



**Company:** Exactmer

**Knowledge Transfer Partnership:** New synthesis methods for exact Polyethylene Glycol Polymers (PEGs).

Exactmer is a fast-growing, ambitious SME that manufactures polymers used in medicine. Polymers are used in therapeutic drugs to regulate transportation and retention in the body. Exactmer has developed a breakthrough technology – Nanostar Sieving – to help improve the accuracy of making polymers. Now, it needs the latest in small-molecule synthesis to improve manufacture of a bespoke suite of polymers known as polyethylene glycols, PEGs, and deliver commercial opportunities.

## Challenge

Nanostar Sieving is a cutting-edge technology for making polymers. Polymers are difficult to make accurately, because the standard chemical techniques are not accurate enough for exact replication. Just a few more or less monomers added to the polymer chain can make a big difference to the way a drug behaves in the body.

While Nanostar Sieving has been developed to synthesise sequence-defined polymers with an exact molecular weight known as ‘oligonucleotides’, the current technology needs enhancing to be able to consistently produce PEG polymers to the same standard, in a commercially viable setting.

## Process to Solution

When the programme begins, the Knowledge Transfer Partnership (KTP)

Associate will develop the chemistry needed to overcome the issues facing Nanostar Sieving for bespoke PEG-polymers.

They will bring Queen Mary’s expertise in small-molecule synthesis to the methods currently used to form PEGs and develop new, unimolecular Nanostar-hub molecules. Exactmer will also benefit from a small library of completely new PEG monomers, with side-arms for attaching cargo including drugs, cell-penetrating agents and targeting ligands. These sequence-defined ‘hetero-PEGs’ will help to drive Exactmer’s expansion into the Antibody Drug Conjugates (ADC) market.

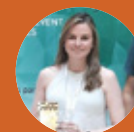
## Impact

Exactmer is at the cutting-edge of polymer manufacture. Now, it wants to turn its research and subsequent technology regarding PEG polymers into a sustainable

commercial venture. Working with the KTP at Queen Mary gives the business access to specific areas of small-molecule expertise and will allow it to continue to develop its commercial proposition and explore new markets.



*Exactmer is thrilled to be part of the Knowledge Transfer Partnership, working with Queen Mary to develop and strengthen new research activities in East London. We are looking forward to integrating the knowledge developed from the partnership into Exactmer’s processes and are excited to see the commercial and business potential this will bring.”*



**DR DARA O'BRIEN,**  
COMPANY LEAD,  
SENIOR BUSINESS ASSOCIATE,  
EXACTMER

### Company Contact:

**Dr Dara O'Brien,**  
Company Lead,  
Senior Business Associate, Exactmer  
dara.obrien@exactmer.com

### Academic Contact:

**Prof Matteo Palma,**  
Academic Lead, School of Physical and  
Chemical Sciences (SPCS)  
m.palma@qmul.ac.uk

### KTP Associate:

**Dr Nitin Bagra,**  
n.bagra@qmul.ac.uk

Collaborate with us

