

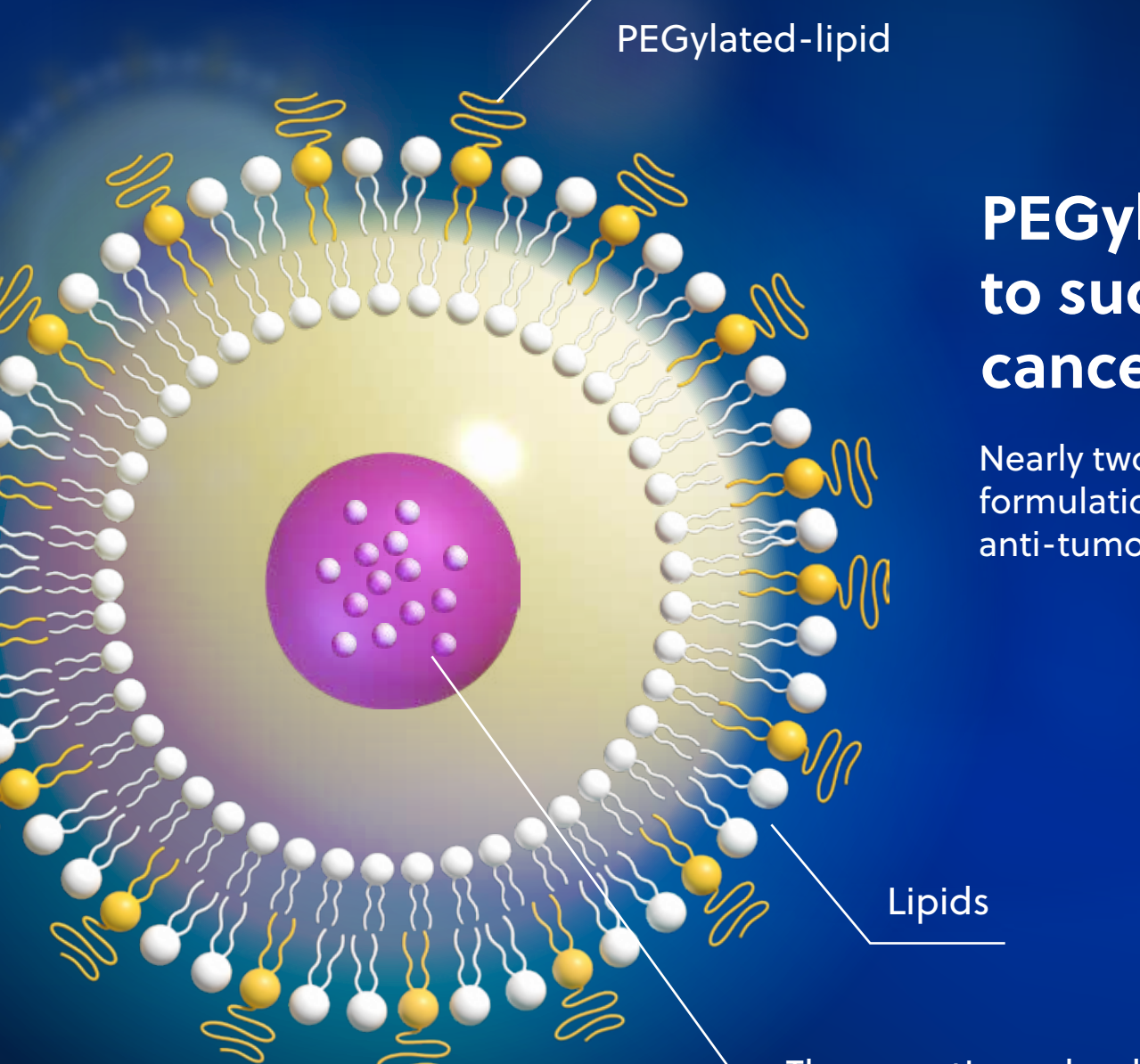
# STAYING UNDERCOVER

## How inconspicuous are PEGylated lipid nanoparticles?

Keeping therapeutics hidden from the immune system so they can safely be delivered within the body is no small task, but PEGylated lipid nanoparticles (LNPs), among numerous other activities, are widely called upon to provide this service in the pharmaceutical industry.

Their successes feature in anti-cancer medications, small-interfering RNAs, and the messenger RNA vaccines developed by BioNTech/Pfizer and Moderna. But can PEGylated LNPs truly keep therapeutics hidden from the immune system? And what are the consequences if they are caught?

Learn more about PEGylation and see all references at [cas.org/](https://cas.org/)



### PEGylated LNPs are used to successfully deliver cancer therapeutics

Nearly two-thirds of the PEGylated LNP formulations are developed for transporting anti-tumor agents (64.5%).

## When PEGylated LNPs are caught, the immune system raises the alarm

When PEGylated LNPs don't manage to fly under the radar, the immune system can have adverse reactions, including accelerated blood clearance (ABC) and a hypersensitivity reaction known as CARPA.



Detection by the immune system

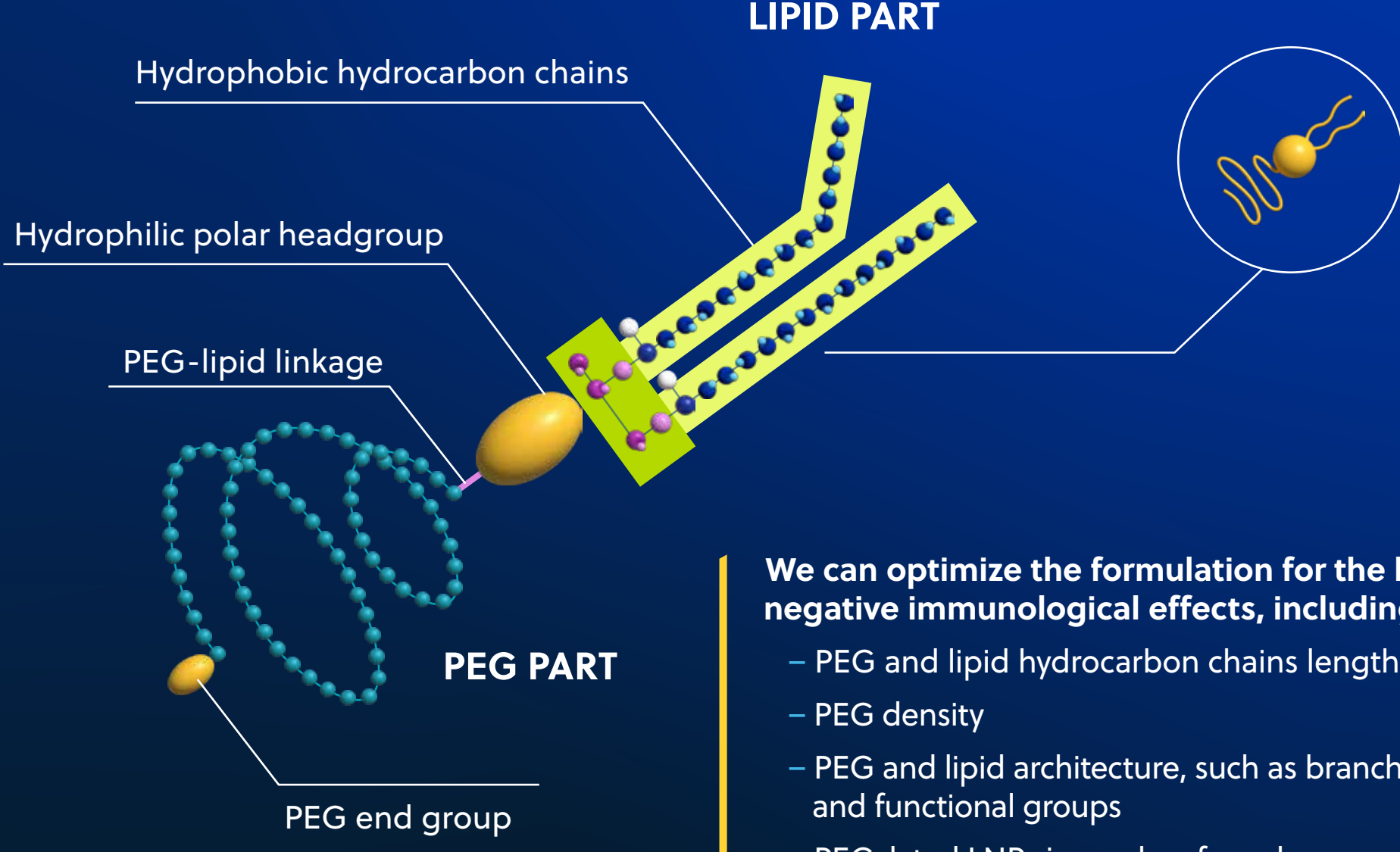
### Complement activation-related pseudoallergy (CARPA)

A severe and potentially life-threatening immune reaction to PEGylated LNPs, affecting multiple organ systems.

### Accelerated blood clearance (ABC)

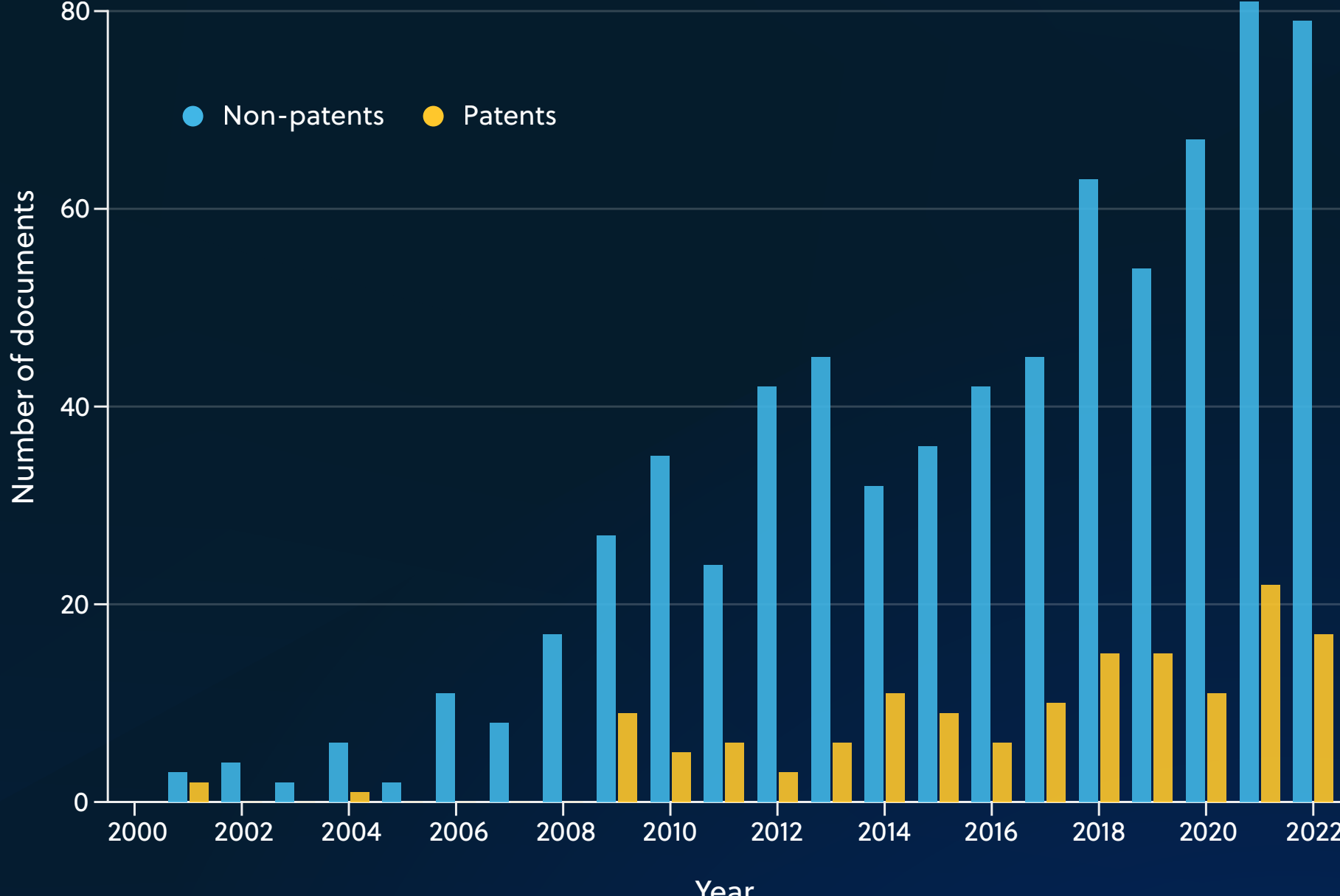
The rapid clearance of PEGylated LNPs from the blood after repeated administration, reducing treatment efficacy

## How can we develop a PEGylated-lipid drug delivery system that avoids these pitfalls?

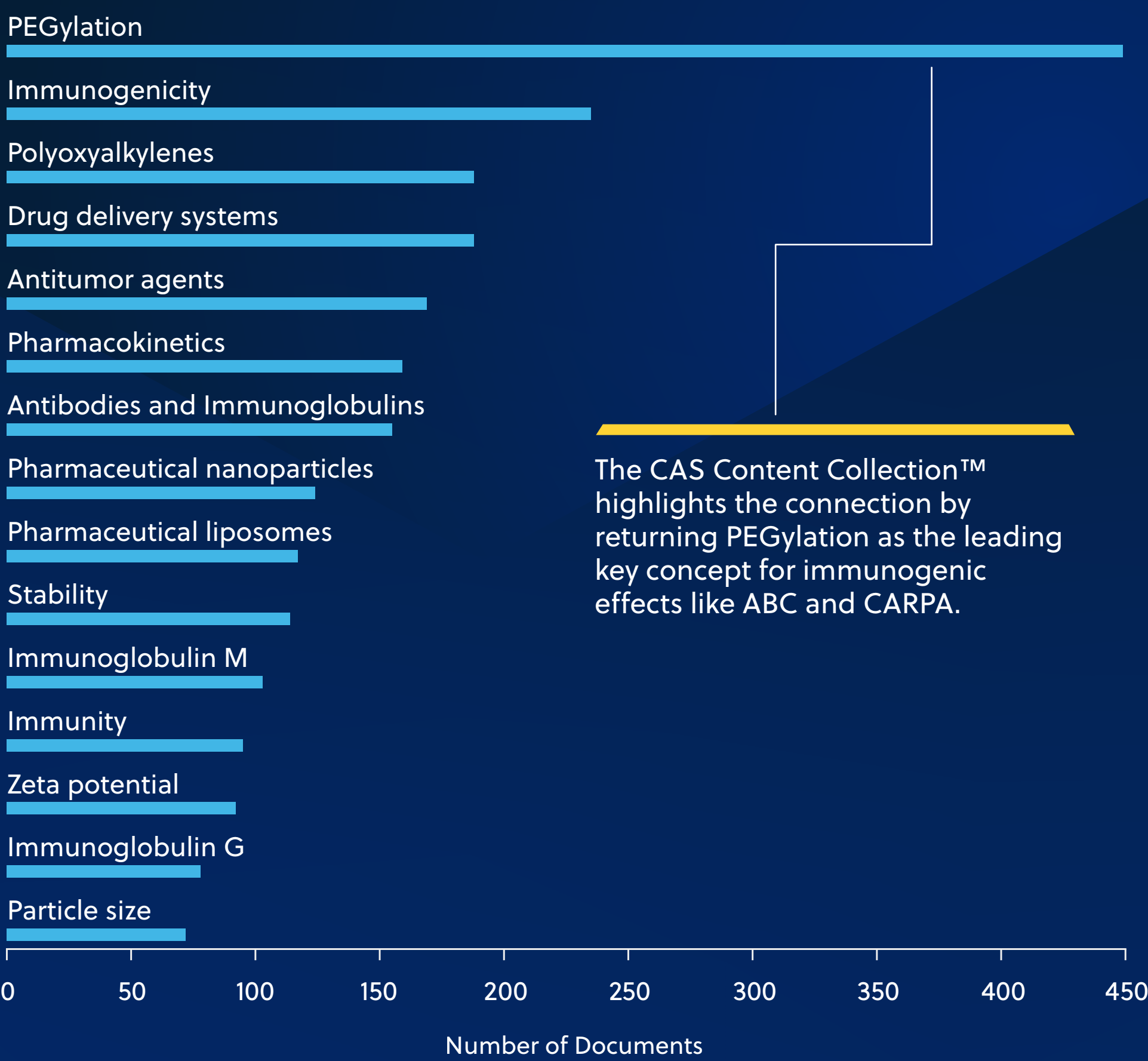


## Research into immune effects is increasing

The number of publications about the negative immunogenic effects of PEGylated LNPs has been increasing, so scientists are searching for new designs to evade immune detection.



## PEGylation is a key concept relating to accelerated blood clearance (ABC) and complement activation-related pseudoallergy (CARPA)



The CAS Content Collection™ highlights the connection by returning PEGylation as the leading key concept for immunogenic effects like ABC and CARPA.