CLAIMS:

1. A construct for promoting absorption of molecules by a cell located at the surface of the construct; wherein the construct comprises:

- a plurality of ~~micro and/or~~ nanoscale protrusions located at the surface of the construct;
- wherein the protrusions have a size and are spaced apart from each other at a distance that promotes absorption of molecules by said cell;
- ~~wherein a pitch between the protrusions is less than the size of the cells to be located at the surface of the construct;~~
- wherein the protrusions are in form of ~~micropillars or~~ nanopillars;
- ~~wherein the protrusions are nanopillars and~~ wherein the pitch between the nanopillars from edge to edge ~~would be~~ is between 150 to 300 nm such that the pitch of the protrusion is less than the size of the cells to be located at the surface of the construct,
- and wherein the protrusions are arranged in an isotropic pattern and are round or polygonal.

2. The construct of claim 1, wherein the absorption of molecules is facilitated by endocytosis, or receptor mediated endocytosis, or pinocytosis, or phagocytosis.

~~3. The construct of claim 1 or 2, wherein the protrusions are arranged in an isotropic or anisotropic pattern.~~

~~4.~~3. The construct of any one of the preceding claims, wherein the protrusions are located at the surface of the construct in a detachable or non-detachable form.

~~5. The construct of any one of the preceding claims, wherein the protrusions are round or polygonal.~~

~~6.~~4. The construct of claim 1, wherein the pillars have a diameter or maximal width of between about 10 nm to about 5 μm or between about 50 nm to 4 μm, or between about 200 nm to about 2 μm.

~~7.~~5. The construct of any one of claims 1 to ~~6~~4, wherein the pillars are extending substantially perpendicular from the surface of the construct or wherein the pillars are

collapsed pillars lying at the surface of the construct; wherein in case the pillars are collapsed pillars they have a length of between about 50 nm to about 5 μm.

~~8.~~6. The construct of any one of claims 1 to ~~7~~5, wherein the pillars are extending between about 50 nm to 4 μm, or between about 100 nm to about 2 μm above the surface of the construct.

~~9.~~7. The construct of any one of the preceding claims, wherein the protrusions are spaced apart from each other by between 200 nm to 12 μm, or 400 to 10 μm, or 5 nm to about 1 μm.

~~10. The construct of claim 9, wherein the protrusions are micropillars and wherein the pitch between the micropillars from edge to edge would be between 1 to 10 μm, or about 9.5 μm.~~

~~11.~~8. The construct of claim ~~9~~7, ~~wherein the protrusions are nanopillars and~~ wherein the pitch between the nanopillars from edge to edge would be between 200 nm to 250 nm.

~~12.~~9. The construct of any one of the preceding claims, wherein a residual layer is arranged between the pillars and the surface of the construct.

~~13.~~10. The construct of any one of the preceding claims, wherein the construct is obtained via nano-imprinting lithography.

~~14.~~11. The construct of claim ~~13~~10, wherein the nano-imprinting lithography is thermal nano-imprinting lithography or UV nano-imprinting lithography.

~~15.~~12. The construct of any one of the preceding claims, wherein the construct and/or the protrusions are made of a polymer.

~~16.~~13. The construct of claim 12~~5~~, wherein the polymer is a synthetic polymer, or a rigid synthetic polymer, or a bioresorbable polymer, or a biodegradable polymer.

~~17.~~14. The construct of claim 16~~2~~, wherein the synthetic polymer is selected from the group consisting of poly(methyl methacrylate) (PMMA), polydimethylsiloxane (PDMS), polystyrene (PS) and mixtures thereof.

~~18.~~15. The construct of claim 16~~4~~, wherein the biodegradable polymer is selected from the group consisting of chitosan, poly(ε-caprolactone), polyglycolic acid, poly(lactic acid), polyphosphoester (PPE) and mixtures thereof.

~~19.~~16. The construct of claim 16~~4~~ wherein the rigid synthetic polymer is polystyrene.

~~20.~~17. The construct of claim 14~~7~~, wherein the polystyrene is tissue-culture grade polystyrene (TCPS).

~~21.~~18. The construct of any one of claims 15~~3~~ to ~~20~~17, wherein during manufacture the polymer is mixed with molecules which are to be absorbed by the cell to be located on the construct or wherein the molecules are attached to the surface of the protrusions.

~~22.~~19. A method of promoting absorption of molecules by cells, wherein the method comprises:

- providing a construct according to any one of claims 1 to ~~21~~18;
- seeding and culturing at least one cell at the surface of the construct under conditions suitable for absorption of molecules by the cells.

~~23.~~20. The method of claim ~~22~~19, wherein the absorption of molecules is via endocytosis, or pinocytosis, or phagocytosis.

~~24.~~21. The method of claim 20~~22~~, wherein absorption of the molecules uses a non-viral carrier or a viral carrier.

~~25.~~22. The method of claim ~~22~~19 to ~~24~~21, wherein the molecules to be absorbed are selected from the group consisting of nucleic acid, nucleic acid vectors, siRNA, microRNA, magnetic nanoparticles, gold nanoparticles, fluorescent nanoparticles, quantum dots, aptamers (oligonucleic acid or peptide), peptides, growth factors, therapeutically active substances, biomarkers, colouring agents, and any one of the aforementioned molecules attached to a microparticles.

~~26.~~23. Use of a construct according to any one of claims 1 to ~~21~~18 for cell transfection, or drug-delivery or high-throughput screening arrays.