Electronic Supplementary Material (ESI) for Nanoscale.
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Nanoscale

ARTICLE

High speed atomic force microscopy allows to investigate the interactions between toxic $A\beta_{1\text{-}42}$ peptides and model membranes in real time

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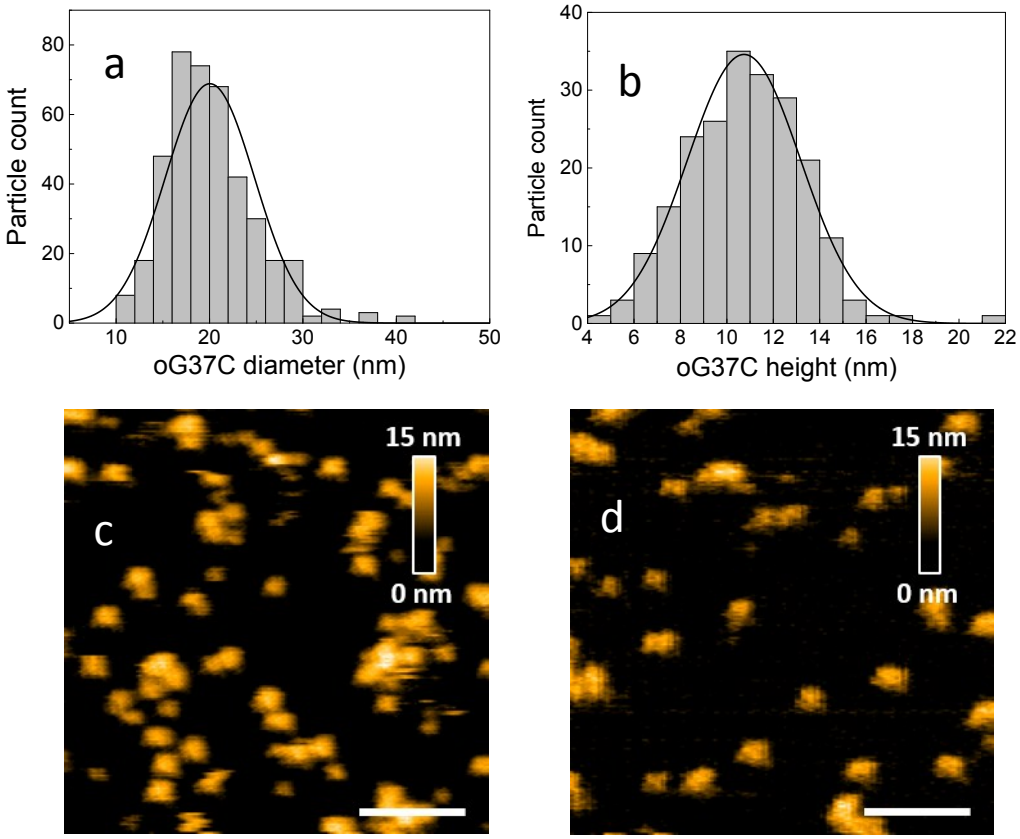

Figure ESI1: histograms of the diameters (a) and of the heights (b) of the oG37C peptides. AFM pictures of the oG37C peptides after 24h (c) and 48h (d) of incubation. The oG37C oligomers do not encounter fibrillation even after a long time.

Electronic Supplementary Information

ESI2_video_SM-PC: High Speed AFM video of the interaction between oG37C (at 20µM) and a mimetic membrane composed of sphyngomyelin and phosphatidylcholine (SM/POPC, 20/80).

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ESI3_video_peptide_diffusion_mica: High Speed AFM video showing the diffusion of the oG37C peptides on a mica substrate.

ESI4_video_SM-PC-Chol: High Speed AFM video of the interaction between oG37C (at 20µM) and a mimetic membrane composed of sphingomyelin, phosphatidylcholine and Cholesterol (20/60/20).

ESI5_video_SM-PC-GM1: High Speed AFM video of the interaction between oG37C (at 20µM) and a mimetic membrane composed of sphingomyelin, phosphatidylcholine and Ganglioside GM1 (20/40/40).

ESI6_video_peptide_diffusion_membrane: High Speed AFM video showing the diffusion of the oG37C peptides on the membrane composed of sphingomyelin, phosphatidylcholine and Ganglioside GM1 (20/40/40).

ESI7_video_SM-PC-Chol-GM1: High Speed AFM video of the interaction between oG37C (at 20µM) and a mimetic membrane with holes and composed of sphingomyelin, phosphatidylcholine, Cholesterol and ganglioside GM1 (20/20/40/20).

ESI8_video_SM-PC-Chol-GM1: High Speed AFM video of the interaction between oG37C (at 20µM) and a mimetic membrane composed of sphingomyelin, phosphatidylcholine, Cholesterol and ganglioside GM1 (20/20/40/20).

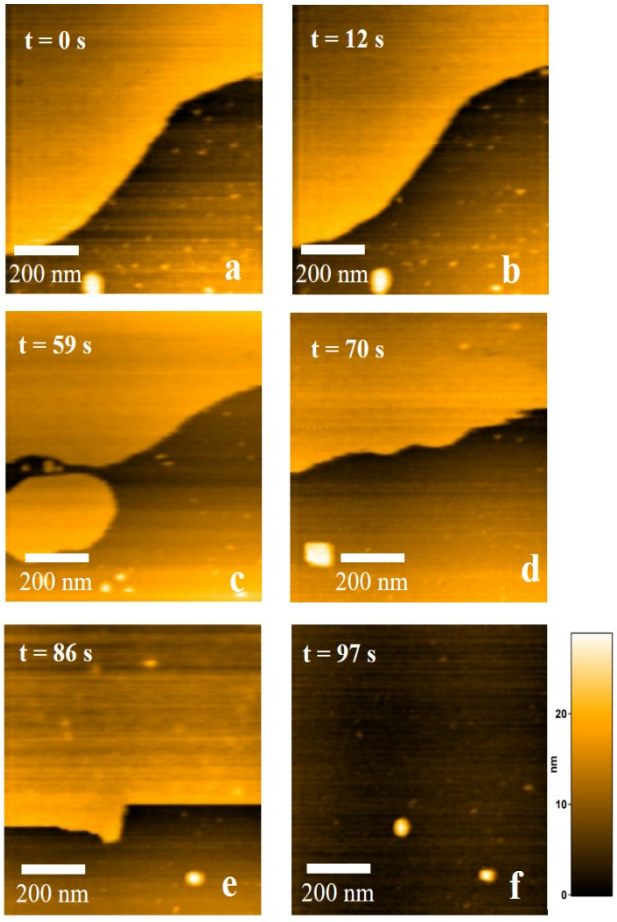

Figure ESI9: Interaction between $A\beta_{1-42}$ oG37C peptides (at 20µM) and a SM/POPC/Chol/GM1 biomimetic membrane without holes. Successive HS-AFM images (a-j). Frame rate, 1s/frame; scan area, 800 × 800 nm² with 200 × 200 pixels². At t=12s, the peptide is injected in the fluid cell during imaging.

ESI10_video_SM-PC-Chol-GM1_control: Control High Speed AFM video of a mimetic membrane composed of sphingomyelin, phosphatidylcholine, Cholesterol and ganglioside GM1 (20/20/40/20).

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ESI11_video_SM-PC-Chol-GM1: High Speed AFM video of the interaction between oG37C (at 20µM) and a mimetic membrane composed of sphingomyelin, phosphatidylcholine, Cholesterol and ganglioside GM1 (20/20/40/20) recorded on two different spots, one without membrane and one with membrane patches.

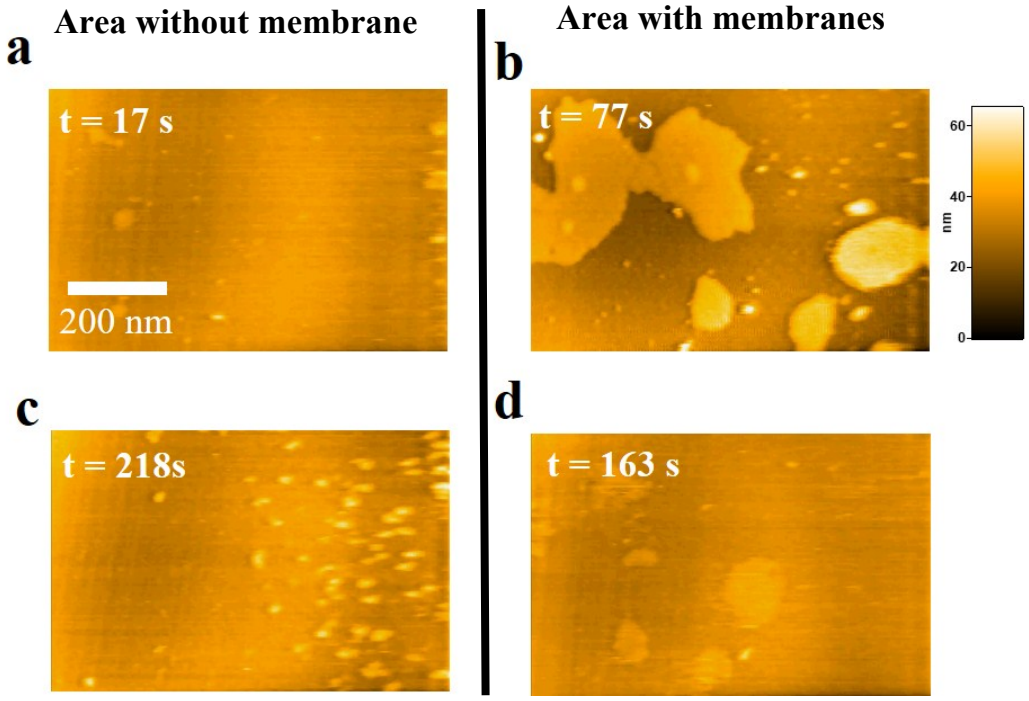

Figure ESI12: Interaction between $A\beta_{1-42}$ *oG37C peptide and a SM/POPC/Chol/GM1 biomimetic membrane. Successive HS-AFM images (a) on a first spot without membrane (b) on a different spot with membrane patches (c) after membrane disruption on the area recorded in (b) and (d) on the area recorded on image (a) at the end of the membrane disruption. Frame rate, 1s/frame; scan area, 800 × 528 nm² with 256 × 128pixels². At t=90s, the peptide is injected in the fluid cell during imaging.*

ESI13_video_SM-PC-Chol-GM1: High Speed AFM video of the interaction between oG37C (at 5µM) and a mimetic membrane composed of sphingomyelin, phosphatidylcholine, Cholesterol and ganglioside GM1 (20/20/40/20).

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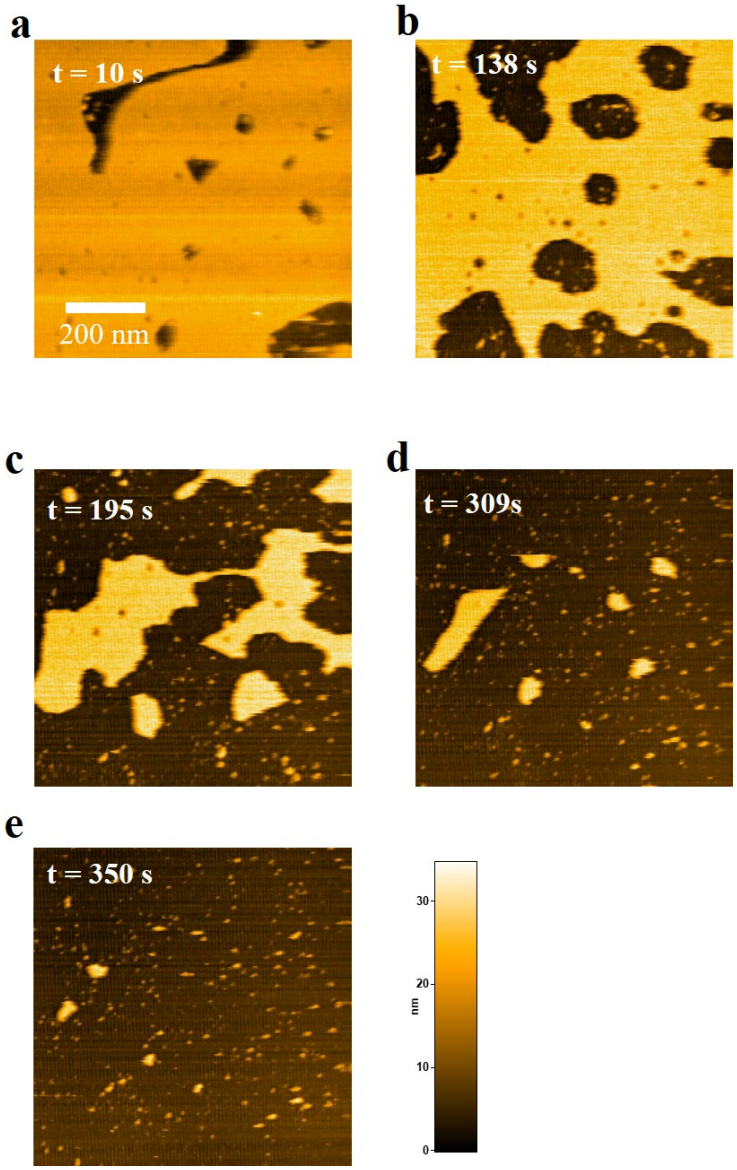

Figure ESI14: Interaction between $A\beta_{1-42}$ *oG37C peptides (5μM) and a SM/POPC/Chol/GM1 biomimetic membrane. Frame rate, 1s/frame; scan area, 800 × 800 nm² with 256 × 256 pixels². At t=30s, the peptide is injected in the fluid cell during imaging.*

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