



INNOVATIVE SCIENCE

# RESEARCH AND DEVELOPMENT

## Partnering to Expand R&D Impact

External collaboration is critical to advancing our R&D strategy and expediting new breakthroughs for patients

### OWNING COLLABORATION



### Centers for Therapeutic Innovation

Pfizer's [Centers for Therapeutic Innovation](#) (CTI) enable us to partner more closely with academic scientists located at major biotech hubs in the U.S., all in an effort to accelerate the translation of emerging science into new therapies. CTI combines the research expertise of academic experts in disease, targets and patient populations with Pfizer's R&D knowledge, resources and development capabilities. CTI's innovative business model allows academic scientists to share more fully in the value of their science and positions Pfizer to potentially enrich our R&D pipeline with innovative next generation therapeutics.

### National Center for Advancing Translational Sciences

Pfizer is a pioneering partner in the National Center for Advancing Translational Sciences (NCATS), the newest program of the U.S. National Institutes of Health (NIH). NCATS provides a collaborative program to match academic researchers with dozens of pharmaceutical industry-owned molecules. A key step forward for the R&D ecosystem, this emerging meta-collaboration among government, academia and industry focuses on a portion of the therapeutic pipeline that traditionally has been difficult for academic researchers to access: compounds that already have cleared safety testing in humans.

Industry partners will retain ownership of their compounds, while academic partners will own any intellectual property they discover using these compounds, along with the right to publish their results.

Some compounds are not effective for their initial intended use, but additional research may yield different therapeutic uses. Examples include sildenafil, which was originally studied as a potential angina treatment, but went on to be developed as Viagra for erectile dysfunction and then repurposed as Revatio for pulmonary arterial hypertension.



### COLLABORATING ACROSS ALL BOUNDARIES

Pfizer has a robust internal pipeline of product candidates across our key therapeutic focus areas, all of which are rooted in leading-edge science in disease biology. Pfizer's 10 in-house research units are complemented by a wide range of collaborators outside the company. Our new, more expansive approach to external collaboration is essential to our R&D strategy—forging partnerships that connect the assets and capabilities of different organizations and sectors to speed the development of new medicines for patients.



### **Cystic Fibrosis Foundation Therapeutics, Inc.**

Cystic Fibrosis Foundation Therapeutics, Inc., the nonprofit drug discovery and development affiliate of the Cystic Fibrosis Foundation, has greatly expanded its research collaboration with Pfizer, agreeing to invest up to approximately \$58 million to speed potential therapies that target the most common underlying causes of cystic fibrosis. The new six-year pre-clinical research program strengthens Pfizer's position in developing therapies that help "correct" the action of mutated proteins and is designed to advance one or more drug candidates into the clinic. Such innovative collaborations between industry and patient organizations are seen as increasingly critical in expediting the translation of science into potential new treatments.

### **Duke University: Exploring Insulin Resistance**

Pfizer entered into collaboration with Duke University's Stedman Center to enhance our understanding of the mechanisms by which insulin resistance develops in humans. The partnership focuses on identifying the pathways underlying the development of diabetes by leveraging the Center's established technology platforms and deep understanding of metabolic pathways. These insights into the biology of diabetes support the research and development of compounds that target the underlying causes of the disease.

### **Nodality: Precision Medicine R&D for Lupus**

Nodality and Pfizer have entered into a strategic collaboration for the use of Nodality's proprietary Single Cell Network Profiling (SCNP) technology as a Precision Medicine tool for the development of Pfizer compounds to treat autoimmune diseases. Precision Medicine has been widely adapted in oncology drug development, and there is considerable optimism that these principles can be applied to other disease areas. This multiyear, collaborative effort will initially focus on lupus, including characterizing mechanisms of action, disease analysis and drug profiling. Pfizer Venture Investments has been an investor in Nodality since 2008.

### **Transcelerate: Drug Development Solutions**

Pfizer is a founding member of TransCelerate BioPharma, a nonprofit consortium formed by leaders in our industry to accelerate the development of new medicines. Joining us in the initiative are Abbott, AstraZeneca, Boehringer Ingelheim, Bristol-Myers Squibb, Eli Lilly, GlaxoSmithKline, Johnson & Johnson, Roche and Sanofi.

This cross-industry initiative is dedicated to identifying and solving common drug development challenges, beginning with clinical study execution, with the end goals of improving the quality of clinical studies and bringing new medicines to more patients more quickly. The five initial projects are: development of a shared user interface for investigator site portals; mutual recognition of study site qualification and training; development of risk-based site monitoring approach and standards; development of clinical data standards; and establishment of a comparator drug supply model.

**INNOVATIVE SCIENCE**

# Advancing Our Pipeline

## A Focused Portfolio of Promising Drug Candidates

Our programs in development include potential treatments for autoimmune diseases such as inflammatory bowel disease, lupus, cardiovascular disease, diabetes, cancer, neurological diseases and pain, as well as vaccines for meningococcal B disease in adolescents and for *Staphylococcus aureus*.

View the latest pipeline on [pfizer.com](http://pfizer.com)

## PROGRAMS IN CLINICAL TRIAL AND REGISTRATION

As of February 28, 2013



**INNOVATIVE SCIENCE**

# Creating a Robust and Sustainable Innovative Core

We continue to transform our R&D approach and capabilities with strategic choices that build a sustainable engine for innovation over the long term, while at the same time ensuring we execute effectively on our near-term pipeline priorities.

## ADVANCING A DIFFERENTIATED PIPELINE — OUR R&D PRIORITIES

Pfizer has established three R&D priorities, unfolding over time, to focus on advancing a differentiated pipeline of medicines and vaccines.

Underlying our choices is a focus on increasing differentiation and innovation and improving R&D productivity and return on investment over the long term, while at the same time seeking to ensure we execute effectively on our near-term pipeline priorities. Two years after launching a comprehensive R&D turnaround effort, we are seeing positive indicators, with a robust portfolio grounded in rigorous decision making and an ownership culture.





## 1. Deliver the Portfolio

First and foremost, we are concentrating internal efforts where we believe we can deliver the greatest medical and commercial impact in areas of significant patient need. Over the last year, Pfizer has gained momentum in our late-stage pipeline with key regulatory approvals for important new medicines, including Eliquis (apixaban) for stroke prevention in nonvalvular atrial fibrillation, Xeljanz (tofacitinib), a first-in-class JAK inhibitor for moderate-to-severe rheumatoid arthritis, and the oncology compounds Inlyta (axitinib) and Bosulif (bosutinib).

Pfizer is advancing a solid late-stage pipeline, including a number of Phase III programs in areas of critical patient need, such as:

- **Vaccines:** To prevent Meningitis B in adolescents.
- **Breast Cancer:** Palbociclib (PD-991) for certain breast cancer patients with limited treatment options.
- **Blood cancer:** Inotuzumab ozogamicin, an antibody drug conjugate for certain types of lymphoma and leukemia.
- **Autoimmune disease:** Xeljanz (tofacitinib) in psoriasis and ulcerative colitis.

## 2. Innovate New Capabilities That Position Us for Leadership

Pfizer is focused on innovative capabilities that can position the company for long term competitive advantage. This includes the significant expansion of our vaccine development program, which now includes investigational first-in-class therapeutic and prophylactic vaccines targeting smoking cessation and deadly hospital-acquired infections. It also includes a leading platform in next-generation antibody drug conjugates (ADCs), which are targeted treatments for cancer that include an antibody and cancer cytotoxic in one medicine. Pfizer has cutting-edge small and large molecule technology capabilities that position us to develop fit-for-purpose optimized medicines for patient needs.

In addition to scientific capabilities Pfizer is at the forefront of innovating novel open-innovation models such as the CTIs, where Pfizer scientists work in real time with academic scientists to expedite the translation of science into medicine.

Key early-to-mid-stage clinical programs that reflect our new capabilities include:

- **Cardiovascular disease:** An optimized antibody targeting PCSK9 for high LDL cholesterol
- **Vaccines:** Therapeutic vaccine for smoking cessation, and prophylactic vaccines targeting two common and deadly hospital-acquired infections caused by *Staph. aureus* and *C. difficile bacteria*
- **Pain:** New family of candidates targeting ion channels with important implications in pain
- **Oncology:** Our first next-generation ADC, rooted in novel science on cancer stem cells
- **Diabetes:** Tissue-distributed small molecule glucokinase inhibitors designed to help patients with glycemic control without causing long term complications
- **Autoimmune disease:** Novel antibodies targeting inflammatory bowel disease (IBD) and lupus
- **Rare disease:** Antibody targeting new pathways for Duchenne's muscular dystrophy, a debilitating and deadly genetic disease in children

## 3. Build the R&D Ecosystem of the Future

We are moving toward a much more networked R&D model—shaping how biopharmaceutical innovation will be done. The R&D ecosystem of the future will draw on the total capabilities in the biomedical community, reducing silos and increasing productivity.

Critical to this new ecosystem is optimizing the promise of Precision Medicine, an approach to discovering, developing and commercializing medicines that we believe will deliver superior clinical outcomes in complex diseases, identify patient populations that are most likely to respond to our medicines and expedite the timelines for drug development.