AMGEN`s COMPETITIVE STRATEGIES
“SMART SCIENCE”

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Agenda

- Project Purpose and Critical Questions
- Overview of Company
- Defining Corporate Strategy and Competitiveness
  - Corporate Goals & Values
  - Management Preferences
  - Resources, Capabilities, Products, and Market
  - Strategic Alliances/Partnership
- SWOT Analysis
- Science Push & Patient Pull Strategy
- Competitive Analysis
- Managing Technology with AMGEN Formula
- Lessons Learned
- Questions & Comments
Project Purpose & Critical Questions

- What are the competitive strategies of AMGEN?
- What role does strategic planning play at AMGEN? How useful is it?
- How is AMGEN managing science and technology to become a leader in the biotech industry?
AMGEN

- 1980- first inception of Applied Molecular Genetics
- 1983- initiated PO
- 1987- built commercial R&D facility
- 1988- launched its first product, Novantrone (Cancer)
- 1989- launch its second product, Epogen (renal failure anemia)
  - established operations in Europe
- 1991- launch its third product, Neupogen (Neutropenia)
  - established operations in Australia and Canada
- 1992- established operations in Hong Kong and Japan
- 1994- launched Thioplex (Cancer)
- 1998- launched Enbrel (Rhuematoid Arthritis)
- 2001- launched Keneret (Rhuematoid Arthritis) and Aranesp (renal failure anemia)
- 2002- launched Neulasta (Neutropenia)
Strategy Formulation

“Strategy is a process for setting the direction of the business future” (F. Betz, 1998)

- “Competitive Strategy" a combination of the ends (goals) for which the firm is striving and the means (policies) by which it is seeking to get there.“ (Porter, 1980)
- Competitive strategy is required to successfully compete in a given industry.
Methodology for Defining Corporate Strategy

- Management Preferences
- Organization
- Strategy
- Environment

Vision
Goals
Values

Company Infrastructure
Corporate financial resources
R&D capabilities
Scientific Capabilities
Product/Innovation Skills
Human Resource (Talented Scientists)
Strategic Partnerships/Alliances

Social and Economic Change
New Scientific Inventions
Competitors
Market Forces
Government regulations (FDA) and Healthcare policies
Corporate Goals & Values

Goals
- Launch a stream of products for improving dramatically patient's lives
- Create an environment where the best people choose to work
- Deliver superior shareholder returns compared to our industry peer group
- Be a good corporate citizen in communities where our staff live and work

Values
- Be Science-based company
- Compete intensely and win
- Create value for patients, staff and stockholders
- Be ethical
- Trust and respect each other
- Work in teams
- Ensure quality
- Collaborate communicate and build consensus

Management Preferences
- Science based leader company in the biotech industry
Resources & Capabilities

➢ SOFT RESOURCES

- Scientific Talent
- Management Talent
- IT expertise
Resources & Capabilities

HARD RESOURCES

- Partnerships and Knowledge
- Facilities and R&D Facilities
- Financial Resources
Resources & Capabilities

- Financial Resources

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Revenues ($ in millions)</th>
<th>Net Income ($ in millions)</th>
<th>Diluted Earnings Per Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
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<td>1,119.7</td>
<td>$1.03</td>
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<td>5,340.1</td>
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<td>1.02</td>
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<td>1998</td>
<td>2,718.2</td>
<td>863.2</td>
<td>0.82</td>
</tr>
<tr>
<td>1997</td>
<td>2,401.0</td>
<td>644.3</td>
<td>0.59</td>
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<td>1996</td>
<td>2,239.8</td>
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<td>1995</td>
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<td>1994</td>
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<td>0.29</td>
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<tr>
<td>1993</td>
<td>1,573.8</td>
<td>383.3</td>
<td>0.33</td>
</tr>
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<td>1992</td>
<td>1,093.0</td>
<td>357.6</td>
<td>0.30</td>
</tr>
</tbody>
</table>

Source: AMGEN`s Annual Report 2001
• Financial Resources

Source: AMGEN’s Annual Report, 2001
Resources & Capabilities

- Facilities and R&D Facilities
## Product and Market Analysis

<table>
<thead>
<tr>
<th>Product</th>
<th>Metabolism, Nephrology</th>
<th>Oncology</th>
<th>Inflammation, Bone Disorders</th>
<th>Neurologic, Metabolic Disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARANESP</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPOGEN</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEUPOGEN</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEULASTA</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENBREL</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>KINERET</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>THIOPLEX</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOVANTRONE</td>
<td></td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>

EMGT 520- December-2002
Product Licensing and Discovery

**Internal Discovery**
- INFERGEN® (Interferon alfacon-1)
- NEUPOGEN® (Filgrastim)
- STEMGEN®
- Aranesp (Darbepoetin)
- OPG

**Licensing/Acquisition**
- EPOGEN® (Epoetin alfa)
- BDNF
- NT3
- KGF
- NIH
- Regeneron
- Calci-mimetics
- NPS
- Neuro-immunophilins
- Guilford Pharma
- Leptin
- Rockefeller Univ.
- Leptin Receptor
- Progenitor
- Enbrel
- Immunex
- Abarelix
- PRAECIS

*Amgen pipeline is represented on this slide.*

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**Product Classification**

- **Engrel**
  - Recovered R&D costs
  - Medium Sales
  - Expected Higher Revenue

- **Aranesp**

- **Eupogen**
  - 87% of Amgen Revenue
  - Still sales increment

- **Neupogen**

- **Novatrone**
  - High R&D costs
  - Low Sales

- **Kineret**

- **Thioplex**

- **Infergen**
  - Not profitable products
  - High Sales Forecast
## Strategic Alliances

<table>
<thead>
<tr>
<th>Product</th>
<th>Alliance</th>
<th>Nature</th>
<th>Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epogen</td>
<td>Kirin Pharmaceuticals</td>
<td>Marketing (Japan and China)</td>
<td>1984</td>
</tr>
<tr>
<td>Neupogen</td>
<td>Kirin Pharmaceuticals</td>
<td>Marketing (Japan, China, Taiwan, Korea)</td>
<td>-</td>
</tr>
<tr>
<td>NESP</td>
<td>Kirin Pharmaceuticals</td>
<td>Marketing (Japan, China, Taiwan, Korea)</td>
<td>-</td>
</tr>
<tr>
<td>Epogen</td>
<td>Johnson &amp; Johnson</td>
<td>Worldwide Marketing (Excluding Japan and China)</td>
<td>1985</td>
</tr>
<tr>
<td>Neupogen</td>
<td>Roche Holdings</td>
<td>Marketing (Europe)</td>
<td>1988</td>
</tr>
<tr>
<td>BDNF</td>
<td>Regeneron</td>
<td>Develop and Market BDNF</td>
<td>1990</td>
</tr>
<tr>
<td>Infergen</td>
<td>Yamanouchi</td>
<td>Worldwide Marketing (Excluding the U.S. and Canada)</td>
<td>1996</td>
</tr>
<tr>
<td>FKBP</td>
<td>Guilford Pharmaceuticals</td>
<td>Granted Amgen a license to worldwide marketing</td>
<td>1997</td>
</tr>
<tr>
<td>Abarelix</td>
<td>Praecis Pharmaceuticals</td>
<td>Develop and Market Abarelix</td>
<td>1999</td>
</tr>
</tbody>
</table>

Source: Cornell Equity Research/Cornell University

- Announce 10 years research partnership with MIT in 1994
- Acquired Kenetix in 2000 and Immunex in 2002

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Strategic Partnerships & Alliances

Based on January 2001 Wood Mckenzie Company Reviews for AMGEN

- Product Sales of 3202.2m (88.2%), YoY increase of 5.2%
- Corporate Partnership Revenues of 246.2m (6.8%), YoY increase of 52.5%
- Royalty Income of 181.0m (5%), YoY increase of 33.2%
Strengths

- High Level R&D spending (average, 26.4% of revenues)
- Well-established Epogen, Neupogen, and Infergen products.
- Steady Cash Flow
- Established procedures and strong experience for licensing.
- Strong sales force in the area of oncology
- Excellent “brand equity”. AMGEN products have an excellent reputation, and are well respected by patients, and more importantly, physicians (prescribers).
- AMGEN has collaborative arrangements with about 200 colleges and universities.
- IT expertise based on Immunex background.
SWOT Analysis

Weaknesses

- The company does not have an extensive global distribution system relative to most major pharmaceutical firms (e.g. Pfizer).

- The lack of product diversification makes AMGEN more vulnerable to its competitors and to healthcare regulations.

- AMGEN lacks of marketing expertise

- Large fixed costs
SWOT Analysis

Opportunities

- Through its convenient California location,
- Development of a small molecule product.
- AMGEN has the opportunity to in-license and out-license new products.
- Aging affects AMGEN because many drugs and cures, such as arthritis and cancers, are produced for the older population
- Expanded product portfolio with Immunex products.
- Kineret has $8 billion potential market by 2005.
- Entering into new markets: (Alzheimer’s market and Small Molecule Product Development)
SWOT Analysis

Threats

- Patenting and Licensing Battle

- Uncertainty of FDA Approval: Approval of ARANESP is delayed, resulting in lower near-term revenue and EPS

- Development of a less expensive alternative to Epogen or Neupogen by a competitor

- Strong influence of insurance companies in the health industry. Any change on policies greatly influence the revenues and profit of biotech firms

- Government Policies: Medicare reimbursement of ARANESP and Epogen
The fundamentals of competitive strategy

- The fundamental unit of competitive strategic analysis is the **industry**
- Company economic performance results from **two** distinct causes:
  - Rules of Competition
  - Sources of Competitive Advantage

- **Strategy must encompass both**
Growing Market for Biotechnology

**Biotechnology Industry Revenues ($ billions)**

<table>
<thead>
<tr>
<th>Year</th>
<th>AMGEN</th>
<th>Biotech Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>1,093.0</td>
<td>$2.2</td>
</tr>
<tr>
<td>1993</td>
<td>1,373.8</td>
<td>$4.7</td>
</tr>
<tr>
<td>1994</td>
<td>1,647.9</td>
<td>$12.7</td>
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<tr>
<td>1995</td>
<td>1,939.9</td>
<td>$14.6</td>
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<td>1996</td>
<td>2,239.8</td>
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<td>1998</td>
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<td>1999</td>
<td>3,340.1</td>
<td>$28.5</td>
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<tr>
<td>2000</td>
<td>3,629.4</td>
<td>$26.0</td>
</tr>
<tr>
<td>2001</td>
<td>4,015.7</td>
<td>$28.5</td>
</tr>
</tbody>
</table>

Source: BIO, AMGEN

EMGT 520- December-2002
## R & D Investment

### Pharmaceutical Industry (2000)

<table>
<thead>
<tr>
<th>Company</th>
<th>Billions $</th>
</tr>
</thead>
<tbody>
<tr>
<td>All drug PhRMA members</td>
<td>$38.01</td>
</tr>
<tr>
<td>Pfizer</td>
<td>$ 4.44</td>
</tr>
<tr>
<td>GlaxoSmithKline</td>
<td>$ 3.84</td>
</tr>
<tr>
<td>Aventis</td>
<td>$ 3.20</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>$ 2.93</td>
</tr>
<tr>
<td>Astra Zeneca</td>
<td>$ 2.89</td>
</tr>
<tr>
<td>Novartis</td>
<td>$ 2.70</td>
</tr>
<tr>
<td>Pharmacia</td>
<td>$ 2.75</td>
</tr>
<tr>
<td>Merck</td>
<td>$ 2.34</td>
</tr>
<tr>
<td>Roche</td>
<td>$ 2.34</td>
</tr>
<tr>
<td>Bayer</td>
<td>$ 2.19</td>
</tr>
</tbody>
</table>


### Biotechnology Companies (2001)

<table>
<thead>
<tr>
<th>Company</th>
<th>Millions $</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,200+ biotechnology companies</td>
<td>&gt;$9,000</td>
</tr>
<tr>
<td>Amgen</td>
<td>$ 865</td>
</tr>
<tr>
<td>Genentech</td>
<td>$ 526</td>
</tr>
<tr>
<td>Millennium</td>
<td>$ 400</td>
</tr>
<tr>
<td>Chiron</td>
<td>$ 344</td>
</tr>
<tr>
<td>Biogen</td>
<td>$ 315</td>
</tr>
<tr>
<td>Serono</td>
<td>$ 308</td>
</tr>
<tr>
<td>Gilead</td>
<td>$ 186</td>
</tr>
<tr>
<td>Genzyme</td>
<td>$ 169</td>
</tr>
<tr>
<td>Human Genome Sciences</td>
<td>$ 146</td>
</tr>
</tbody>
</table>

Source: EMGT 520- December-2002
AMGEN`s Competitive Analysis

Key Success Factors for Competitive Advantage: good scientists, strong R&D investment, blockbuster drugs, good product and innovation process, skills in developing deals to get funding.

Contingencies: technological uncertainty and research success, FDA approval, patent protection and being first (second place does not count), market size, alternative drugs, legal environment, HMO growth/reimbursement issues.
AMGEN`s Competitive Analysis

Porter's 5 Forces

Barriers for new biotech companies:
- High cost of R&D
- Increasing technology cost (machinery and devices)
- High annual salaries for scientist
- Long waiting for FDA approval
- Access to distribution channels

 Suppliers regulated by FDA
 AMGEN produces final product and also buy from suppliers
 Manufacture drugs to sell big companies to earn royalty income

Infergen: Intron-A (Schering-Plough market leader in Hepatitis C
ARANESP – Procrin Johnson & Johnson
Epogen and NESP: (Erythropoitein TKT and Hoechst Marrion Russel) for blood cell production
Leptin (obesity drug): Millenium Pharmaceuticals, Roche, Neurogen Inc. Pfizer, Genentech, Merck, Novartis Centococor Inc

## AMGEN`s Competitive Analysis

### AMGEN`s Competitors in Each Disease Area and Threat of Substitutes

<table>
<thead>
<tr>
<th>Disease</th>
<th>Amgen Products</th>
<th>Amgen late stage product candidates</th>
<th>Amgen`s competitors in each disease area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anemia</strong></td>
<td>EPOGEN</td>
<td>(patent expires 2015)</td>
<td>Abbott, Pfizer, Hoechst, Marion Russel, Transkaryotic Therapies</td>
</tr>
<tr>
<td>(More than 1 million people in the U.S)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cancer</strong></td>
<td>NEUPOGEN</td>
<td>(patent expires 2014)</td>
<td>Pfizer, Novartis Johnson &amp; Johnson (Procrit)</td>
</tr>
<tr>
<td>(More than 8 million people around the world)</td>
<td>ARANESP (patent expires 2018)</td>
<td>SD/01</td>
<td></td>
</tr>
<tr>
<td><strong>StemCell Tnsplantation</strong></td>
<td>NEUPOGEN</td>
<td></td>
<td>Merck</td>
</tr>
<tr>
<td><strong>Obesity</strong></td>
<td>LEPTIN</td>
<td></td>
<td>Millenium Pharm. Merck Progenitor Inc, Novartis,</td>
</tr>
<tr>
<td>($33 billion annually)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rheumotoid arthritis</strong></td>
<td>KINERET</td>
<td></td>
<td>Abbott (Remicade, DE27), Pfizer, Centococor</td>
</tr>
<tr>
<td>(2 million people)</td>
<td>ENBREL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hepatitis C</strong></td>
<td>INFERGEN</td>
<td></td>
<td>Schering-Plough, Biogen</td>
</tr>
</tbody>
</table>
What is AMGEN`s Competition Strategy?

“R&D is the lifeblood of any therapeutics endeavor, but it’s much more than that at Amgen. It goes to the very core of our identity.

Our Success comes from one simple fact - we are committed to being a science-based, patient driven company.”

Kevin Sharer
CEO of AMGEN
Technology Bases for Research and Development

Clinical Areas

Support

Platforms

Inflammation
Cancer
Neurology
Metabolism/Nephrology
Other

Proteins
Genomics
Small Molecules

Product Discovery
and
Innovation

Research & Development

EMGT 520 - December 2002
“Science Push & Patient Pull” Strategy

✓ Successful biotechnology firms live on the innovation edge, AMGEN has very strong scientific knowledge and the company established its competitive innovation strategy based upon strong scientific knowledge which comes from R&D.

✓ Conventional wisdom says listen to the market. Most pharmaceuticals companies, and quite a few biotech ones as well, are basically market-driven.

✓ AMGEN heard things differently. Rather than start with the disease and work back to the science, AMGEN assumed that the opposite strategy is superior—that companies should take brilliant science and find a unique use for it.
Managing Technology with AMGEN`s Formula

- Creating innovation and new technologies based on strong scientific knowledge
- Invest in R&D at an industry leading percentage of sales.
- Aggressively build and advance the product pipeline. (by 2005 which will enable the company to participate in new markets with an estimated value of $13 billion)
- Attract and retain the best people (managers and scientist).
- Being very active in both licensing new technologies and establishing various forms of collaboration and partnership.
- Balance short term earnings with investment for long-term growth.
- AMGEN conducts in-house development of the technologies it sees as being very important to the company’s future.
- Research collaboration with universities.

The advantage of technology leadership is the opportunity to move first and profit first before competitors.

Both proactive and reactive product strategies provide a business with a healthy investment portfolio and can create a successful competitive position.

Amgen’s competitiveness and success depends on superior scientific innovation, integrity, and continuous improvement in all aspects of business through the application of the scientific method.

Cash flow products in science-based industry are key factors to business survival in a long term.

Aggressive R&D and continuous product & process improvement will assure future profit.

Alliances can bring fast and achievable capabilities as well as profits that a company cannot deliver in a timely manner.
References

• Ernst & Young LLP, Annual Biotechnology Industry Reports, 1993-2001
• Gengos, Andrew. Personal Interview conducted by Lydia Haid. 11/15/02.
• AMGEN http://www.amgem.com/corporate/AboutAmgen/facts.html#aspiration
• Henry Mintzber 3. The Rise and Fall of Strategic Planning, Basic Books, 1994
• F. Betz, Managing Technological Innovation, John & Willey Sons, 1998
• F. Betz, Strategic Technology Management, McGraw Hill Engineering and Technology Management Series, 1993
• Michael Porter, Competitive Strategy, Free Press 1980
• AMGEN http://www.amgen.com/corporate/AboutAMGEN/backgrounder.html
• AMGEN Corporate Goals and Values http://www.amgen.com/corporate/AboutAmgen/values.html
• Make Money In Biotech, Forbes; New York; Apr 15, 2002, by Robert Langreth and Zina Moukheiber
• Excite Careers – AMGEN, www1.excite.com/home/careers/company_profile/0,15623,1184,00.html
• AMGEN fortifies IT expertise with Immunex buy
  InformationWeek; Manhasset; Dec 24-Dec 31, 2001, Larry Greenemeier; Steve Konicki;
• From Biotech to Big Pharma, Chairman Gordon Binder Leads a Decade of Growth for AMGEN, by Wayne Koberstein, Pharmaceutical Executive
  May 2000
• AMGEN/Immunex acts as a carrot for firms with big growth aspirations Mergers and Acquisitions; Philadelphia; Mar 2002, Joan Harrison
• Whitney, Carol. Stockbroker. Personal Discussion with Lydia Haid on 11/15/02. Information hit the Dow Jones News Release on 11/15/02 at 5:27pm EST.
• Up from Biotech, Business Week; New York; March 18, 2002; Arlene Weintraub in Los Angeles, with Amy Barrett in Philadelphia
• Finding the bulls in biotech; Brian O'Keefe;
  Fortune; New York; Feb 4, 2002
• Biotechnology Company Review of AMGEN by Wood Mackenzie Company, January
• Smart Science, Fortune June 23, 1997
• Expanding the Focus of Licensing Deals, New York (Business Wire) November 8, 2000
• Amgen Outlines Rapid Growth Strategies, Chemical Market Reporter, Life Sciences November 13, 2000
• Amgen, Immunex: The Arthritis Merger, Matthew Herper, Forbes.com, 12.17.01, 10:00 ET
Questions & Comments