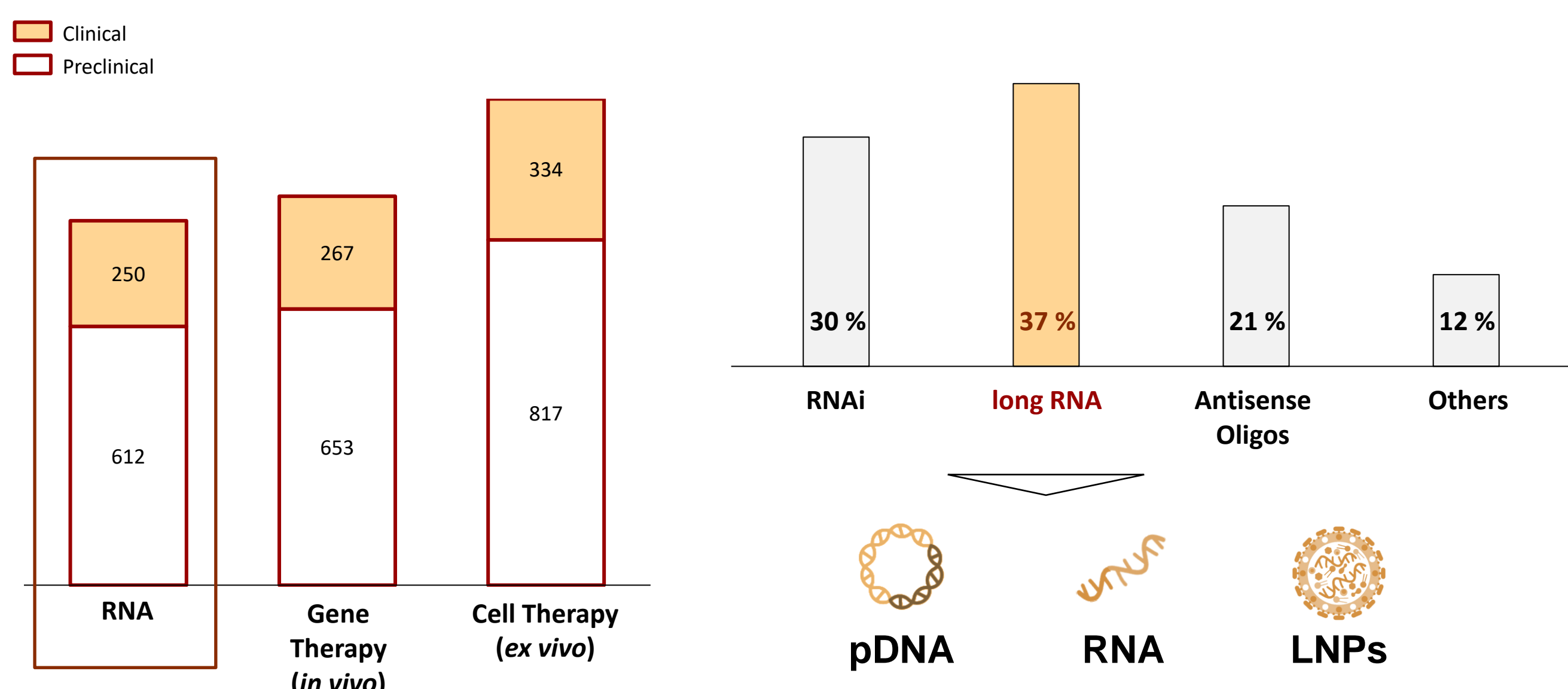
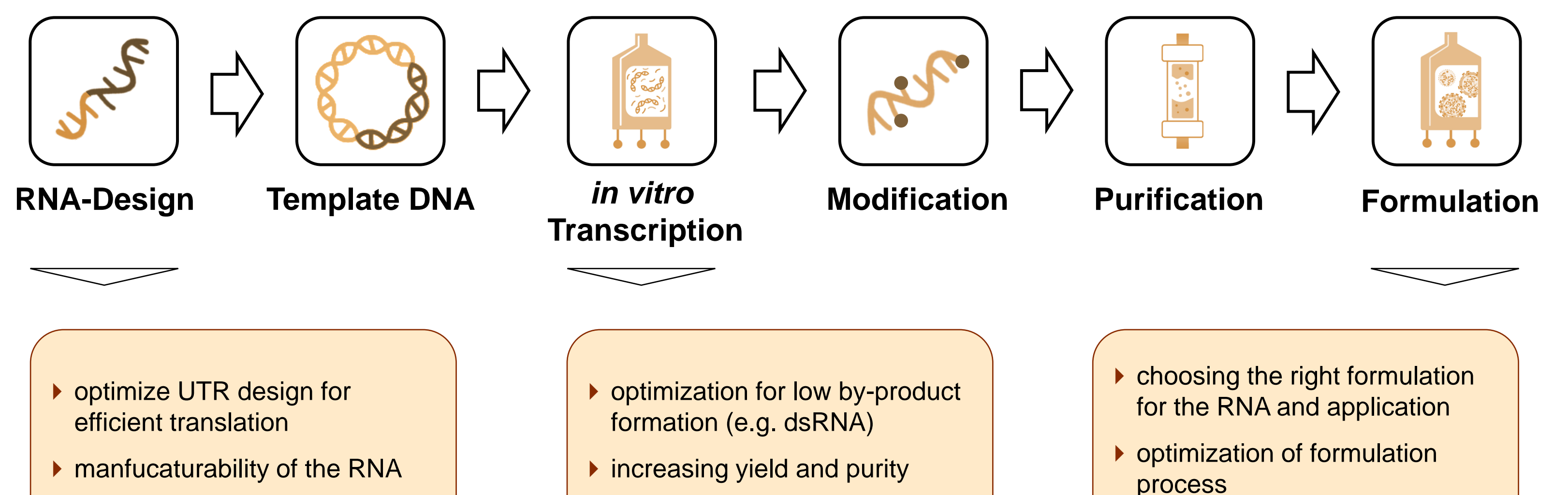


# INNOVATIVE TECHNOLOGIES ENABLE HIGHLY EFFICIENT DEVELOPMENT AND MANUFACTURING OF NUCLEIC ACID BASED THERAPEUTICS

## Advanced Therapy Pipeline and RNA Relevancy

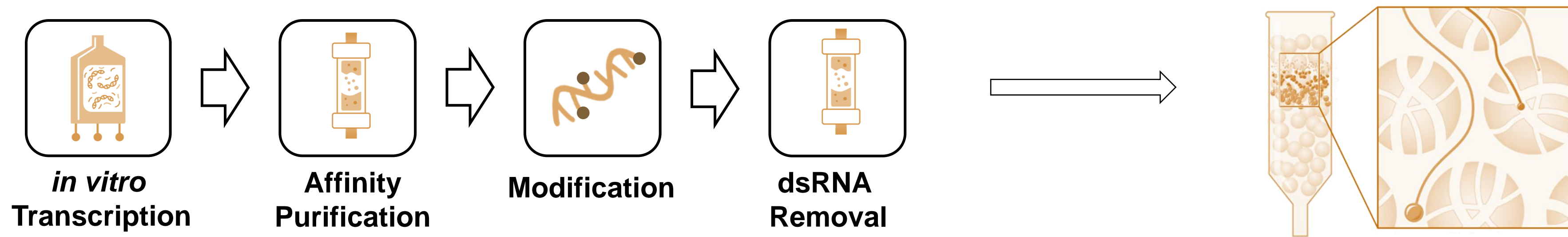


## mRNA Manufacturing Value Chain

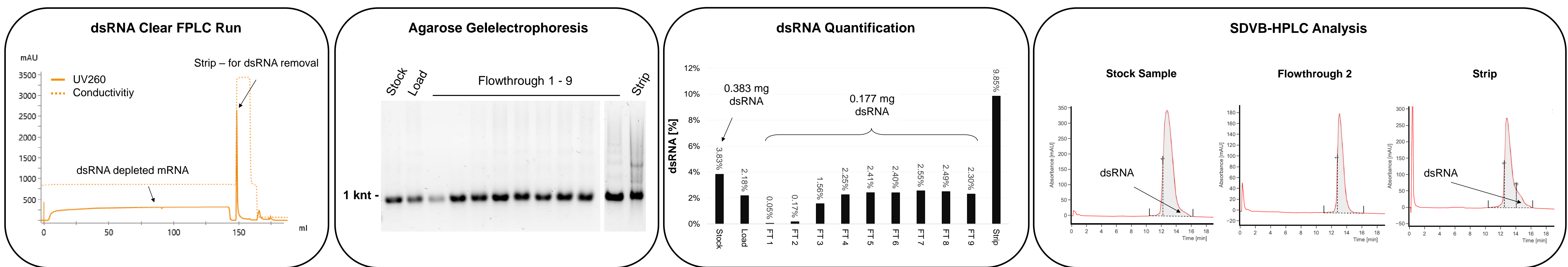


## Reduction of dsRNA – A Way Forward for Therapeutic RNA Applications

## As a major immunogenic by-product dsRNA affects efficacy and safety of RNA therapeutics

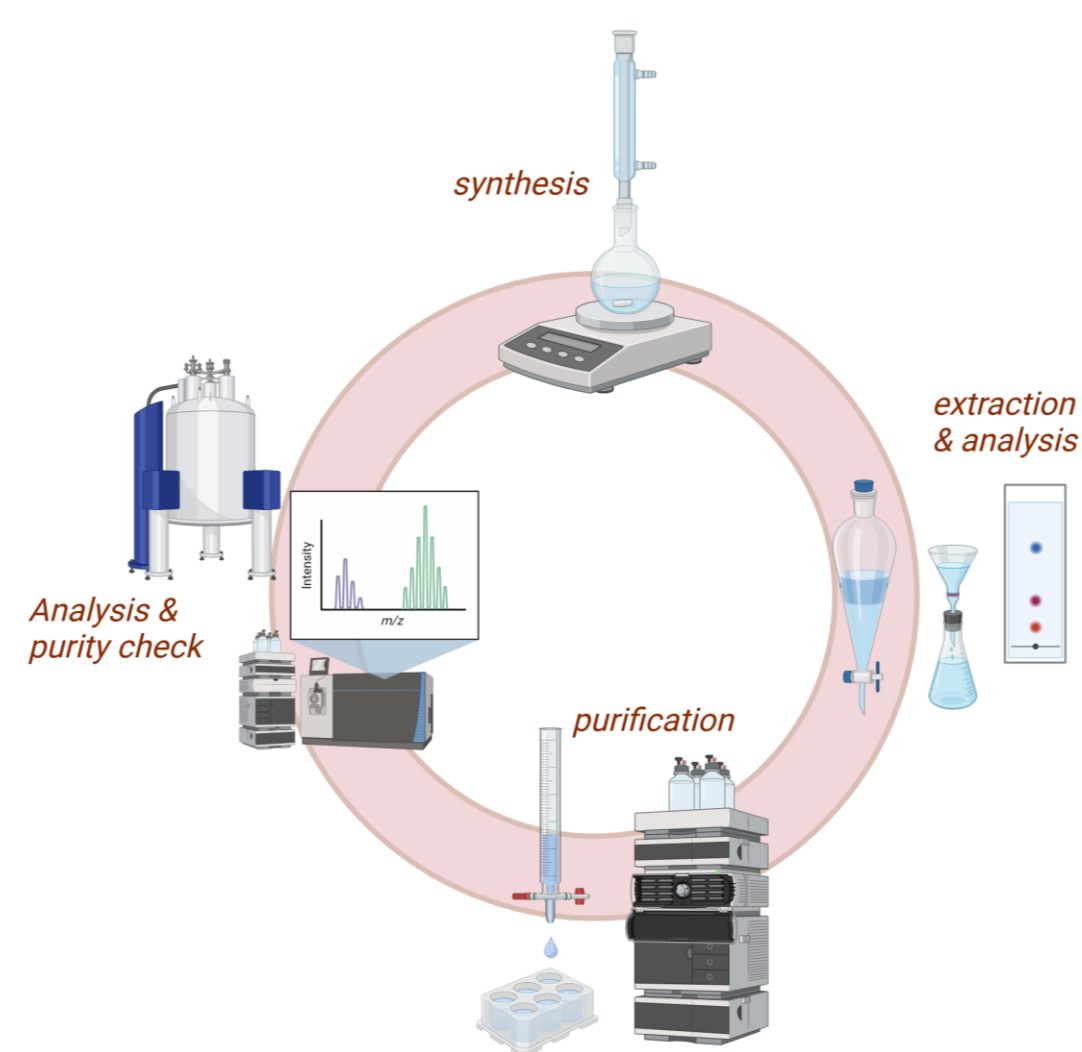


- ▶ dsRNA induces strong immune response which is very critical for therapeutic applications (e.g. cancer)
- ▶ typical purification strategies of dsRNA involve specific precipitation steps (high losses) and reverse phase chromatography (organic solvents)



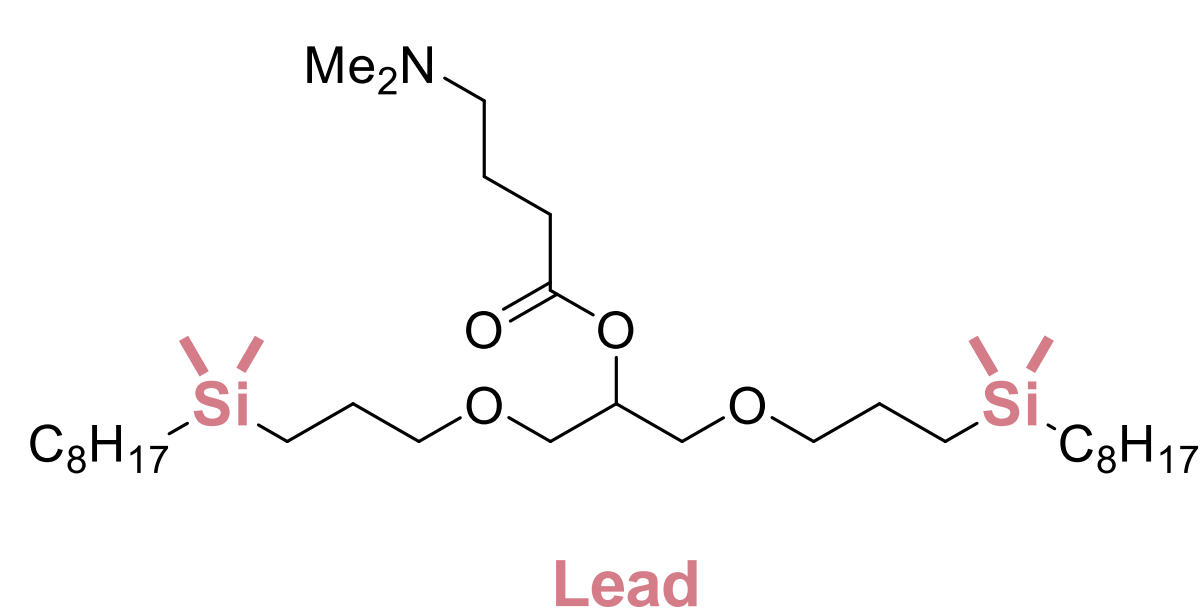
## Lipid Design and Synthesis

## Workflow

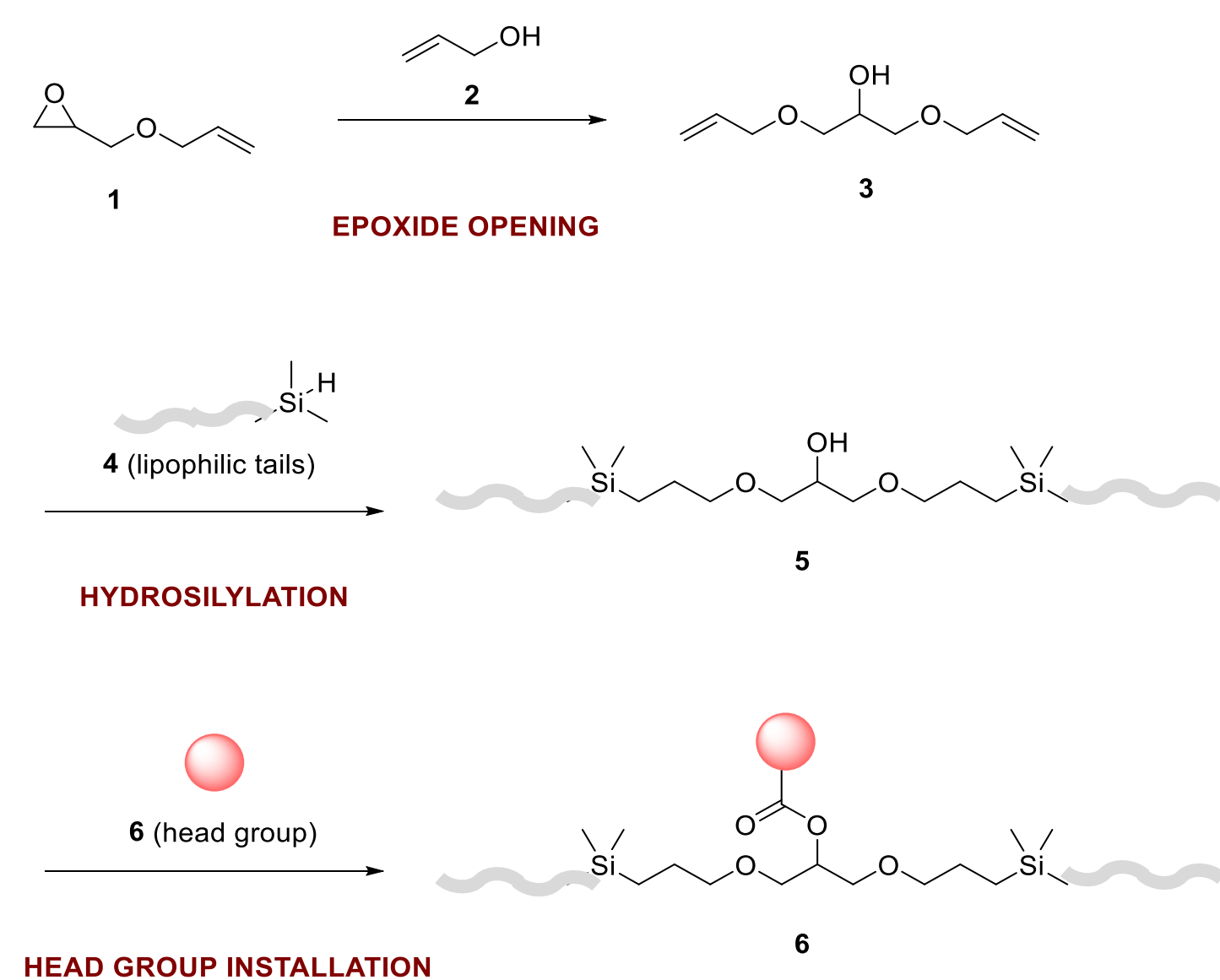


## Results

- **>250 lipids** were synthesized **varying the tail** (linear, branched, Si-containing, non-Si-containing), **the linker** (e.g. CO, CO<sub>2</sub>, CONH) and the **head group**

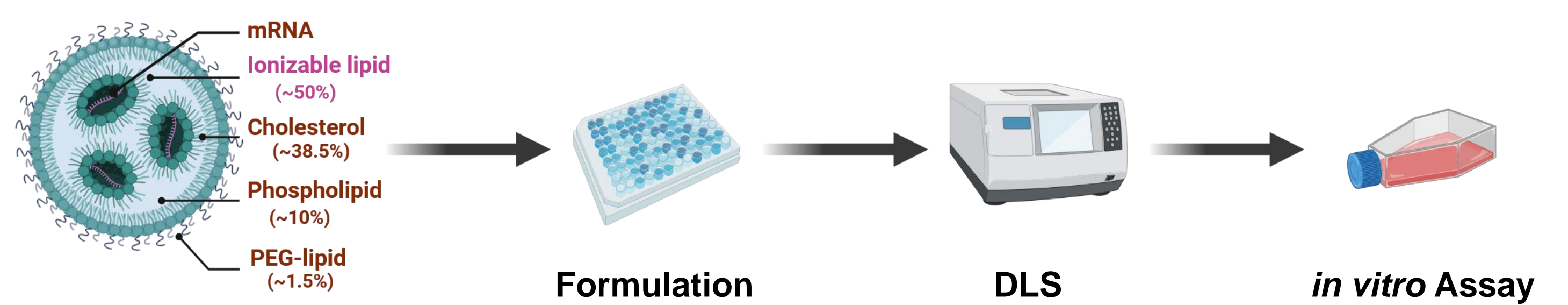


## Example



## LNP Production and Screening

## Workflow



## Results

