

## Supporting Information

# Biocatalysis of D,L-peptide nanofibrillar hydrogel

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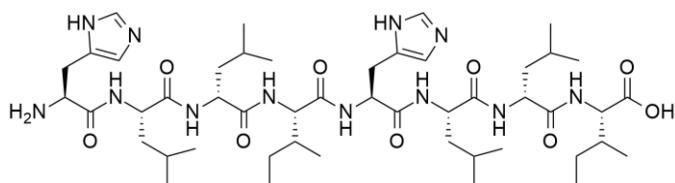
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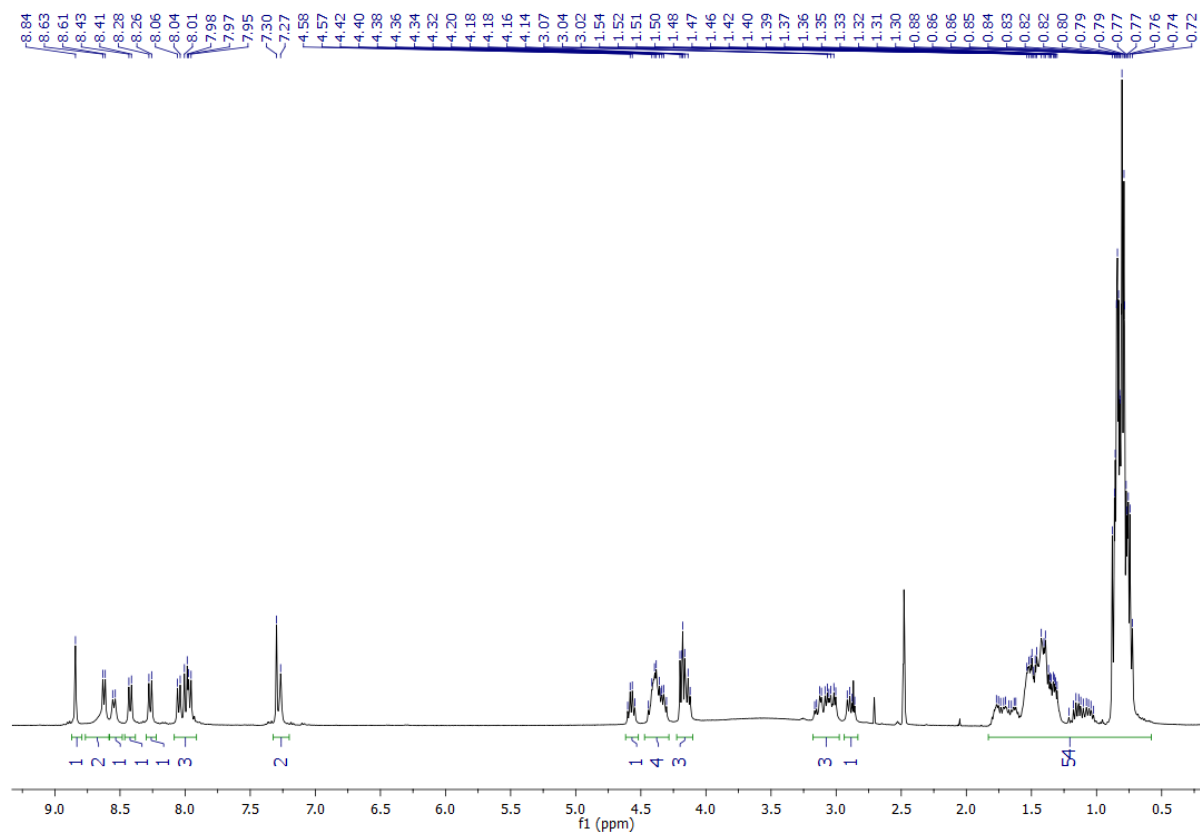
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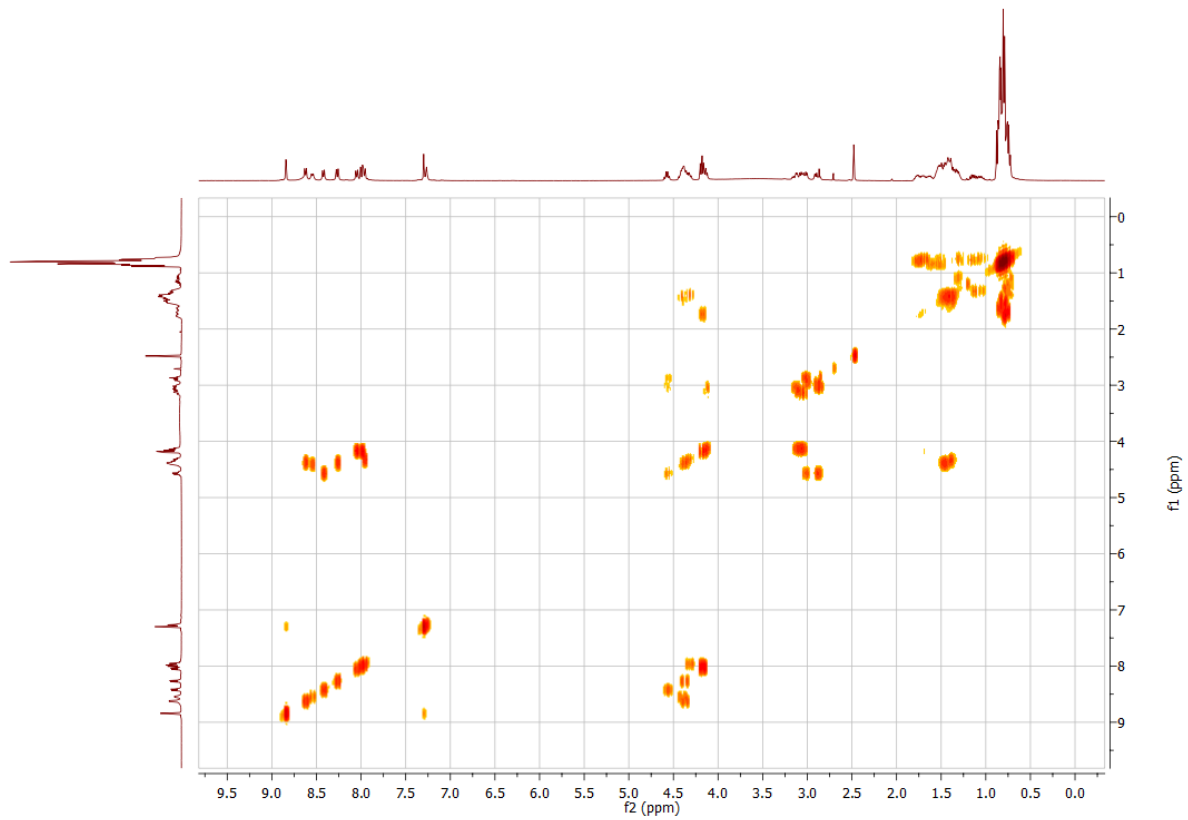
## 1. Peptide spectroscopic data



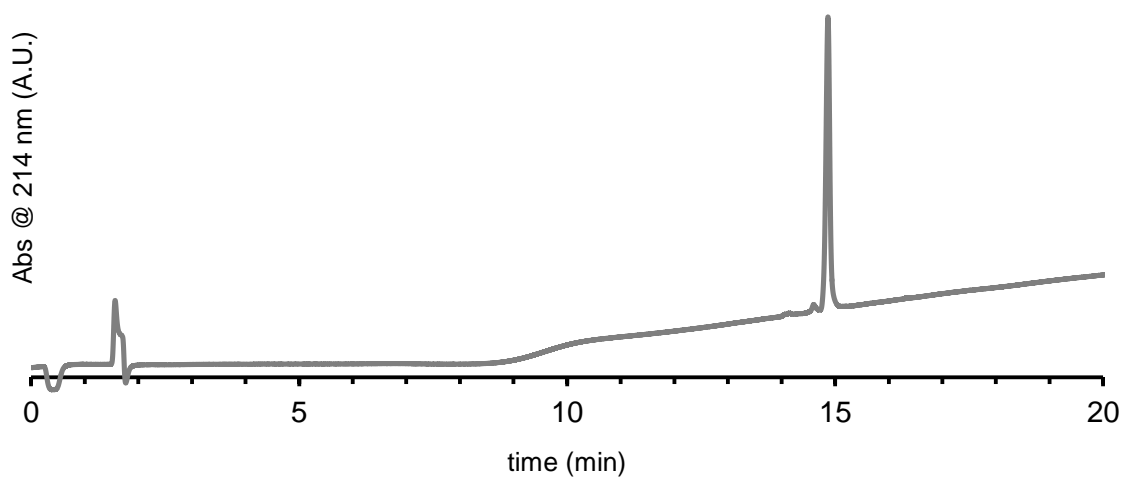
**<sup>1</sup>H-NMR** (400 MHz, DMSO-*d*<sub>6</sub>) δ (ppm): 8.70 (s, 2H, HimCH His), 8.62 (d, 1H, NH), 8.41 (d, 1H, NH), 8.29 (d, 1H, NH), 8.03 (d, 1H, NH), 7.99 (d, 1H, NH), 7.96 (d, 1H, NH), 4.56 (dd, 1H, CH His), 4.38 (m, 4H, CH Leu), 4.18 (m, 2H, CH Ile), 4.04 (dd, 1H, CH His), 3.01 (m, 2H, CH<sub>2</sub> His), 3.01 (dd, 1H, CH<sub>2</sub> His), 2.86 (dd, 1H, CH<sub>2</sub> His), 1.80-1.30 (m, 16H, CH, CH<sub>2</sub>), 1.21-1.01 (m, 2H, CH), 0.88-0.73 (m, 36H, CH<sub>3</sub>). **MS (ESI):** *m/z* 972.5 (M+H)<sup>+</sup> 486.4 (M+2H)<sup>2+</sup>, C<sub>46</sub>H<sub>x</sub>N<sub>12</sub>O<sub>x</sub> requires 971.2.



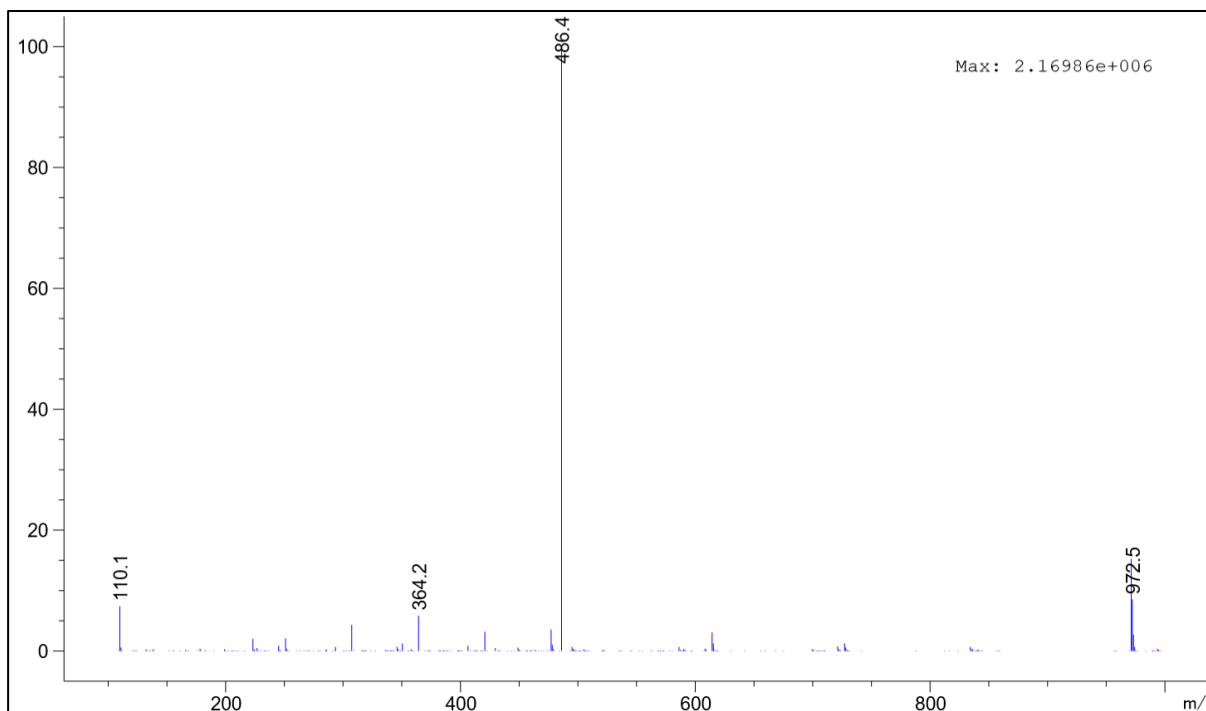
**Fig. S1.** <sup>1</sup>H-NMR spectrum of the octapeptide.



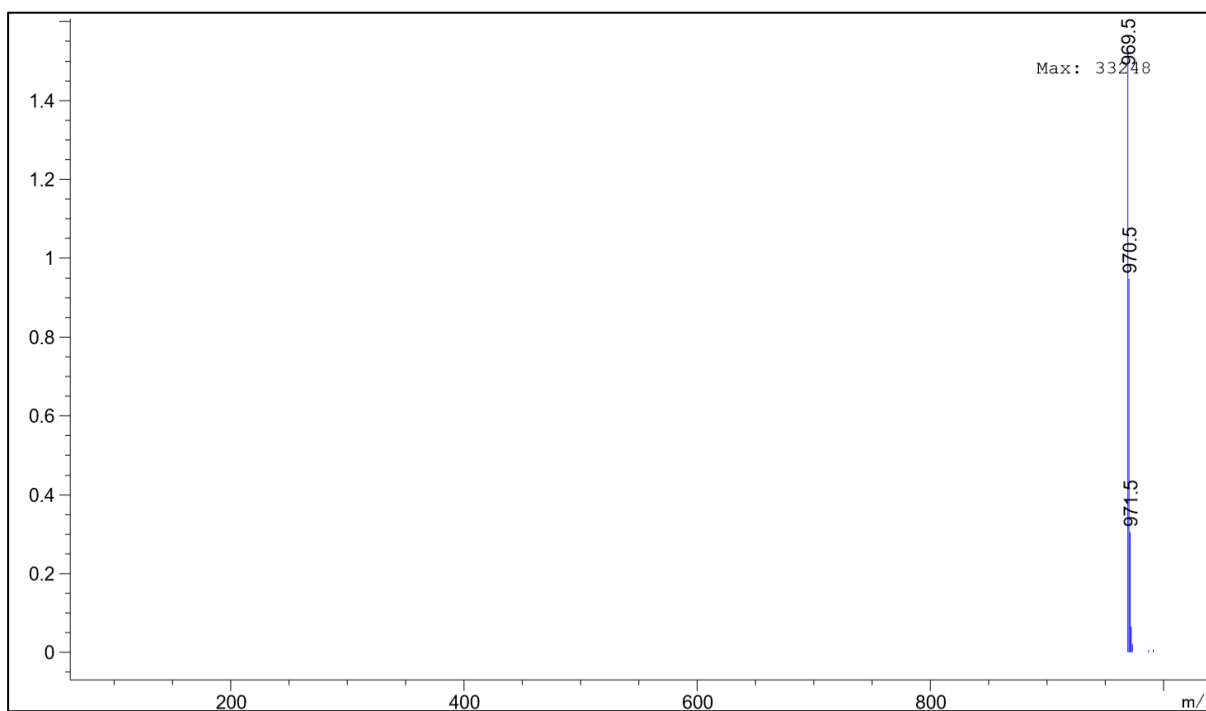
**Fig. S2.** COSY spectrum of the octapeptide.



**Fig. S3.** HPLC trace of the purified octapeptide.

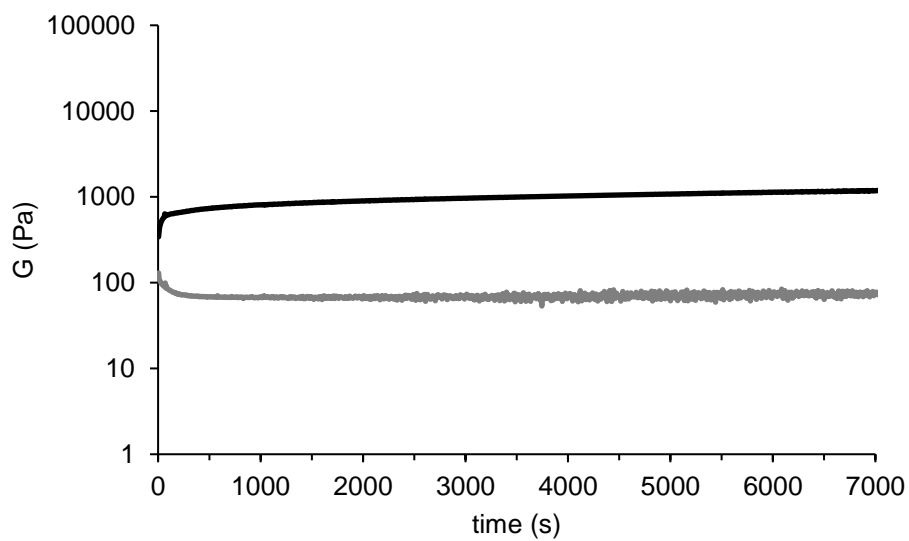


**Fig. S4.** ESI-MS spectrum of the octapeptide (positive ion mode).

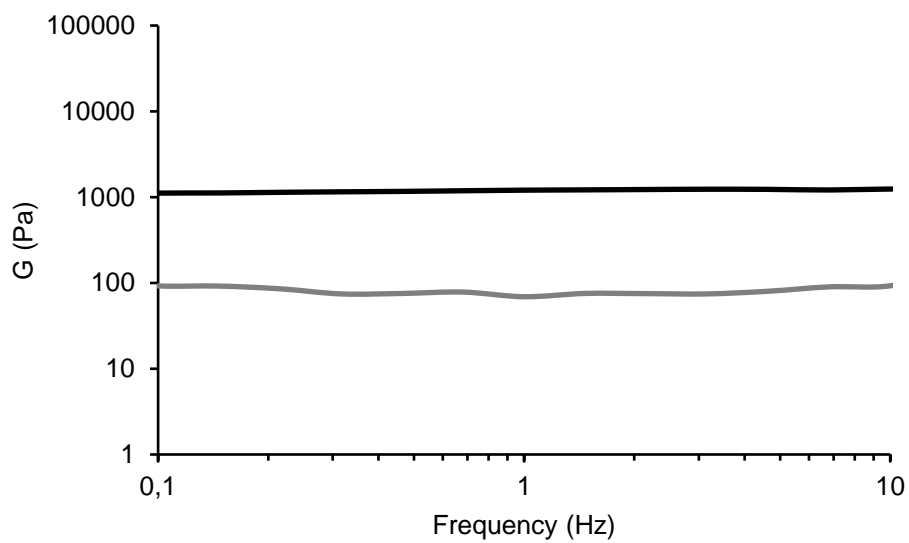


**Fig. S5.** ESI-MS spectrum of the octapeptide (negative ion mode).

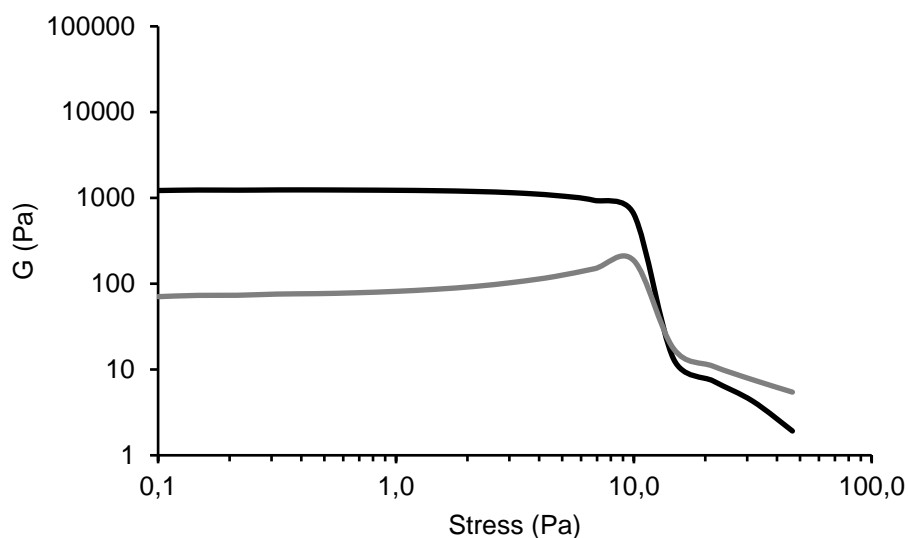
## 2. Rheometry data



**Fig. S6.** Time sweep at 10 mM. Elastic modulus  $G'$  (black) and viscous modulus  $G''$  (grey).

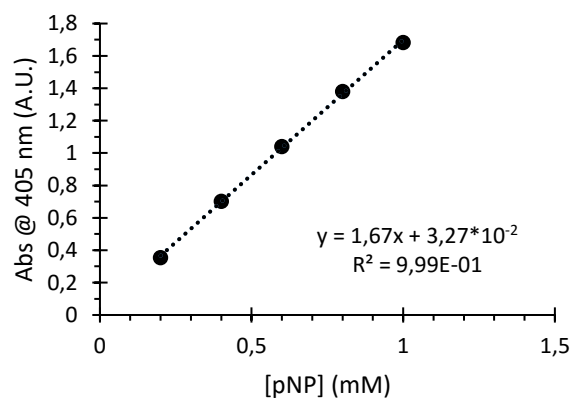


**Fig. S7.** Frequency sweep at 10 mM. Elastic modulus  $G'$  (black) and viscous modulus  $G''$  (grey).



**Fig. S8.** Stress sweep at 10 mM. Elastic modulus  $G'$  (black) and viscous modulus  $G''$  (grey).

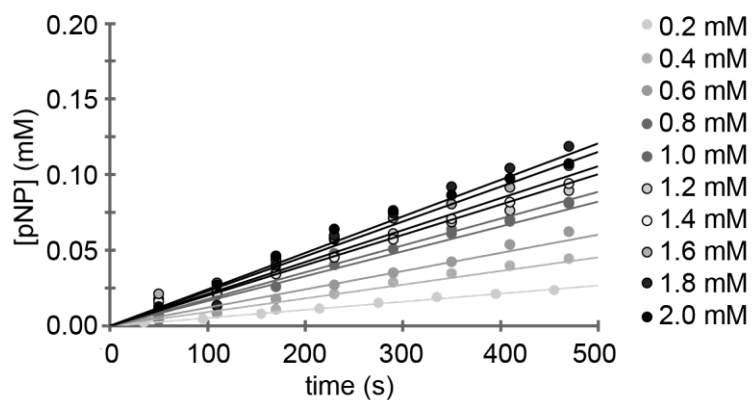
### 3. Biocatalysis data



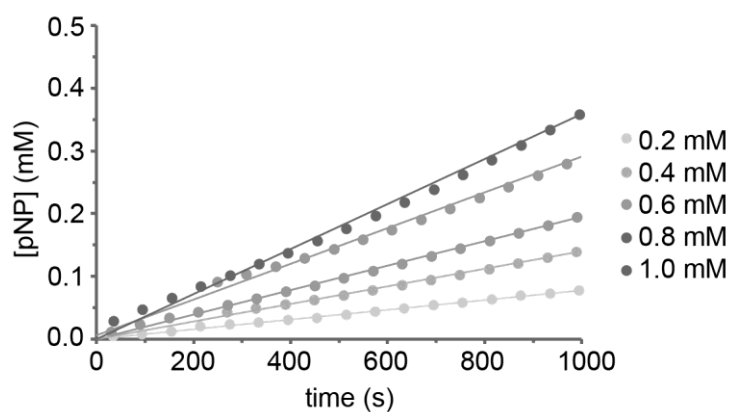
**Fig. S9.** Calibration curve for pNP.

[pNPA] (mM)	$V_i$ (mM/s)
0.2	$6.25 \cdot 10^{-6}$
0.4	$1.26 \cdot 10^{-5}$
0.6	$1.87 \cdot 10^{-5}$
0.8	$2.51 \cdot 10^{-5}$
1.0	$3.13 \cdot 10^{-5}$
1.2	$3.76 \cdot 10^{-5}$
1.4	$4.38 \cdot 10^{-5}$
1.6	$5.01 \cdot 10^{-5}$
1.8	$5.63 \cdot 10^{-5}$
2.0	$6.26 \cdot 10^{-5}$

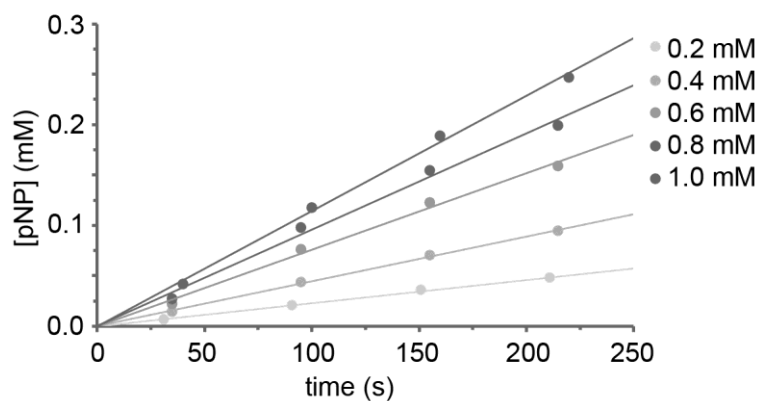
**Fig. S10.** Initial velocities ( $V_i$ ) for blank reactions (without catalyst) in PBS at pH 7 ( $k_{obs} = 3.13 \cdot 10^{-5}$ ).



**Fig. S11.** Initial velocities ( $V_i$ ) for the reaction with 0.1 mM peptide, which is the minimum concentration for significant catalysis to occur.



**Fig. S12.** Initial velocities ( $V_i$ ) for the reaction with 1 mM peptide.



**Fig. S13.** Initial velocities ( $V_i$ ) for the reaction with 10 mM peptide.