Supplemental Data

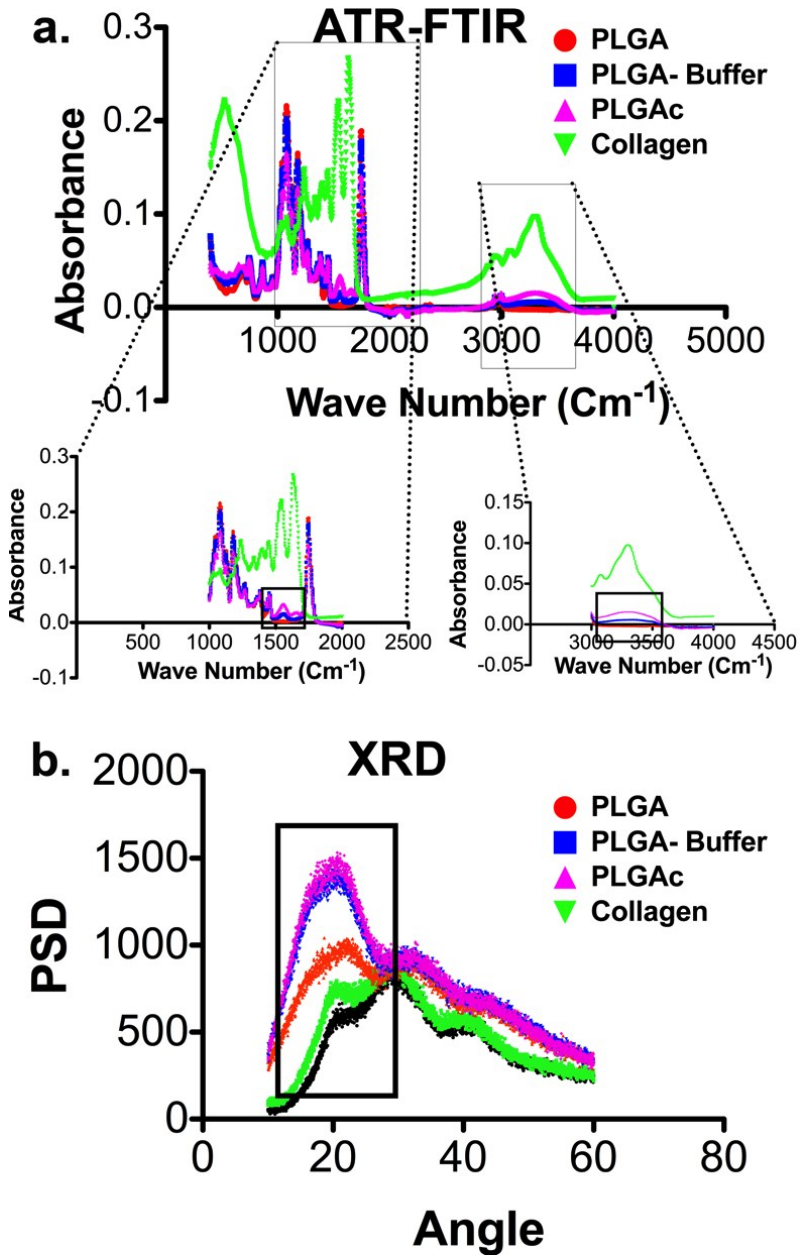

Figure S1. a) ATR- FTIR (from 400- 4000 cm-1) and b) XRD spectra (2θ= 10-60^{O}) of PLGA, PLGA- buffer treated and PLGAc (Red- PLGA, blue- PLGA buffer treated, pink- PLGAc, green- lyophilized collagen).

Supplemental Data

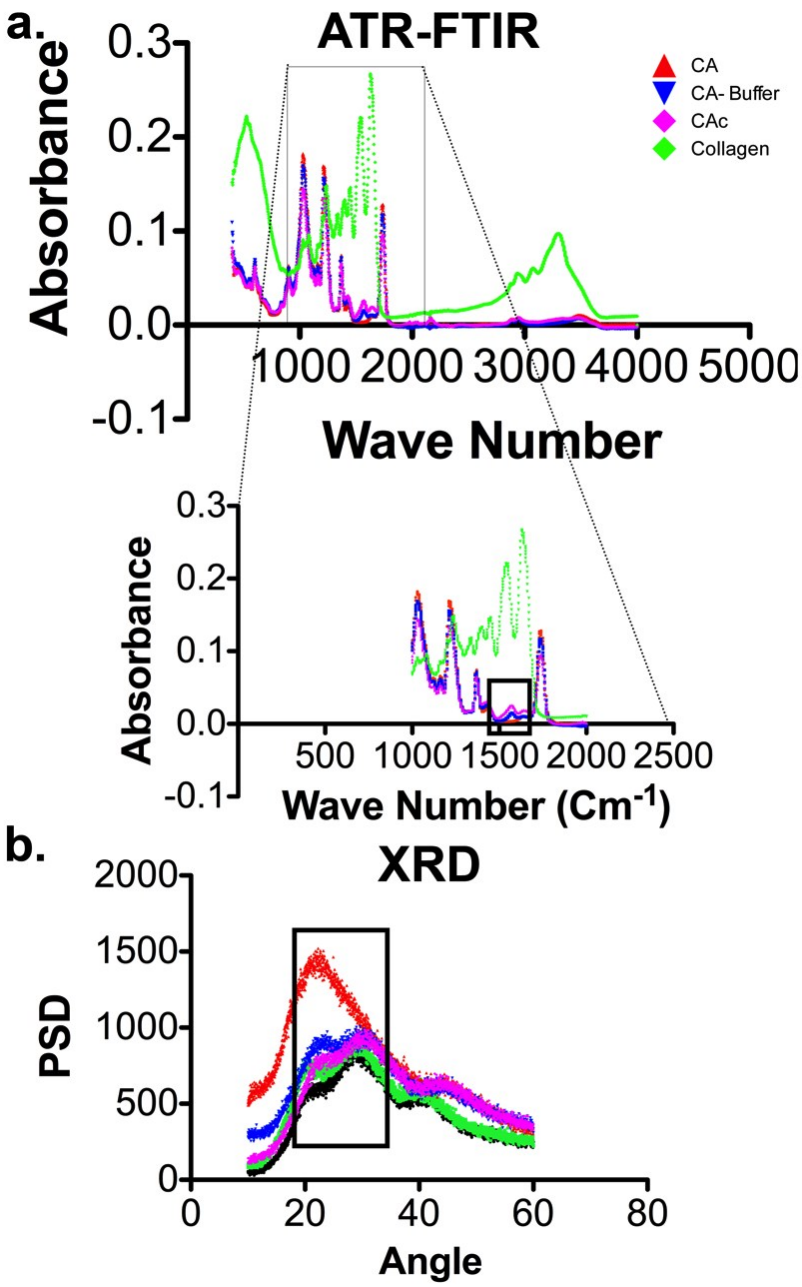

Figure S2. a) ATR- FTIR (from 400- 4000 cm^{-1}) and b) XRD spectra (2θ= 10-60^{O}) of CA,CA- buffer treated and CAc. (Red- CA, blue- CA buffer treated, pink- CAc, green- lyophilized collagen).

Supplemental Data

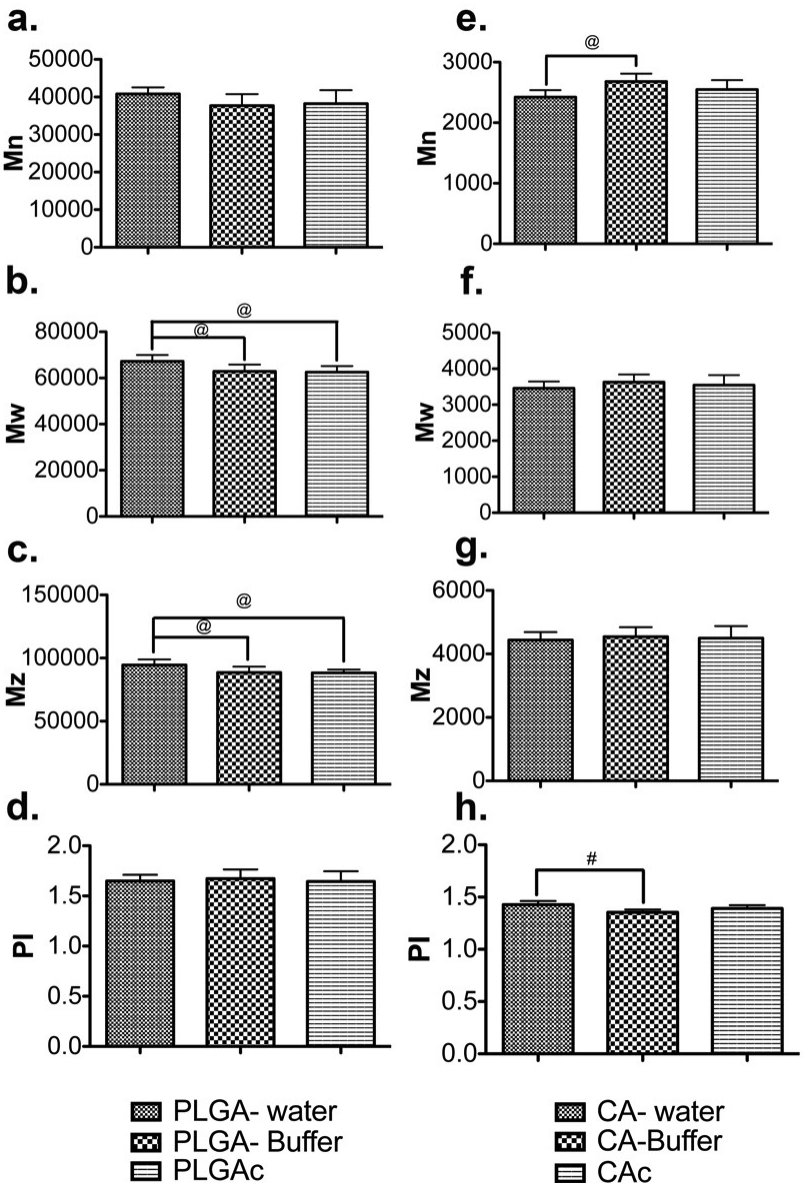

Figure S3. Molecular weights determined by Gel permeation chromatographic analysis of a), b), c), d) PLGA and e), f), g), h) CA polymers after treatments: a), e) Mn- Number average molecular weight, b), f) Mw- weight average molecular weight, c), g) Mz- z average molecular weight, d), h) PI- Polydispersity index= Mw/Mn). One – way ANOVA with Tukey post test, with 95% confidence intervals, $^{*}P<0.001$, $^{\#}P<0.01$, $^{@}P<0.05$.

Supplemental Data

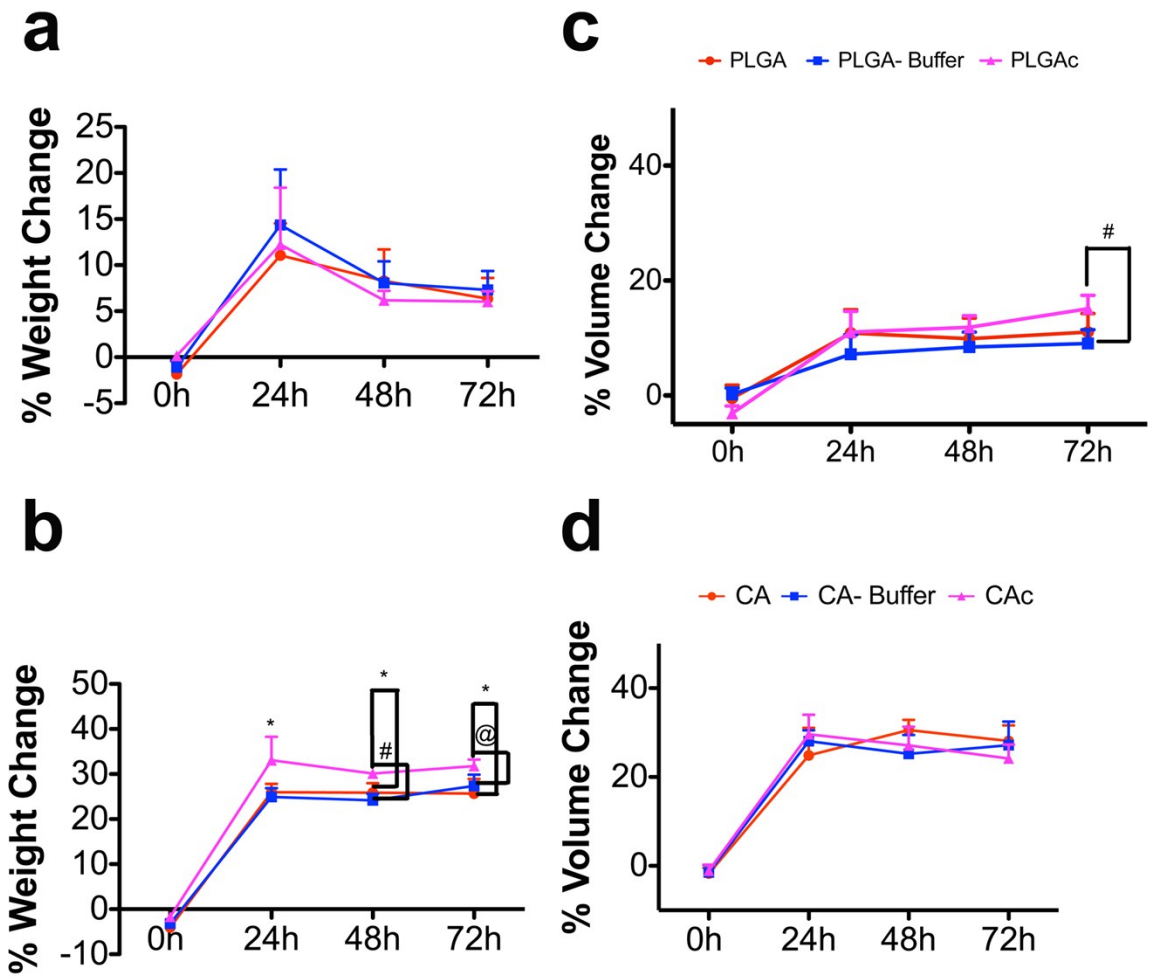

Figure S4. Effect of hydration on the scaffold weight and volume changes over 72 hours of incubation in PBS at 37°C. Changes in scaffold weight a) PLGA, PLGA- Buffer treated and PLGAc, b) CA, CA- Buffer treated and CAc. Changes in scaffold volume c) PLGA, PLGA- Buffer treated and PLGAc, d) CA, CA- Buffer treated and CAc. Two-way ANOVA with Bonferroni post- test, with 95% confidence intervals, *P<0.001, #P<0.01, @P<0.05.

Supplemental Data

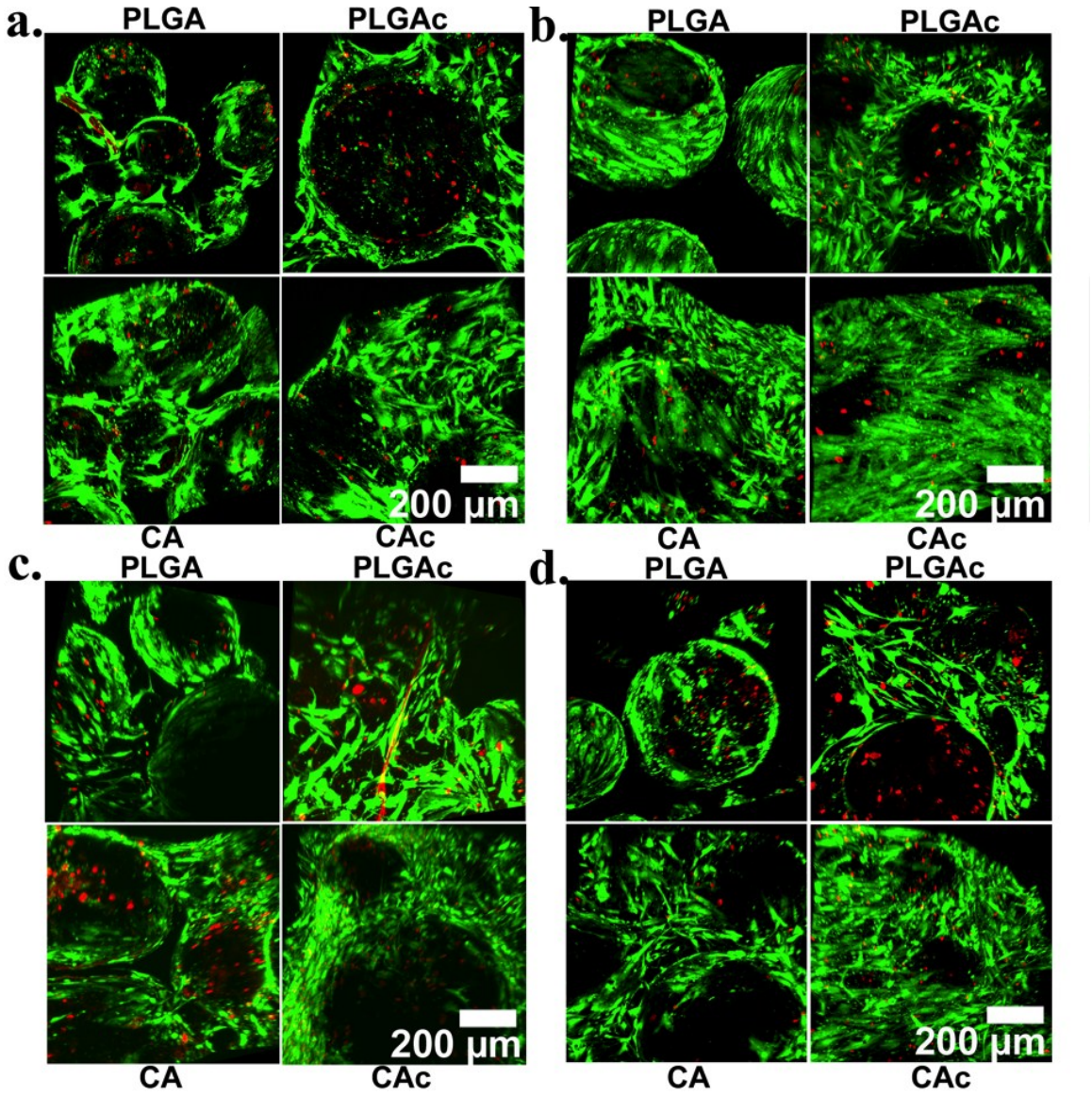

Figure S5. Live (green)/ dead (red) staining of cells on scaffolds at a) Day 3, b) Day 7, c) Day 14, d) Day 21. PLGA (top left) PLGAc (top right), CA (bottom left) and CAc (bottom right) show good viability of seeded hMSC throughout all culture time points.

Supplemental Data

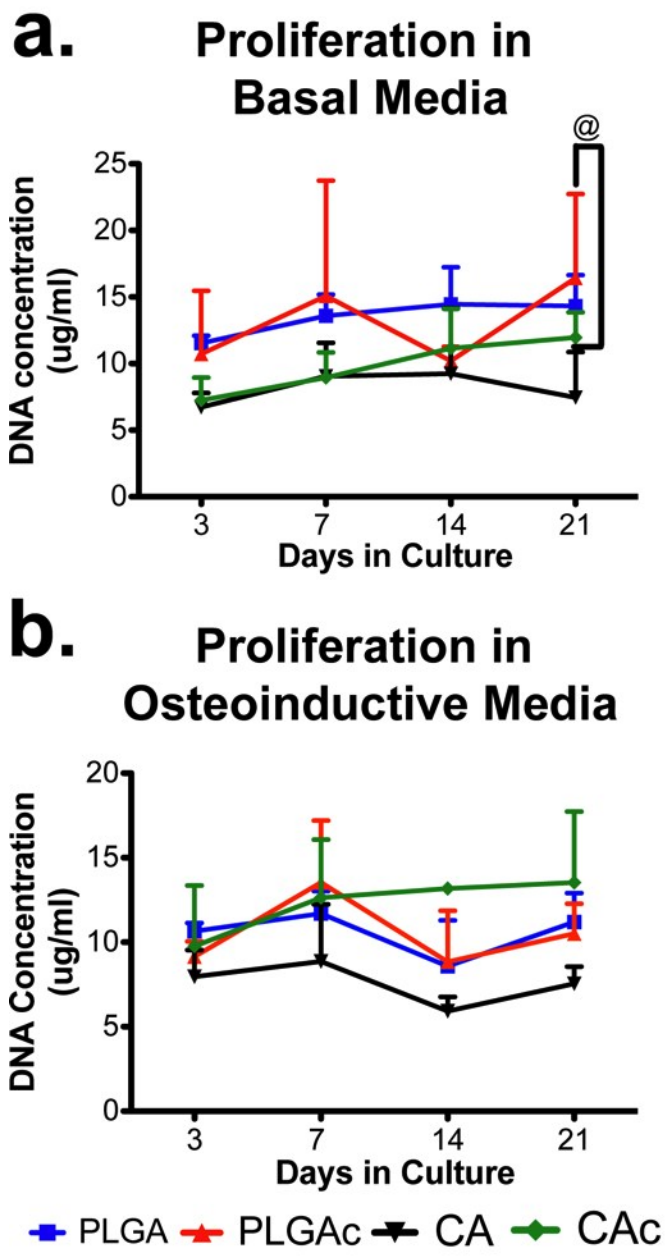

Figure S6. a) hMSC proliferation determined by pico- green assay over 21 days of culture in basal and b) osteoinduced condition. Two- way ANOVA with Bonferroni post-test, with 95% confidence intervals, $^{*}P<0.001$, $^{\#}P<0.01$, $^{@}P<0.05$.

Supplemental Data

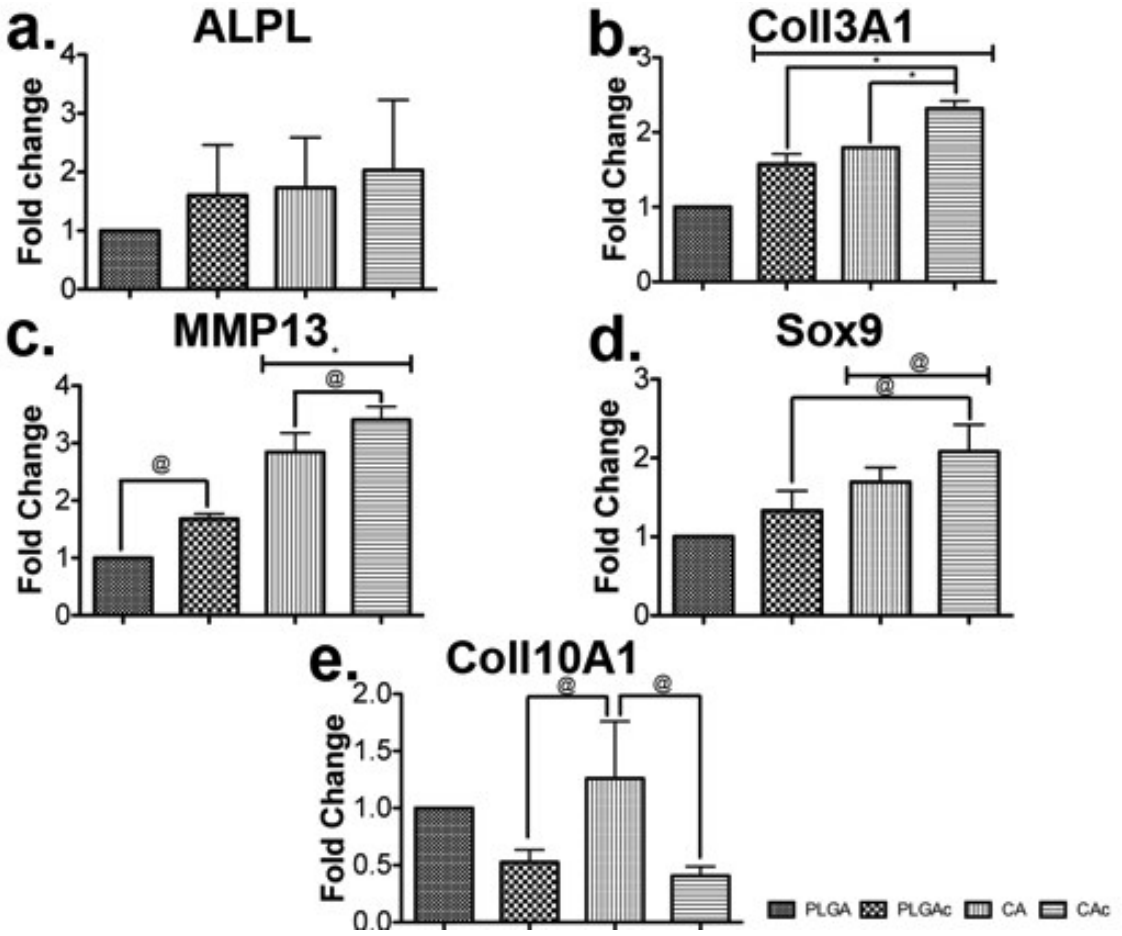

Figure S7. Osteochondral gene expression by osteoinduced hMSCs on PLGA, PLGAc, CA and CAc. a) ALPL- Alkaline phosphatase, b) Coll3A1- collagen 3A1, c) MMP13- Matrix metaloprotease 13, d) Sox9, e) Coll10A1- collagen 10A1. One – way ANOVA with Tukey posttest, with 95% confidence intervals, $^{*}P<0.001$, $^{\#}P<0.01$, $^{@}P<0.05$

Supplemental Data

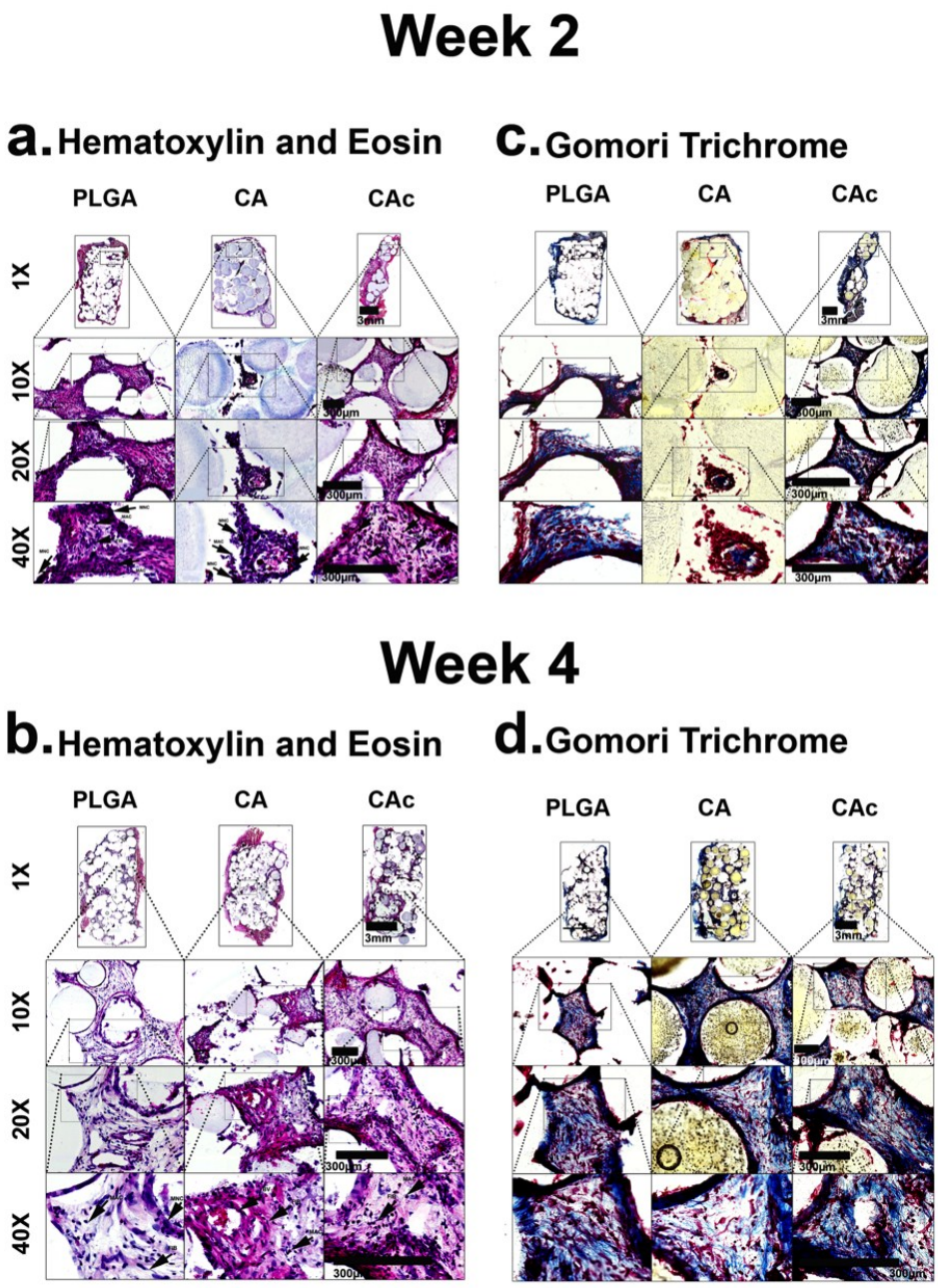

Figure S8. Histological staining of subcutaneously implanted PLGA, CA abnd CAc at early time points. (a, c- at 2 weeks , b, d- at 4 weeks). a), b)- Hematoxylin and eosin staining, c), d)- Gomori trichrome staining. Scalebars on 1X magnification = 3mm, scalebar on 20X and 40X magnifications= 300 µm.

Supplemental Data

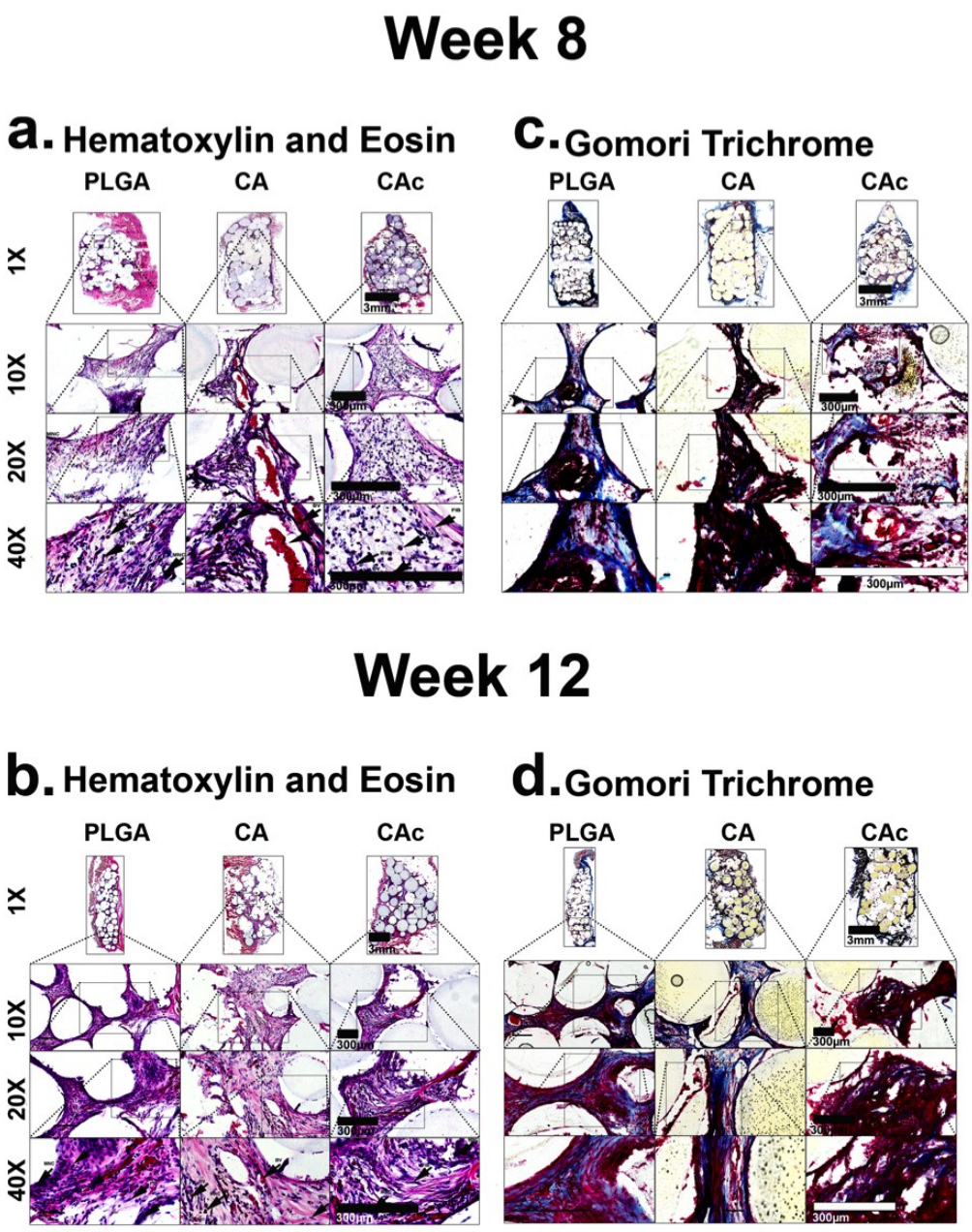

Figure S9. Histological staining of subcutaneously implanted PLGA, CA abnd CAc at late time points (a,c- at 8 weeks, b,d- at 12 weeks). a), b) Hematoxylin and eosin staining, c), d) Gomori trichrome staining. Scalebars on 1X magnification = 3mm, scalebar on 20X and 40X magnifications= 300 μm.

Supplemental Data

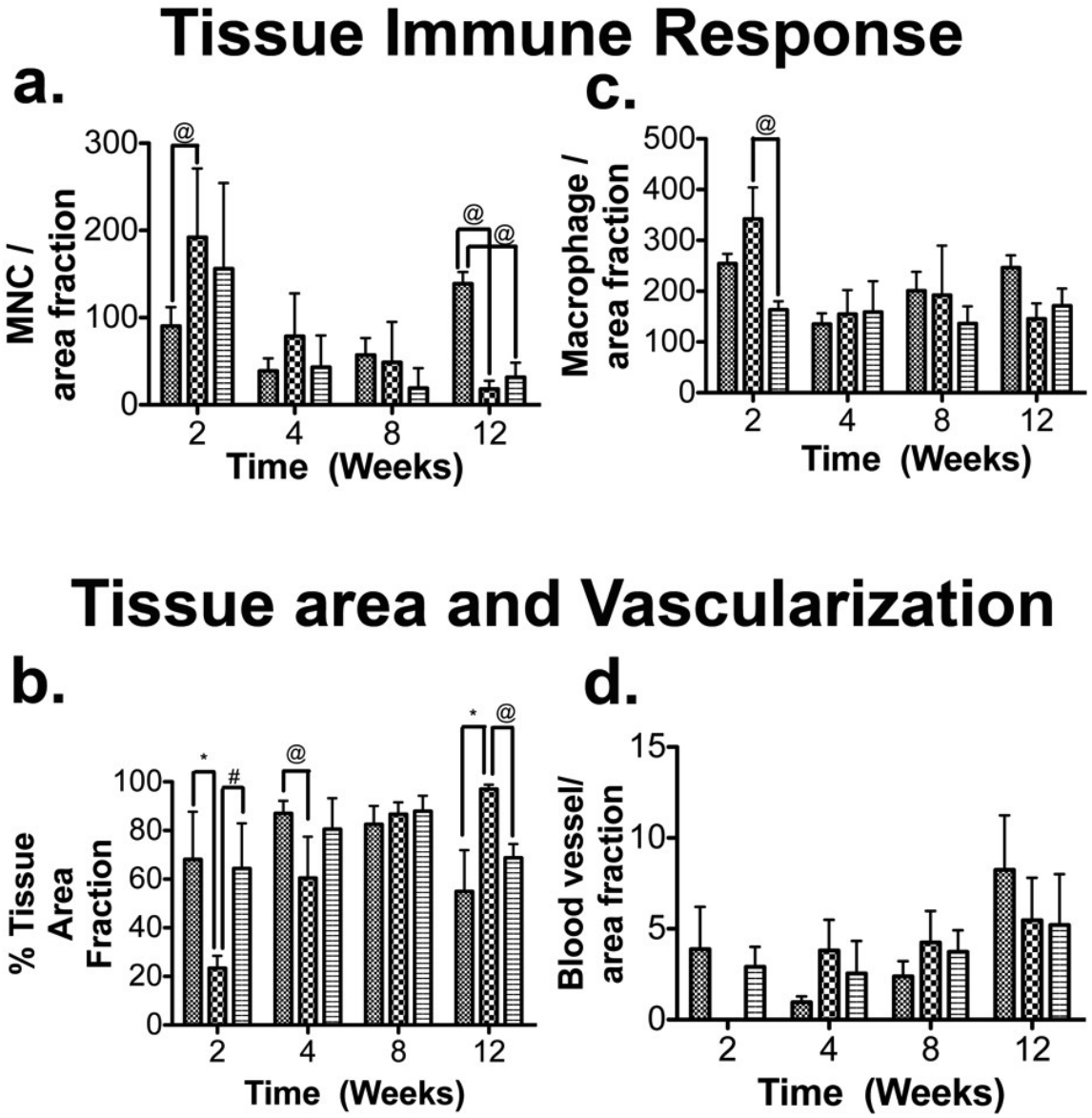

Figure S10. Histomorphometric analysis of implanted scaffolds over time- Immune response represented by a) multinucleated giant cells (MNCs), and, b) percentage tissue area, c) macrophages and d) number of blood vessels. Two- way ANOVA with Bonferroni post- test, with 95% confidence intervals, $^{*}P<0.001$, $^{\#}P<0.01$, $^{@}P<0.05$.