

The GMP Drug  
Delivery offer of  
PMC Isochem



## CDMO for PolyAmino Acids



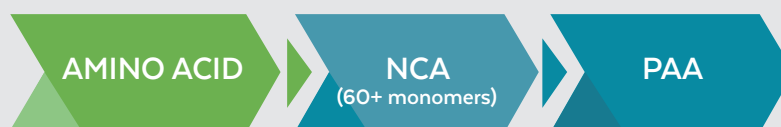
### Why PolyAmino Acids - PAA

- Functional Excipients
- Biodegradable Polymers
- Drug Delivery & Drug Conjugate
- Alternative to PEG (i.e. polysarcosine)
- Less Immunogenic Choice
- Half-life increase of proteins



### A unique Integrated Solution

- Talented & Multidisciplinary R&D team
- Broad network for access cutting-edge technologies
- Integrated NCA supply (Phosgene expert)
- Ring Opening Polymerisation (ROP) technology
- Custom PAA synthesis & tailor-made
- From R&D to commercial supply



N°1 Producer of NCAs, 25+ years expertise



### PMC Isochem services

- 45 years in large scale Manufacturing under GMP
- RSM, Intermediates, APIs and Excipients
- Analytical Development & QC
- Process development and scale up
- 3 FDA & EU qualified facilities (France)

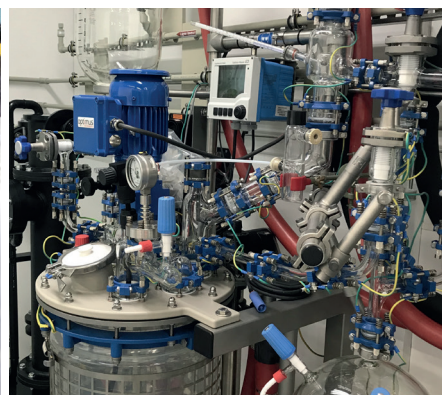
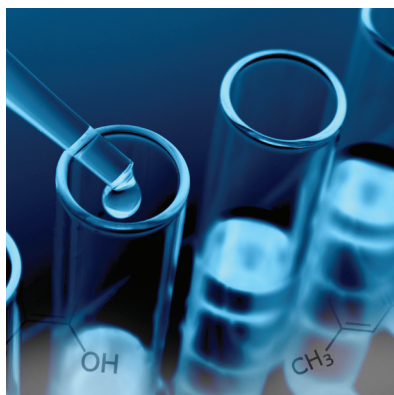


### Preclinical, clinical and commercial batches

- Lean approach to provide faster, better and cost effective solutions
- GMP batches for clinical trials
- Stability studies, process & analytical methods validations, reports...
- Full regulatory support (CMC-DMF Documentation)



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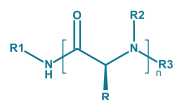


## Why a PAA based delivery technology?

**Non-exhaustive examples of PAA**  
linear, branched or grafted architectures

### PAA HOMOPOLYMERS

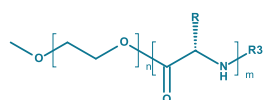
Poly-L-amino acids
Poly-sarcosine



L or D amino acids configuration  
R, R': amino acid side chains  
R1: alkyl group or functionalized alkyl group  
R2: H or methyl group  
R3: H or capping group

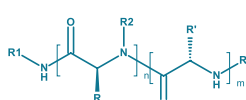
### PAA COPOLYMERS

Methoxy-poly(ethylene glycol)-block-poly(L-amino acids)
Poly(L-amino acids)-block-poly(L-amino acids)
Poly(sarcosine)-block-poly(L-amino acids)



### FUNCTIONALIZED PAA

Functionalized monoblock and diblock polyaminoacids
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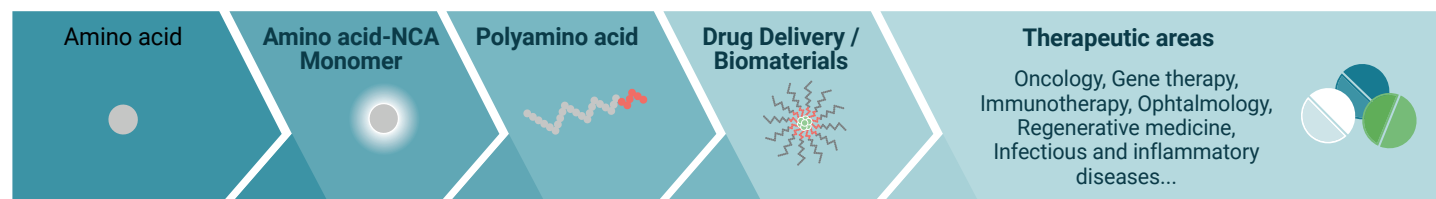


### Growing interest for advanced & new polypeptides backbone

- PolyAmino Acids (PAAs) based materials have gained more interest in:
  - > Drug delivery
  - > Drug conjugates
- PAAs demonstrate remarkable biocompatibility and biodegradability due to the nature of the amino acid monomers building blocks
- Less Immunogenic material and beneficial replacement of PEG
- Use of activated amino acids monomers by ROP chemistry:
  - > Narrow distribution of molar masses
  - > Minimal side product formation
  - > High reproducibility
  - > Versatile architectures
  - > Precise functionalisation of polypeptide backbone

O. Zagorodko et al, Macromol. Biosci. 2017

## A global offer from amino acid to therapeutic solution



**pmc isochem**™

Your partner  
for Smart Delivery  
Technologies

GENERAL REQUESTS [contact@pmcisochem.fr](mailto:contact@pmcisochem.fr)  
Tel.: +33 1 64 99 0300

KARINE SALIM [k.salim@pmcisochem.fr](mailto:k.salim@pmcisochem.fr)  
Tel.: +33 6 30 12 8461

[pmcisochem.fr](http://pmcisochem.fr)