

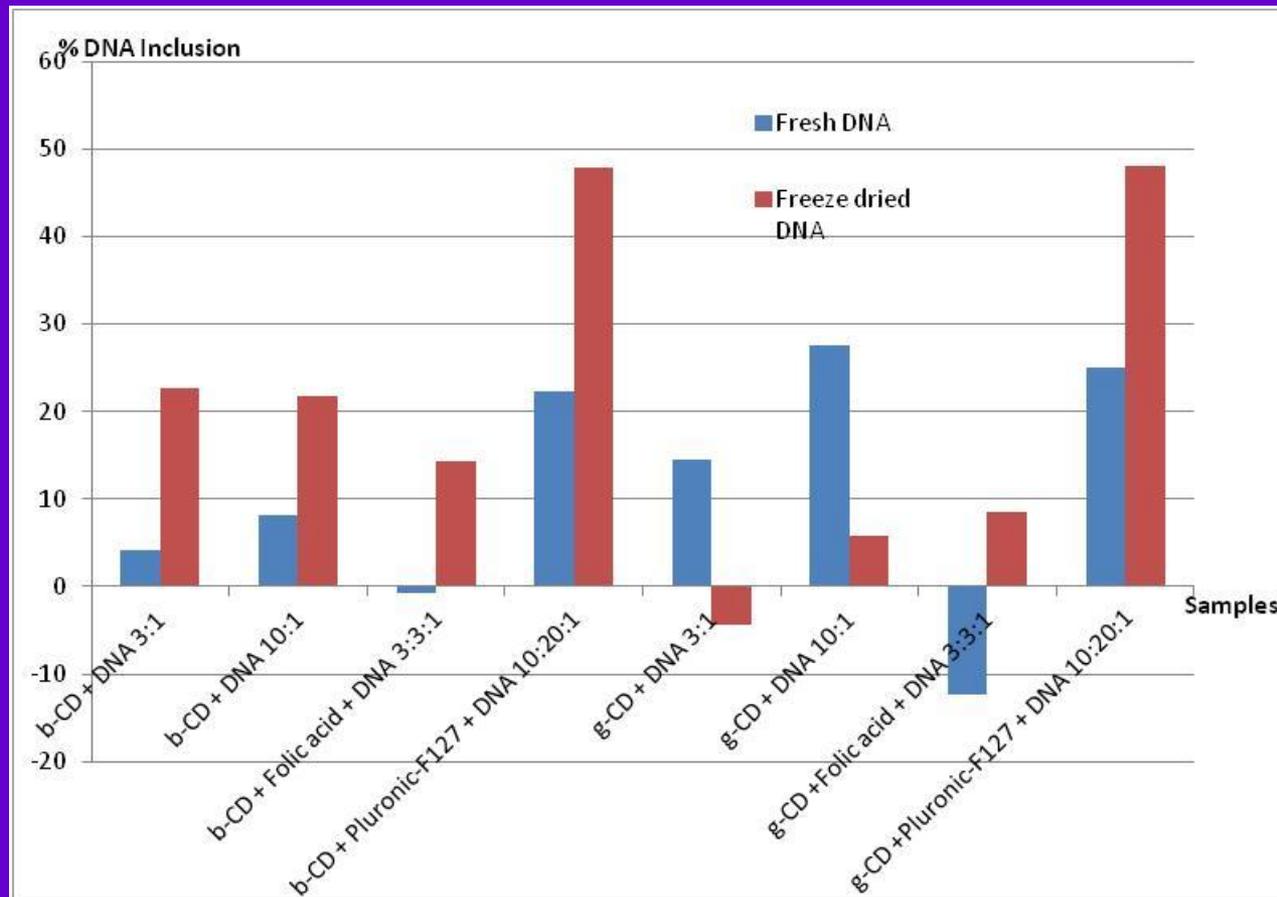


# **Gene Delivery Using Non-Viral Vectors (Cyclodextrins) with Pluronic<sup>®</sup>-F127 and Folic acid**

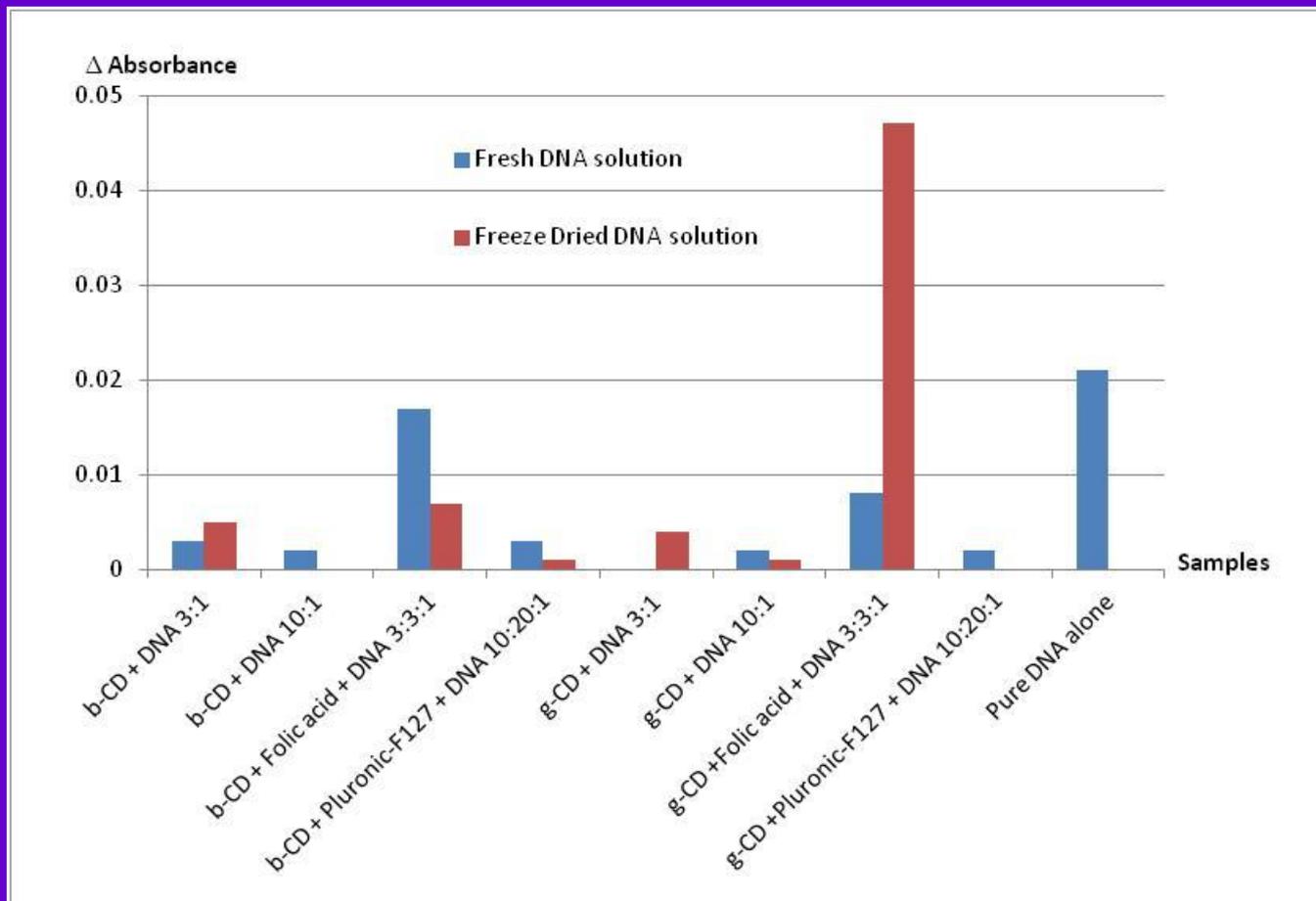
**Mr. Matthew Hong Sheng Eng (MPharm)  
and**

**Dr. Amal Ali Elkordy, senior lecturer in  
pharmaceutics**

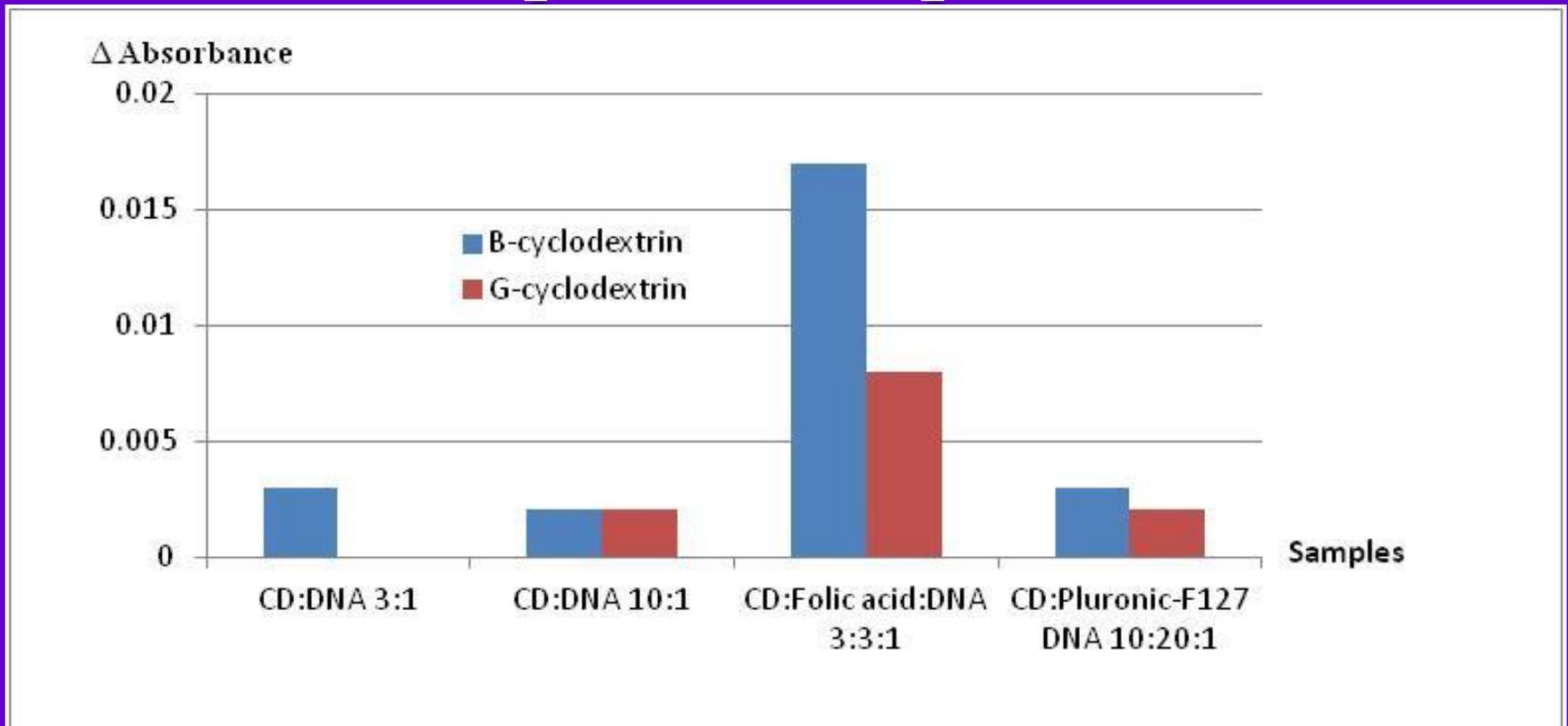
# Comparison between % inclusion of fresh and freeze dried DNA samples; $b=\beta$ and $g=\gamma$



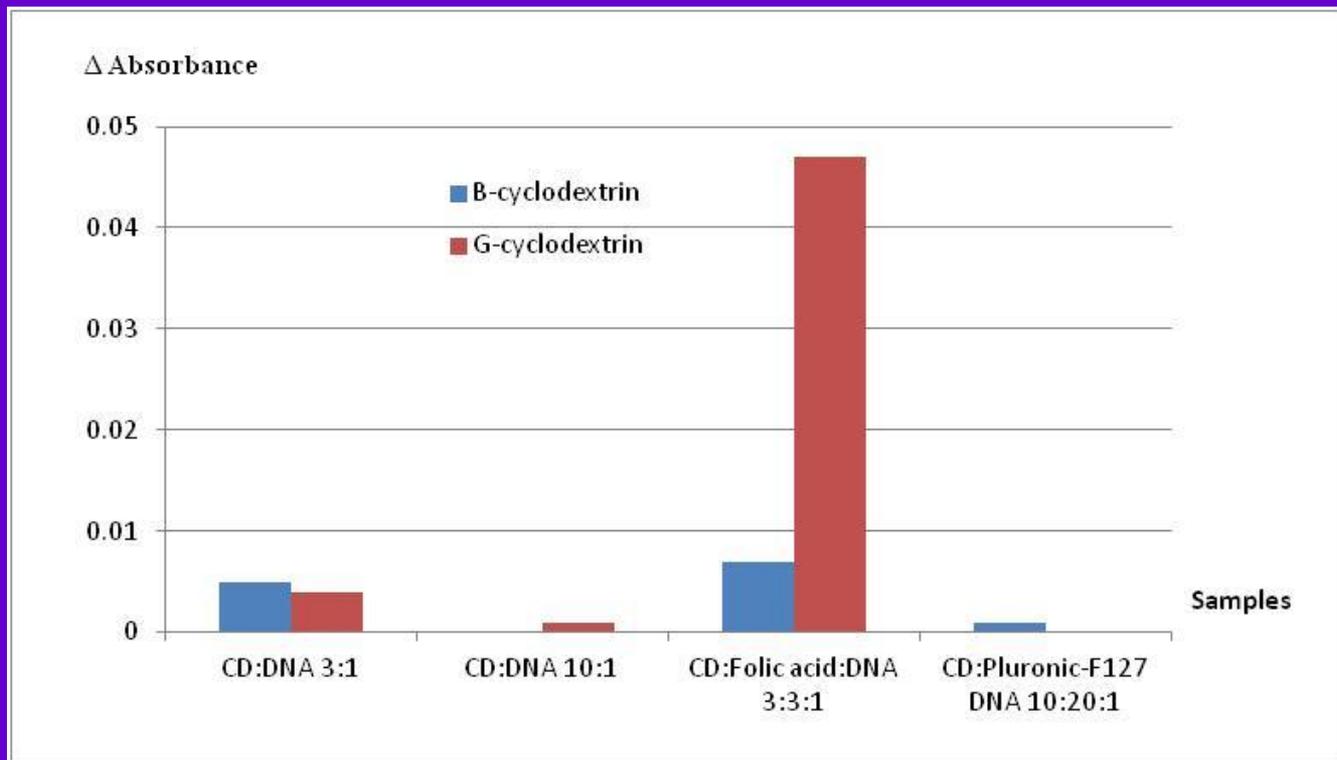
# Comparison between fresh and freeze dried DNA samples in relation to DNase I activity; $b=\beta$ and $g=\gamma$



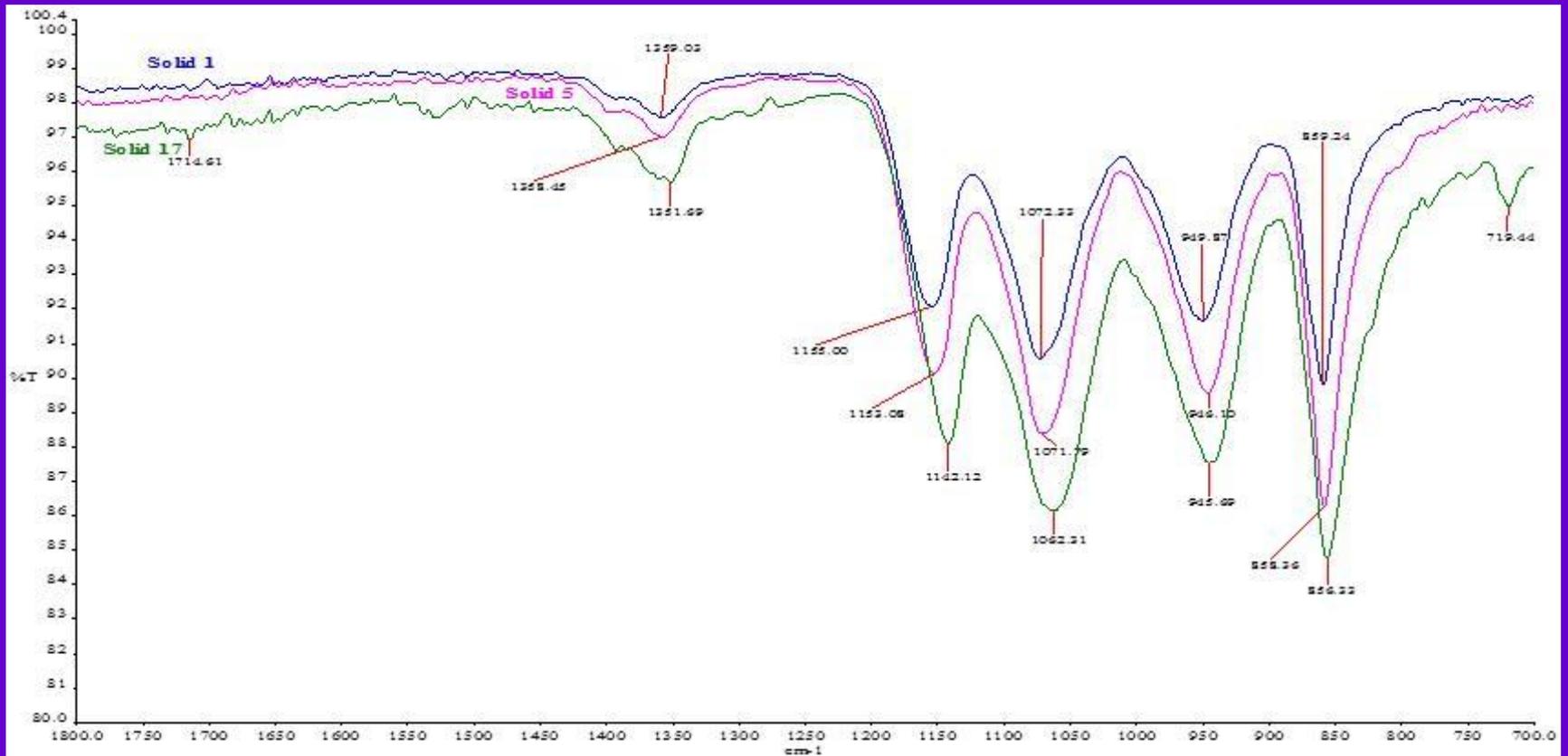
# Comparison between the stability offered by $\beta$ -CD and $\gamma$ -CD against DNase I ( $\Delta$ Absorbance at 260nm) for fresh DNA aqueous samples



# Comparison between the stability offered by $\beta$ -CD and $\gamma$ -CD against DNase I ( $\Delta$ Absorbance at 260nm) for freeze dried DNA samples



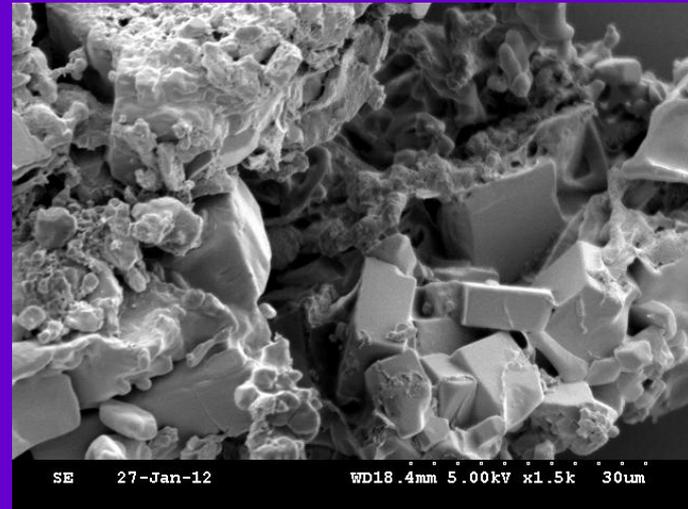
# Spectra of Solid 1 ( $\beta$ -CD:DNA 3:1) blue; Solid 5 ( $\beta$ -CD:Folic Acid:DNA 3:3:1) pink; Solid 17 ( $\beta$ -CD:Pluronic-F127:DNA 10:20:1) green



# SEM



$\gamma$ -CD:Folic  
Acid:DNA 10:10:1



$\beta$ -CD:Pluronic-  
F127:DNA 10:20:1

# Charge measurements of DNA samples

Sample	Average Zeta Potential (mV)
$\beta$ -CD: DNA 3:1	-2.6
$\beta$ -CD:DNA 10:1	11.18
$\beta$ -CD:Pluronic-F127:DNA 10:20:1	0.18
$\gamma$ -CD:Pluronic-F127: DNA 10:20:1	-5.06

# $T_m$ values for freeze dried DNA samples as determined by DSC

<b>Sample</b>	<b><math>T_m</math> (°C)</b>
<b><math>\beta</math>-CD + Folic acid + DNA 3:3:1</b>	<b>230.06</b>
<b><math>\beta</math>-CD + Pluronic-F127 + DNA 10:20:1</b>	<b>224.98</b>
<b>DNA alone</b>	<b>209.52</b>

# CONCLUSIONS

The use of cyclodextrins as non-viral gene carriers with the incorporation of Pluronic-F127 or folic acid as excipients has dramatically affected the stability of the gene formulations. The addition of Pluronic-F127 into the DNA formulations improved the overall stability while conflicting results were observed with folic acid containing formulations. The stability of the DNA formulations was significantly increased through freeze drying.