

## Lists of Tables

Table no.	Caption	Page no.
1.1	Deposition fate of inhaled particles in lungs	6
1.2	DPI devices currently available on the market	14
1.3	DPIs approved or in development stage	15
3.1	Composition of Simulated lung fluid (SLF)	94
3.2	Calibration data for estimation of Netilmicin sulfate at 335nm	103
3.3	Regression analysis parameter for estimation of Netilmicin sulfate at 335nm	104
3.4	Accuracy data for Netilmicin sulfate	105
3.5	Standard addition method for accuracy (n = 9)	105
3.6	Result of intermediate precision study	106
3.7	Determination of Netilmicin sulfate in marketed formulation	106
3.8	Calibration data for Rhodamine B and 6-Coumarin in Chloroform:Methanol (1:1) obtained with Spectrofluorometer (RF-5301PC, Shimadzu)	109
3.9	Calibration data for Rhodamine B and 6-Coumarin in Chloroform:Methanol (1:1) obtained with Synergy™ Mx Microplate Reader	111
3.10	Calibration data for plasmid DNA in 1X TE buffer, PBS pH 7.4, and Acetate buffer pH 5	113
3.11	Calibration data for BSA	115
4.1	Observations of bacterial growth on agar plate after transformation	128
5.1	Actual and coded values of the formulation parameters	137
5.2	Effects of the independent variables on two response variables: encapsulation efficiency and the particle size	137
5.3	Results of the fractional factorial design	154
5.4	Analysis of variance table obtained by statistical evaluation of the results of % EE	155
5.5	Analysis of variance table obtained by statistical evaluation of the results of particle size (nm)	156
5.6	Optimal parameters for NS-loaded PLGA NPs	165
5.7	Summary of drug encapsulation efficiency, particle diameter and Zeta potential of PEGylated NS loaded PLGA NPs (mean ± SD, n = 3).	167
5.8	Summary of drug encapsulation efficiency, particle diameter and Zeta potential of rhodamine loaded PLGA NPs (mean ± SD, n = 3).	167
5.9	Physicochemical characterization of pDNA loaded PEI-PLGA NPs. Results denote mean ± SD	184
5.10	Physicochemical characterization of PEGylated pDNA loaded PEI-PLGA NPs. Results denote mean ± SD	191

5.11	Summary of drug encapsulation efficiency, particle diameter and Zeta potential of 6-coumarin loaded PLGA NPs (mean $\pm$ SD, n = 3).	194
6.1	Particle size of NS loaded NPs before and after lyophilization (n=3) (Mean $\pm$ SD)	226
6.2	Particle size of pDNA loaded NPs before and after lyophilization (n=3) (Mean $\pm$ SD)	227
6.3	Aerodynamic properties of dry powders containing NS loaded and Rhodamine loaded PLGA NPs (mean $\pm$ SD, n=3).	230
6.4	Aerodynamic properties of dry powders containing pDNA loaded and 6-coumarin loaded PLGA NPs (mean $\pm$ SD, n=3).	230
6.5	Results of stability study (mean $\pm$ SD)	240

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## Lists of Figure

Figure no.	Caption	Page no.
1.1	Internal structure and organisation of lungs.	3
1.2.	Deposition efficiency of particle in the respiratory system as function of the particle size	7
1.3	Schematic presentation of a jet nebulizer	9
1.4	Schematic representation of a typical pressurized metered-dose inhaler	10
1.5	Representation of the use of a spacer device with an MDI	12
1.6	Schematic presentation of the Spinhaler	17
1.7	Schematic presentation of the Diskhaler	18
1.8	Schematic presentation of the Diskus	18
1.9	Schematic presentation of Turbuhaler	19
2.1	Various classes of CFTR mutations	41
2.2	Median survival age in cystic fibrosis from 1988 until 2012. The 95% confidence intervals for the survival estimate are denoted by the vertical bars	51
2.3	New drug delivery approaches to enhance transport of therapeutics through cystic fibrosis sputum. A) Surface modified nanoparticles; B) Co-administration with DNase; C) Co-administration with mannitol; D) Co-treatments with drug and nanoparticles	60
2.4	a) piRIS2-EGFP vector; b) piRIS2-EGFP CFTR vector	68
2.5	a) pCDNA 3 vector; b) pcDNA-3 LUC-WT plasmid vector	69
2.6	Structure of Netilmicin Sulfate	70
3.1	UV Absorption Spectrum of Netilmicin sulfate in Acetonitrile:Phosphate buffer pH 7.4 (2:1), phosphate buffer (pH 7.4), Simulated lung fluid	107
3.2	Calibration curve of Netilmicin sulfate in Acetonitrile:Phosphate buffer pH 7.4 (2:1), Phosphate buffer (pH 7.4), Simulated Lung Fluid at 335 nm	107
3.3	Overlaid spectra of pure drug and drug spectrum in presence of common excipients used in formulations in Acetonitrile:Phosphate buffer pH 7.4 (2:1)	108
3.4	Overlaid spectra of pure drug and drug spectrum in presence of common excipients used in formulations in Phosphate Buffer pH 7.	108
3.5	Overlaid spectra of pure drug and drug spectrum in presence of common excipients used in formulations in Simulated Lung Fluid	109
3.6	Calibration curve of Rhodamine B and 6-Coumarin in in Chloroform: Methanol (1:1) obtained with Spectrofluorometer (RF-5301PC, Shimadzu)	111
3.7	Calibration curve of Rhodamine B and 6-Coumarin in in Chloroform: Methanol (1:1) obtained with Synergy™ Mx Microplate Reader	112
3.8	Calibration curve for plasmid DNA in 1X TE buffer, PBS pH 7.4, and Acetate buffer pH 5	114

3.9	Calibration curve for BSA	115
4.1	Agarose gel electrophoresis for (A) piRIS2-EGFP CFTR plasmid (Lane 1: Marker DNA, Lane 2: Isolated Plasmid); (B) pCDNA-3 LUC-WT plasmid (Lane 1: Marker DNA, Lane 2: Isolated Plasmid)	129
4.2	Digestion of piRIS2-EGFP CFTR plasmid by Pst I and Xho I restriction endonuclease enzyme. (Lane 1: Undigested Plasmid, Lane 2: Marker DNA, Lane 3: Digested with PSt I, Lane 5: Undigested Plasmid, Lane 6: Marker DNA, Lane 7: Digested with Xho I)	130
4.3	Digestion of pCDNA-3 LUC-WT plasmid by Pst I and Xho I restriction endonuclease enzyme. (Lane 1: Undigested Plasmid, Lane 2: Marker DNA, Lane 3: Digested with Hind III & BamH I, Lane 5: Undigested Plasmid, Lane 6: Marker DNA, Lane 7: Digested with EcoR I)	131
5.1	Nanoparticulate formulation with varying charge ratio of NS & DS and different concentrations of PLGA were formulated using a double emulsion/solvent evaporation technique. Particles were either encapsulated with NS or with Rhodamine B	139
5.2	Nanoparticulate formulation with varying w/w ratio of PEI to PLGA were formulated using a double emulsion/solvent evaporation technique encapsulated with pDNA or 6-coumarin.	146
5.3	Interaction plots showing significant two-way interaction terms for the dependent variables. Solid lines display factor at high level, whereas dashed lines are the low level of the factors. A: interaction term X3X4–Pluronic F 68 concentration/ NS:DS ratio. B: X1X5– Volume ratio/sonication time. C: X3X4 – Pluronic F 68 concentration/ NS:DS ratio. D: X3X5– Pluronic F 68 concentration/Sonication time. E: X4X5– NS:DS ratio/sonication time. A: Encapsulation efficiency. B-E: particle size	159
5.4	Surface plot for PLGA NPs; A) effect of PLGA concentration & Volume ratio on EE; B) effect of Pluronic F 68 concentration & Volume ratio on EE; C) effect of NS:DS ratio & Volume ratio on EE; D) effect of Sonication time & Volume ratio on EE; E) effect of Pluronic F 68 concentration & PLGA concentration on EE; F) effect of NS:DS ratio & PLGA concentration on EE; G) effect of sonication time & PLGA concentration on EE; H) effect of NS:DS ratio & Pluronic F 68 concentration on EE; I) effect of sonication time & Pluronic F 68 concentration on EE; J) effect of NS:DS ratio & sonication time on EE	161
5.5	Surface plot for PLGA NPs; A) effect of PLGA concentration & Volume ratio on PS; B) effect of Pluronic F 68 concentration & Volume ratio on PS; C) effect of NS:DS ratio & Volume ratio on PS; D) effect of Sonication time & Volume ratio on PS; E) effect of Pluronic F 68 concentration & PLGA concentration on PS; F) effect of NS:DS ratio & PLGA concentration on PS; G)	162

- effect of sonication time & PLGA concentration on PS; H) effect of NS:DS ratio & Pluronic F 68 concentration on PS; I) effect of sonication time & Pluronic F 68 concentration on PS; J) effect of NS:DS ratio & sonication time on PS
- 5.6 Counter plot for PLGA NPs; A) effect of PLGA concentration & Volume ratio on EE; B) effect of Pluronic F 68 concentration & Volume ratio on EE; C) effect of NS:DS ratio & Volume ratio on EE; D) effect of Sonication time & Volume ratio on EE; E) effect of Pluronic F 68 concentration & PLGA concentration on EE; F) effect of NS:DS ratio & PLGA concentration on EE; G) effect of sonication time & PLGA concentration on EE; H) effect of NS:DS ratio & Pluronic F 68 concentration on EE; I) effect of sonication time & Pluronic F 68 concentration on EE; J) effect of NS:DS ratio & sonication time on EE 163
- 5.7 Counter plot for PLGA NPs; A) effect of PLGA concentration & Volume ratio on PS; B) effect of Pluronic F 68 concentration & Volume ratio on PS; C) effect of NS:DS ratio & Volume ratio on PS; D) effect of Sonication time & Volume ratio on PS; E) effect of Pluronic F 68 concentration & PLGA concentration on PS; F) effect of NS:DS ratio & PLGA concentration on PS; G) effect of sonication time & PLGA concentration on PS; H) effect of NS:DS ratio & Pluronic F 68 concentration on PS; I) effect of sonication time & Pluronic F 68 concentration on PS; J) effect of NS:DS ratio & sonication time on PS 164
- 5.8 **A)** The DLS results show that size of NSDS PLGA NPs is  $140.83 \pm 2.4$  nm (PDI =  $0.130 \pm 0.018$ ); **B)** zeta potential ( $-23.45 \pm 3.06$  mV) of NS-loaded NPs; **C)** TEM micrographs of NSDS PLGA NPs. DLS & TEM based characterization of NPs confirms that size distribution and colloidal stability of mono-dispersed particles 165
- 5.9 **A)** The DLS results show that size of PEG NSDS PLGA NPs is  $150.13 \pm 3.20$  nm (PDI =  $0.295 \pm 0.07$ ); **B)** zeta potential ( $-12.53 \pm 1.78$  mV); **C)** TEM micrographs of PEG NSDS PLGA NPs. DLS & TEM based characterization of NPs confirms that size distribution and colloidal stability of mono-dispersed particles 166
- 5.10 **a)** Differential scanning calorimetry curves of (A) PLGA, (B) NS, (C) blank NPs, (D) NS-loaded NPs; **b)** Overlay of FTIR spectra of A) PLGA, B) NS, C) Physical mixture, D) NS loaded NPs. The absence of characteristic drug peaks in the NPs sample indicates that nonencapsulated drug on NPs surface was not present 169
- 5.11 Overlay of FTIR spectra of A) DSPE PEG 2000 B) PEG NSDS PLGA NPs. The characteristic DSPE PEG 2000 peaks in the NPs sample confirms the PEGylation of NPs. 170

- 5.12 **A)** Cumulative percent drug released in PBS pH 7.4; **B)** Cumulative percent drug released in SLF. 171
- 5.13 CFU count from blank NPs susceptibility testing. We observed that CFU count for both control and the blank NPs, were closely similar, which demonstrate that the blank NPs do not possess any antibacterial activity. The antibacterial effect is mainly due to the NS encapsulated in the NPs 173
- 5.14 **A)** In vitro antibacterial activity of free NS and NS-encapsulated PLGA NPs against *P. aeruginosa*. (OD = absorbance at 600 nm of UV-spectrophotometer measurement). The higher MIC value for NS-loaded NPs was attributed to the sustained release of the drug from the NPs, however the amount of drug released by the particles after 24 hour was similar to the MIC observed for the NS alone; **B)** Effect of the encapsulation on the antibacterial activity of NS. We observed that there is no significant difference ( $p > 0.05$ ) ( $p=0.138$ ;  $p > 0.05$  &  $p=0.385$ ;  $p > 0.05$  for NSDS PLGA & PEG-NSDS PLGA NPs respectively) in the bacterial eradication rates of the encapsulated NS and native NS, which confirm that encapsulation of NS in NPs doesn't affect its antibacterial activity. 173
- 5.15 Fate of NS antibacterial activity *in-vivo*. NPs show the better performance than free NS due to the protection of the NS by NPs when incubated with bronchial cells. NS was released slowly from NPs over the period of time and retains its antibacterial activity against *P. aeruginosa*. \*Significant difference;  $P < 0.05$ . 174
- 5.16 a) Percent amount of Rhodamine permeated in the gelatin layer after 8, 12, 24 h. Data are mean  $\pm$  SD ( $n = 3$ ); b) visual inspection of NP penetration through an artificial mucus layer (representative image at 8, 12, 24 h). A: PEG NSDS PLGA NPs; B: NSDS PLGA NPs. \*Significant difference;  $P < 0.05$  176
- 5.17 **A)** Effects of NP formulations on viability of CFBE 41 o- cells after 24 h incubation. Test samples contained 0.5 mg/mL, 1 mg/mL, 2 mg/mL and 5 mg/mL of formulation. Data represent mean  $\pm$  SD,  $n = 6$ ; 6 (\* results are significantly different from other treatment groups,  $p < 0.05$ ) **B)** TEER analysis of CFBE 41 o- cells layers exposed to NPs over time. We observed that there was significant difference in TEER when using the NSDS PLGA NPs as compared to the control ( $p=0.03$ ;  $p < 0.05$  for NSDS PLGA NPs and control &  $p=0.22$ ;  $p > 0.05$  PEG-NSDS PLGA NPs and control). The results of MTT & TEER study suggest the safe use of developed NPs system. 177
- 5.18 Confocal microscopy of CFBE cells (63X) after 24 hours of incubation with NPs: A) PEG NSDS PLGA NPs; B) NSDS PLGA NPs; C) The NPs uptake in CFBE cells ( $n = 9$ ). Top images represent slices from the middle of a z-stack of a CFBE cells. Bottom images are projections in the z-axis created from a z-stack of the same CFBE cells displayed in the top image \*Significant difference;  $P=0.02$ ;  $P < 0.05$ . Cells were treated with Rhodamine loaded NPs (red), fixed 179

	and nucleus stained with Hoechst dye. A more efficient NP uptake is apparent for PEGylated NPs as compared to non-PEGylated NPs	
5.19	Stability of NPs was tested by measuring particle size in (A) saline solution; (B) simulated lung fluid at 37 °C; (C) 10% fetal bovine serum. The PEGylated NPs remained stable for up to 2 days while non PEGylated NPs tended to show aggregation, indicating comparatively less stability. Data are shown as mean ± SD (n = 3)	180
5.20	Agarose gel electrophoresis of pDNA extracted at various stage during process optimization. Lane 1: Control non-treated Plasmid; Lane 2: Amplitude 10, 1 <sup>0</sup> Emulsion; Lane 3: Amplitude 10, 2 <sup>0</sup> Emulsion; Lane 4: Amplitude20, 1 <sup>0</sup> Emulsion; Lane 5: Amplitude20, 2 <sup>0</sup> Emulsion; Lane 6: Amplitude30, 1 <sup>0</sup> Emulsion; Lane 7: Amplitude30, 2 <sup>0</sup> Emulsion.	182
5.21	Agarose gel electrophoresis of pDNA extracted at various stage during process optimization. <b>A:</b> Primary emulsion: Lane 3: Control non-treated Plasmid, Lane 4: Sonication time 20 sec, Lane 5: Sonication time 30 sec, Lane 6: Sonication time 30 sec; <b>B:</b> Secondary emulsion: Lane 3: Control non-treated Plasmid, Lane 4: Sonication time 20 sec, Lane 5: Sonication time 30 sec, Lane 6: Sonication time 30 sec.	182
5.22	<b>A)</b> The DLS results show that size of NPs is 180.3 ± 2.06 nm (PDI = 0.097 ± 0.004); <b>B)</b> zeta potential (+ 27.66 ± 2.05 mV) of PEI-PLGA NPs (10%w/w PEI); <b>C)</b> TEM micrographs of PEI-PLGA NPs (10%w/w PEI). DLS based characterization of size and zeta potential of NPs confirms that size distribution and colloidal stability of mono-dispersed particles. TEM based size and surface characterization of NPs confirms size distribution and colloidal stability of mono-dispersed particles	184
5.23	Overlay of FTIR spectra of A) PLGA, B) PEI, C) PEI PLGA (10%) NPs. Presence of characteristic PEI peaks in the NPs sample indicates that the presence of PEI on NPs surface.	185
5.24	Cumulative release of pDNA from NPs A: PBS pH 7.4; B: Sodium acetate buffer (pH 5.0) at 37 °C	187
5.25	Structural integrity of pDNA released from NPs (PLGA-PEI 10 %) A: PBS pH 7.4; B: Sodium acetate buffer (pH 5.0).	188
5.26	Transfection of CFBE cells treated with PEI-PLGA NPs encapsulating pCDNA-3 LUC-WT plasmid along with large T antigen and normalized to total protein content. Particle formulations contained PLGA and 0%, 2.5%, 5%, 7.5%, 10% and 12.5% PEI. Transfection efficiencies were compared to Lipofectamine plus (prepared according to the manufacturer's instructions) as a positive control and pDNA as a negative control	189
5.27	<b>A)</b> Effects of NP formulations on viability of CFBE 41 o- cells after 24 h incubation. Test samples contained 0.05 mg/mL, 0.1 mg/mL, 0.2 mg/mL, 0.4	190

- mg/mL, 0.8 mg/mL, 1 mg/mL, 2 mg/mL and 3 mg/mL of formulation. Data represent mean  $\pm$  SD, n =6; (\* results are significantly different from other treatment groups, p < 0.05)
- 5.28 **A)** The DLS results show that size of NPs is  $189.5 \pm 4.22$  nm (PDI =  $0.059 \pm 0.041$ ); **B)** zeta potential +  $13.66 \pm 1.69$  mV of PEGylated PEI-PLGA NPs (10%w/w PEI); **C)** TEM micrographs of PEGylated PEI-PLGA NPs (10%w/w PEI). DLS based characterization of size and zeta potential of NPs confirms that size distribution and colloidal stability of mono-dispersed particles. TEM based size and surface characterization of NPs confirms size distribution and colloidal stability of mono-dispersed particles 192
- 5.29 FTIR spectra of A) DSPE PEG 2000 B) PEI PLGA NPs, C) PEGylated PEI PLGA NPs. The characteristic DSPE PEG 2000 peaks in the NPs confirms the PEGylation of NPs. 193
- 5.30 Cumulative release of pDNA from NPs A: PBS pH 7.4; B: Sodium acetate buffer (pH 5.0) at 37 °C 195
- 5.31 Structural integrity of pDNA released from NPs (PEG-PEI-PLGA 10 %) A: PBS pH 7.4; B: Sodium acetate buffer (pH 5.0). 195
- 5.32 Transfection of CFBE cells treated with NPs encapsulating pCDNA-3 LUC-WT plasmid along with large T antigen and normalized to total protein content. Particle formulations contained PLGA NPs, PEI-PLGA 10 % and PEG-PEI-PLGA 10 %. Transfection efficiencies were compared to Lipofectamine plus (prepared according to the manufacturer's instructions) as a positive control and pDNA as a negative control. 196
- 5.33 Fluorescence image of GFP expressed cells at 144 h after treatment with NPs loaded with piRIS2-EGFP CFTR DNA. A) cells treated with DNA; B) cells treated with PLGA NPs; C) cells treated with PEI-PLGA NPs (10%); D) cells treated with PEG-PEI-PLGA NPs (10%);E: cells treated with Lipofectamine plus; F1) CFTR expression after transfection of CFBE 41o- cells with different NPs. CFTR expression was measured 144 h after transfection using a Western blot assay. Lane 1: cells treated with DNA; Lane 2: cells treated with PLGA NPs; Lane 3: cells treated with PEI-PLGA NPs (10%); Lane 4: cells treated with PEG-PEI-PLGA NPs (10%); Lane 5: cells treated with Lipofectamine plus; Lane 6: WT- CFBE cells (Positive control), Band C corresponds to mature, complex-glycosylated CFTR, and band B corresponds to core-glycosylated CFTR. Band A indicated Na-K ATPase, used as internal control; F2): Quantification of immunoblots by densitometry by monitoring the relative amounts of bands C and B normalized to the background and the WT- CFBE cells control. The optical density of all the bands and background were measured, and then the two bands for WT- CFBE cells were designated 100% and the background as 0%. The percentage for each band is then calculated 198

- separately.
- 5.34 **A)** Effects of PEI-PLGA NPs 10% & PEG-PEI-PLGA NPs 10% formulations on viability of CFBE 41o- cells after 24 h incubation Test samples contained 0.05 mg/mL, 0.1 mg/mL, 0.2 mg/mL, 0.4 mg/mL, 0.8 mg/mL, 1 mg/mL, 2 mg/mL and 3 mg/mL of formulation. Data represent mean  $\pm$  SD, n =6; (\* results are significantly different from other treatment groups,  $p < 0.05$ ) **B)** TEER analysis of CFBE 41o- cells layers exposed to NPs over time. We observed that there is a significant difference in TEER when using the PEI-PLGA NPs ( $p=0.011$ ;  $p < 0.05$  &  $p=0.027$ ;  $p < 0.05$  against untreated cells and PEG-PEI-PLGA NPs respectively). The results of MTT & TEER study suggest the safe use of developed PEGylated NPs system. 200
- 5.35 Confocal microscopy of CFBE cells (63X) after 24 hours of incubation with 6-coumarin loaded NPs: **A)** PLGA NPs; **B)** PEI PLGA NPs (10%); **C)** PEG PEI PLGA NPs (10%); Cells were treated with 6-coumarin loaded NPs (green), fixed and nucleus stained with Hoechst dye & cell membrane with FM® 4-64 membrane stain. Top images represent slices from the middle of a z-stack of a CFBE cells. Bottom images are projections in the z-axis created from a z-stack of the same CFBE cells displayed in the top image; **D)** The NPs uptake in CFBE cells (n = 9). \*Significant difference;  $P < 0.05$ . A more efficient NP uptake is apparent for PEGylated NPs as compared to non-PEGylated NPs. 201
- 5.36 Agarose gel electrophoresis of plasmid DNA extracted from particles after treatment with DNase I. Lane 1: marker DNA; Lane 2: control non-treated pDNA; lane 3: naked pDNA after incubation with DNase I; Lane 4: pDNA encapsulated in PLGA NPs; Lane 5: pDNA encapsulated in PEI-PLGA NPs; Lane 4: pDNA encapsulated in PEG PEI-PLGA NPs; after incubation with DNase I for 4 h 202
- 5.37 a) Percent amount of 6-coumarin permeated in the gelatin layer after 0, 8, 12, 24 h. Data are mean  $\pm$  SD (n = 3); b) visual inspection of NP penetration through an artificial mucus layer (representative image at 8, 12, 24 h). **A:** PEG PEI PLGA NPs; **B:** PEI PLGA NPs \*Significant difference;  $P < 0.05$  204
- 5.38 Stability of NPs was tested by measuring particle size in **(A)** saline solution; **(B)** simulated lung fluid at 37 °C; **(C)** 10% fetal bovine serum. The PEGylated NPs remained stable for up to 2 days while non PEGylated NPs tended to show aggregation, indicating comparatively less stability. Data are shown as mean  $\pm$  SD (n = 3) 205
- 6.1 SEM image of **A)** Lyophilized NSDS PLGA NPs; **B)** Lyophilized PEG NSDS PLGA NPs; **C)** Lyophilized PEI PLGA NPs; **D)** Lyophilized PEG PEI PLGA NPs; **E)** Lyophilized NSDS PLGA NPs + Lactohale 201 (1:1.5 ratio); **F)** Lyophilized PEG NSDS PLGA NPs + Lactohale 201 (1:1.5 ratio); **G)** Lyophilized PEI PLGA NPs + Lactohale 201 (1:1.5 ratio); **H)** Lyophilized 231

	PEG PEI PLGA NPs + Lactohale 201 (1:1.5 ratio); I) Schematic representation of drug NPs loaded in the crevices of the carrier particle	
6.2	In vitro antibacterial activity of NSDS PLGA NPs (Initial), PEG NSDS PLGA NPs (Initial), Formulation D (Reconstituted) and Formulation F (Reconstituted) against <i>P. aeruginosa</i> . (OD = absorbance at 600 nm of UV-spectrophotometer measurement). We observed that there is no significant difference in MIC values for initial and reconstituted formulation. ( $p > 0.05$ ; $p=0.174$ for PEG NSDS PLGA NPs (Initial) & Formulation D (Reconstituted); $p=0.109$ ; $p > 0.05$ for NSDS PLGA NPs (Initial) & Formulation F (Reconstituted))	232
6.3	Transfection of CFBE cells treated with NPs encapsulating pCDNA-3 LUC-WT plasmid along with large T antigen and normalized to total protein content. Particle formulations contained PEI-PLGA NPs 10 % (Initial), Formulation L (Reconstituted), PEG-PEI-PLGA NPs 10 % and Formulation N (Reconstituted). Transfection efficiencies were compared to Lipofectamine plus (prepared according to the manufacturer's instructions) as a positive control and pDNA as a negative control.	233
6.4	Uptake of particles by rat alveolar macrophages 1 h after incubation with (A) Rho-DS PLGA NPs (Formulation G); (B) PEG Rho-DSPLGA NPs (Formulation H); (C) 6-C-PEI PLGA NPs (Formulation O); (D) PEG 6-C-PEI PLGA NPs (Formulation P). Panel 1 shows macrophages nucleus stained with Hoechst dye, panel 2 shows fluorescent particles, panel 3 indicate the bright filed, and panel 4 indicate the merge image.	235
6.5	(A-D) Lung tissue sections imaging 24 h after administration of fluorescent particles: A) Formulation H; B) Formulation G; C) Formulation O; D) Formulation P; (E & F) Clearance of the particles from rat lungs after intratracheal administration	238
6.6	<b>A)</b> Effects of formulations D & F on viability of CFBE 41 o- cells after 24 h incubation. Data represent mean $\pm$ SD, (n=6); <b>B)</b> Effects of formulations L & N on viability of CFBE 41 o- cells after 24 h incubation. Data represent mean $\pm$ SD, (n=6); <b>C)</b> TEER analysis of CFBE 41 o- cells layers exposed to formulations; <b>D)</b> BAL fluid analysis post administration of formulations for lactate dehydrogenase (LDH) and alkaline phosphatase (ALP) activities. ■ indicates wet lung weight per 100 g of rat weight. Data represents mean $\pm$ SE (n = 3) <b>E)</b> Histological analyses of lung in hematoxylin and eosin stained sections. (1) Saline, (2) LPS, (3) Formulation D, (4) Formulation F, (5) Formulation L, (6) Formulation N.	239

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## List of Abbreviations and symbol

PDD	Pulmonary drug delivery
DDS	Drug delivery system
COPD	Chronic obstructive pulmonary disease
CF	Cystic fibrosis
CFTR	Cystic fibrosis transmembrane conductance regulator
Cl <sup>-</sup>	Chloride
Na <sup>+</sup>	Sodium
ATP	Adenosine triphosphate
ENaC	Epithelial sodium channel
ASL	Airway surface liquid
CaCC	Calcium-activated chloride conductance channel
MCC	Mucociliary clearance
MIC	Minimum inhibitory concentration
DNA	Deoxyribonucleic acid
pDNA	Plasmid Deoxyribonucleic acid
SVC	Small-colony variants
pMDI	Pressurized metered-dose inhalers
DPI	Dry powder inhalers
MMAD	Mass median aerodynamic diameter
BALF	Bronchoalveolar lavage fluid
EDTA	Ethylene diamine tetraacetic acid
CFC	Chlorofluorocarbon
HFA	Hydrofluoroalkanes
FPF	Fine particle fractions
PEG	Poly (ethylene glycol)
DTBP	Dimethyl 3,3-dithiobispropionimidate 2HCl
PLGA	Poly (lactic-co-glycolic) acid polymer
PLA	Poly Lactic acid
PEI	Polyethyleneimine
LDH	Lactate dehydrogenase
NPs	Nanoparticles
PAE	Post-antibiotic effect
OPA	o-phthalaldehyde
PED	Pulsed electrochemical detection
SLF	Simulated lung fluid
UV	Ultraviolet
VIS	Visible
HPLC	High performance liquid chromatography

LCMS	Liquid chromatography coupled with mass spectrophotometer
TLC	Thin layer chromatography
QC	Quality control
LQC	Lower quality control
MQC	Medium quality control
HQC	Higher quality control
LOD	Limit of detection
LOQ	Limit of quantitation
%	Percentage
% Bias	Measure of accuracy of analytical method
% CDR	Percentage cumulative drug released
% RSD	Percentage relative standard deviation
°C	Degree centigrade
µg/cm	Micro gram per centimetre
µg/cm <sup>2</sup>	Micro gram per centimetre square
µg/L	Micro gram per litre
µg/mL	Micro gram per millilitre
µL	Micro liter
µm	Micro meter
λ <sub>max</sub>	Wavelength of maximum absorbance
<	Less than
>	Greater than
=	Equal to
cm <sup>-1</sup>	Centimetre inverse
cm <sup>2</sup>	Centimetre square
Conc.	Concentration
et al.	Co-workers
<i>F</i>	Calculated or tabulated value of statistical test analysis of variance
g	Gram
H	Hour
Sec	Second
min	Minute
ICH	International conference on harmonization
K	Release rate constant
L	Litre
Kg	Kilogram
Log P	Log of oil water partition coefficient
M	Molar
mg	Milligram
mg/day	Milligram per day

mg/mL	Milligram per millilitre
ng/mL	Nanogram per millilitre
pg/mL	Picogram per millilitre
mL	Milliliter
mM	Milimolar
mm	Millimeter
nm	Nanometer
<i>p</i>	Probability
pH	Negative log to the base 10 of hydrogen ion concentration
QC	Quality control
R	Correlation coefficient
R <sup>2</sup>	Regression coefficient
RPM	Revolution per minute
S	Slope of the least square regression line
SD	Standard deviation
t	Calculated or tabulated value of statistical test Student t-test
t <sub>1/2</sub>	Half life
USP	United State Pharmacopoeia
v/v	Volume by volume
w/w	Weight by weight
w/v	Weight by volume
$\sigma$	Standard deviation of y intercept of regression equation
Abs	Absorbance
$\mu\text{g}/\text{cm}^2$	Microgram per centimeter square
ACN	Acetonitril
PBS	Phosphate buffer saline
BSA	Bovine serum albumin
LB	Luria broth
EtBr	Ethidium bromide
PLGA	Poly(dl-lactide-co-glycolide)
CPPs	Cell-penetrating peptides
kDa	Kilo Dalton
NS	Netilmicin sulfate
DS	Dextran sulfate
DSPE-PEG	1,2-distearoyl-sn-glycero-3-phosphoethanolamine-N-amino(polyethylene glycol)-2000
TEM	Transmission electron microscopy
DSC	Differential scanning calorimetry
FTIR	Fourier transform infrared spectroscopy
TSB	Trypticase soy broth

OD	Optical density
MBC	Minimum bactericidal concentration
TEER	Transepithelial electrical resistance
EE	Encapsulation efficiency
RD	Recovered dose
ED	Emitted dose
FPF	Fine powder fraction
GSD	Geometric Standard Deviation
MMAD	Mass Median Aerodynamic Diameter