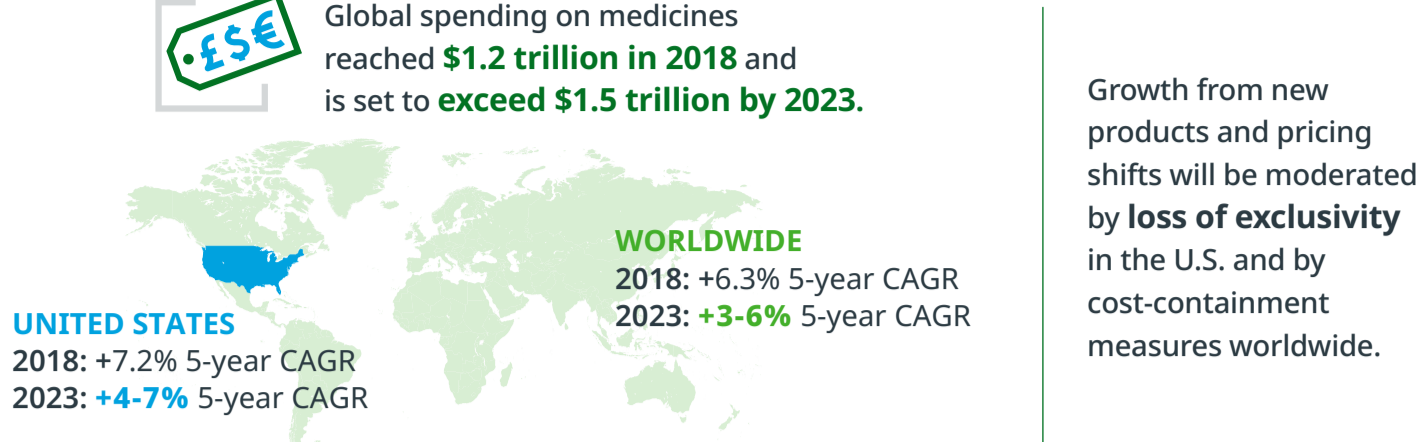


## PREDICTIONS AND AREAS TO WATCH

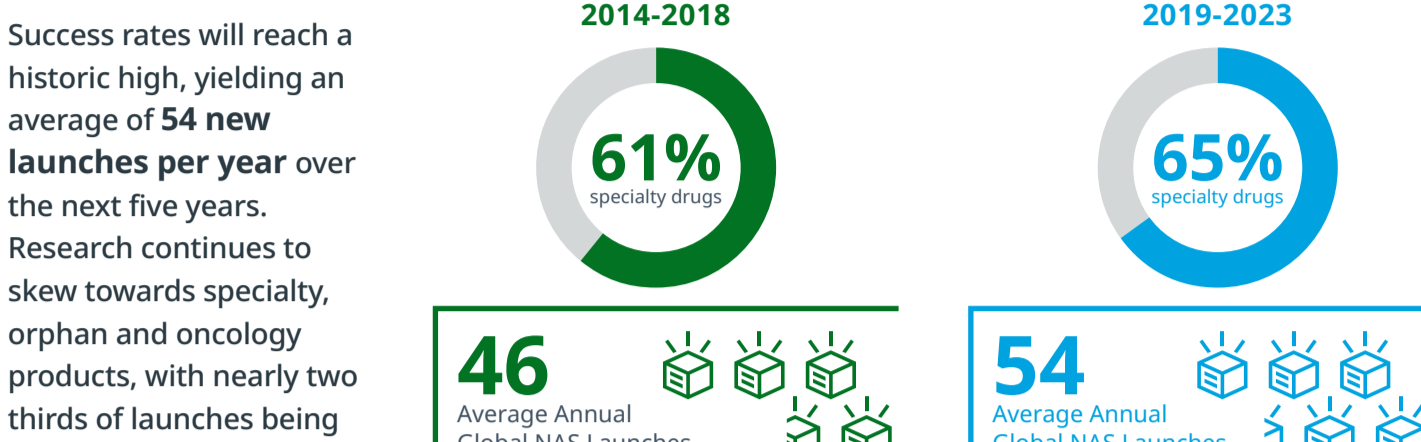
*in the global pharma market ahead, 2019-2023*

### GLOBAL PREDICTIONS

#### Slower global market growth versus the recent five-year average



#### R&D pipelines expand, and continued rates of success drive more launches



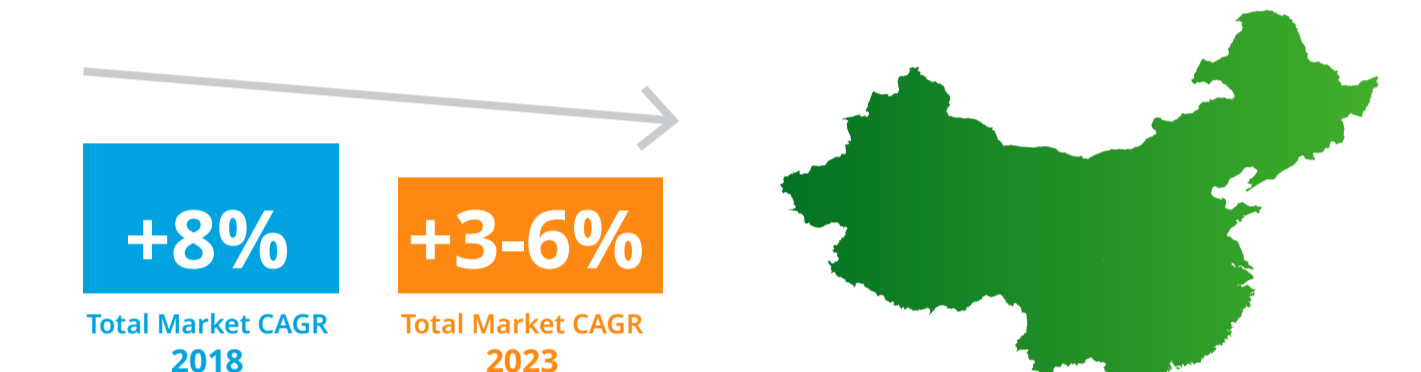
#### The expected impact of losses of exclusivity will peak in 2019



#### Spending on medicines is expected to decline in Japan



#### China market growth is expected to level off



#### Slower growth is forecast in Europe



### AREAS TO WATCH, 2019-2023

#### Prescription digital therapeutics bring new players and new investments

Mobile apps are increasingly submitted to the FDA for clearance or approval. These prescription digital therapeutics (DTx) are an emerging treatment modality with indications and disease-specific treatment effectiveness claims in their prescribing labels.



#### An acceleration in the use of artificial intelligence and machine learning

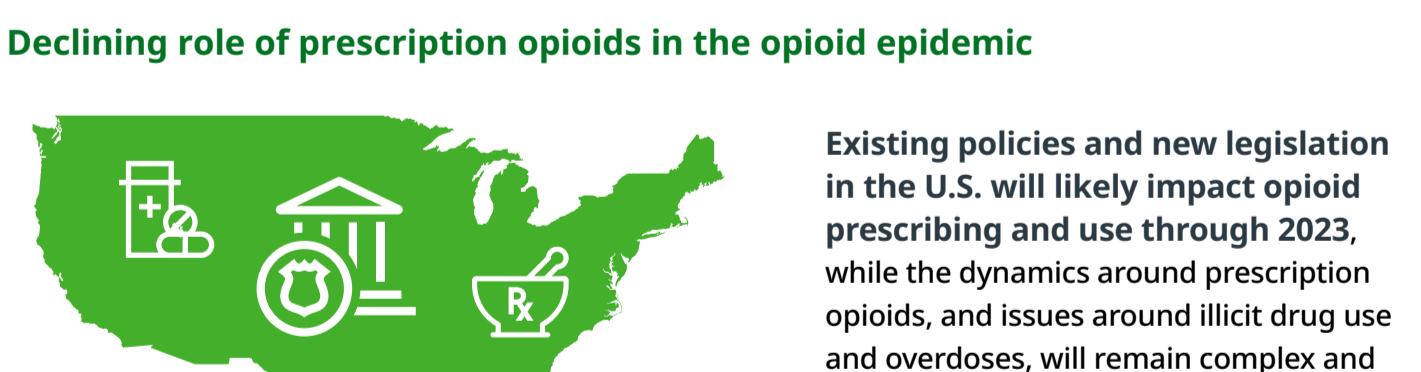


#### The expansion of Next-Generation Biotherapeutics

Increasing numbers of cell-based therapies, gene therapies and regenerative medicines (also called Next-Generation Biotherapeutics) are in active clinical research. About 5-8 approvals per year are expected through 2023.



#### Declining role of prescription opioids in the opioid epidemic



#### Pharma companies hiring patient advocacy leaders

A growing number of companies will name "Chief Patient Officers" dedicated to building stronger ties to patients and patient-advocacy groups.



#### Growing influence of emerging biopharma companies



#### Expanding use of real-world evidence (RWE) in clinical trials

Standards and practices will continue to evolve for the use of RWE in clinical trials, post-approval marketing and supportive studies to characterize and understand diseases.

