



The Global Life Sciences Innovation Race: Where Does Europe Stand?

1. Is Europe keeping or losing its competitiveness for life sciences investment vis-à-vis other innovators?

Growth in life sciences innovation output in China and the US is outpacing growth in the EU for many output indicators. In particular, the US shows strengths in cutting-edge innovation, drug development and patenting activities – areas where emerging companies are key drivers. China witnesses high growth rate on all fronts, including highly innovative areas like biologics.

Life sciences innovation outputs

	Who is the lead innovator? *			Is the EU losing competitiveness? **	To whom? ***
	EU	US	China		
Scientific publications				Yes	China
Clinical research				Yes	China (and US to a lesser extent)
Drug development				Yes	US and China
Patenting activity				Yes	US and China
Licensing and acquisitions				No	
Manufacturing	Export	Added value		No	

* Which country has the highest absolute value? ** Has the EU share of total global output decreased?

*** Which innovators have increased or kept constant their share out of total global (i.e. have shown a faster growth than the EU?)

Clinical research

- **Trials carried out in the EU are less innovative (early phase) than in the US:**
 - A lower share of CTs is early phase in Europe (24%) than in the US (34%) and China (29%);
 - 34% of biologic CTs in Europe are early phase, against 73% in China and 72% in the US.
- **Emerging companies and universities/research organizations play a more limited role in the clinical pipeline in Europe:**
 - The share of CTs financed by the industry (57%) is higher than in the US and China;
 - Only 23% of total CTs by emerging companies takes place in Europe, against 61% in the US.
- **Europe experiences a steeper loss of competitiveness than the US, especially for more innovative (biologics and early phase) trials:**
 - The US is overall keeping its competitiveness for biologics CTs (no loss of share out of global total); In absolute terms, the US carries out more early phase biologic trials than Europe.

Patenting activity

- **China has overtaken Europe as the second largest patenting country for pharma and biotech.**
- **Growing distance with the US, especially for most innovative (triadic) patents:**
 - Number of triadic patents in Europe decreased in Europe in 2018;
 - The US is managing to maintain its position as top life sciences patenting country.

2. Which issues are impacting the ability to maintain or deepen competitiveness?

Evidence shows a growing gap with the US in availability of investment capital to emerging companies and R&D spending – pointing to the need for the EU to pursue a better investment environment and stronger Government support to life sciences innovation.

Life sciences innovation inputs

	EU	US	China
Access to finance			
Human capital			
Scientific capabilities			
Tech transfer framework			
Regulatory environment			
Intellectual Property			
Commercial incentives			

Which issues are impacting the EU’s capacity to compete?
More difficult access to funding for EU companies
Global talent competitiveness second to the US
Lower R&D spending both overall and for life sciences
Variable tech transfer capacities across EU countries
(Lack of harmonization at EU level)
(SPC manufacturing waiver)
More challenging pricing & reimbursement environment

Access to finance

- **Large and growing distance from US and China in the capacity to raise venture capital:**
 - Venture capital into innovative US life sciences companies outpaced Europe by 5.7x in 2018 (USD 2.2bn vs 12,3bn);
 - Chinese companies set an historical precedent with the highest percentage increase (600%) in venture capital over the last decade;
 - The number of IPO deals for life sciences companies in Europe dropped from 17 in 2017 to 8 in 2018; in the US it doubled since 2017 and the amount raised in 2018 set a record.

R&D spending

- **Strong prioritization of life sciences among R&D spending is a US strength;**
 - US grants 24% of total federal funds to medical research, 53% if looking at non-defense R&D spend;
 - In Europe, public allocations for health R&D vary from 23% in the UK to 5% in Germany.
 - The US spends the most on biopharmaceutical R&D both in absolute terms and as a % of GDP;
 - Biopharmaceutical R&D spending has grown faster in the US than in Europe and Japan.

Life sciences vs overall S&T trends: In life sciences Europe and particularly the US are losing competitiveness to China at a slower pace than in other innovative sectors (also because China’s catch up started later). On the contrary, looking at S&T at large, China is already the second largest R&D spender and patenting country after the US.

Why does it matter?

- Large gains from bringing back investment to Europe
(estimate: matching 2010 performance would have delivered additional **USD11,7bn** in R&D investment in 2016)
- Sweden is well positioned to benefit from investment that comes to Europe
- As an innovative powerhouse, Sweden can drive the efforts to raise the EU’s game in life sciences innovation