





A new report from the Drug Discovery series...

## Immunomodulators

Therapeutic Needs, Pipelines & Prospects



-  Identify major immunomodulatory growth opportunities using this report's unique market forecasts
-  Understand the commercial imperatives for established and evolving immunomodulatory applications
-  Explore the range of tools available for protein and peptide drug engineering
-  Assess your organisation's exposure to competitive threats within the engineered protein marketplace

Pre-publication Offer...

### Report overview

The modulation of immune system activity is a required pharmacological intervention for many medical conditions. Immunosuppression is integral to the treatment of autoimmune diseases and allergies, and the inhibition and prevention of immune responses also constitutes a prominent treatment aim for transplant recipients. Conversely, immune system stimulation is adopted for a number of infections and cancers. With traditional immunomodulatory drugs continuing to exhibit limited efficacy and adverse side effects, the drive to develop new, improved, and specifically targeted immunotherapies has been gaining momentum.

**'Immunomodulators: Therapeutic Needs, Pipelines & Prospects'** is a new report published by Business Insights that examines the current market for immunomodulatory therapies and highlights the commercial imperatives in the development of improved products. The strategies and technologies used in immunomodulation are analysed and the major clinical applications of immunomodulators are reviewed to identify the leading drug classes and most promising agents currently in development. This report will also investigate patient metrics and provide market forecasts for immunomodulators to 2011.

**Identify future growth areas and patenting trends to develop future strategies, and assess your organisation's competitive position within the immunomodulatory market using this new report...**

### Key findings...

- **The market for immunomodulators was valued at \$43bn in 2006,** and is expected to grow at a CAGR of 13% to reach **\$80bn by 2011.**
- **Pipeline immunomodulators mainly consist of biopharmaceuticals** such as **recombinant proteins, vaccines** and **monoclonal antibodies,** but also include several **small molecules.**
- In **inflammatory and autoimmune disorders,** immunomodulators in clinical development are predominantly aimed at **GCPR's, leukocyte surface antigens, cytokines** and **kinases.**
- **Clinical trials for infectious diseases** are focused upon **prophylactic vaccines.** However, the treatment of **HIV and HCV infections** has also warranted the development of **therapeutic vaccines.**
- **Immunostimulation** marks a dynamic change in **cancer treatments.** **Two prophylactic cancer vaccines** have been approved and **several therapeutic vaccines** are in clinical and preclinical development.
- **Co-stimulation blockers** promise to become the new standard of **post-transplantation immunosuppression.**

Extract: Pre-clinical Immunomodulators by Indication

| Rank | Type            | Drugs | %    |
|------|-----------------|-------|------|
| 1    | Infection       | 265   | 41.9 |
|      | +Influenza      | 43    | 6.8  |
|      | +HIV/AIDS       | 37    | 5.9  |
|      | +Hepatitis B    | 15    | 2.4  |
|      | +Anthrax        | 15    | 2.4  |
|      | +Streptococcal  | 13    | 2.1  |
|      | +Malaria        | 11    | 1.7  |
|      | +Staphylococcal | 10    | 1.6  |

Business Insights

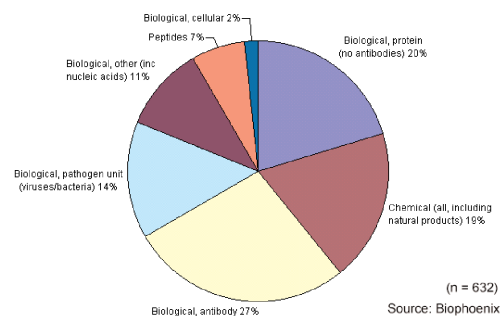
"As is the case with immunomodulators in clinical trials, the most active areas in infectious disease continue to be in Influenza, HIV, and hepatitis viral infections. The initiation of many preclinical programs targeting Streptococcal and Staphylococcal bacteria, as well as the parasite malaria, has in all likelihood been driven by a recent dramatic rise in levels of microbial resistance to antibiotics. The leading cancer indications are breast and prostate cancers..."



### Key questions answered...

- How is the immunomodulator market structured?
- What were the leading immunomodulator drug classes in 2006?
- Which immunomodulator drug classes will dominate the market in 2010?
- What types of immunomodulators are in clinical development for:
  - Inflammatory and Autoimmune disorders?
  - Infectious Diseases?
  - Cancer?
- Who are the pharmaceutical and biotechnology companies that are set to become the future market leaders?
- Which companies were the most influential signees of immunomodulatory US patents?

Immunomodulators: Drug Origins



Business Insights

“Only 19% of the immunomodulators in pre-clinical development are small molecule chemical compounds; most are biologicals (led by antibodies and other proteins), reflecting the paradigm shift ongoing in the pharmaceutical industry towards disease-modifying therapy....”

### Key issues examined in this report...

- **Concerns over traditional immunomodulators.** Agents in development are set to enhance safety and specificity, and may also be administered over a more convenient time-course.
- **Opportunities in inflammation.** The inflammation pathway offers a range of promising targets for the development of new immunomodulator drugs.
- **New approaches to vaccine development.** Sub-unit and DNA vaccines have emerged to address the ineffectiveness of traditional vaccines in inducing cell-mediated immunity.
- **Biological response modifiers.** Widespread debate has been evoked over the capabilities of immune systems in eliminating cancer cells. Cytokines, monoclonal antibodies and therapeutic vaccines are set to enhance this function.
- **Developments in immunosuppression therapy.** Co-stimulatory blockers are a class of immunomodulators under investigation for chronic maintenance therapy.

Pre-clinical Vaccines: Therapy types

| Therapy Type                          | No. | %    |
|---------------------------------------|-----|------|
| Recombinant vaccines                  | 109 | 47.2 |
| Prophylactic, non-recombinant vaccine | 79  | 34.2 |
| Therapeutic vaccine (Cancer)          | 37  | 16   |
| Other                                 | 6   | 2.6  |
| Total                                 | 231 | 100  |

Business Insights

“Current therapeutic cancer vaccine candidates in clinical trials are commonly tested in patients with advanced cancer. However, it is increasingly acknowledged that they are unlikely to be very successful in the context of high tumor burden/load commonly encountered in late-stage cancer. In advanced cancer, due to the limited time window and practical constraints imposed by large tumor masses immediate tumor regression is desired...”



### CHAPTER 1: MODULATING THE IMMUNE SYSTEM

- Overview of the human immune system
  - Innate (non-specific) immunity
  - Cytokines: the chemical messengers
  - Lipid mediators of inflammation
  - Phagocytic and natural killer cells
  - Complement system
  - Inflammatory and acute phase responses
  - Adaptive (specific) immunity
  - B and T lymphocytes
  - Antigen-presenting cells
- Biopharmaceuticals as immunomodulators
  - Delivery of biopharmaceuticals
  - Regulatory requirements (US)

### CHAPTER 2: INFLAMMATORY AND AUTOIMMUNE DISORDERS

- The role of T cells in autoimmune diseases and allergies
- Current therapies
  - Glucocorticoids
  - Nonsteroidal anti-inflammatory drugs
  - Nitric oxide (NO)-releasing NSAIDs
  - Therapies targeting proinflammatory cytokines
  - B cell-targeted therapeutics
- Current drug targets
  - GPCRs
  - Chemokine receptors
  - LTB4 receptor
  - S1P1 receptor
  - Leukocyte surface antigens
  - Cytokines and their receptors
  - IL-1 and receptors
  - Other ILs and receptors
  - TNF proteins and receptors
  - BlyS (BAFF) and APRIL
  - Interferons
  - Other cytokines
  - Kinases
- Immunomodulators in clinical development (US)
  - Rheumatoid arthritis
  - Psoriasis
  - Multiple sclerosis
  - Inflammatory bowel disease
  - Systemic lupus erythematosus
  - Asthma and allergic rhinitis
  - Chronic obstructive pulmonary disease
  - Cardiovascular disease

### CHAPTER 3: INFECTIOUS DISEASE

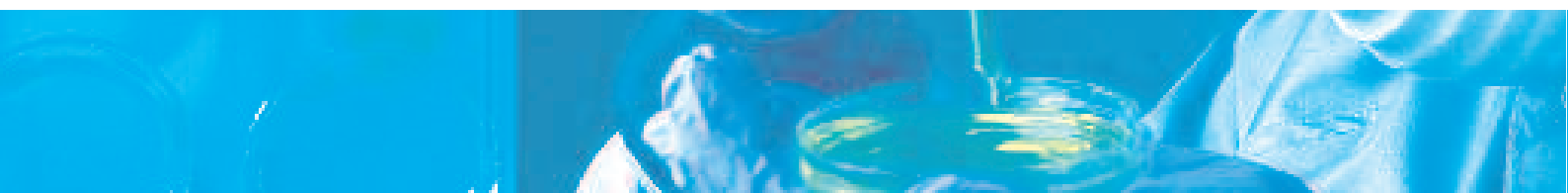
- Combination vaccines
- Viruses
  - Influenza
  - New vaccines
  - HIV
  - New vaccines
  - Other immunotherapies
  - Hepatitis viruses
  - New vaccines
  - Other immunotherapies
  - Herpes simplex viruses
  - New vaccines
  - RSV
  - New vaccines and immunotherapies
- Bacteria, fungi and parasites
  - New vaccines

### CHAPTER 4: CANCER

- Tumor immunity
- Treatment of cancer
- Overview of immunotherapies
  - Small molecule immunomodulators
  - Cytokines
  - Monoclonal antibodies
  - Recent trends
  - Prophylactic vaccines
  - Therapeutic vaccines
  - Tumor antigens targeted by vaccines
  - Antigen/adjuvant vaccines
  - Whole cell vaccines
  - Dendritic cell vaccines
  - Idiotype vaccines
  - Genetically-engineered vaccines
  - Immunostimulatory sequences
  - Adoptive T cell immunity

### CHAPTER 5: TRANSPLANTATION

- Introduction to organ transplantation
  - Rejection mechanisms
  - Prevention of rejection
- Small molecule immunosuppressants
  - Calcineurin inhibitors
  - Anti-proliferatives
  - Glucocorticoids
  - mTOR inhibitors
  - Novel small molecule drugs



- Induction therapy with T cell antibodies
  - Polyclonal antibodies
  - Monoclonal antibodies and fusion proteins
- Co-stimulatory blockers
- New approaches to prevention of GVHD

### CHAPTER 6: MARKET CONSIDERATIONS AND FORECASTS

- Overview of the AIID Market
  - Rheumatoid arthritis
  - Multiple sclerosis
  - Inflammatory bowel disease
  - Systemic lupus erythematosus
  - Psoriasis
  - Asthma and allergic rhinitis
- Overview of the Viral Infectious Disease Market
  - Influenza
  - HIV
  - Hepatitis viruses
  - Herpes simplex viruses
  - RSV
- Overview of the Cancer Market
  - Cytokines
  - Monoclonal antibodies
  - Prophylactic vaccines
  - Therapeutic vaccines
- Overview of the Transplantation Market
- Quantitative Market Analysis
  - The global immunomodulator market
  - Immunosuppression in AIID and allergies
  - Vaccines for viral pathogens
  - Vaccines for cancer
  - Monoclonal antibodies for cancer
  - Recombinant interferons
  - Transplantation medicine
  - Geographical analysis

### CHAPTER 7: TRENDS AND OPPORTUNITIES

- Preclinical immunomodulator programs
- Trends in vaccines
- Trends in monoclonal antibodies
- Future players in immunomodulation
- Immunomodulators Patent Survey

- Patenting Activity
- Leading assignees
- Patent citation analysis

### LIST OF TABLES

- Indications by Category and Within-Category Count
- Recent Immunomodulator Deals
- Immunomodulators in US Clinical Development
  - Rheumatoid Arthritis
  - Psoriasis
  - Multiple Sclerosis
  - Crohn's Disease
  - Ulcerative Colitis
  - SLE
  - Asthma
  - Allergic Rhinitis
  - COPD
  - General Inflammation
  - Autoimmune Disorders
  - Influenza
  - HIV
  - Viral Hepatitis
  - Herpes simplex
  - Other Viruses
  - Bacteria
  - Fungi and Parasites
  - Breast cancer
  - Prostate cancer
  - Non-Small Cell Lung Cancer
  - Ovarian cancer
  - Malignant melanoma
  - Head and neck cancer
  - Pancreatic cancer
  - Renal cancer
  - Solid tumours
  - Lymphoma
  - Non-Hodgkin's Lymphoma
  - Multiple myeloma
  - General Cancer
  - Colorectal cancer
  - Chronic Lymphocytic
  - Leukaemia
- Glossary - Immunomodulators in US Clinical Development

- Immunomodulators in US Clinical Development (Transplantation)
- Inflammatory Disease Prevalences and Incidences (2006)
- Inflammatory Disease Summary (2006)
- World AIDS Statistics (2006)
- World Annual Cancer Incidence by Site (2002)
- Trends in cancer incidence, 1975-2000
- World Cancer Statistics (2002)
- World Pharma Market by Therapeutic Category, 2006-2011
- World Pharma Market by Region, 2006-2011
- Immunomodulator Analysis by Therapy Type, 2006-2011
- Immunomodulator Analysis by Indication, 2006-2011
- World Immunomodulator Market by Region, 2006-2011
- Preclinical Immunomodulators by Indication
- Preclinical Vaccines: Therapy Types, Indications
- Monoclonal antibodies in preclinical development
- Preclinical Immunomodulators: Top Originators
- Preclinical Vaccines: Top Originators
- Immunomodulator Patent Survey: Category Definitions
- Summary of Patents by Segment
- US Immunomodulator Patents: Filing and Publication Activity, 1992-2007
  - All Patents
  - Autoimmunity
  - Allergy
  - Transplantation
  - Vaccines
- US Immunomodulator Patents: Assignee Summary
- US Immunomodulator Patents: Top Assignees
- US Immunomodulator Patents: Most Frequently Cited Organizations



**FAX BACK TO: +44 (0) 207 900 6688**

 or scan and e-mail to  
**marketing@globalbusinessinsights.com**
**I would like to order the following report...**
**1**

 (Please use **BLOCK CAPITALS**)

---



---

 **Hard Copy** (extra £50/€75/\$95)  
 Please allow 28 days for delivery

 **Interactivity** (extra £50/€75/\$95)  
 Search, customize & translate content

**Please select a license type:**
**2**

|   | GB£  | EUR€ | US\$  |
|---|------|------|-------|
| <input type="checkbox"/> <b>Single User (eCopy)</b>               | 1995 | 2880 | 3835  |
| Access permitted for one individual only                          |      |      |       |
| <input type="checkbox"/> <b>Site License</b>                      | 3790 | 5470 | 7285  |
| Access permitted for every individual based at one location       |      |      |       |
| <input type="checkbox"/> <b>Company License</b>                   | 7475 | 9180 | 12180 |
| Global access for every individual member of staff at the company |      |      |       |

 To ask a question about license types, email: [marketing@globalbusinessinsights.com](mailto:marketing@globalbusinessinsights.com)
**Communications Feedback**

Please let us know if any of the following factors influenced your purchase...

- |   |   |
|---|---|
| <input type="checkbox"/> Email/Fax/Postal promotion | <input type="checkbox"/> Trade Press          |
| <input type="checkbox"/> Brochure                   | <input type="checkbox"/> My Account Manager   |
| <input type="checkbox"/> Table of Contents          | <input type="checkbox"/> Conference materials |
| <input type="checkbox"/> Colleague Recommendation   | <input type="checkbox"/> Website/web search   |

**Recipient details (if different from Payor)**

Title: Mr/Mrs/Ms **(Please use BLOCK CAPITALS)**

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Email: \_\_\_\_\_

Job Title: \_\_\_\_\_

Department: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State/Province: \_\_\_\_\_

Country: \_\_\_\_\_ Post Code/ZIP: \_\_\_\_\_

Tel: \_\_\_\_\_ Fax: \_\_\_\_\_


**Marketing Department**  
[marketing@globalbusinessinsights.com](mailto:marketing@globalbusinessinsights.com)
**Code Ref: Website**

[www.globalbusinessinsights.com](http://www.globalbusinessinsights.com)

**+44 (0) 20 7551 9700**

**Registered Office: Business Insights Ltd, Mortimer House,**  
**37-41 Mortimer Street, London W1T 3JH.**  
**UK Registered Number: 05006037**
**Company details**
**3**

Company name: \_\_\_\_\_

EU companies (except UK) must supply VAT / BTW / MOMS / MWST / IVA / FPA number:




\_\_\_\_\_

Purchase Order Number (if required) \_\_\_\_\_

**Payment method**
**4**

 Please indicate your preferred currency:  GB£  EUR€  US\$

Total order value is \_\_\_\_\_

- I will forward a check payable to Business Insights Limited.
- Please invoice my company (please complete invoice address below)
- I would like to pay by bank transfer (email address required)
- Debit my credit/charge card:  Amex  Visa  Mastercard

Card No \_\_\_\_\_

Expiry Date \_\_\_\_ / \_\_\_\_ Signature \_\_\_\_\_

**Payor details**
**5**

 Title: Mr/Mrs/Ms **(Please use BLOCK CAPITALS)**

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Email: \_\_\_\_\_

Job Title: \_\_\_\_\_

Department: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

City: \_\_\_\_\_ State/Province: \_\_\_\_\_

Country: \_\_\_\_\_ Post Code/ZIP: \_\_\_\_\_

Tel: \_\_\_\_\_

Fax: \_\_\_\_\_

**Sign here to confirm your order:**
**ORDERS WITHOUT A SIGNATURE CANNOT BE PROCESSED**

By completing this form you agree that the data in the form will be used for the purpose of processing your order. We may also use your data to keep you informed of our products and services. As an international organization, Business Insights may need to process your data in countries which do not have data protection laws, or which have standards lower than the EU. Business Insights seeks to protect your personal data. You have a right to see and correct your data by writing to us. In case of queries, contact [info@globalbusinessinsights.com](mailto:info@globalbusinessinsights.com). Please tick the relevant box(es) if you would not like Business Insights to contact you by:

 Email  Post  Fax  Phone 

Occasionally, our client list is made available to other companies for carefully selected correspondence. Please check here if you do not wish to receive such correspondence by:

 Email  Post 
*This order is subject to our standard terms and conditions, a copy of which is available on request.*