

# Key Facts 2016

## RESEARCH AND DEVELOPMENT (R&D)<sup>1</sup>

Average time to develop a drug = **10 to 15 years**

Percentage of drugs entering clinical trials resulting in an approved medicine = less than **12%**

## PERCENTAGE OF SALES THAT WENT TO R&D IN 2015<sup>5</sup>

Domestic R&D as a percentage of domestic sales = **24.8%**

Total R&D as a percentage of total sales = **19.8%**

## MEDICINES IN DEVELOPMENT

Medicines in development globally = **7,000**<sup>14</sup>

Potential first-in-class medicines\*\* across the pipeline = an average of **70%**<sup>15</sup>

Medicines in development to treat rare diseases = more than **450**<sup>16</sup>

## DEVELOPMENT COSTS

Average cost to develop a drug (including the cost of failures):<sup>2</sup>

2000s–early 2010s = **\$2.6 billion**

1990s–early 2000s = **\$1.0 billion\***

1980s = **\$413 million**

1970s = **\$179 million**

## ECONOMIC IMPACT OF THE BIOPHARMACEUTICAL SECTOR<sup>6</sup>

Direct jobs = about **854,000**

Total jobs (including indirect and induced jobs) = more than **4.4 million**

## VALUE OF MEDICINES

**Cancer:** Since peaking in the 1990s, cancer death rates have declined **23%**.<sup>17</sup> Approximately **83%** of survival gains in cancer are attributable to new treatments, including medicines.<sup>18</sup>

**Hepatitis C:** Just five years ago, treatment options for hepatitis C came with debilitating side effects and cured only half of patients over a course of treatment lasting up to 48 weeks.<sup>19</sup> Today, a range of treatment options are available offering cure rates upwards of **90%**, with minimal side effects, in as few as 8 weeks.<sup>20</sup>

**HIV/AIDS:** Since the introduction of highly active antiretroviral treatment (HAART), the HIV/AIDS death rate has dropped **87%**.<sup>21</sup> As a result of HAART and all the medical innovations that followed, it is estimated that **862,000** premature deaths were avoided in the United States alone.<sup>22</sup>

## R&D SPENDING

Year	PhRMA members <sup>3</sup>
2015	\$58.8 billion (est.)
2014	\$53.3 billion
2013	\$51.6 billion
2012	\$49.6 billion
2011	\$48.6 billion
2010	\$50.7 billion
2009	\$46.4 billion
2008	\$47.4 billion
2007	\$47.9 billion
2006	\$43.0 billion
2005	\$39.9 billion
2000	\$26.0 billion
1990	\$8.4 billion
1980	\$2.0 billion



## APPROVALS

Novel medicines approved 2015 = **56**<sup>7,8</sup>

Medicines approved since 2000 = more than **550**<sup>9,10,11</sup>

In the 30 years since the Orphan Drug Act was established, more than **500** orphan drugs have been approved, with nearly **300** approved in the last decade alone<sup>12</sup>

Only **2 of 10** marketed drugs return revenues that match or exceed R&D costs<sup>13</sup>

## SALES

Generic share of prescriptions filled:<sup>4</sup>

2000 = **49%**

2015 = **91%**



<sup>1</sup>Previous research by the same author estimated average R&D costs in the early 2000s at \$1.2 billion in constant 2000 dollars [see DiMasi JA, Grabowski HG. The cost of biopharmaceutical R&D: Is biotech different? *Managerial and Decision Economics*. 2007;28:469–479]. That estimate was based on the same underlying survey as the author's estimates for the 1990s to early 2000s reported here (\$800 million in constant 2000 dollars), but updated for changes in the cost of capital.

<sup>2</sup>Note: First-in-class medicines are those that use a different mechanism of action from any other already approved medicine.