Electronic Supplementary Information

Synthesis of Poly(lactide-co-glycerol) as a Biodegradable and Biocompatible Polymer with High Loading Capacity for Dermal Drug Delivery

Fatemeh Zabihi[a,b], Patrick Graff[b], Fabian Schumacher[c,d], Burkhard Kleuser[c], Sarah Hedtrich[b*] and Rainer Haag[a*]

[a]Institut für Chemie und Biochemie, Freie Universität Berlin, Takustr. 3, 14195, Berlin, Germany

[b]Institute of Pharmacy (Pharmacology and Toxicology), Freie Universität Berlin, Takustr. 3, D-14195 Berlin, Germany

[c]Institute of Nutritional Science, Department of Nutritional Toxicology, Universität Potsdam, Arthur-Scheunert-Allee 114-116, D-14558 Nuthetal, Germany

[d]Department of Molecular Biology, Universität Duisburg-Essen, Hufelandstr. 55, D-45122 Essen, Germany

Corresponding author: Rainer Haag; haag@chemie.fu-berlin.de and Sarah Hedtrich; sarah.hedtrich@fu-berlin.de

Synthesis of PLG11 and PLG12

PLG11, PLG12 was synthesized according to previously reported method. Briefly, 1/1 and 1/2 molar ratio of glycidol/L-lactide were mixed and stirred at 100 °C for 24 h. Afterwards, the product was dissolved in DMF and dialyzed against DMF and water for 6 and 72 h, respectively. Finally, the solvent was evaporated by vacuum and the product was lyophilized. The product was analyzed using H NMR (S1) and GPC (S2).

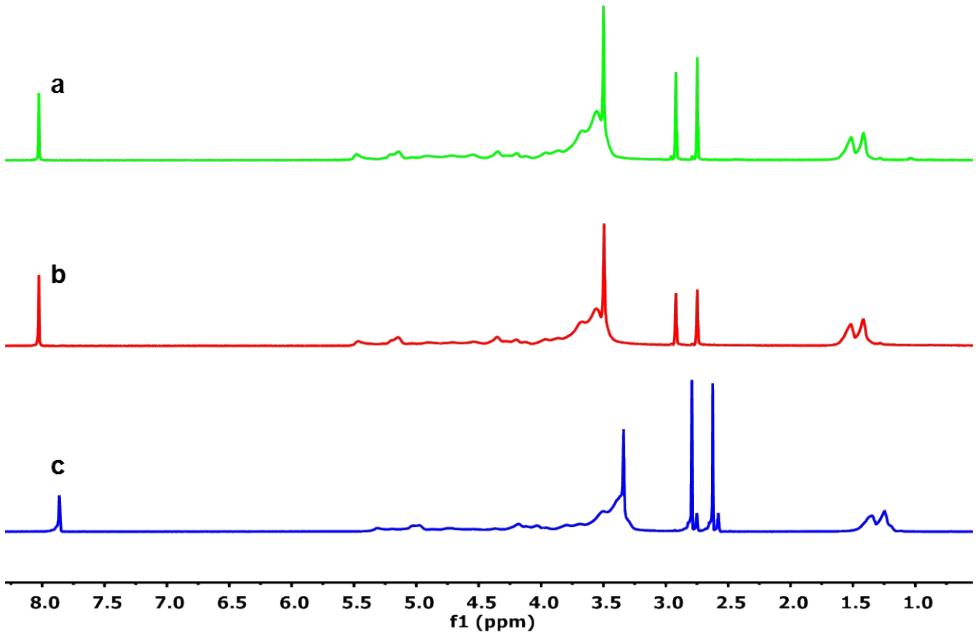

Figure S1. [1]HNMR spectrum of PLG11 (a), PLG21 (b) and PLG (c) recorded in DMF-d7 solvent.

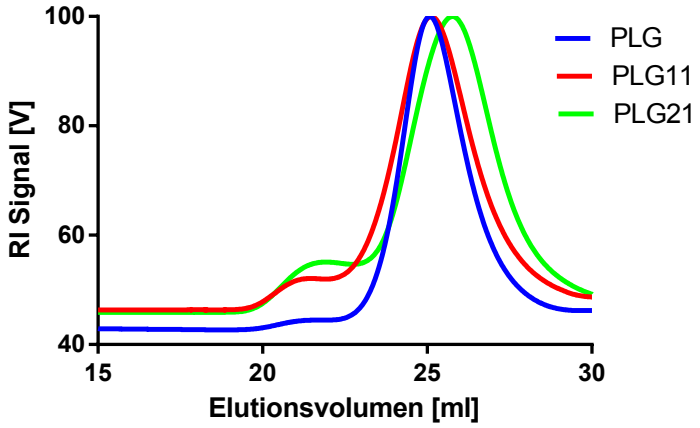

Figure S2. GPC spectrum of PLG11 (red), PLG21 (green) and PLG (blue)

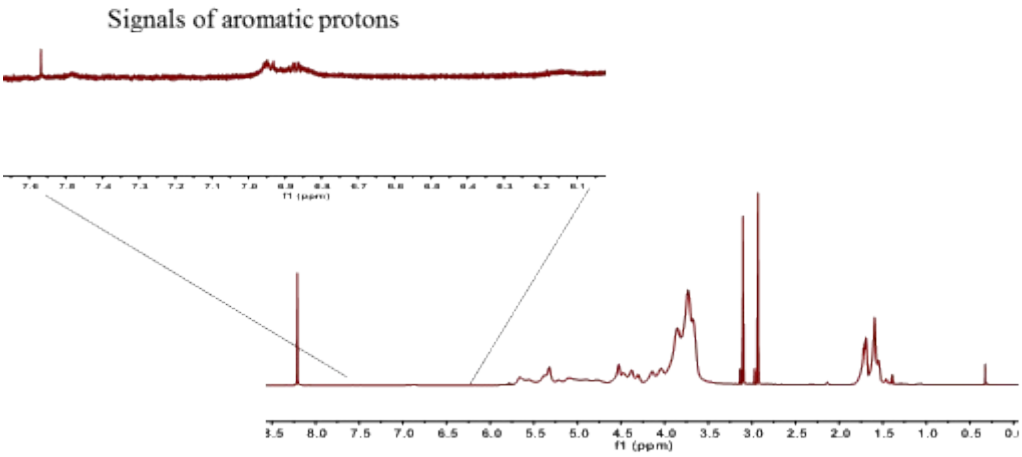

Figure S3. [1]HNMR spectrum of FITC conjugated PLG.

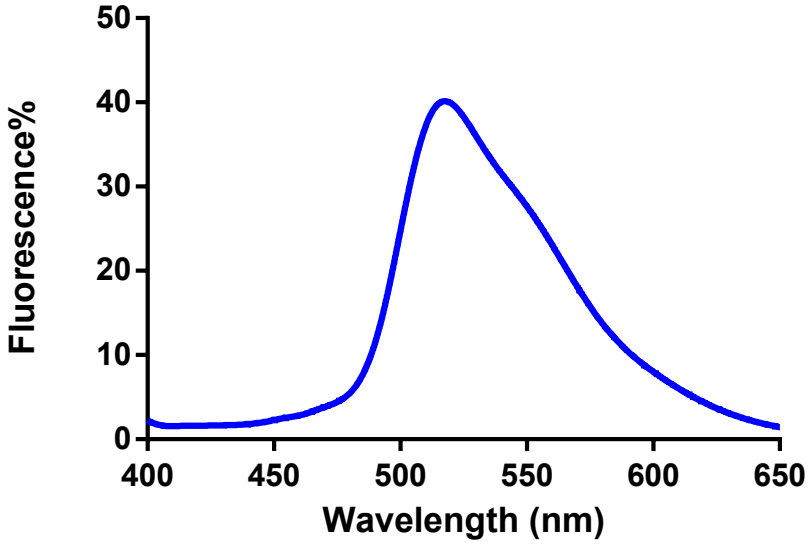

Figure S4. Florescence spectrum of FITC conjugated PLG.

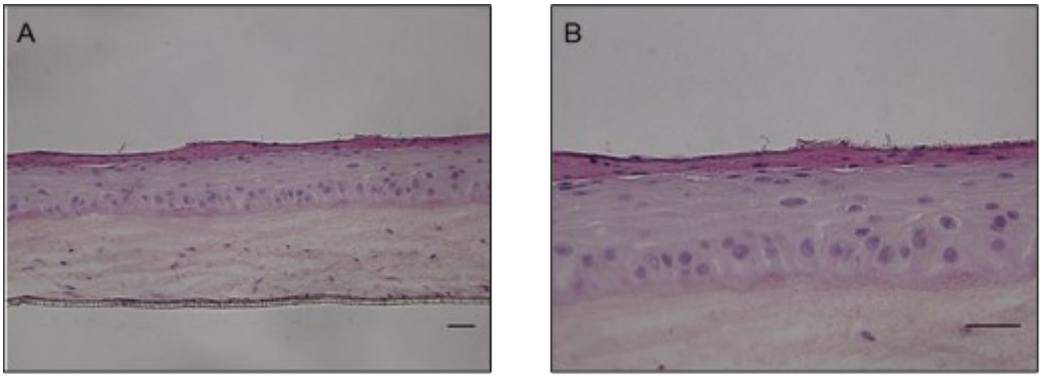

Figure S5. Representative pictures of hematoxylin & eosin staining of normal skin models. **A** magnification 10x. **B** Magnification 20x. Scale bar = 50 μm.

Gene	Primer sense 5'-3'	Primer antisense 5'-3'
FLG	*AAGGAACTTCTGGAAAAGGAATTTC*	*TTGTGGTCTATATCCAAGTGATCCAT*
GAPDH	*CTCTCTGCTCCTCCTGTTCGAC*	*TGAGCGATGTGGCTCGGCT*

Table S1. Primer sequences for qRT-PCR

Antibody	Isotype	Clone	WB	Company
TSLP	rabbit IgG	polyclonal	1:1000	Abcam, Cambridge, United Kingdom
β-actin	mouse IgG1	monoclonal	1:10000	Sigma-Aldrich, Munich, Germany

Table S2. Antibody dilutions for Western Blot (WB)

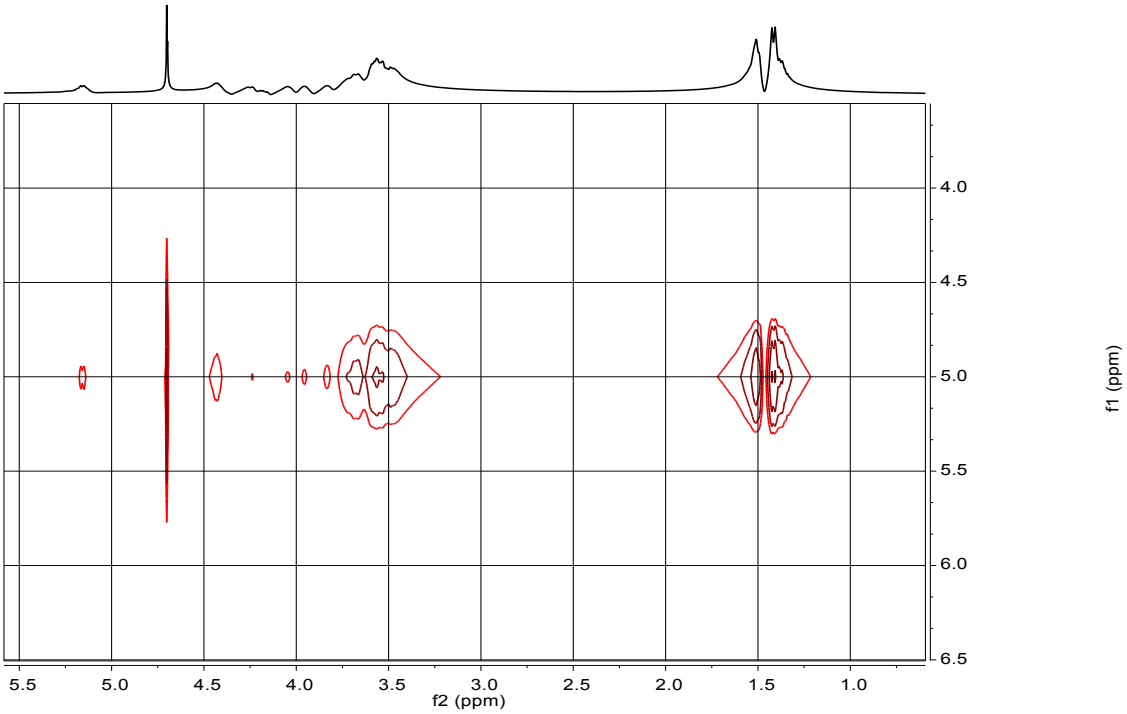

Figure S6. DOSY NMR of PLG measured in D_2O

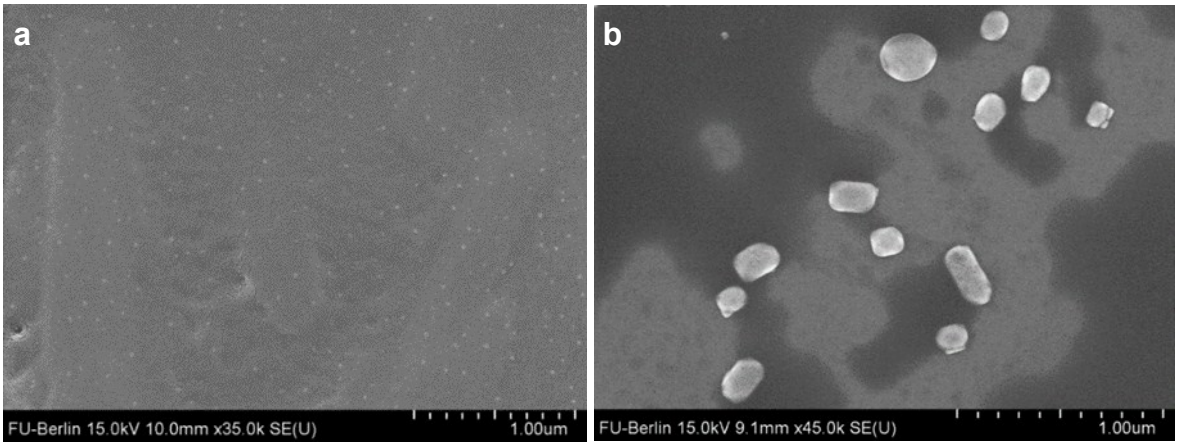

Figure S7. SEM images of PLG before loading TAC (a) after loading TAC with higher resolution.

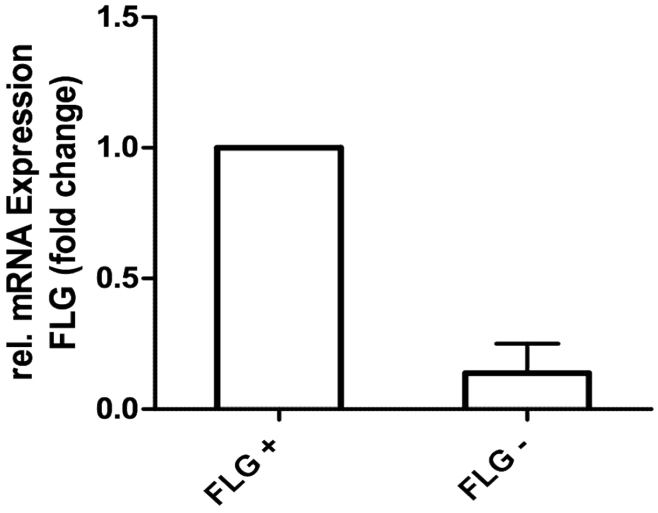

Figure S8. Relative mRNA expression of filaggrin in normal (FLG+) and filaggrin-deficient (FLG-) skin models (n=2, mean ± SEM). GAPDH served as housekeeping gene.