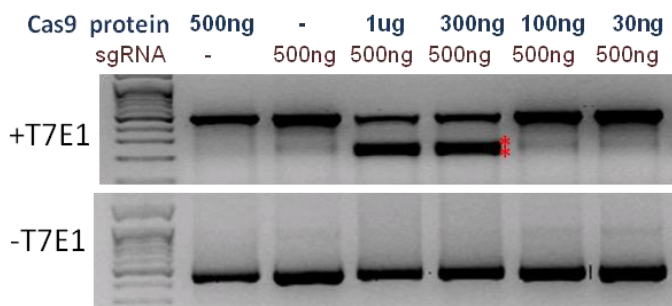


# Custom sgRNA Synthesis

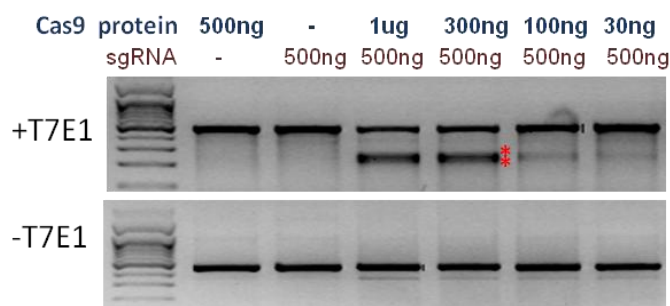
- gRNA Tool to design gRNA, and check off-targets ([www.pnabio.com/supportg/gRNATool.htm](http://www.pnabio.com/supportg/gRNATool.htm))
- aRGEN: custom sgRNA synthesis service, 50 ug IVT, injection ready form
- dRGEN: custom sgRNA vector service
- Cas9 vectors: with GFP/Hygro-R or with RFP/Puro-R, CMV or EF1a promoter
- With or without validation (*in vivo* or *in vitro*)

## Cas9 Protein with NLS

- *S pyogenes* Cas9 protein with NLS, injection & transfection ready
- Nickase (D10A) and dCas9 (D10A/H840A) protein also available (with NLS)
- Quality and lowest pricing guaranteed



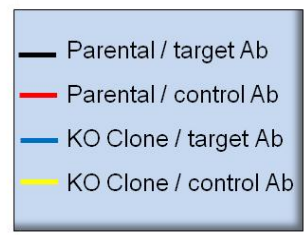
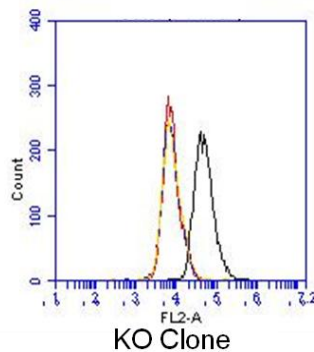
Electroporation into NIH3T3 cells (Neon)



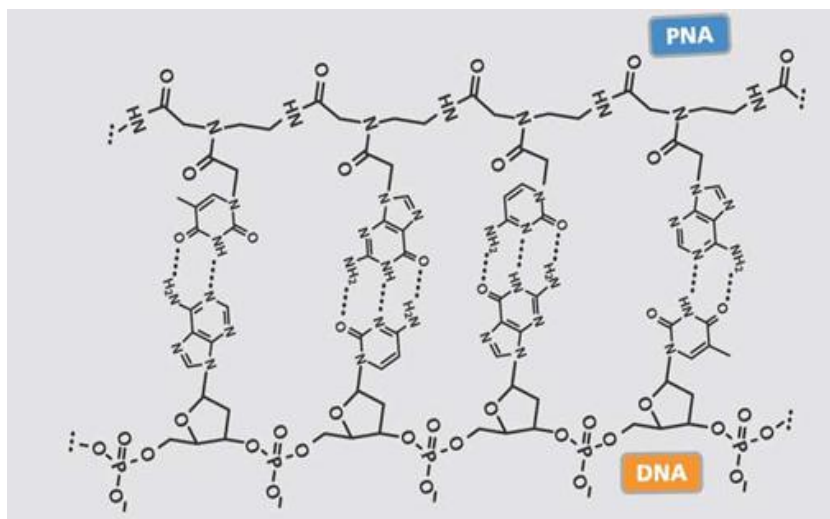
Lipofectamine2000 transfection into NIH3T3 cells

## KO/KI Cell Lines

- Fast, efficient and affordable engineered cell line generation
- Mycoplasma free confirmation
- Time line: 4~7 months depending on the complexity of the project



# PNA (Peptide Nucleic Acid)



## What is Peptide Nucleic Acid (PNA)?

- PNA is an artificial DNA that has the polyamide backbone as in peptide
- Due to neutral backbone, PNA has higher affinity and specificity to target DNA and RNA

## PNA Advantages over DNA

- Higher T<sub>m</sub>: roughly 1 °C higher per base than DNA
- Better specificity: single mismatch lowers T<sub>m</sub> by 15 °C compared to 10 °C with DNA
- Fast hybridization: 100~5,000 times faster than DNA, usually completed in 1~2 hrs
- Long half life: resistant to nucleases and proteases
- Binding is relatively independent of salt and pH
- Functional modification is easy: conjugation with peptide, dye, biotin etc conjugation
- Short length for optimal specificity (13~19 bp)

## Applications of PNA

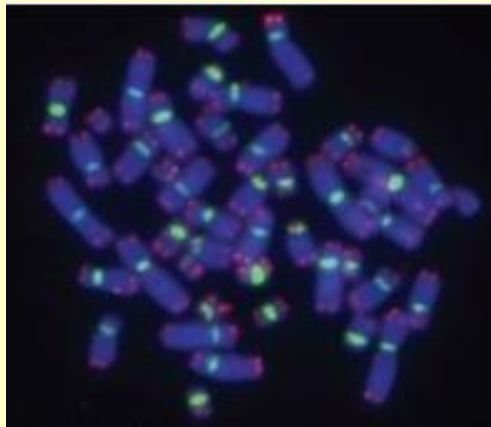
- PNA Clamping: PCR blocking of unwanted host DNA
- Gene mutation (SNP) detection
- Anti-sense therapy (conjugation to cell penetrating peptide): anti-microbial agent
- FISH probes for telomere, centromere, and gene specific detection
- miRNA inhibitors
- Sensitive and specific detection of bacteria or viral infection
- Sequence specific DNA/RNA capture
- Double strand DNA invasion and triple complex formation (Gamma & Bis PNA)
- Globin reduction in RNA prep
- Microarray and biosensor
- Gene correction

# Custom PNA Oligos

- High affinity and specific binding to target nucleic acids
- Conjugate with peptide, dye, biotin, thiol or other functional groups
- Bis PNA / gamma PNA for double strand DNA invasion
- Provided >95% purity after HPLC purification
- Perfect tool for anti-sense therapy, DNA capture, gene specific detection etc

## FISH Probes

- Telomere, centromere probes
- Telomere quantification
- Specific for mouse and human
- Cost <30 cents / slide
- Fast hybridization
- Custom probe design possible



Metaphase chromosome spread stained with TelC-Cy3 (F1002) & CENPB-FAM (F3001)

- Blue: DAPI (DNA)
- Red: Cy3 (telomere probe)
- Green: FAM (centromere probe)

## PCR Blockers / SNP Detection

- Sequence specific block of PCR
- Prevent unwanted amplification from host DNA (ie, mitochondria & plasmid)
- PNA clamping & SNP detection
- Genotyping
- Cancer mutation detection kit: PNA Clamp, MutyperR

