

Electronic Supplementary Information (ESI)

for

Bioactive Peptide Functionalized Aligned Cyclodextrin Nanofibers for Neurite Outgrowth

*Seren Hamsici,^a Goksu Cinar,^a Asli Celebioglu,^a Tamer Uyar,^{a *} Ayse B. Tekinay,^{a *} and*

*Mustafa O. Guler^{a *}*

^a Institute of Materials Science and Nanotechnology, National Nanotechnology Research

Center (UNAM), Bilkent University, Ankara 06800, Turkey

**Corresponding Author e-mail address: moguler@unam.bilkent.edu.tr (M.O.G.)*

atekinay@unam.bilkent.edu.tr (A.B.T.), and uyar@unam.bilkent.edu.tr (T.U.)

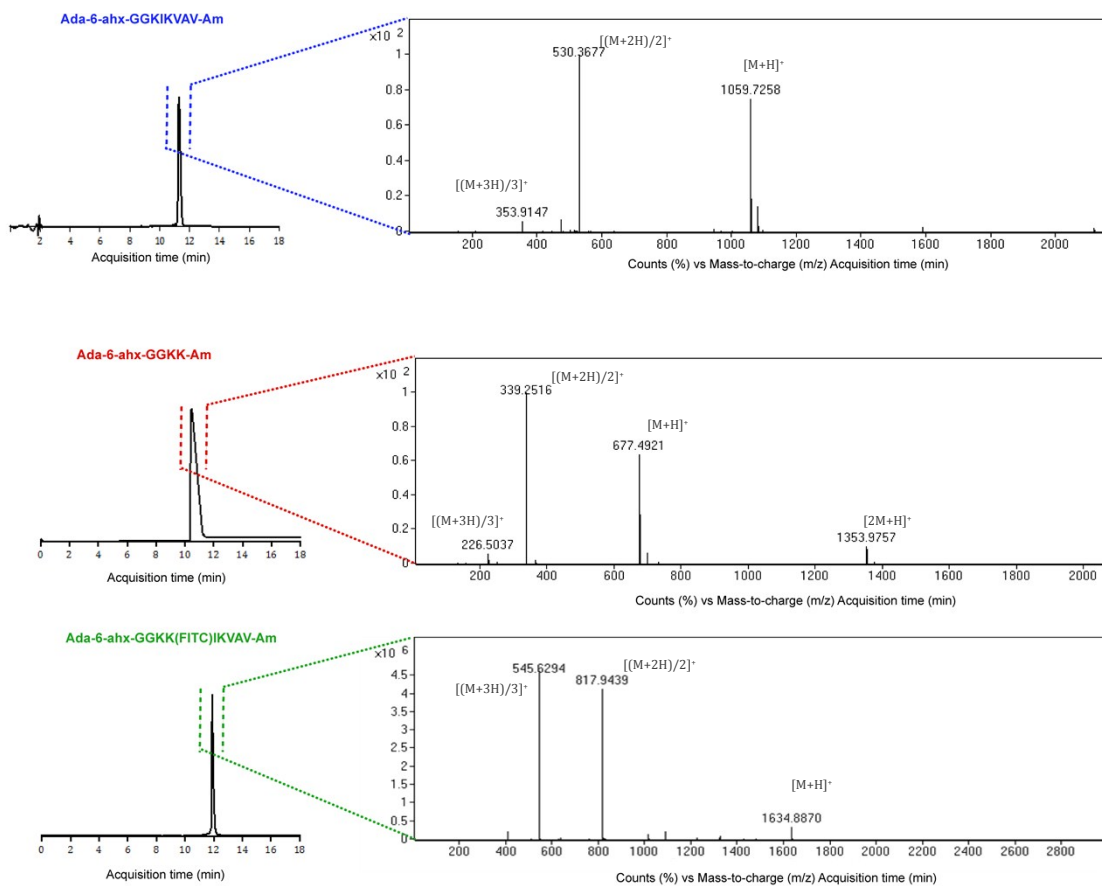


Figure S1. Liquid chromatography-mass spectrometry (LC-MS) analyses of the synthesized adamantane conjugated peptides.

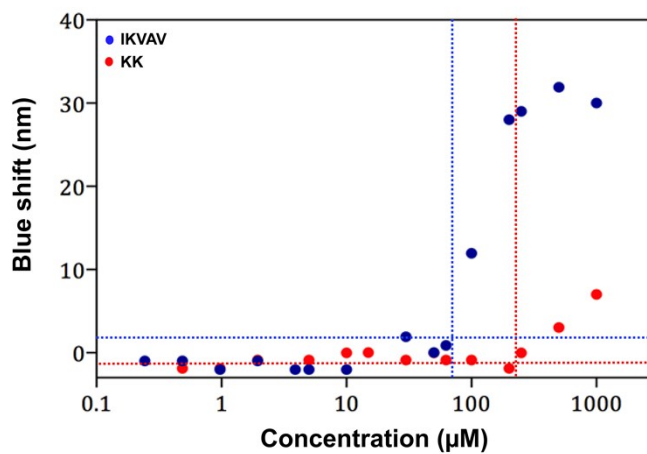


Figure S2. Blue shift of Nile Red in different concentrations of guest molecules. Formation of aggregation takes place for Ada-*IKVAV* and Ada-*KK* at concentration around 60 and 125 μM respectively

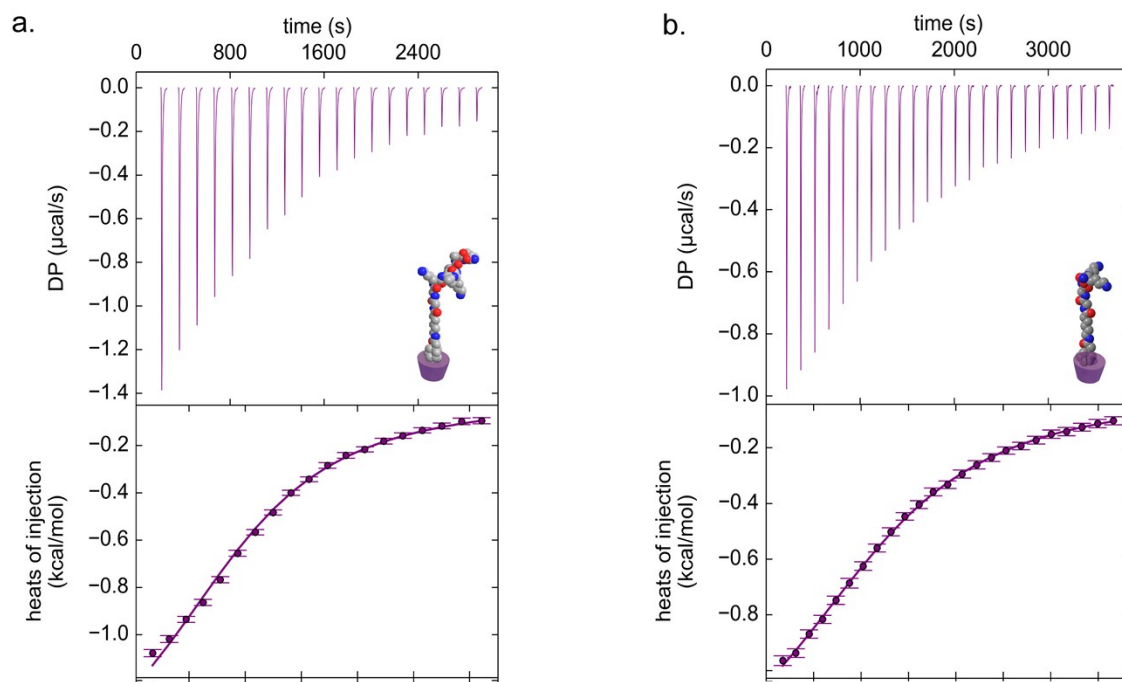


Figure S3. Isothermal Titration Calorimetry (ITC) traces of CD titrated into solutions of a) Ada-IKVAV, b) Ada-KK. The purple markers represent each injection, whereas the purple line fitted

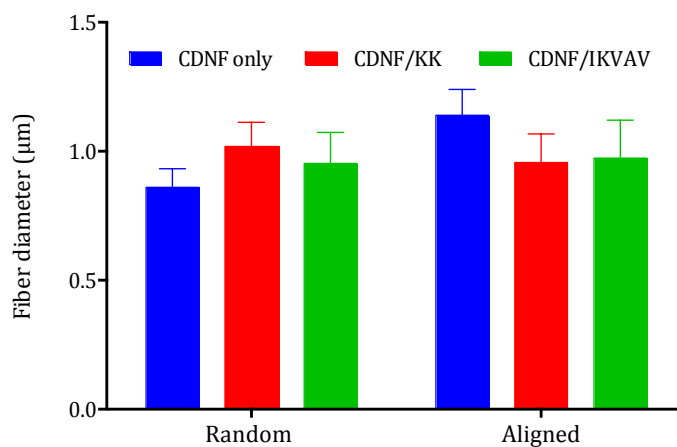


Figure S4. Fiber diameters of electrospun random and aligned CDNFs with their peptide functionalized forms. There were not any significant differences between groups in terms of fiber diameter.

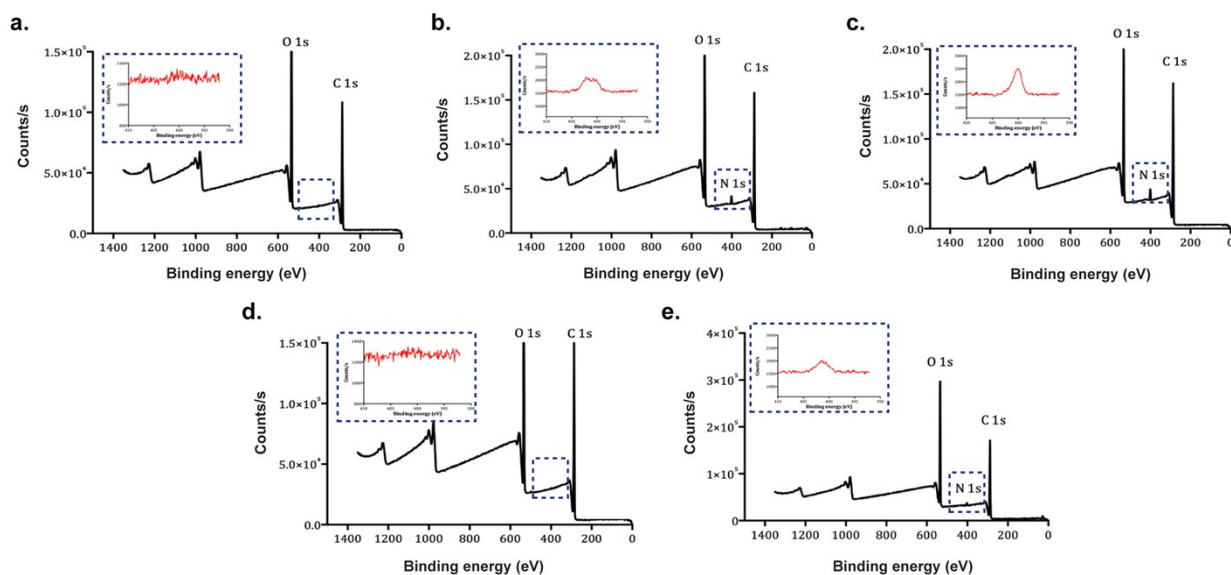


Figure S5. XPS analyses of random (a-c) and aligned (d-f) CDNFs. **a.** Random only CDNFs, **b.** Functionalized with Ada-KK, **c.** Ada-IKVAV, **d.** Aligned only CDNFs, **e.** Functionalized with Ada-KK.

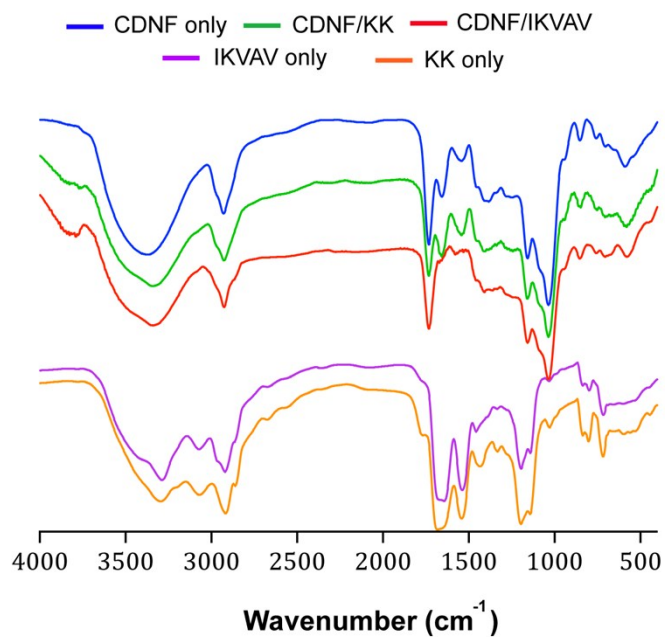


Figure S6. FT-IR spectrum of random organized CDNF only, CDNF/KK, CDNF/IKVAV and only bioactive and non-bioactive peptide molecules.

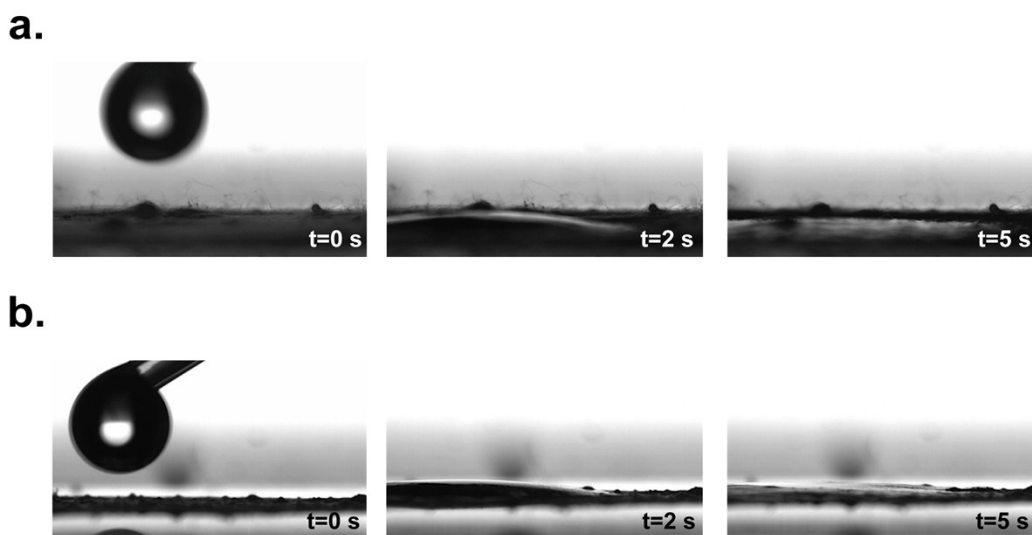


Figure S7. Contact angle analyses of **a.** random **b.** aligned CDNFs show wettability behavior.

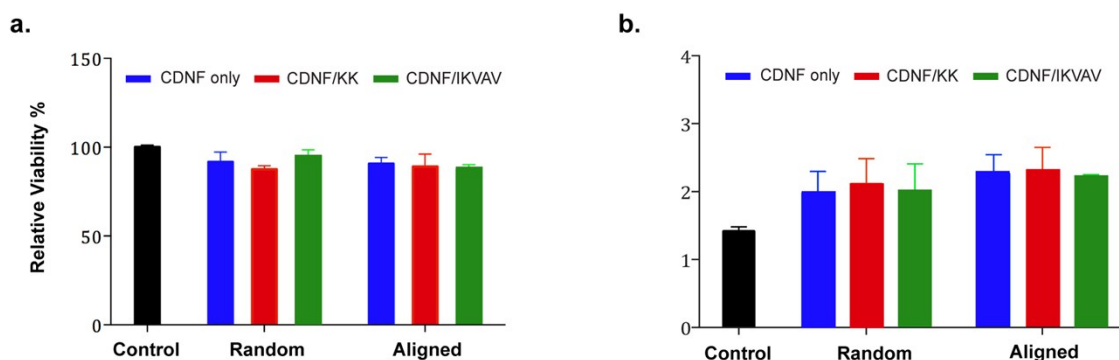


Figure S8. a. Relative viability on CDNFs after 48 h of incubation **b.** Cellular adhesion on CDNFs after 4 h of incubation

Supplementary Table S1. Atom weight percentages of random and aligned CDNFs and functionalized forms

		wt %C	wt %H	wt %N
RANDOM	CDNF	33.32	4.67	-
	CDNF/KK	35.0	4.76	1.55
	CDNF/IKVAV	34.46	4.77	2.37
ALIGNED	CDNF	33.62	4.37	-
	CDNF/KK	34.31	4.75	1.45
	CDNF/IKVAV	35.14	4.86	2.40

Supplementary Table S2. Peptide amount in 100 g of functionalized random and aligned CDNFs.

Peptide Amount (g)	Random CDNFs (g)	Aligned CDNFs (g)
KK	32.90	30.95
IKVAV	30.62	30.81

Supplementary Table S3. Designed primers used for gene expression analysis

Gene	Forward Primer	Reverse Primer
β-III Tubulin	5'-CCTGCCTCTTCGTCTCTAGC-3'	5'-AACTTGGCCCCTATCTGGTT-3'
SYN1	5'-CCAGCTCAACAAATCCCAGT-3'	5'-TGGTCTCAGCTTTCACCTCA-3'
GAPDH	5'-GTGCCAGCCTCGTCTCATA-3'	5'-AACTTGCCGTGGGTAGAGTC-3'