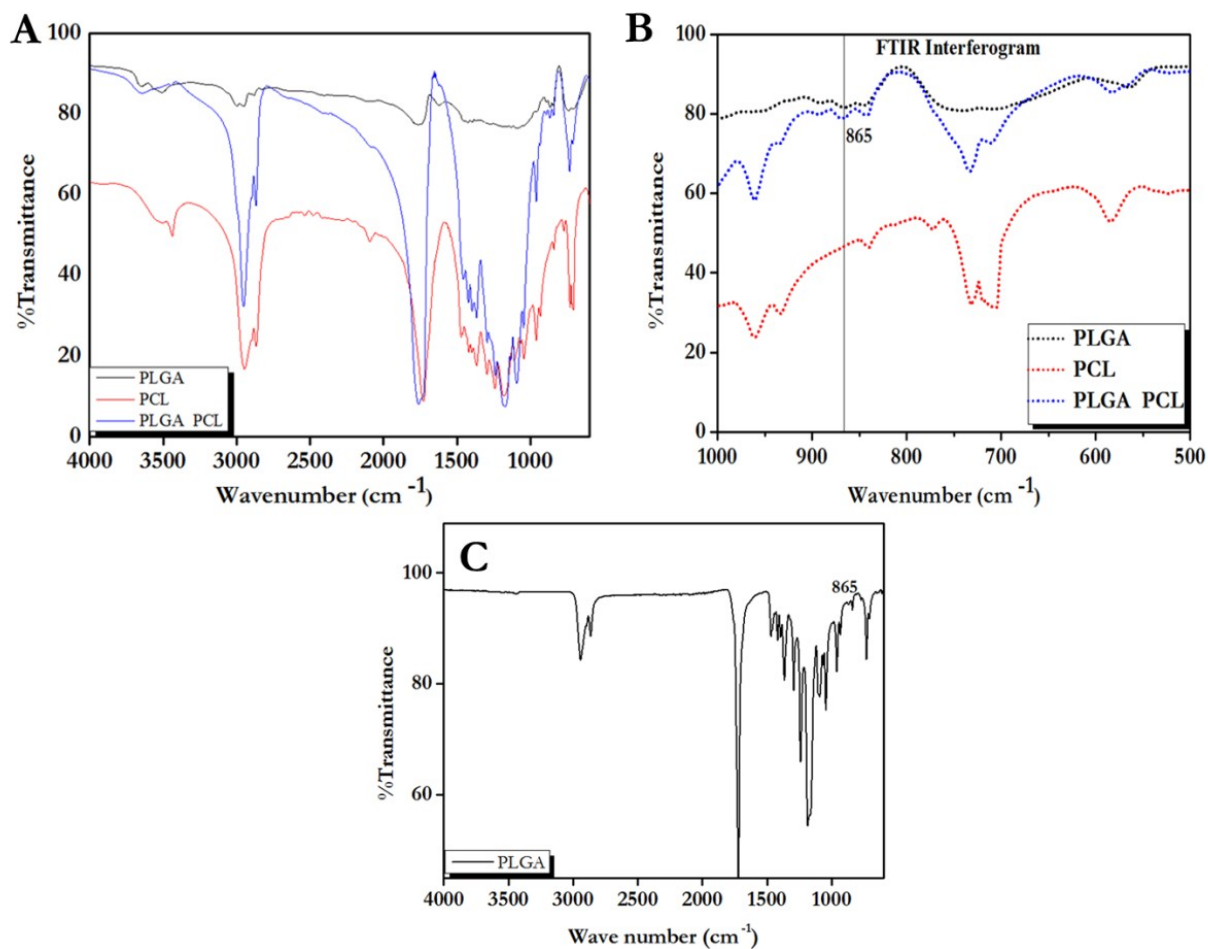## Supplementary Figures

Figure S1 Electrospun fibers of PCL (top row) and PLGA (bottom row) at various voltages showing the gradual disappearance of beading to form uniform fibers.

Figure S2 Scanning Electron Micrograph of (A) electrospun PLGA:PCL nanofibrous mesh and (B) electrosprayed PLGA microparticles.

Figure S3 FTIR spectra of (A) PLGA, PCL and its physical blend (PLGA:PCL) and (B) Zoomed image revealing peak at 865 cm $^{-1}$ for PLGA (C) FTIR spectrum of the PLGA microparticles.
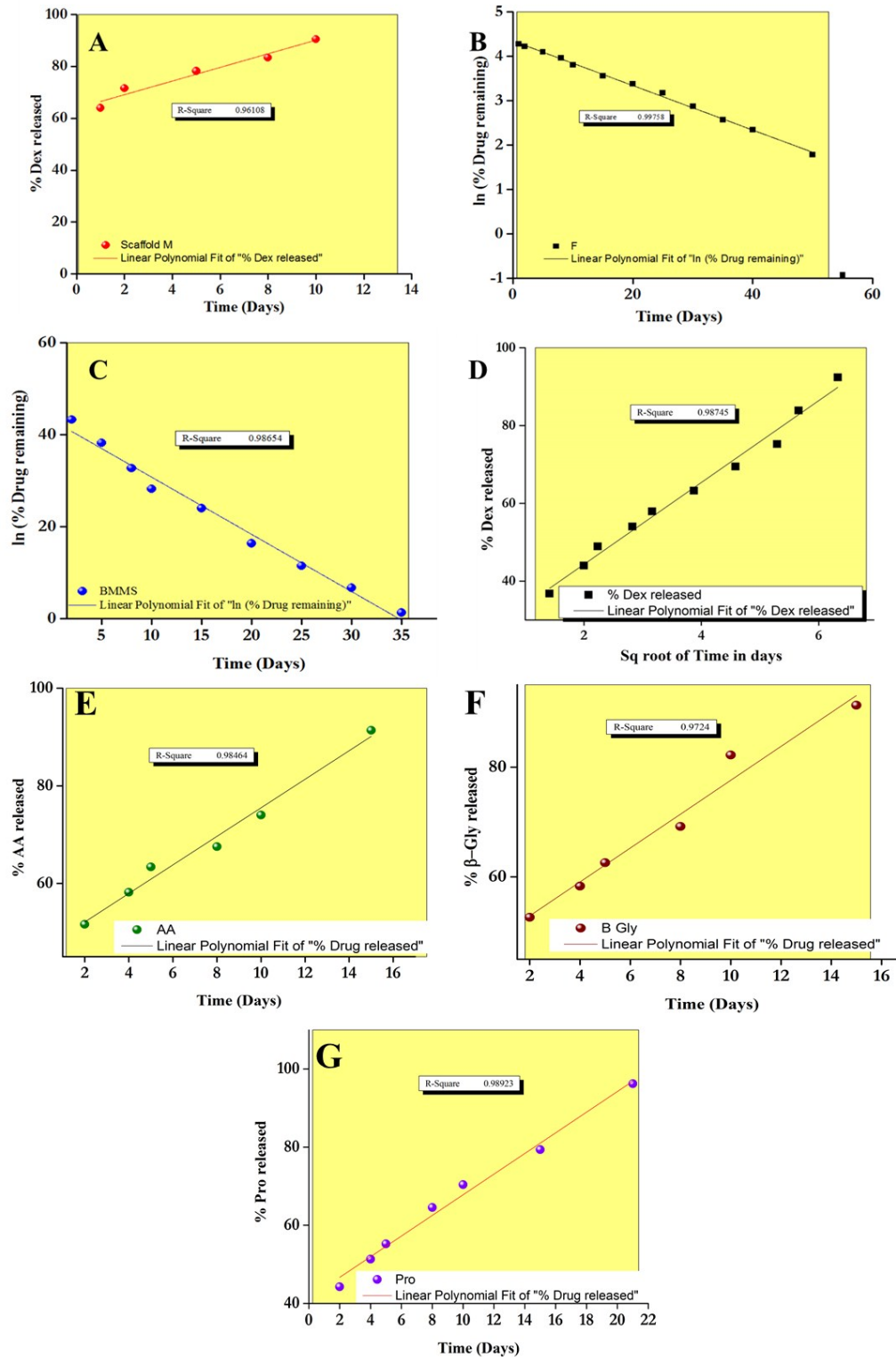
Figure S4 Kinetics of Dex release from all three scaffold systems. (A) The release of Dex from scaffold M follows zero order kinetics with R^2 =0.96. (B) Scaffold F follows a first order kinetic profile exhibiting a correlation coeffeicient R^2 =0.99. (C) Release

of Dex from BMMS exhibits a first order kinetics with a R^2 =0.98. (D) Release of Dex from BMMS when encapsulated along with hydrophilic molecules exhibits a R^2 =0.98. (E-G) Zero order release kinetics was exhibtied by AA (E), ß Gly (F) and Pro (G) encapsualted in the microparticles of BMMS [R^2 =0.98]. In all the cases, the initial burst release of the drug was not taken into account to evaluate the release kinetics.
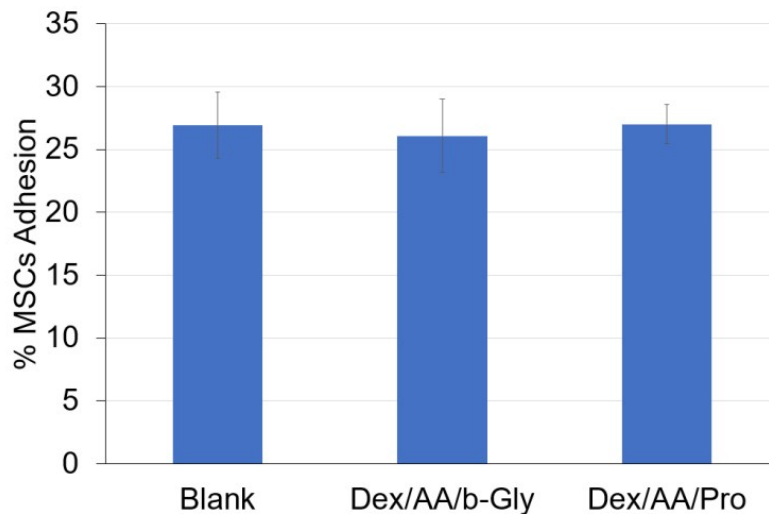
Figure S5 MSCs adhesion study on the blank and bioactive scaffolds.

Table S1 Polymer concentrations and solvent ratios used for electrospinning and solvent ratios used for electrospraying.

PLGA:PCL fibers					
Polymer ratio at 12% conc PLGA:PCL	Solvent ratio [DCM/MeOH]				
30:70	90:10	80:20	50:50	20:80	90:10
50:50	90:10	80:20	50:50	20:80	90:10
70:30	90:10	80:20	50:50	20:80	90:10
PLGA Particles (3% polymer concentration)					
Solvent Ratio [CHL/DMF]					
90:10	80:20	50:50	20:80	90:10	

Table S2 Primer sequences used in real time PCR

Gene	Accession number	Primer sequence (both 5'-3')	Product size
	NM_000088	F: CAGCCGCTT CACCTACAGC R: TTTTGTATTCAATCACTGTCTTGCC	83
Collagen Type II (Col II)	NM_001844	F: GGCAATAGCAGGTTCACGTACA R: CGATAACAGTCTTGCCCCACTT	79
Aggrecan (AGG)	NM_001135	F: ACTTCCGCTGGTCAGATGGA R: TCTCGTGCCAGATCATCACC	111
Glyceraldehyde 3-phosphate dehydrogenase (GADPH)	NM_002046	F: ATGGGGAAGGTGAAGGTCG R: TAAAAGCAGCCCTGGTGACC	70

Table S3 Percentage weight loss exhibited by the scaffolds when subjected to PBS for a period for seven weeks.

Day	Initial weight (mg)	Dry weight of degraded sample (mg)	Weight Loss (%)
1	8.25 ± 0.44	8.25 ± 0.57	0.20 ± 0.13
15	8.33 ± 0.92	7.01 ± 0.15	15.77 ± 1.55
45	9.52 ± 0.30	4.33 ± 1.26	53.12 ± 1.56

Table S4 lists the Encapsulation Efficiency of Dex (1 % w/w) when encapsulated alone (n=6).

Weight of the scaffold (mg)	Theoretical amount of encapsulated Dex (µg)	Actual Dex detected (µg)	Encapsulation Efficiency (%)
20	200	163.82	
20	200	151.75	
20	200	152.69	78.04 ± 3.36
25	250	214.77	
25	250	223.19	
25	250	209.83	86.37 ± 2.70

Table S5 Encapsulation Efficiencies for all the biomolecules employed in this study.

Biomolecule	Incorporated into	
	Microparticles	Nanofibrous mesh
	Encapsulation Efficiency (EE)%	
Dexamethasone	n/a	83 ± 5.24
Ascorbic acid	62 ± 7.5	n/a
ß-Glycerophosphate	72 ± 3.3	n/a
Proline	88 ± 0.51	n/a