Supporting information:

Reversible Gating of Ion Transport Through DNA-Functionalized Carbon Nanotube Membranes

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1- Length of As-grown CNTs measured using SEM

The sample was prepared by cutting across a large area of CNT forest grown on a Si substrate.

![SEM image of vertically aligned CNTs on a Si substrate.](image)

**Figure S1:** SEM image of vertically aligned CNTs on a Si substrate.

2- Calibration curve for DPV current vs. ferricyanide concentration
Figure S2: Calibration curve for differential pulse voltammetry (DPV) measurement of ferricyanide ion concentration.

3- Fluorescence microscopic confirmation of ssDNA grafting on CNT membranes

Figure S3: Transmission white-light (a) and Fluorescence microscopy (b) images of a CNT membrane after conjugation of ssDNA (Cy3-labelled, amine-modified) onto the CNT tips.
**Figure S4:** Fluorescence spectra of permeate solutions 48 hours after ssDNA (red) and cDNA (blue) functionalization (in the feed reservoir) confirmed that DNA transport across the CNT membranes is negligible. As a reference, the fluorescence spectrum of 10 nM Cy3-labelled ssDNA shows a clear peak around 565 nm.
5- HR-TEM images showing structural blockage in a small percentage of MWNTs

**Figure S5:** HR-TEM images of multi-walled carbon nanotubes show example structural defects causing blocked CNT channels.