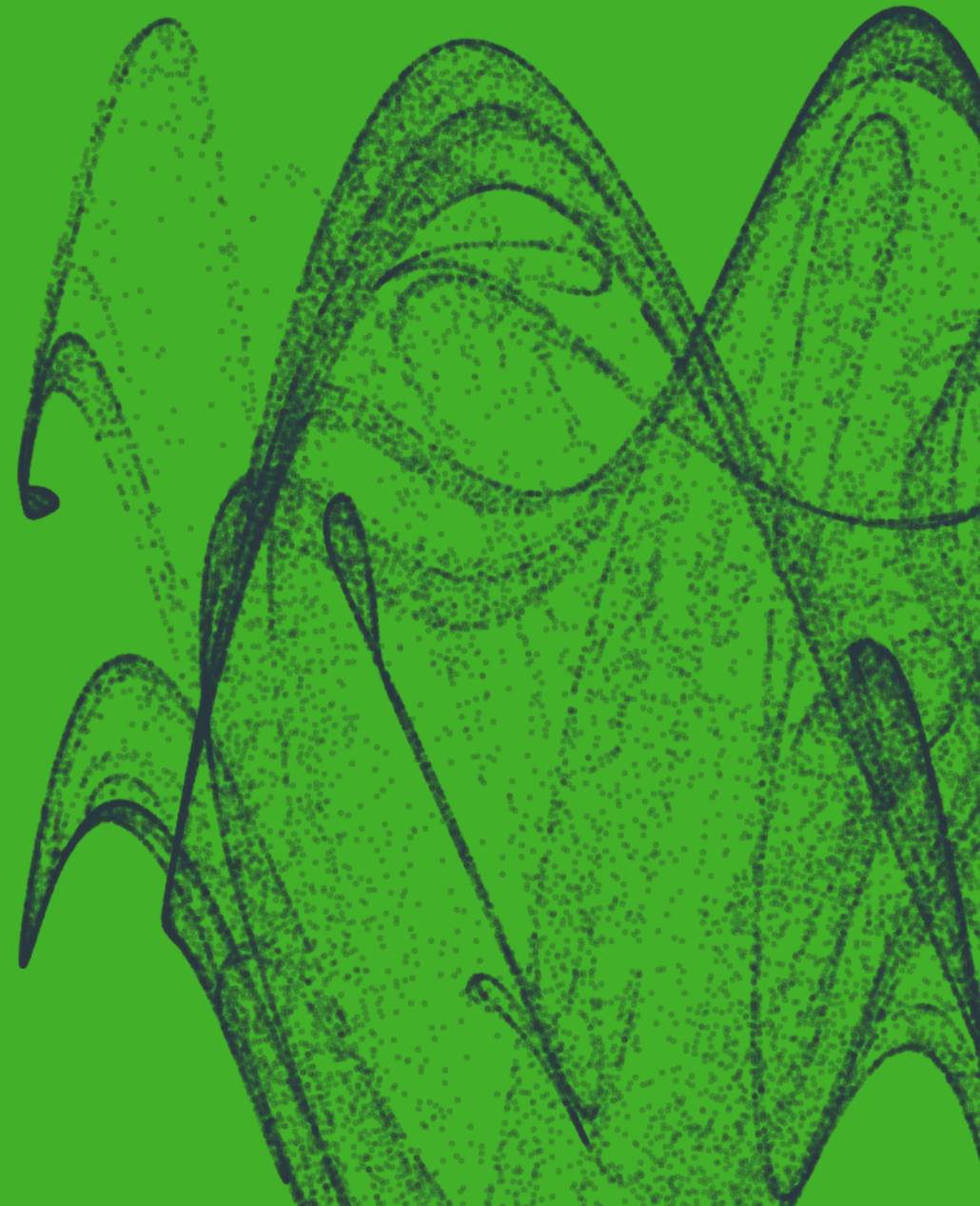




# **IQVIA Life Sciences Innovation Forum**

**Set-up Slides: Evolving the Biomedical  
Innovation System**

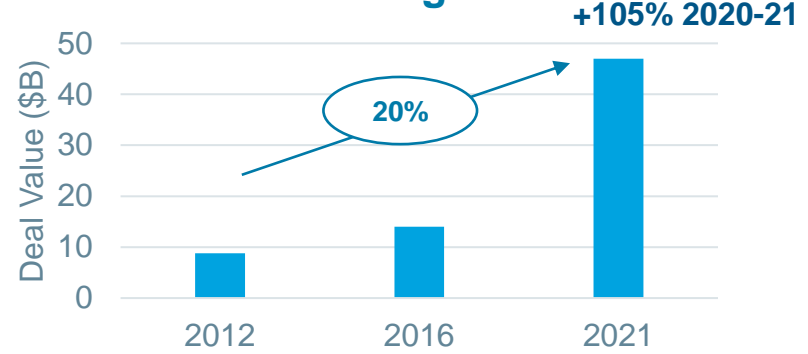
**September 13, 2022**



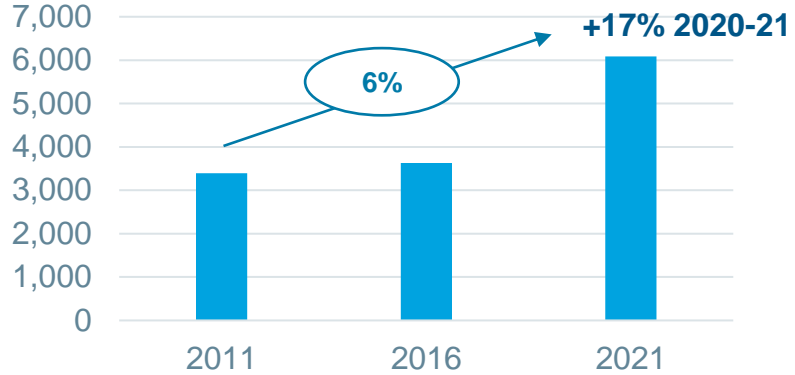
# Today's biomedical R&D pipeline innovation levels at all time highs

CAGR for illustrated period

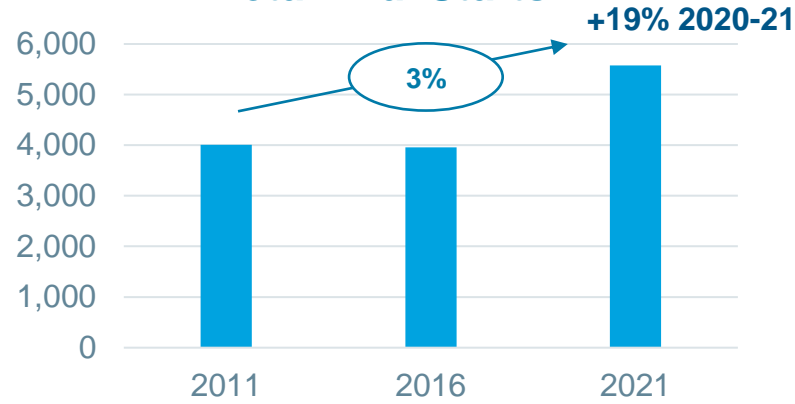
**US Lifesciences Venture Funding**



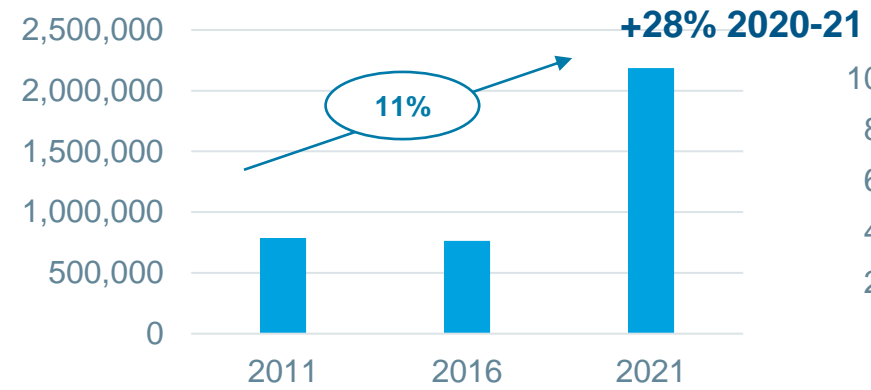
**Pharmaceutical Pipeline**



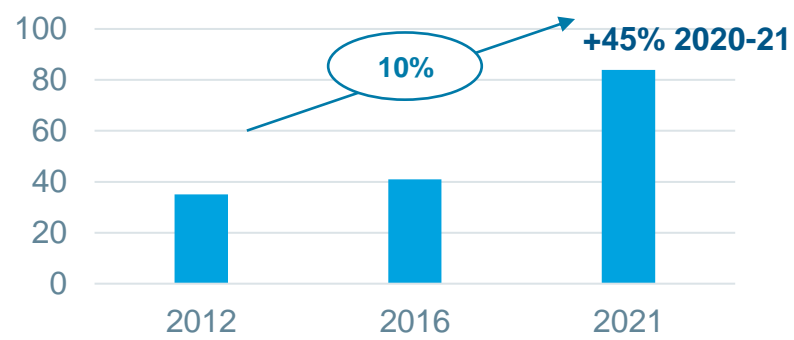
**Total Trial Starts**



**Clinical Trial Subjects**



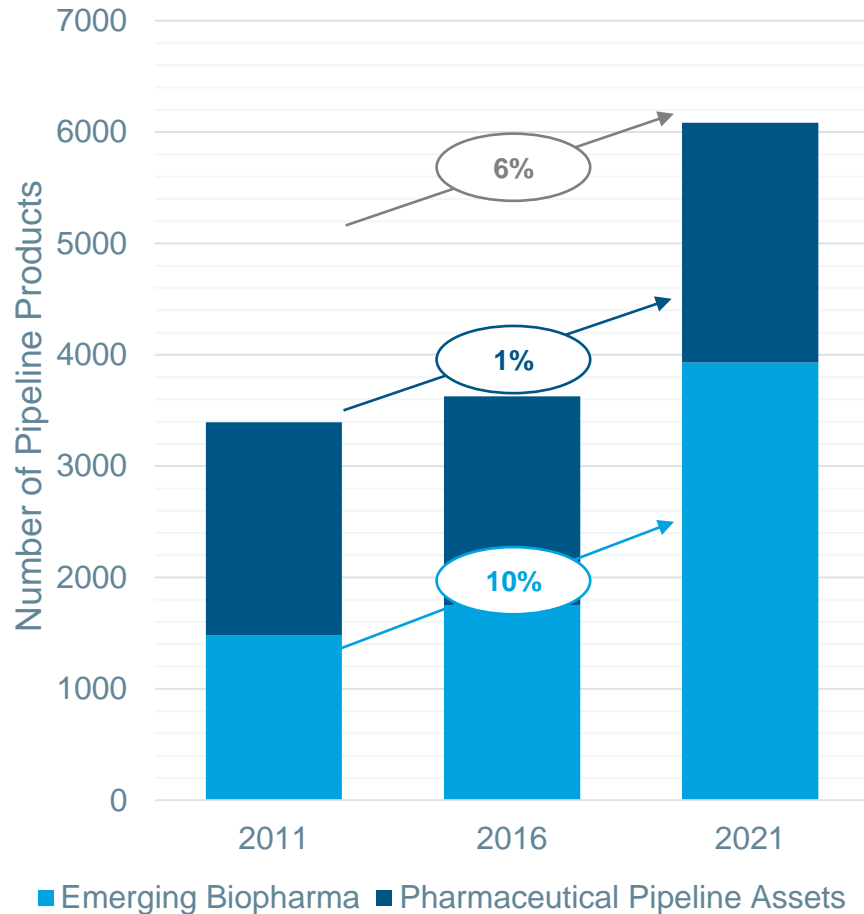
**Novel Active Substances Launched**



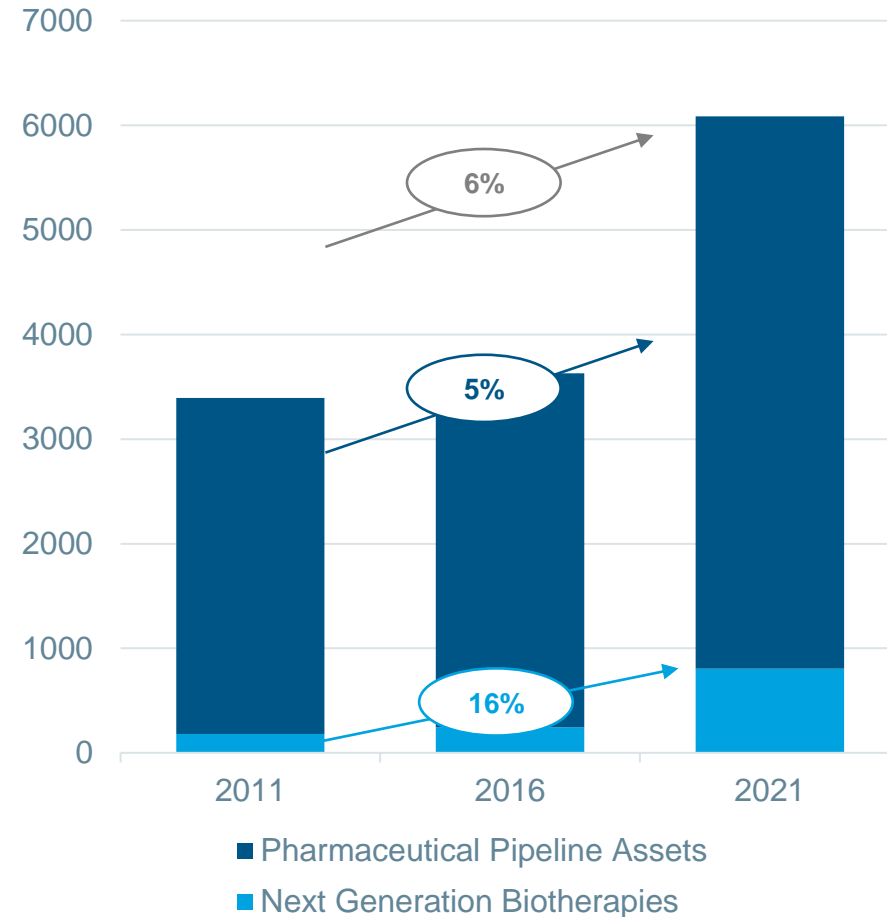
Source: IQVIA Institute, Jan 2022. Adapted from Global Trends in R&D: Overview through 2021. Report by the IQVIA Institute for Human Data Science.

# Examples clinical complexity growing faster than underlying pipeline

## Emerging Biopharma Pipeline

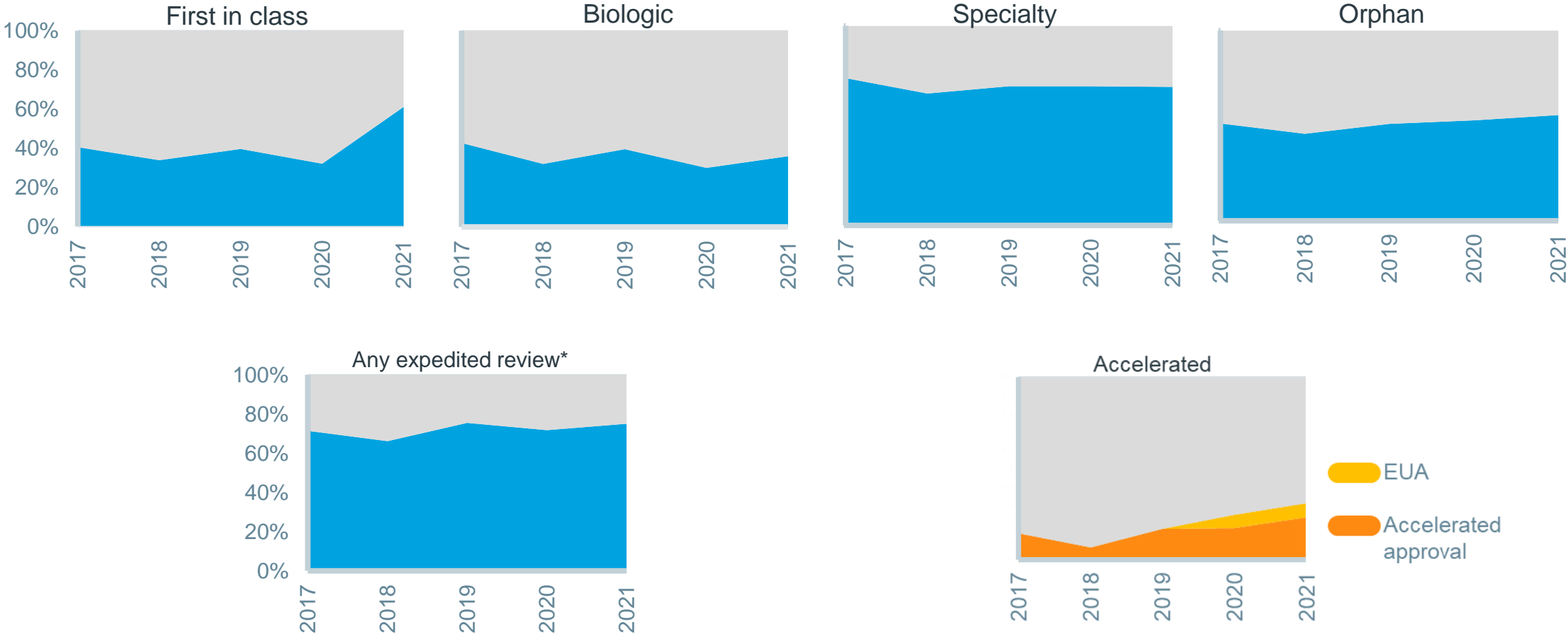


## Next Generation Pipeline



Source: IQVIA Institute, Jan 2022.  
Adapted from Global Trends in R&D: Overview through 2021. Report by the IQVIA Institute for Human Data Science.

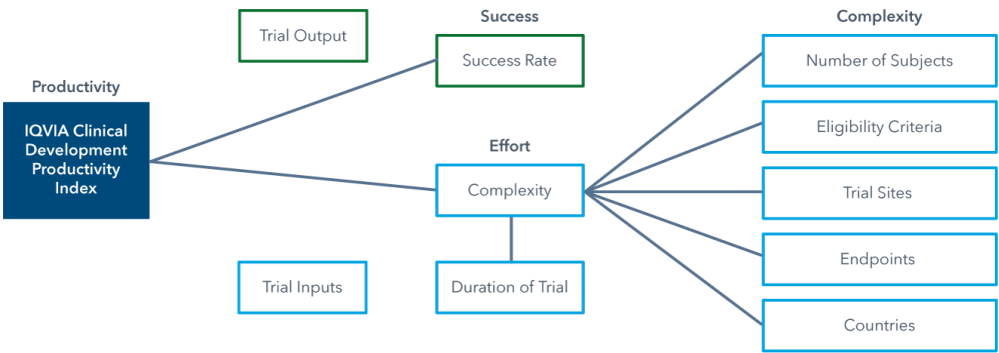
# New launches also suggesting greater rate of innovation coming through the pipeline



Source: IQVIA Institute, Jan 2022.  
 Adapted from Global Trends in R&D: Overview through 2021. Report by the IQVIA Institute for Human Data Science.  
 \*includes FDA Priority Review, Fast Track, and Breakthrough Designation as well as consolidated trials and accelerated/EUA pathways

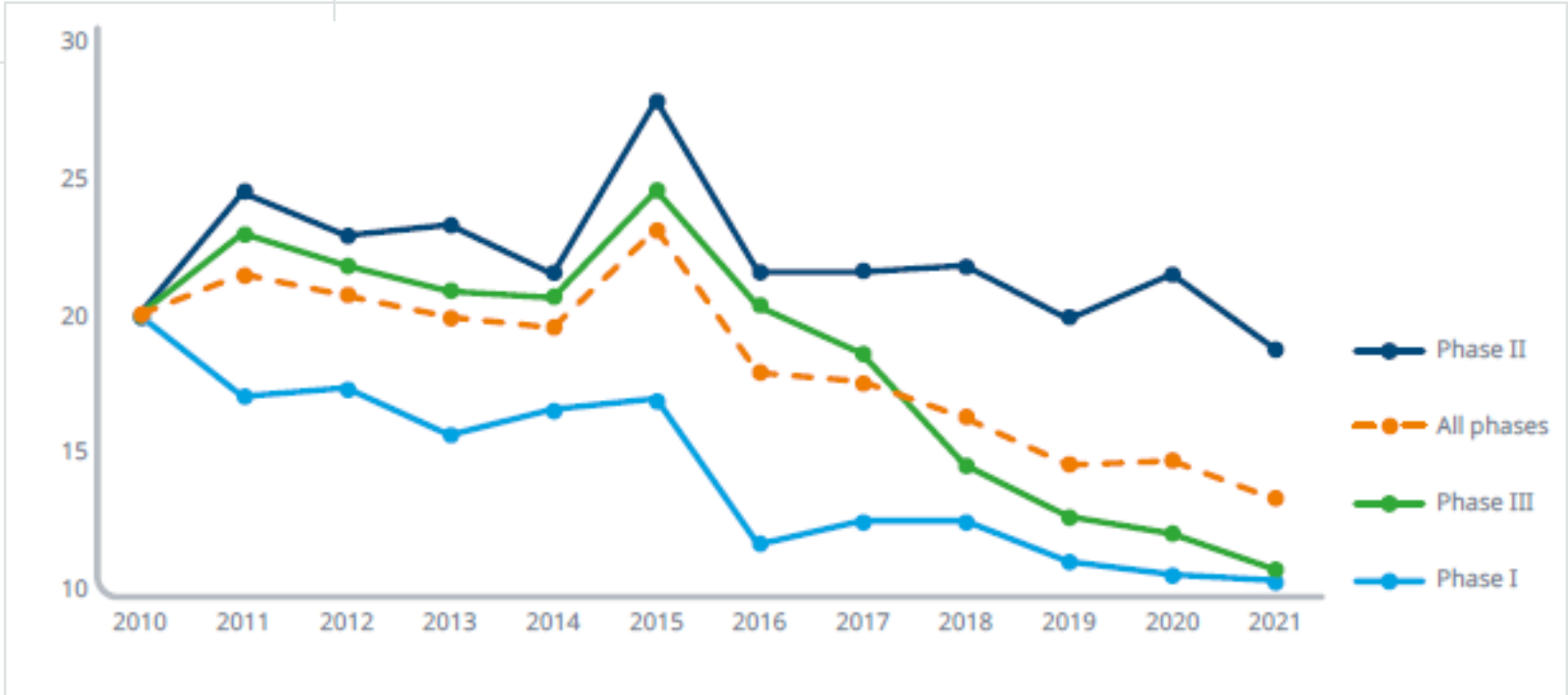
# Despite investment, industry facing productivity challenge in translating pipeline innovation to new medicines

## IQVIA Institute Clinical Development Productivity Index



The productivity of the clinical development process can be estimated from a measure of trial outputs (drugs, innovation, trial success, etc.) compared to a measure of trial inputs.

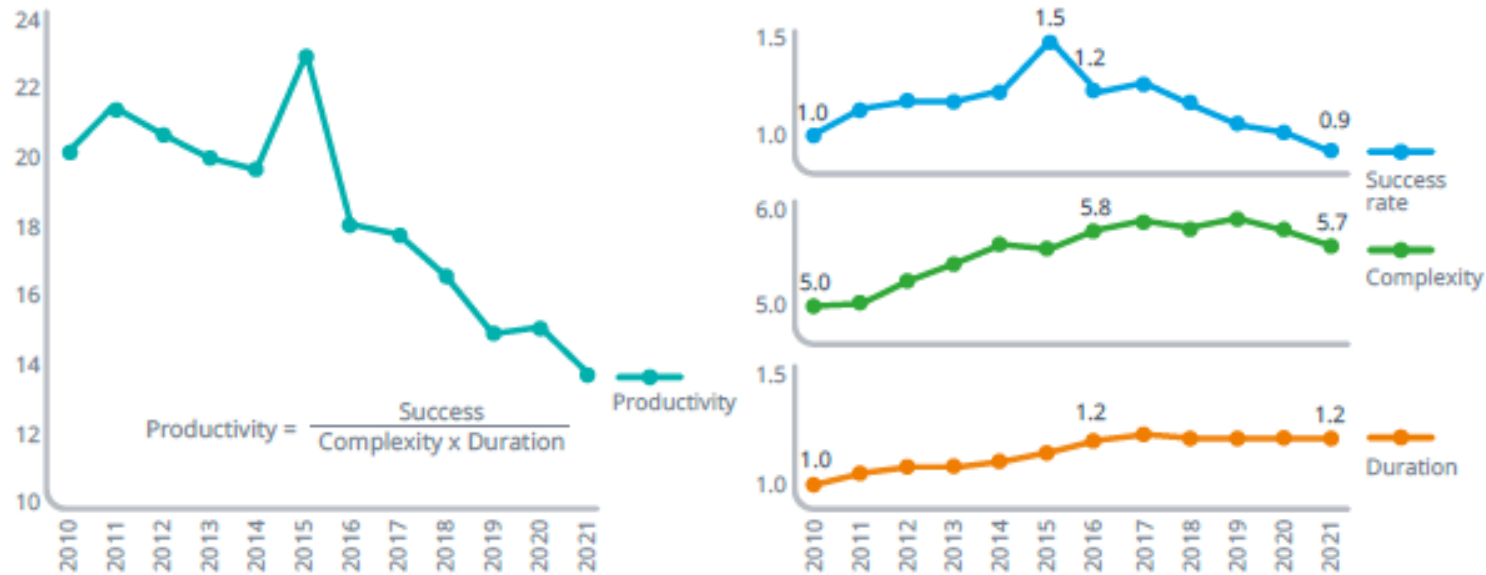
By this estimate, the composite Clinical Development Productivity Index has dropped by 32% over the past decade.



Source: IQVIA Institute, Jan 2022.  
Adapted from Global Trends in R&D: Overview through 2021.  
Report by the IQVIA Institute for Human Data Science.

# Ongoing complexities and societal demands will continue to evolve the innovation system and effect productivity

Clinical Development Productivity Index and elements of productivity indexed to 2010 values



Increasing proportion of scientific innovation in the pipeline contributing to reduced probability of success, increased complexity and timelines

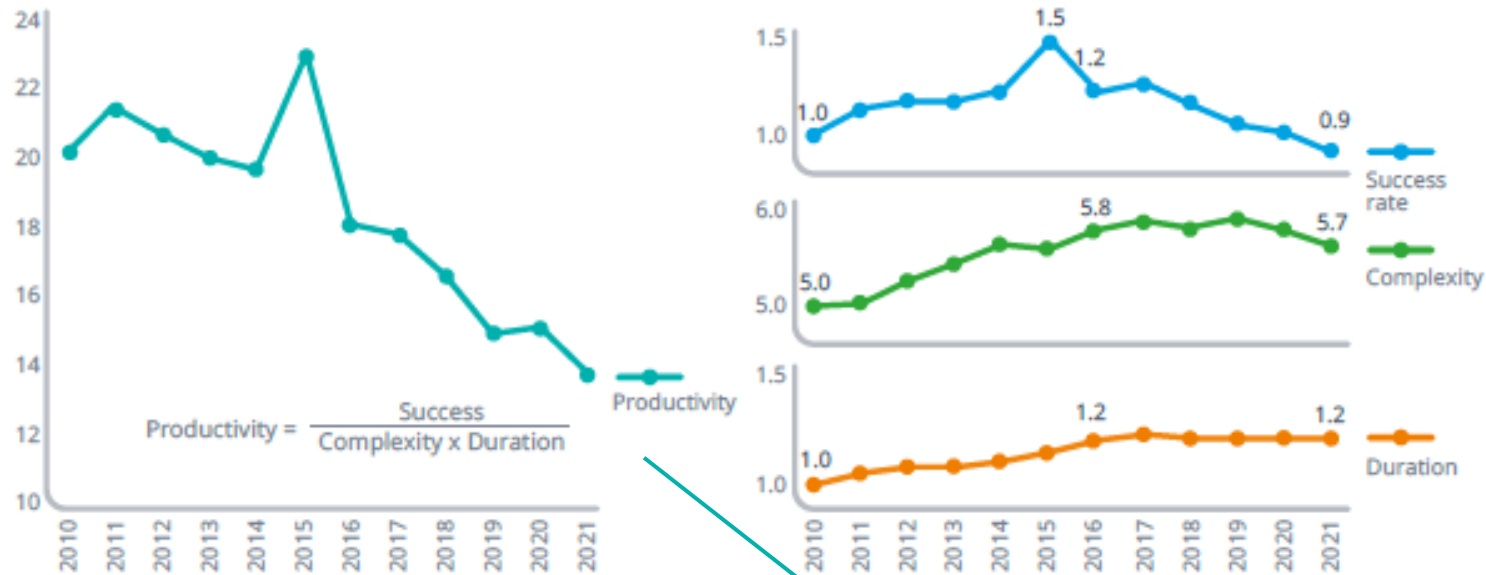
- Novel MOAs
- New Platforms
- New targets and biomarkers

Societal demands are evolving requirements from the system and may alter drivers of productivity

- Regulatory Changes
- Patient privacy
- Patient representativeness

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How will we leverage key operational innovations to restore productivity of biomedical pipeline?

- Biomarkers
- Predictive Analytics & AI/ML
- PRO
- RWE
- Digital Health
- DCT and Patient-centricity
- Collaboration models (public-private and research clusters)
- Evolving development platforms (NTD out to in silico)

# Opportunity to harness clinical innovations to address productivity challenges

## Productivity Enablers

	Biomarkers	Digital Health (Sensors, CTMS, etc.)	Decentralization / Patient-Centricity	RWE	Predictive Analytics/ AI/ML	Evolving trial models (novel trial design, in silico)	Collaborative models (public-private, research clusters)
<b>New targets/ biomarkers</b>	X	X		X	X	X	X
<b>Novel MOAs</b>	X				X	X	X
<b>Novel therapeutic platforms</b>					X	X	X
<b>Regulatory changes</b>			X	~		~	~
<b>Patient privacy</b>		X	X	~			X
<b>Patient representative-ness</b>			X	X			X

Drivers of Complexity



# Evolving the Biomedical Innovation System

*Areas for discussion*

## Role of real world evidence and advanced analytics

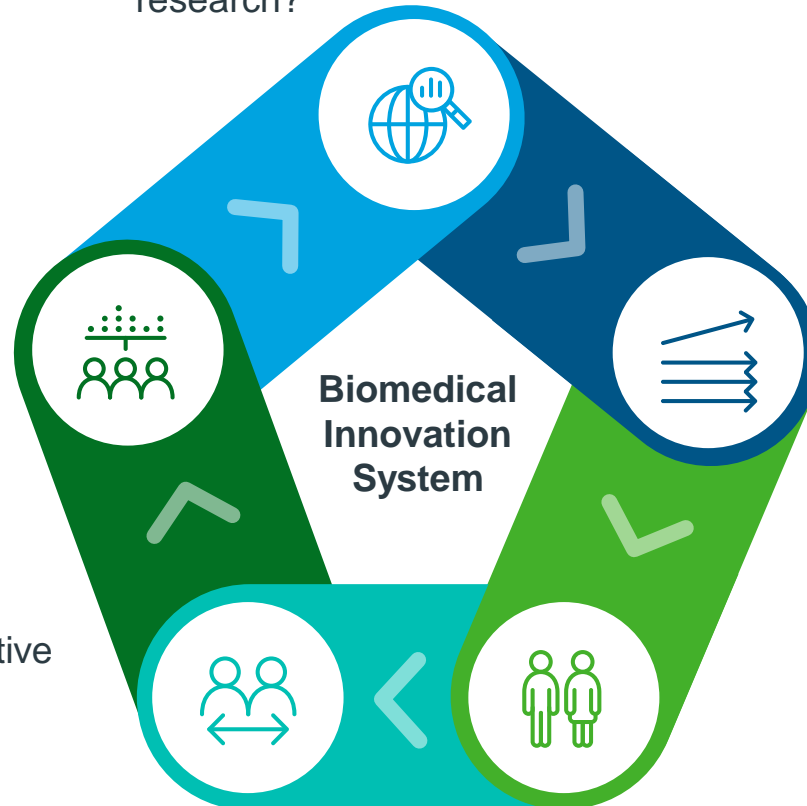
Where and when can real-world data and advanced analytics including AI/ML be best applied to advance biomedical research?

## Clinical trial productivity

What areas of significant “white space” can be minimized to improve clinical trial productivity, and what new decision-making or management approaches will be needed?

## Regulatory environment

What are the shared hurdles and collaborative pathways for regulators and sponsors, including building representativeness into drug development plans?



## Sustainability of innovation system

How to assess and optimize the balance between scientific/technical risk and adequacy of investment returns to ensure sustainability?

## Collaboration Models

Partnerships between emerging biopharma and larger pharma companies; collaboration clusters and public-private collaboration