



# Pharma Company Focus Areas and Business Development Opportunities: Pfizer, AbbVie, UCB and Takeda

## Executive Summary

This white paper provides an overview of the key therapeutic focus areas of several major pharmaceutical companies, including Pfizer, AbbVie, UCB, and Takeda. It also highlights potential business development opportunities for companies interested in partnering.

## Introduction

The pharmaceutical industry is constantly evolving, with new discoveries and technologies emerging at a rapid pace. To stay ahead of the curve, pharmaceutical companies must focus their research and development (R&D) efforts on specific therapeutic areas where they can make a significant impact. This white paper will explore the key focus areas of four major pharmaceutical companies:

- Pfizer
- AbbVie
- UCB
- Takeda

## Company Focus Areas

- **Pfizer:** Pfizer's focus areas include rare disease, internal medicine, inflammation & immunology, vaccines, oncology, and anti-infectives. ([link to Pfizer Focus Areas](#))
- **AbbVie:** AbbVie focuses on a core set of therapeutic areas including oncology, immunology, neuroscience, eye care, aesthetics and other areas of unmet need. ([link to AbbVie Focus Areas](#))
- **UCB:** UCB's focus areas are neurology and immunology. They are driven by their commitment to people living with severe diseases. In neurology, they focus on epilepsy and rare neurological diseases. In immunology, they focus on immune-mediated inflammatory diseases. ([link to UCB Focus Areas](#))



- **Takeda:** Takeda Pharmaceuticals focuses on innovations that contribute to making a difference in people's lives. They aim to discover and deliver life-transforming treatments in their core therapeutic and business areas, including gastrointestinal and inflammation, rare diseases, plasma-derived therapies, oncology, neuroscience and vaccines. ([link to Takeda Focus Areas](#))

## Business Development Opportunities

Companies with innovative technologies or drug candidates in these focus areas may have opportunities to partner with these pharmaceutical companies. Potential BD opportunities include:

- In-licensing agreements
- Co-development agreements
- Joint ventures
- Acquisitions

## Conclusion

The pharmaceutical industry offers a wealth of opportunities for companies with innovative products and technologies. By understanding the focus areas of major pharmaceutical companies, companies can develop targeted BD strategies that increase their chances of success.

## Next Steps

For more information on partnering with any of these pharmaceutical companies, please visit their websites or contact their business development teams.



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## Pfizer Focus Areas

Internal Medicine

<https://www.pfizer.com/partners/candidate/internal-medicine>

**Pfizer is interested in partnering to develop therapeutics, expand our understanding of disease biology, and identify biomarkers that can help us impact:**

- CVD (Heart failure, hypertriglyceridemia, atherosclerosis)
- Type 2 diabetes and related disorders such as hyperinsulinemia
- Non-alcoholic fatty liver disease (NAFLD), Non-alcoholic steatohepatitis (NASH), and liver cirrhosis
- Cachexia as a consequence of chronic illness
- Obesity and related co-morbidities
- Chronic kidney disease, diabetic kidney disease, and polycystic kidney disease
- Vascular disease

### **Specific areas of interest include:**

- Metabolic treatments of heart failure (HFrEF, HFpEF)
- Novel therapies that target insulin sensitivity in type 2 diabetes
- Addressing obesity and eating disorders to induce and sustain weight loss
- New mechanisms and pathways for the treatment of diabetic nephropathy, chronic kidney disease or polycystic kidney disease
- Novel approaches to target vascular dysfunction

### **Not actively seeking partnering opportunities in:**

- Anti-arrhythmics
- Stable angina treatments



Inflammation and Immunology

<https://www.pfizer.com/partners/candidate/inflammation-and-immunology>

**We are interested in establishing alliances to develop therapeutics, expand disease biology understanding, and identify biomarkers that impact three main areas:**

- Rheumatology
  - Rheumatoid Arthritis
  - Systemic / Cutaneous Lupus Erythematosus
  - Lupus Nephritis
  - Scleroderma, localized and systemic
  - Systemic Sclerosis
  - Myositis
  - Sjögren's Syndrome
  - Vasculitis
  - Giant Cell Arteritis
  - Rare rheumatologic diseases
  - Spondyloarthropathies
- Gastroenterology/Hepatology
  - Inflammatory Bowel Disease
  - F4 Non-Alcoholic Steatohepatitis
  - Fibrosing / Stricturing Crohn's Disease
  - Autoimmune Hepatitis
  - Refractory Celiac
  - Eosinophilic Esophagitis
  - Systemic aspects of food allergy
- Medical Dermatology
  - Atopic Dermatitis
  - Alopecia Areata
  - Vitiligo
  - Hidradenitis Suppurativa
  - Chronic Spontaneous Urticaria

- Pruritis indications: Lichen Sclerosus, Seborrheic / Perioral Dermatitis, Chronic Hand Eczema, Prurigo Nodularis
- Bullous Pemphigoid,
- Pemphigus Vulgaris
- Non-GI/Hepatology Fibrotic Diseases
- Other indications with high unmet need that are related to those above

**Specific areas of interest include:**

- Cytokines and their signaling pathways
- Adaptive Immunity, Lymphocyte biology including Th17 lymphocytes
- Regulatory cells and Tolerance induction
- Host-microbial interactions and microbiome with an interest in epithelial barrier
- Leukocyte metabolism
- Innate Immunity and Innate Lymphoid Cell biology
- Oxidative stress modulators
- Pan anti-fibrotics
- Novel methods to target pathogenic inflammatory fibroblast populations
- Technology platforms and products to help understand patient segmentation in the disease areas of interest and develop precision medicine strategies for innovative portfolio products
- Technology platforms and products that allow for greater tissue and cell specific delivery

**Not actively seeking partnering opportunities in:**

- TNF $\alpha$ , IL-1 $\beta$  targeting biologics
- B cell depleting biologics
- Corticosteroids



Oncology

<https://www.pfizer.com/partners/candidate/oncology>

**We are interested in establishing alliances to develop and access:**

- Breast, prostate, lung, bladder, colorectal, renal, melanoma and hematologic cancers

**Specific areas of interest include:**

- Oncogenic drivers and signaling pathways
- Epigenetics
- Hormone signaling
- Synthetic lethality
- Selective protein degraders
- Transcriptional regulators
- Immune modulators
- Immune cell engagers
- Precision medicine
- Functional genomics
- Liquid biopsy and imaging technologies
- In vivo cell reprogramming

**Immuno-Oncology**

The clinical successes reported with cancer immunotherapy are reshaping the field of oncology. Pfizer is significantly advancing activity in this area by partnering to develop cutting edge science beyond the current mainstream immune checkpoints. The IO programs at Pfizer uniquely leverage a combination of our scientific and clinical strength in immunobiology, as well as our historical expertise in developing first-in-class cancer therapies.

Pfizer's efforts in IO include external collaborative alliances with leading academic medical centers and visionary biotech firms. Our IO efforts are driven primarily by the Cancer Immunology Discovery Unit (CID) within our La Jolla, CA-based laboratory site. Leveraging its strength in biotherapeutics, along with core expertise in immunobiology, CID has a strong record of converting validated targets into novel protein-based therapeutics and advancing molecular and cell-based IO treatments. We would like to partner in the IO space on pre-clinical and clinical-stage immunomodulatory opportunities, with an emphasis on those agents that directly engage or impact T-cell and other tumor-infiltrating immune cell populations.



**We are interested in establishing alliances to develop and access:**

- Novel Targets for Overcoming Tumor-associated Immune Resistance
  - Targets that impact the immune response to cancer cells; innate immune activation; and immuno-suppression
- Platform Technologies
  - Mechanisms, biomarkers, and screening approaches to identify and accelerate the most promising combination therapies
  - New modalities to promote immune responses: Bi-specific and Tri-specific antibody/cytokine platforms, nanoparticles, or novel T cell receptors (TCRs)
  - Identification of new immune-modulating targets
  - Monitoring of biomarkers of immune-responsiveness and immune-suppression within tumors
  - Novel animal models that recapitulate more faithfully human tumor-immune system interactions

**Not actively seeking partnering opportunities in:**

- Antisense/siRNA/shRNA therapeutics
- Reformulated cytotoxic agents



Rare Disease

<https://www.pfizer.com/partners/candidate/rare-disease>

**Pfizer is interested in partnering to develop therapeutics, expanding our understanding of disease biology, and identifying biomarkers that can help us impact:**

- Rare renal and cardiac diseases
- Rare endocrinology & metabolic diseases
- Rare neurologic diseases
- Rare hematologic diseases
- Genetic-based approaches (e.g., gene therapy and gene editing) in the above disease areas

**Specific areas of interest include:**

- Gene therapy-, gene editing-, and mRNA-based therapies including methods to minimize host immune responses and afford redosing with viral vectors
- Oral small molecule- and biologics-based approaches
- Modifiers of expanded repeat disorders
- Pharmacologic chaperones and other modifiers of protein trafficking, misfolding, or degradation that could be applied to multiple diseases

**Not actively seeking partnering opportunities in:**

- Dermatology
- Rare oncology
- Ex-vivo gene therapies



## Vaccines

Vaccines are one of the greatest public health advancements of all time, resulting in the control, elimination, or near-elimination of numerous infectious diseases that were once pervasive and often fatal. Pfizer has a rich history in vaccine research and development. Over the years, we've played a pivotal role in eliminating or nearly eliminating deadly infectious diseases like smallpox and polio globally. We have designed novel vaccines based on new delivery systems and technologies that have resulted in vaccines to prevent bacterial infections, like those caused by *S. pneumoniae* and *N. meningitidis*.

Today, more people are benefiting from safe and efficacious vaccines to prevent infectious diseases than ever before, and vaccines provide essential health benefits at all ages, from maternal and infant populations to seniors. However, our work is not done given the many infectious diseases with high unmet medical need as well as the existence of a growing number of diseases which are potentially vaccine- preventable.

It is an exciting time in vaccine research and development, as scientific discoveries, technological advancements and regulatory paradigms are paving the way for novel vaccines. While Pfizer's Vaccine Research and Development scientists continue to extend our leadership position in pneumococcal and meningococcal disease prevention, they are also working on vaccines against other major infectious diseases while striving to bring the benefits of vaccines into previously unexplored areas. We are at the forefront to usher in a new era of vaccine innovation, to prevent serious infectious diseases that span our life span, protecting infants through maternal immunization and infant immunization through to older adults.

The approval of the first mRNA-based COVID-19 vaccines was a scientific turning point, establishing mRNA as a versatile, flexible technology. The focus and drive Pfizer exhibited in developing our COVID-19 vaccine in partnership with BioNTech produced a wealth of scientific knowledge in just one year.

Pfizer's next wave of mRNA scientific innovation is expanding in the infectious disease arena with development programs in influenza and shingles, and we are also exploring the application of mRNA technology in other areas, including in rare genetic diseases. Our intention is to evaluate opportunities where the scientific rationale for using mRNA technology along with Pfizer's expertise in disease is strongest, and where the potential impact on patients could be the greatest.

### **Pfizer Vaccines is interested in partnering opportunities in Vaccines R&D:**

- Infectious disease vaccines that address a high unmet medical need and represent a breakthrough vs. standard of care
- Focus on bacterial and viral vaccines

### **Specific areas of interest in Vaccine Research include:**



- Research tools, reagents, and materials to aid in vaccine discovery
- Novel viral and bacterial antigens (peptides, proteins, DNA, RNA, glycoconjugates) and expression systems
- Immunomodulators, adjuvants, delivery platforms, and vector systems to enhance vaccine immune responses
- Needle-free alternative delivery methods and devices

Broad platform technologies for application across multiple programs





## Therapeutic Modalities and Technology Platforms

<https://www.pfizer.com/about/partners/research-and-business-development-partnerships>

### Drug Safety

**Translational safety sciences to predict safe human dose:** Probabilistic early screening approaches coupled with mechanistic and translational investigations to understand, predict, detect, and mitigate toxicities in humans; for example:

- Cardiovascular and vascular injury
- Liver injury, in particular immune-mediated drug-induced liver injury (DILI) and transporters
- Immunosafety concerns including both immunosuppression and immunostimulation, such as hypersensitivity, autoimmunity, complement activation and cytokine release
- Neuropathology (central and peripheral)
- Kidney toxicity – glomerular and tubular
- Ocular toxicity – retina and cornea
- Bone marrow toxicity - hematopoietic and myelopoietic
- Gastrointestinal toxicity - characterization, mechanistic and translational relevance

**Development, validation, and implementation of new drug development tools:** Mechanistic de-risking using new tools that include AI/ML approaches, 2D and 3D human cell-based models, microphysiological and complex in vitro systems, and omics-based translational biomarkers; for example:

- Novel data insights and applications of Artificial Intelligence (AI) to predict, understand and improve safety assessment
- Quantitative systems toxicology approaches using genetic and multi-omics data sets to allow prediction of adverse events and develop a risk stratification strategy for patients
- High-resolution screening methodologies (single cell transcriptomics, high dimensional phospho and global proteomics), cell painting, single parameter and multiplex digital image analysis and omics approaches to discover, develop, and qualify multi-parametric biomarkers for translational safety monitoring
- Comparative analysis with digital imaging and digital pathology to enable forward and reverse translation between animals and humans
- Physiologically relevant complex in vitro models incorporating multiple organ systems to de-risk human toxicity concerns

### **Support all therapeutic areas with an end-to-end non-clinical safety assessment**

**approach:** Execute safety packages for regulatory acceptances of IND/NDA/BLA submissions for all mono- and combination-therapy approaches (interpretation and translatability); for example:

- Quantitative approaches to demonstrate safety of emerging modalities such as multifunctional antibodies; mRNA technologies (lipid nanoparticle, gene therapy, gene editing); modulators of protein homeostasis (protein degraders, molecular glues); antibody drug conjugates



- Innovative scientific approaches to assess developmental and reproductive toxicology risks and develop weight of evidence using multi-modal datasets for carcinogenicity waivers

**Contribute to the biomedical ecosystem** by mentoring; participating and leading of public-private partnerships, scientific and regulatory consortia, and conversations related to safety/regulatory guidance and policies

#### Medicinal Sciences

- [Biologics Product & Process Development](#)
- [Biotherapeutics Discovery & Development](#)
- [Medicine Design](#)
- [Small Molecule Product & Process Development](#)

#### Precision Medicine

We are focused on Precision Medicine as an approach to discovering and developing potential treatments that can deliver superior outcomes for patients, by integrating clinical and molecular data to understand the biological basis of disease, the pharmacology of our drug candidates and the appropriate patient population to treat. Precision medicine efforts have the potential to lead to better matching of drug targets with selected patient populations that may experience clinical benefit.

**We are interested in establishing collaborations to develop and access:**

##### Patient cohorts

- Large-scale datasets with high quality longitudinal clinical (e.g., electronic medical record)
- Molecular, imaging and other phenotypic data appropriately consented, preferably with broadly consented biospecimens (e.g., whole blood serum/plasma, saliva, tissue, PBMCs, stool, etc.)
- Cohorts with the potential to recall patients based on genotype or phenotype for follow up studies

##### Systems Biology/Pharmacology

- Databases with high quality data on treatment and disease outcomes associated with genetic, as well as molecular (metabolomic, proteomic transcriptomic, epigenetic, clinical chemistry markers) or functional measures, in particular with associated imaging data
- Databases of searchable expression quantitative trait loci (eQTLs), protein quantitative trait loci (pQTLs) across tissues
- Disease biology guided combination therapy design platforms



- Systems biology approaches and proven *in silico* tools to evaluate pharmacological perturbation and to elucidate mechanisms of *in vivo* toxicity
- Mining of data for correlation and understanding of causality

#### Biospecimen Analysis

- High dimensional single cell analysis platforms
- 3D cell models for safety and efficacy assessment that ideally incorporate genetic diversity
- Emerging “omic” analysis (e.g., phosphoproteome, autoantibody profiling, microbiome in addition to proteomics, metabolomics)

#### Physiological Biomarkers

- Technologies that have the potential to add enhanced precision to pre-clinical studies
- EEG-based biomarkers

Induced pluripotent stem cell (iPSC) resources and technologies to generate iPSCs that may be used to enable Precision Medicine strategies

- Validated cell differentiation protocols
- iPSCs derived from sub populations with specific genotypic/phenotypic data
- Technology that can create iPSCs in a rapid and reproducible fashion without insertional approaches

Biospecimen collection/stabilization technologies:

- Novel sample collection approaches that allow frequent (at home) sample collection with appropriate stabilization (e.g., dried blood spots, swabs)

Remote Patient wearable technologies:

- Novel actigraphy and other wearables that allow frequent at home collection of data regarding relevant physiological states or biomarkers

Advanced computational biology approaches/platforms:

- Integration of high-dimensional data across various platforms in combination with traditional clinical readouts for the predictive modeling of patient response or disease progression
- AI approaches to gaining disease insight, target selection and/or patient populations likely to respond to potential treatment
- Microbiome, including virome characterization

#### RNA

Pfizer is interested in partnering for the advancement of RNA therapeutics and the development of the next generation of RNA medicines

**Novel target concepts and therapeutic strategies amenable to RNA based approaches (mRNA, circular RNA, gene editing, siRNA), in the following areas of interest:**

- Cellular reprogramming:
  - Cellular reprogramming in cancer (*CRC, Lung, Breast, Prostate, Renal*), metabolic, autoimmune disease or fibrosis (e.g. *transcription factors*). Prioritized lineages include:



- Myeloid cells (*DC, macrophages, monocytes*)
- T cells: CAR-Tregs or Treg reprogramming and induction of Tregs (autoimmunity, tolerance); T cell exhaustion and CAR-T (oncology, autoimmunity, fibrosis, etc)
- Adipocytes, muscle cells, endothelial cells
  - Tunable cytokine/interleukin expression for immune cell modulation in cancer
  - Reprogramming of Myofibroblasts in liver and lung fibrosis
- Infectious Disease Vaccines
  - Protective cell mediated response to bacterial or viral infections
  - Emerging virus threats
  - Bacterial pathogens
- Chronic Kidney Disease
- Conditions related to global health crises, e.g. obesity, cardiovascular disease, and viral diseases
- Preference given to targets not amenable to small or large molecule intervention

**Technologies and Enabling Infrastructure:**

- Next-gen gene-editing including gene correction/replacement
- Epigenetic editing
- Delivery technology, including tissue targeting for liver, lung, kidney, immune cell subsets, hematopoietic stem cells, central nervous system, or muscle
- Non-viral delivery for RNA and gene-editing
- Processes and linker chemistries for antibody-conjugation to LNPs and oligos
- Novel analytical methods for characterization of LNPs
- RNA engineering technologies (*e.g. UTRs, IRES, circular RNA, chemical modifications, stability*)

**Not actively seeking partnership opportunities in:**

- RNA vaccine strategies for Flu, COVID-19, RSV
- Non-coding RNA targets and modalities

Target Sciences

Target Sciences (TS) is a genomics partner line with expertise in Human Genetics, Functional Genomics, and Computational Biology. TS is focused on Pfizer R&D in target discovery and validation of first in class targets with compelling human-based confidence in rationale.

**We are interested in establishing alliances to develop and access:**

- Highly characterized patient cohorts for genetics and omics studies in diseases of interest to Pfizer
  - Extreme phenotypes
  - Disease progression
  - Patient sub-types
  - Underrepresented ancestry patient cohorts





- Specific areas of interest, in addition to Pfizer's core disease areas, include fibrosis, chronic kidney diseases, obesity, senescence, and cellular reprogramming
- Population-based Biobanks and high-quality, longitudinal genotype - phenotype data sets, including clinical and molecular data, access to biospecimens, and the potential for patient recall
- Computational Biology approaches to understand disease drivers through the integration of human omics data (e.g. genetics, RNA-seq, proteomics, epigenomics, clinical measures)
- AI/ML approaches for novel target and biomarker discovery, patient stratification, and methods of development for multi-omics data analysis and integration
- Novel *in silico* or *in vitro* approaches to translate disease associated genetic loci into causal genes and therapeutic hypotheses
- Functional Genomics technologies to accelerate target discovery in disease-relevant biological systems





## AbbVie Focus Areas

### Immunology

<https://www.abbvie.com/science/areas-of-focus/immunology.html>

#### **Research interests**

We're building on our deep expertise and historic legacy in immunology research to explore new disease areas, create a more patient-centric discovery and development process, and offer solutions for more diverse patient populations. Our advanced technologies support a rich pipeline of medicines for some of the most challenging immunological diseases. Research interests include:

#### **Understanding drivers of disease**

Increasing understanding of disease through molecular profiling of patient samples, exploring preclinical disease to post-treatment states and using multi-omics, machine learning and artificial intelligence.

#### **Fit for purpose drug discovery**

Redesigning drug discovery using molecular profiles that reveal the genetic makeup of disease rather than diagnoses that describe disease.

#### **Increasing probability of success in drug discovery**

Developing more humanized preclinical model systems (e.g., CRISPR, iPSC, organoids and disease-on-a-chip) and state-of-the-art immunological, imaging and computational approaches to drive innovation of target identification, validation, benchmarking and prioritization.

#### **Inducing of immune tolerance**

Pursuing the biology behind inducing tolerance rather than suppressing pathological immune activity.

#### **Drug delivery platforms**

Investing in targeted drug delivery platforms, which are designed to specifically deliver a potent drug to the right cells and/or tissues. These include bispecifics,



Antibody-Drug Conjugate platforms, small molecule approaches, RNA therapeutics and in situ cell reprogramming.

Oncology

<https://www.abbvie.com/science/areas-of-focus/oncology.html>

### **Research interests**

We focus on creating targeted medicines that either impede the reproduction of cancer cells or enable their death. We achieve this through immuno-oncology approaches, tumor antigen targeting, and taking advantage of specific tumor dependencies. Our research interests include:

- Identifying and targeting mechanisms that allow tumor cells to proliferate and survive, including under-explored forms of regulated cell death, such as necroptosis and ferroptosis
- Investigating how to re-energize T cells so that they can retain their fitness and continue to destroy tumor cells
- Advancing the use of Antibody Drug Conjugates (ADCs) to target and deliver potent toxins and targeted agents directly to cancer cells
- Creating new technologies to improve the efficacy of bispecific biologics in treating both solid tumors and blood cancers, enabling the development of therapies with highly targeted potential
- Innovating in the field of targeted protein degradation by designing protein degraders that bind to a protein of interest and trigger its proteasomal degradation
- Developing CAR-T cell therapies that attack cancers with healthy donor immune cells engineered to target and kill tumor cells while being resistant to host immune system rejection



Neuroscience

<https://www.abbvie.com/science/areas-of-focus/neuroscience.html>

### **Research interests**

We work across all stages of development in search of novel therapeutics and drug-device combinations that have the potential to treat chronic disabling neurological and psychiatric conditions. Our research interests include:

#### **New disease modification approaches**

Investigating mechanisms supported by genetic, molecular and physiological discoveries, with an emphasis on pathological proteins, mitochondrial/lysosomal function, proteostasis, neuroinflammation, neuroprotection, and neurorehabilitation, with an emphasis on preventing the spread and mediating the clearance of toxic intracellular protein aggregates.

#### **Managing disease symptoms**

Advancing approaches that ameliorate the cognitive and behavioral deficits in Alzheimer's, Parkinson's disease and neuropsychiatric conditions.

#### **Genetic, molecular and physiological insights**

Investigating mechanisms supported by genetic, molecular and physiological discoveries, with an emphasis on pathological proteins, mitochondrial/lysosomal function, proteostasis, neuroinflammation, neuroprotection, and neurorehabilitation.



Eye Care

<https://www.abbvie.com/science/areas-of-focus/eye-care.html>

### **Research interests**

Each year more people will receive a vision-threatening diagnosis due to aging and lifestyle factors. Our robust research and development approach is anchored in improving the standards of care across multiple disease areas to make a meaningful difference for patients.

Our research, focused on unmet needs, fuels an innovative pipeline of treatments that seek to preserve and protect vision and prevent blindness. Our research interests include:

#### **Improving standards for all**

Bridging our understanding of biological processes and the genetic basis of human disease to accelerate ophthalmic drug discovery.

#### **Finding new approaches**

Leading innovation in long-acting therapeutic approaches via mechanism of action, sustained-release formulations or gene therapy to reduce the treatment burden.

#### **Collaboration in innovation**

Working with colleagues across AbbVie to seize the scientific opportunity of innovation within oncology, immunology and neuroscience through knowledge of common disease pathways.

#### **State-of-the-art imagery**

Applying state-of-the-art imaging modalities to monitor disease progression and therapeutic intervention to accelerate the translation of bench science to the clinic.

#### **Strategic collaboration**

Joining forces with innovative partners that complement our strengths,



capabilities and commitments to eye care, including our work in chronic retinal diseases with REGENXBIO.

Aesthetics

<https://www.abbvie.com/science/areas-of-focus/aesthetics.html>

### **Research interests**

We take an evidence-based approach to investigating the signs of aging and their underlying causes, building a portfolio of complementary, next-generation aesthetic solutions that aim to redefine the standard of care. Our pipeline is focused in five areas: neurotoxins, soft tissue fillers, non-invasive body contouring, plastic surgery and regenerative medicine, and topical skincare. Our research interests include:

- Advancing the neurotoxin landscape, building on a decades-long legacy in both aesthetic and therapeutic uses, through prioritizing novel indications and a diversified approach of unique formulations, serotypes and durations.
- Evolving the science around dermal fillers, developing novel injectables and seeking to address signs of aging caused by the loss of structural building blocks on skin and underlying soft tissues.
- Exploring meaningful advances in non-invasive body contouring for localized fat reduction, body sculpting, core strengthening and cellulite treatments, with potential growth areas in skin laxity and scar management.
- Leading the industry in plastic surgery and regenerative medicine, driving innovation in implantable medical devices while zeroing in on technologies and platforms that aim to rebuild and regenerate soft tissues, a critical innovation that could help people seeking reconstruction after surgery.
- Expanding a robust portfolio of topical skincare offerings that address broader skin types and new benefit areas, centered on research and backed



by the demand for solutions for skin conditions like hyperpigmentation and acne.

Other Specialties

<https://www.abbvie.com/science/areas-of-focus/other-specialties.html>

### **Research interests**

We're leveraging our global expertise, innovative technologies, and collaborative approach to find answers across a diverse set of research interests. Learn how we are working to improve the quality of life for patients in the following areas:

#### **Infectious diseases**

Our infectious disease work includes antibacterial and antiviral programs.

- Our antibacterial program includes both on-market products as well as products that are in development, including work toward a next-generation gram-negative antibacterial for life-threatening infections.
- In antiviral therapies, our work spans hepatitis C (HCV), HIV and COVID-19. With HCV, we are building off our expertise in chronic HCV to find effective therapies for acute HCV so we can help move the world closer toward eliminating this disease.
- In HIV, we are pursuing functional cures that can potentially suppress the HIV virus to low levels so that patients have no need for antiretroviral therapy.
- We are investigating direct-acting antivirals for the treatment of COVID-19.
- Within our pro bono program, more than 400 scientists have given over 170,000 hours of their time toward advancing research and potential medications to treat neglected diseases, including river blindness, Chagas disease and malaria.



## **Pulmonology**

We have research programs investigating idiopathic pulmonary fibrosis (IPF) such as exploring agents to halt and potentially reverse lung fibrosis.







## UCB Focus Areas

<https://www.ucb.com/disease-areas>

### Neurology

- Epilepsy
- Dravet Syndrome
- Lennox-Gastaut Syndrome
- Restless Leg Syndrome
- Parkinson's Disease

### Immunology

- Rheumatoid Arthritis
- Osteoporosis
- Axial Spondyloarthritis
- Psoriatic Arthritis
- Crohn's Disease
- Lupus
- Psoriasis
- Juvenile Idiopathic Arthritis
- Hidradenitis Suppurativa

### Rare Diseases

- Myasthenia Gravis (MG)



## Takeda Focus Areas

Gastrointestinal and Inflammation

<https://www.takeda.com/science/areas-of-focus/gastroenterology/>

### Disease areas

- **Inflammatory Bowel Disease (IBD):** includes IBD (ulcerative colitis and Crohn's disease) and associated complications such as perianal fistulas, short bowel syndrome and intestinal failure.
- **Celiac Disease:** complements our efforts in IBD as another GI inflammatory disease. Our aim is to deliver disease-modifying treatments by targeting a range of mechanisms including immune response, tolerance, and protein degradation.
- **Dermatological & Rheumatic Diseases:** focus on inflammatory diseases such as psoriasis, psoriatic arthritis, systemic lupus erythematosus (SLE) and the exploration of additional immune-mediated diseases.
- **Liver Diseases:** focus on three distinct areas: select rare monogenic liver diseases, fibrosis in chronic liver diseases such as nonalcoholic steatohepatitis (NASH) and select end-stage liver diseases.
- **Neurogastric Disorders:** encompass a diverse range of diseases including gastroparesis and cyclic vomiting syndrome.

Rare Diseases

<https://www.takeda.com/science/areas-of-focus/rare-diseases/>

Rare Hematology and Hemostasis

We are a leader with more than 70 years of experience in rare hematology. Our experience in hematology means we are well-prepared to meet today's needs as we pursue future developments in the treatment of bleeding disorders. Together with the hematology community, we are raising expectations for the future,



including earlier diagnosis, earlier and protection against bleeds, and more personalized patient care.

### **Disease areas**

- Hemophilia
- Von Willebrand Disease
- Thrombotic thrombocytopenic purpura

### Rare Immunology

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Within Rare Immunology we focus on driving continuous innovation and personalized care through our portfolio of plasma products and innovative targeted treatments, devices, diagnostics and other technological services, for the benefit of patients with rare immunological disorders. Our core therapeutic areas include Hereditary Angioedema, immuno-deficiencies, rare autoimmune disorders, post-transplant complications and rare specialty care.

### **Disease areas**

- Hereditary Angioedema
- Immune Deficiency Diseases
- Rare Autoimmune Disorders
- Hypoalbuminemia and Hypovolemia
- Severe Congenital Protein C Deficiency
- Prothrombin Deficiency
- Alpha-1 Antitrypsin Deficiency

### Rare Metabolic

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We have a strong legacy in developing treatments for lysosomal storage disorders (LSDs), with a portfolio that includes commercial products, late-stage investigational therapies, and pipeline candidates. Because rare genetic and metabolic diseases can have symptoms that vary widely and progress differently from person to person, we empower global education and awareness, and partner with medical and research organizations. We are committed to helping reduce the



amount of time between the onset of symptoms and diagnosis and to accelerating the development of innovative new treatments.

### **Select disease areas**

- Hunter Syndrome
- Fabry Disease
- Gaucher Disease
- CMV and Transplant

Plasma-Derived Therapies

<https://www.takeda.com/science/areas-of-focus/pdt/>

### **Disease areas**

- Immunodeficiencies
- Neuroimmunology
- Hematology
- Pulmonology
- Specialty & Critical Care
- Other rare and chronic diseases

Oncology

<https://www.takeda.com/science/areas-of-focus/oncology/>

<https://www.takedaoncology.com/>

### **Disease areas**

- Solid tumors
- Hematology



Neuroscience

<https://www.takeda.com/science/areas-of-focus/neuroscience/>

## Disease areas

- **Rare Epilepsies:** Dravet syndrome and Lennox-Gastaut syndrome are two types of rare epilepsies that typically present early in life and are often associated with severe cognitive and developmental impairment in addition to frequent treatment-resistant seizures throughout the person's lifetime. <sup>1-5</sup>
- **Sleep-wake disorders:** Sleep-wake disorders relate to the quality, timing, and amount of sleep that can result in daytime distress and impairment. <sup>6</sup> Narcolepsy type 1 (NT1), narcolepsy type 2, and idiopathic hypersomnia are sleep-wake disorders that are characterized by excessive daytime sleepiness (EDS). <sup>7</sup>
- **Parkinson's disease:** A common neurological disorder characterized by slow movement in combination with tremor and/or rigidity. <sup>8,9</sup> The disease is progressive and has a significant impact on patients, families, and caregivers through its degenerative effects on mobility and muscle control. <sup>8,10</sup> In addition, patients may suffer non-motor symptoms such as cognitive changes and sleep disorders. <sup>10</sup>

\*NOTE: These are not the complete diagnostic criteria and having some or all of these symptoms does not mean you have any one of these diseases. Diagnosis should be based on a complete history and evaluation of the patient. Only a trained health care professional can diagnose these disorders. If you or a loved one is concerned about any of these disorders, please consult your health care professional.

## Vaccines

<https://www.takeda.com/science/areas-of-focus/vaccines/>

### Disease areas

#### Dengue

- A mosquito-borne viral disease that spreads rapidly around the world.
- Estimated that half of the world's population is at risk of contracting the disease.

#### COVID-19

- Caused by a new coronavirus, SARS-CoV-2, first identified in December of 2019.
- COVID-19 cases have been identified across all seven continents.

#### Zika

- Spread by the bite of an infected mosquito or passed from a pregnant woman to her fetus.<sup>7</sup>
- Has impacted 89 countries and territories.

#### Pandemic Influenza

- Influenza viruses are constantly changing, making it possible for them to infect people and easily spread.
- Last four pandemics killed approximately 50-100 million (1918), 1.1 million (1957), 1 million (1968) and 0.2-0.6 million (2009) people.



## Business Development Contact Information

Pfizer

<https://www.pfizer.com/about/partners/research-and-business-development-partnerships>

AbbVie

<https://www.abbvie.com/science/partner-with-us.html>

UCB

<https://www.ucb.com/our-company/partnering>

Takeda

<https://www.takeda.com/science/research-and-development/partnerships/cei/>

Takeda Oncology

<https://www.takedaoncology.com/about/leadership/>

