Practical Applications of Patent Valuation Approaches and Methods
Speaker Biography

For over 20 years, Robert Reilly has been a managing director of Willamette Management Associates. Willamette provides business valuation, forensic analysis, and financial opinion services for transaction, financing, taxation, bankruptcy, litigation, and planning purposes. For over 30 years, Robert has focused on business and securities valuation, intangible asset and intellectual property analyses, and on lost profits and economic damages analyses.

Robert holds a BA in economics and an MBA in finance, both from Columbia University. He is a certified public accountant, accredited in business valuation, and certified in financial forensics. He is also a chartered financial analyst, certified management accountant, and certified business appraiser.

Robert can be reached at (773) 399-4318 or at rfreilly@willamette.com
Discussion Outline

- Defining the valuation analyst’s assignment
- Data gathering and due diligence procedures
- Generally accepted patent valuation approaches, methods, and procedures
- Performing the valuation synthesis and reaching the value conclusion
- Patent valuation illustrative example
- Defending the valuation analyst conclusion
Defining the Valuation Analyst’s Assignment

Alternative intellectual property (IP) analysis purposes

- estimating a sale price between a willing buyer/willing seller
- estimating a royalty rate between a willing licensor/willing licensee
- estimating a value to the current owner/operator
- estimating a value to a specific buyer owner/operator
- estimating an intercompany transfer price (royalty rate) between related parties
- estimating economic damages related to an IP infringement or other damages event
- concluding the fairness of a sale price or a license royalty transaction
- concluding a mutual exchange ratio for two IP bundles
- estimating the IP collateral value for asset-based financing
- estimating the IP remaining useful life (RUL)
Defining the Valuation Analyst’s Assignment (cont.)

**Alternative IP analysis purposes**

- intended objective: value (to an owner/operator), transaction price, third-party license royalty rate, lost profits/economic damages, fairness
- alternative standards of value (value to whom?)
  - fair value
  - fair market value
  - use value
  - user value
  - owner value
  - investment value
  - acquisition value
  - collateral value
Defining the Valuation Analyst’s Assignment (cont.)

Alternative IP analysis purposes (cont.)

• alternative premises of value (how the transaction occurs)
  - value in continued use
  - value in place (not in use)
  - value in exchange—orderly disposition
  - value in exchange—voluntary liquidation
  - value in exchange—involuntary liquidation

• IP highest and best use (HABU) analysis
  - current owner/operator HABU
  - new owner/operator HABU
  - licensor/licensee HABU
Defining the Intellectual Property

Develop a clear and complete definition of the patent analysis subject

• intellectual property: patents, trademarks, copyrights, trade secrets
• other related intangible assets, such as:
  - trademarks—advertising materials, trade dress
  - patents—product/process drawings, proprietary technology
  - copyrights—software, masks and masters
  - trade secrets—customer lists, product formulae
Develop a clear and complete definition of the patent analysis subject (cont.)

- types of patents
  - design patent—new, original or ornamental design for an article of manufacture; term is 14 years from date of grant
  - utility patent—covers the following inventions: a process, a machine, a manufacture, or a composition of matter; term is 20 years from date of filing
  - plant patent—for invention or discovery of a new and distinct variety of asexually reproduced plant; term is 20 years from date of filing
  - applied to and granted by the United States Patent and Trademark Office (USPTO)
  - patent requirements: useful, novel, nonobvious
Defining the Intellectual Property (cont.)

Develop a clear and complete definition of the patent analysis subject (cont.)

- subject bundle of patent legal rights
  - fee simple
  - term/reversion interest
  - licensor/licensee interest
  - domestic/international interest
  - product line/industry interest
Defining the Intellectual Property (cont.)

- Develop a clear and complete definition of the patent analysis subject (cont.)
  - patent licensor/licensee responsibilities
    - legal protection
    - R&D expenditures
    - marketing expenditures
    - licenses, permits, regulatory approvals
  - other patent contract terms
    - minimum use, production, sales
    - minimum marketing, commercialization expense
    - R&D technology development, completion payments
    - obtain required approvals
    - milestone license payments
Valuation Analyst’s Data Gathering and Due Diligence Procedures

- **Patent analysis to the current owner/operator (use/user)**
  - historical and prospective financial statements
  - historical and prospective development and maintenance costs
  - current and expected resource/capacity constraints
  - description and estimate of the patent economic benefits
    - revenue (increase unit price/volume, market size/position)
    - expense (decrease product returns, COGS, SGA, R&D)
    - investment (inventory, capx)
    - risk (contracts, cost of capital)
Valuation Analyst’s Data Gathering and Due Diligence Procedures (cont.)

- **Patent analysis to the alternative owner/operator (use/user)**
  - change in market definition or size
  - change in alternative/competitive uses
  - patent creates inbound/outbound license opportunities
  - owner operates and licenses patent (in different products, territories, distribution channels)
Valuation Analyst’s Data Gathering and Due Diligence Procedures (cont.)

- Analyze projections and patent economic benefits against a benchmark comparison
  - prior projections vs. prior actual results
  - current projections vs. capacity constraints
  - current projections vs. market size
  - consider industry average comparable profit margins (CPM)
  - consider guideline public company comparable profit margins
  - consider quality and quantity of guideline patent license data
  - consider patent RUL analysis, based on:
    - legal/statutory life
    - contract/license life
    - technology obsolescence life
    - economic obsolescence life
    - prior generations of the subject invention
    - position of the subject invention in its life cycle
Valuation Analyst’s Data Gathering and Due Diligence Procedures (cont.)

- **Analyze projections and patent economic benefits against a benchmark comparison** (cont.)
  
  - data sources commonly used to identify industry average profit margins for patent owner/operators
    
    - Financial Research Associates—*Financial Studies of the Small Business*
    
    - The Risk Management Association—*Annual Statement Studies: Financial Ratio Benchmarks*
    
    - BizMiner (The Brandow Company)—*Industry Financial Profiles*
    
    - CCH, Inc.—*Almanac of Business and Industry Ratios*
    
    - Fintel, LLC—*Fintel Industry Metrics Reports*
    
    - MicroBilt Corporation (formerly IntegralInfo)—*Integra Financial Benchmarking Data*
    
    - ValueSource—*IRS Corporate Ratios*
    
    - Schonfeld & Associates, Inc.—*IRS Corporate Financial Ratios*
Patent Valuation Approaches and Methods

**Income approach methods**

- yield capitalization involves uneven income projections over a finite projection period
- direct capitalization involves an annual constant change rate income projection over either a finite period or a perpetuity period
- typical patent income measures:
  - incremental/differential income (with vs. without the invention)
  - excess income/residual income (business enterprise income less capital charge on all contributory assets)
  - profit split (percentage of business enterprise income assigned to the subject patent, based on a “functional analysis”)
  - residual profit split (excess income “split” between two final intangible assets)
Patent Valuation Approaches and Methods (cont.)

**Income approach methods (cont.)**

- typical patent analysis income levels:
  - net operating income
  - EBIT
  - pretax income
  - contribution income (for economic damages analysis)
- discount rate/capitalization rate should agree with the selected income measure
- discount rate/capitalization rate should agree with selected standard of value and the selected premise of value
- income projection period should agree with the patent RUL
- income projection should consider the shape of patent life cycle
- income projection should consider the patent maintenance costs
Market approach methods

- comparable profit margin (CPM) method:
  - compare guideline public companies without patent to the subject company with patent
  - difference in profit margins is due to the subject patent
  - the profit margin delta is considered to equal a royalty rate
  - royalty income (i.e., royalty rate \times revenue) is capitalized over patent RUL to indicate value
- note that, typically, guideline companies may also have patents
- so, the CPM method compares the superior subject patent profit margin to an industry average patent profit margin
- typically, EBIT is used as the CPM income measure
Patent Valuation Approaches and Methods (cont.)

Market approach methods (cont.)

- data sources commonly used to identify guideline companies and guideline company profit margins:
  - FactSet Research Systems, Inc.—FactSet
  - Hoover’s, Inc.—Hoover’s Company Records
  - Mergent, Inc.—MergentOnline
  - Morningstar, Inc.—Morningstar Equity Research
  - Standard & Poor’s—CapitalIQ
  - Thomson Reuters—Thomson ONE Analytics
Patent Valuation Approaches and Methods (cont.)

- **Market approach methods** (cont.)
  - comparable uncontrolled transactions (CUT) method:
    - select guideline license agreement CUTs of comparable patent
    - adjusted the CUT royalty rates for differences in the guideline patent vs. the subject patent
    - calculate the mean/median/mode CUT license royalty rates
    - selected a royalty rate appropriate to the subject patent
    - royalty income (i.e., royalty rate × revenue) is capitalized over the patent RUL to indicate value
  - consider relative age of the guideline patent vs. the subject patent
  - consider relative market size of guideline patent vs. the subject patent
  - consider relative growth rate of guideline patent vs. the subject patent
Patent Valuation Approaches and Methods (cont.)

**Market approach methods (cont.)**

- data sources commonly used to identify patent CUT royalty rates:
  - AUS Corporation—RoyaltySource Royalty Rates
  - ktMINE, LLC—ktMINE
  - RoyaltyStat, LLC—RoyaltyStat
Market Approach Data Sources Examples

- RoyaltySource illustrative example
- ktMINE illustrative example
- RoyaltyStat illustrative example
- Recombinant Capital illustrative example
RoyaltySource Intellectual Property Database

Personal Care Product: Toiletry Preparations
08/25/2011

| Licensee:       | HI TECH PHARMACAL CO INC                      |
| Licensee Business: | Pharmaceutical Preparations                  |
| Licenser:       | DFB PHARMACEUTICALS INC.                     |
| Licenser Business: | Pharmaceutical Preparations                  |
| Royalty Rate, % (low range): | 6                           |
| Royalty Rate, % (high range): | 6                           |
| Upfront Fee:    | $2,000,000                                  |

Licensed Property:
Date: July 16, 2009.

The Company, a specialty manufacturer and marketer of prescription, over-the-counter and nutritional products, entered into an Agreement with the Licenser, the plaintiff in a lawsuit against the Company. Plaintiff has asserted claims for false advertising, unfair competition and common law misappropriation against defendant, based on the defendant’s marketing and sale of Salicylic Acid 6% Cream and Salicylic Acid 6% Lotion. Plaintiff filed a motion to substitute the Licenser for the original plaintiff, Coria Laboratories, and the Court has granted that motion. The Agreement provides for a stay to all pending matters and motions in this lawsuit for a certain period as stipulated. On July 16, 2009, the Company entered into an agreement with the plaintiff in the lawsuit against the Company, whereby in exchange for a payment, upon signing the term sheet of the settlement, the Company has obtained the right to purchase five ANDAs (Abbreviated New Drug Application) and/or a manufacturing facility from the Licenser for consideration agreed to in the agreement.

Additionally, if the lawsuit is dismissed the Licensee will enter into another Agreement whereby they will have the right to continue to manufacture and market the product subject to the lawsuit.

Compensation Detail:
Upfront Fee: In exchange for the payment of $2,000,000 upon signing the term sheet of the settlement, Hi Tech has obtained the right to purchase five ANDAs (Abbreviated New Drug Application) and/or a manufacturing facility from DFB for consideration agreed to in the Agreement. This upfront payment is non-refundable in the event neither acquisition is completed.

Royalty: Hi-Tech will enter into another Agreement whereby they will have the right to continue to manufacture and market the product subject to the lawsuit in exchange for a 6% royalty on future sales.

Source: Form 10-K HI TECH PHARMACAL CO INC. 07/23/09
http://www.sec.gov/Archives/edgar/data/0001195325-09-150977/def10k.htm#2020

The source of information provided in this report has been gathered from public financial records, news releases, and other articles and references, and also includes all of the Licensing Economics Review (LER) issues. While we believe the sources to be reliable, this does not guarantee the accuracy or completeness of the information provided.
## Agreement 1 of 2

### Synopsis
- **Grant the right to develop, make, have made, use, market, offer for sale, sell, distribute, and import Orlapred, Orlapred ODT, and Orlapred RT.**

| Agreement ID: | 505 |
| Filing Company: | BIOMARIN PHARMACEUTICAL INC |
| Licensors(s): | BIOMARIN PHARMACEUTICAL INC. |
| Licensees(s): | ALLIANT PHARMACEUTICALS, INC. |
| Effective Date: | 03/15/2006 |

### Term:
- "Term" means the term defined in Section 12.1
- The term of this Agreement (the "Term") will commence on the Effective Date and, unless sooner terminated as provided in Section 12.3, shall continue for as long as BioMarin has the right to grant the Sublicense to Alliant pursuant to the Ascent License and the Cima License and following the Assignment until fifteen (15) years after the Effective Date.

### Type:
- MANUFACTURING/PROCESS INTANGIBLE, MARKETING INTANGIBLE

### Industry:
- HEALTHCARE: PHARMACEUTICAL

### SIC Code:
- 2834

### Territory:
- WORLDWIDE

### Exclusivity:
- MULTI-EXCLUSIVITY

### Royalty Rates

<table>
<thead>
<tr>
<th>License Actuals</th>
<th>Value</th>
<th>Agreement Base</th>
<th>Modifier</th>
<th>Common Base</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>25%</td>
<td>NET SALES</td>
<td>For all Orlapred ODT, including any generic versions thereof, sold or otherwise disposed of by Alliant or its Permitted Sublicensees during the License Term, Alliant shall pay to BioMarin twenty-five percent (25%) of Net Sales of Orlapred ODT for the first three (3) years after the Commercial Launch of Orlapred ODT and thirty percent (30%) of Net Sales of Orlapred ODT thereafter.</td>
<td>NET SALES</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>NET SALES</td>
<td>For all Orlapred ODT, including any generic versions thereof, sold or otherwise disposed of by Alliant or its Permitted Sublicensees during the License Term, Alliant shall pay to BioMarin twenty-five percent (25%) of Net Sales of Orlapred ODT for the first three (3) years after the Commercial Launch of Orlapred ODT and thirty percent (30%) of Net Sales of Orlapred ODT thereafter.</td>
<td>NET SALES</td>
</tr>
<tr>
<td></td>
<td>25%</td>
<td>NET SALES</td>
<td>of each Orlapred (New Strength) or Orlapred RT (New Strength), as applicable, for the first three (3) years after the Commercial Launch of each such respective product</td>
<td>NET SALES</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>NET SALES</td>
<td>of each such respective product thereafter</td>
<td>NET SALES</td>
</tr>
<tr>
<td></td>
<td>5.3%</td>
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<td>of Orlapred ODT $0 million to $10 million</td>
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<tr>
<td></td>
<td>6.5%</td>
<td>NET SALES</td>
<td>of Orlapred ODT Over $10 million to $50 million</td>
<td>NET SALES</td>
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<tr>
<td></td>
<td>7.5%</td>
<td>NET SALES</td>
<td>of Orlapred ODT Over $50 million</td>
<td>NET SALES</td>
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</table>
RoyaltyStat

Reference: 6533
SEC Filer Name: SALTON MAXIM HOUSEWARES INC
Source: 10-Q/A EX-10.30 SEQ2 07/30/97
Filed Date: 07/30/1997
Effective Date: 02/01/1996
Type of Agreement: Trademark
SIC Code: 3634
Licensor: White Consolidated Industries, Inc.
Licensee: Salton Maxim Housewares, Inc.
Royalty Rate: 4.000%
Royalty Base: Net Sales
Duration (Year): 1.5
Territory: Canada, United States
Exclusive: Exclusive

Description of Licensed Intangible:
Exclusive trademark license to use the "White-Westinghouse" trademarks to design, manufacture, advertise, sell and promote small kitchen appliances such as irons, can openers, mixers, food processors, electric knives, popcorn makers, toaster, toaster ovens, coffee makers, espresso/cappuccino makers, bread machines, pasta makers, doughnut makers, woks, pressure cookers, ice tea makers, sandwich makers, waffle irons/waffle makers, pancake grills, portable grilling machines, ice cream makers, yogurt makers, juice makers, and juice extractors.

Other Payments:
Initial license fee is $50,000, which is credited against royalties. Art. 7.2

Comments:
Exclusive trademark license. Art. 1. Royalty for products selling for less than $10.00 per unit is 2% of wholesale price during the contract term, and 3% of wholesale price during the extension terms. Royalty for products selling for more than $10.00 per unit is 3% of wholesale price during the contract and 1st extension terms; 3.5% of wholesale price during the 2nd and 3rd extension terms; and 4% of wholesale price during the remaining terms. Art. 6.1. Minimum guaranteed royalty is $146,200 during contract term; $136,500 during 1st extension term; $211,200 in 2nd extension term; $315,900 in 3rd term; $409,500 in 4th term; $491,400 in 5th term; $589,200 in 6th term; $707,500 in 7th term; $848,600 in 8th term; $1,019,200 in 9th term; $1,221,700 in 10th term; $1,467,400 in 11th term; $1,760,900 in 12th term; and $2,113,500 in 13th term. Art. 7.1. Minimum required net sales – see Art. 8.
Recombinant Capital

Strategic alliances are a fundamental part of the biotechnology industry. Recap learns about strategic alliances in press releases and other literature, governmental filings, and presentations at investment conferences and other public meetings. Recap has recorded & indexed the formation of more than 13,000 agreements in the Alliances database.

Alliance information is available on both Recap.com and RDNA.com. The following table summarizes the information available on each site:

<table>
<thead>
<tr>
<th>Recap</th>
<th>RDNA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Document:</strong></td>
<td><strong>Primary Document:</strong></td>
</tr>
<tr>
<td>Alliance Summary</td>
<td>Alliance Summary (with Upfront Payments, R&amp;D Payments, Milestone Payments, and Advanced Search Builder)</td>
</tr>
<tr>
<td><strong>Supporting Documents:</strong></td>
<td><strong>Supporting Documents:</strong></td>
</tr>
<tr>
<td>Press Release</td>
<td>Press Release</td>
</tr>
<tr>
<td>Contract ($300 per set)</td>
<td>Deal Snapshot</td>
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<tr>
<td>Contract Analysis ($200 or $300)</td>
<td>Contract</td>
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<td></td>
<td>Contract Analysis</td>
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</table>

An ALLIANCE SUMMARY contains high-level summary information about an alliance. Each Alliance Summary is indexed by several key terms so that subscribers can easily locate relevant or comparable agreements using the Alliance Search Builder. Recap links Press Releases to the Alliance Summaries on Recap.com. On RDNA.com, Recap links Press Releases, Contracts, and Contract Analyses to the Alliance Summaries.

Whenever possible, Recap links Press Releases to an agreement.
Recombinant Capital

On rDNA.com many of the Alliance Summaries include a Deal Snapshot. A Deal Snapshot is a pictorial overview of alliance terms.

On rDNA.com, alliance Contracts are linked to the Alliance Summary documents. These contracts may be purchased by Recap.com subscribers for an additional fee. We are able to find contracts for approximately 40% of the alliances in the database. Many of these contracts predate the advent of electronic filing and are available in PDF format, created from the printed page.
Recombinant Capital

A Contract Analysis is a detailed synopsis of an alliance’s terms. Contract Analyses are based on the actual contracts behind an agreement and they fit a standard 56-point format. Often, specific financial terms have been redacted (replaced for confidentiality purposes) from the original contracts. If Recap analysts are able to uncover these terms in other sources like Annual Reports or Press Releases, the terms are entered into the analyses. In this way, Contract Analyses become an increasingly complete view of a deal’s terms.

Our complete collection of over 1,300 analyses is immediately available to iDNA.com subscribers. Analyses may be purchased by Recap.com subscribers for an additional fee.
Patent Valuation Approaches and Methods (cont.)

**Cost approach methods**

- particularly applicable for recently developed invention, for which development cost or development effort data are available
- also applicable for in-development or non-commercialized (e.g., defensive use) invention
- value is commonly estimated as replacement cost new less depreciation (RCNLD)
- replacement cost new (RCN) includes:
  - direct costs (person-months × cost per month)
  - indirect costs (out-of-pocket costs)
  - developer’s profit (return on cost investment)
  - entrepreneurial incentive (opportunity cost during patent development period)
Cost approach methods (cont.)

- less depreciation (LD) allowances for:
  - functional obsolescence (excess operating costs)
  - technological obsolescence (age/life before replacement)
  - economic obsolescence (inadequate ROI)
- owners often don’t track invention development costs
- all conceptualization/commercialization costs should be included
- consider the subject patent RUL for obsolescence
- remember: value is RCNL, value is not RCN
Patent Income Approach Valuation—Income Tax Amortization Effect

For federal income tax purposes, taxpayers may amortize a purchased intangible asset over the Internal Revenue Code Section 197 15-year period.

In an income approach valuation analysis:
- the intangible asset amortization expense is recognized as a non-cash expense before pretax income.
- the amortization expense is added back as a non-cash expense after the income tax expense line.
- alternatively, the income tax amortization effect may be recognized by the use of an amortization effect value “factor”:

\[
\text{Amortization effect factor} = \frac{1}{1 - (\text{income tax rate}) \times (\text{present value annuity factor})} \\
\text{amortization period}
\]
Patent Income Approach Valuation—Income Tax Amortization Effect (cont.)

In an income approach valuation analysis: (cont.)

- income tax rate – for the owner/operator
- amortization period – always 15 years
- PVAF – for 15 years at the present value discount rate used in the income approach analysis
Patent Income Approach Valuation—
Income Tax Amortization Effect (cont.)

Illustrative example variables:
- Income approach patent value indication - $100,000,000
- Owner/operator income tax rate – 40%
- Present value discount rate – 20%

\[
\text{Amortization effect factor} = \frac{1}{1 - (40\%) \times (4.6755)} \frac{1}{15 \text{ years}}
\]

Amortization effect factor = 14%
Illustrative example conclusion:

$100,000,000 \times (1 + 14\%) = $114,000,000

Preliminary DCF value \times (1 + \text{factor \%}) = 
Patent fair market value indication
Income Approach—
Income Tax Amortization Effect Conditions

This valuation adjustment is only appropriate:

- in an income approach valuation analysis
- for a Section 197 intangible asset (not all intangible assets qualify as a Section 197 intangible asset)
- in the purchase of a going concern operating business (not of a single patent) in a taxable purchase of assets (not in a non-taxable purchase of stock)
- in a transaction between taxpayer entities that can recognize the income tax benefits (e.g., not between tax-exempt entities, tax pass-through entities, entities with large NOLs, etc.)
Patent Valuation Synthesis and Conclusion

How to select the valuation approaches and methods to use

- does the selected valuation method accomplish the analyst’s assignment?
  - defined value
  - transaction price
  - third-party license rate
  - intercompany transfer price
  - economic damages
  - IP bundle exchange ratio
  - transaction fairness opinion
Patent Valuation Synthesis and Conclusion (cont.)

- How to select the valuation approaches and methods to use (cont.)
  - does the selected valuation method analyze the appropriate bundle of legal rights?
  - are there sufficient available data to perform the selected valuation method?
  - will the selected valuation method be understandable to the intended audience?
Patent Valuation Synthesis and Conclusion (cont.)

- **How to weight the various valuation approach/method value indications to conclude a final patent value**
  - valuation analyst’s confidence in the quantity and quality of available data
  - valuation analyst’s level of due diligence performed on available data
  - relevance of the valuation method to the subject patent life cycle stage and degree of marketability
  - degree of variation in the range of value indications
  - final value can be point estimate or a value range (for transaction negotiations or fairness opinions)
Patent Valuation Illustrative Examples

- Income approach—excess earnings method – Alpha Company chi pharmaceutical patent
- Market approach—relief from royalty method – Beta Company psi pharmaceutical patent
- Cost approach—RCNLD method – Gamma Company omega pharmaceutical patent
### Income Approach—Excess Earnings Method Example

**Alpha Company**  
Pharmaceutical Compound Patent Valuation  
Income Approach—Excess Income Method  
As of January 1, 2011

<table>
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<tr>
<th>Valuation of the Chi Compound Patent</th>
<th>Notes</th>
<th>12/31/11</th>
<th>12/30/12</th>
<th>12/30/13</th>
<th>12/30/14</th>
<th>12/31/15</th>
<th>12/30/16</th>
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<th>12/30/18</th>
<th>12/31/19</th>
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<td>Revenue attributable to chi product</td>
<td>[b]</td>
<td>$3,575,289</td>
<td>$2,604,350</td>
<td>$1,849,994</td>
<td>$1,289,821</td>
<td>$883,047</td>
<td>$679,946</td>
<td>$523,559</td>
<td>$403,140</td>
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<td>Annual growth rate percent</td>
<td>[c]</td>
<td>NA</td>
<td>-27.2%</td>
<td>-29.0%</td>
<td>-30.3%</td>
<td>-31.5%</td>
<td>-23.0%</td>
<td>-23.0%</td>
<td>-23.0%</td>
<td>-23.0%</td>
<td>-23.0%</td>
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<tr>
<td>EBITDA</td>
<td></td>
<td>1,573,127</td>
<td>1,145,914</td>
<td>813,997</td>
<td>567,521</td>
<td>388,541</td>
<td>299,176</td>
<td>230,366</td>
<td>177,382</td>
<td>136,584</td>
<td>105,170</td>
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<td>EBITDA margin</td>
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<td>438,575</td>
<td>319,167</td>
<td>228,278</td>
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<td>135,346</td>
<td>104,216</td>
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<td>22.8%</td>
<td>23.7%</td>
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<td>25.9%</td>
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<tr>
<td>Less: Income taxes @ 37 percent</td>
<td>[f]</td>
<td>288,640</td>
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<td>38,560</td>
<td>29,691</td>
<td>22,862</td>
</tr>
<tr>
<td>Net income</td>
<td></td>
<td>491,469</td>
<td>373,557</td>
<td>276,302</td>
<td>201,075</td>
<td>143,815</td>
<td>110,738</td>
<td>85,268</td>
<td>50,556</td>
<td>29,691</td>
<td>38,928</td>
</tr>
<tr>
<td>Net income margin</td>
<td></td>
<td>13.7%</td>
<td>14.3%</td>
<td>14.9%</td>
<td>15.6%</td>
<td>16.3%</td>
<td>16.3%</td>
<td>16.3%</td>
<td>16.3%</td>
<td>16.3%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Less: Contributory assets charges:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working capital capital charge</td>
<td>[g]</td>
<td>27,530</td>
<td>20,053</td>
<td>14,245</td>
<td>9,932</td>
<td>6,799</td>
<td>5,236</td>
<td>4,031</td>
<td>3,104</td>
<td>2,390</td>
<td>1,840</td>
</tr>
<tr>
<td>Tangible assets capital charge</td>
<td>[g]</td>
<td>(823,022)</td>
<td>(599,454)</td>
<td>(425,589)</td>
<td>(296,467)</td>
<td>(202,736)</td>
<td>(156,107)</td>
<td>(120,202)</td>
<td>(92,556)</td>
<td>(71,268)</td>
<td>(54,876)</td>
</tr>
<tr>
<td>Routine intangible assets capital charge</td>
<td>[g]</td>
<td>(164,756)</td>
<td>(123,965)</td>
<td>(91,524)</td>
<td>(66,472)</td>
<td>(47,625)</td>
<td>(36,671)</td>
<td>(28,237)</td>
<td>(21,742)</td>
<td>(16,742)</td>
<td>(12,891)</td>
</tr>
<tr>
<td>Equals: patent economic income</td>
<td></td>
<td>324,239</td>
<td>223,159</td>
<td>148,856</td>
<td>96,422</td>
<td>60,516</td>
<td>46,598</td>
<td>35,880</td>
<td>27,627</td>
<td>21,273</td>
<td>16,381</td>
</tr>
<tr>
<td>Discounting periods</td>
<td>[h]</td>
<td>0.5000</td>
<td>1.5000</td>
<td>2.5000</td>
<td>3.5000</td>
<td>4.5000</td>
<td>5.5000</td>
<td>6.5000</td>
<td>7.5000</td>
<td>8.5000</td>
<td>9.5000</td>
</tr>
<tr>
<td>Present value factor @ 11%</td>
<td></td>
<td>0.9492</td>
<td>0.8551</td>
<td>0.7704</td>
<td>0.6940</td>
<td>0.6252</td>
<td>0.5633</td>
<td>0.5075</td>
<td>0.4572</td>
<td>0.4119</td>
<td>0.3710</td>
</tr>
<tr>
<td>Present value of patent economic income</td>
<td></td>
<td>307,767</td>
<td>190,823</td>
<td>114,679</td>
<td>66,917</td>
<td>37,834</td>
<td>26,249</td>
<td>18,209</td>
<td>12,631</td>
<td>8,762</td>
<td>6,077</td>
</tr>
<tr>
<td>Present value of patent economic income</td>
<td></td>
<td>789,949</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fair market value of chi patent (rounded)</td>
<td></td>
<td>790,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Income Approach—Excess Earnings Method Example (cont.)

Notes:

[a] RUL on the chi compound patent is 10 years. Alpha management is planning to replace the chi product with a new product as soon as it goes “off patent.”

[b] Management provided a revenue projection for the chi product for the next five years. That projection indicates the expected impact of non-infringing competitive pharmaceutical products.

[c] The analyst quantified the 23% revenue decay rate for similar drugs during the last five years of their patent life cycles.

[d] The chi product EBITDA margin has been fairly constant at around 44% during the first half of the patent life cycle.

[e] Depreciation expense is allocated to all Alpha products based on their relative revenue.

[f] Income tax rate at the marginal Alpha rate.

[g] Capital charge is based on a fair rate of return multiplied by the:
   -- FMV of product line NWC
   -- FMV of product line RE and TPP
   -- FMV of product line routine intangible assets (other than the chi patent)

[h] Mid-year discounting convention.
# Market Approach—Relief from Royalty Example

Beta Company  
Psi Compound Patent Valuation  
Hypothetical Guideline Patent License Agreements  
As of January 1, 2011

<table>
<thead>
<tr>
<th>Guideline Drug Patent License</th>
<th>Guideline Licensee</th>
<th>Guideline Licensor</th>
<th>Guideline License Start Date</th>
<th>Guideline License Term Years</th>
<th>Guideline License Royalty Rate %</th>
<th>Other Consideration Paid to the Licensor</th>
<th>Type of Licensed Drug Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pfizer, Inc. Columbia U.</td>
<td>2008</td>
<td>15</td>
<td>6</td>
<td>$4m [a]</td>
<td>ED</td>
<td></td>
<td>ED</td>
</tr>
<tr>
<td>Glaxo Smith Kline Autogent</td>
<td>2007</td>
<td>10</td>
<td>5</td>
<td>$10m [b]</td>
<td>cardiovascular</td>
<td></td>
<td>cardiovascular</td>
</tr>
<tr>
<td>Johnson &amp; Johnson Novel N.V.</td>
<td>2008</td>
<td>12</td>
<td>10</td>
<td>[c]</td>
<td>anti-obesity</td>
<td></td>
<td>anti-obesity</td>
</tr>
<tr>
<td>Merck &amp; Co. All Saints Hospital</td>
<td>2008</td>
<td>10</td>
<td>4.5</td>
<td>[d]</td>
<td>vascular</td>
<td></td>
<td>vascular</td>
</tr>
<tr>
<td>Pharmacia &amp; Upjohn MIT</td>
<td>2009</td>
<td>15</td>
<td>5.5</td>
<td>[e]</td>
<td>pulmonary hypertension</td>
<td></td>
<td>pulmonary hypertension</td>
</tr>
<tr>
<td>Wyeth-Ayerst MD, LP</td>
<td>2009</td>
<td>20</td>
<td>8-10 [f]</td>
<td>[f]</td>
<td>botanical ED</td>
<td></td>
<td>botanical ED</td>
</tr>
</tbody>
</table>

Notes:  
[a] Represents an upfront (i.e., development financing) license payment.  
[b] Represents a milestone payment after the 5th year of the license.  
[c] The license agreement also settles a pending $50 million litigation between the various license parties.  
[d] The physician owners/employees also receive research grants from Merck.  
[e] There are also numerous other relationships between the licensor/licensee parties.  
[f] The royalty rate range is based on the level of the drug product annual sales volume.
## Beta Company

### Psi Compound Patent Valuation

**Guideline Royalty Rate Adjustment Grid and Selected Royalty Rate**

As of January 1, 2011

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>--</td>
<td>+.5% [c]</td>
<td>6%</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>2</td>
<td>++</td>
<td>++</td>
<td>0</td>
<td>+1% [c]</td>
<td>7%</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>2</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>-2% [c]</td>
<td>8%</td>
</tr>
<tr>
<td>4</td>
<td>4.5</td>
<td>3</td>
<td>+</td>
<td>0</td>
<td>-</td>
<td>- [c]</td>
<td>4%</td>
</tr>
<tr>
<td>5</td>
<td>5.5</td>
<td>2</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>- [c]</td>
<td>6%</td>
</tr>
<tr>
<td>6</td>
<td>8-10</td>
<td>3</td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>-2% [d]</td>
<td>7%</td>
</tr>
</tbody>
</table>

Royalty rate mean 6.3%
Royalty rate trimmed mean 6.5%
Royalty rate median 6.5%
Royalty rate mode 6.5%
Selected psi patent royalty rate conclusion 6.5%

### Notes:

[a] Based on a scale of 0 to 3; where 0 means that the guideline patent is less comparable to the psi patent; and 3 means that the guideline patent is more comparable to the psi patent.

[b] Based on a scale of --, -, 0, +, ++; where – is the smallest in size relative to the psi patented product; and ++ is the largest in size relative to the psi patented product.

[c] Valuation analyst adjustment, based on an assessment of other factors (1) in the guideline patent license agreement or (2) between the guideline patent licensor and the licensee.

[d] Valuation analyst adjustment, due to the different nature of a botanical drug product versus a pharmaceutical drug product.
### Beta Company
#### Psi Compound Patent Valuation
Relief from Royalty Valuation Method
As of January 1, 2011
(in $ millions)

<table>
<thead>
<tr>
<th>Psi Patent Valuation Analysis: [a]</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psi product revenue expected growth rate [b]</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>-12%</td>
<td>-12%</td>
<td>-12%</td>
</tr>
<tr>
<td>Psi revenue amount (year 0 revenue = 400)</td>
<td>440</td>
<td>484</td>
<td>532</td>
<td>532</td>
<td>532</td>
<td>532</td>
<td>469</td>
<td>412</td>
<td>363</td>
</tr>
<tr>
<td>Selected patent license royalty rate</td>
<td>6.5%</td>
<td>6.5%</td>
<td>6.5%</td>
<td>6.5%</td>
<td>6.5%</td>
<td>6.5%</td>
<td>6.5%</td>
<td>6.5%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Projected “relief from royalty” license expense (rounded)</td>
<td>29</td>
<td>31</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>30</td>
<td>27</td>
<td>24</td>
</tr>
<tr>
<td>Projected patent maintenance expense (year 0 expense = 10) [c]</td>
<td>10</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Projected net “relief from royalty” license expense (rounded)</td>
<td>19</td>
<td>20</td>
<td>24</td>
<td>24</td>
<td>23</td>
<td>23</td>
<td>18</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>Present value discount factor (at 20%, mid-year convention)</td>
<td>0.91</td>
<td>0.76</td>
<td>0.63</td>
<td>0.53</td>
<td>0.44</td>
<td>0.37</td>
<td>0.30</td>
<td>0.25</td>
<td>0.21</td>
</tr>
<tr>
<td>Present value of “relief from royalty” net license expense</td>
<td>17</td>
<td>15</td>
<td>15</td>
<td>13</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Total present value or “relief from royalty” net license expense</td>
<td>90</td>
<td>15</td>
<td>15</td>
<td>13</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Fair market value of the psi compound patent (rounded) | 90 |
Market Approach—Relief from Royalty Method Example (cont.)

Notes:

[a] Expected RUL of the psi patent is 9 years, based on management’s projection of the psi product economic life. Management is currently developing a replacement product.

[b] Analyst derived the projected revenue growth/decline rates (in conjunction with management) based on an analysis of similar drug product revenue growth/decline rates during the last half of their patent life cycles.

[c] Analyst derived (in conjunction with management) an estimate of the psi product legal, R&D, marketing, and other maintenance expenses.
Cost Approach—RCNLD Method Example

Gamma Company
Omega Compound Patent
Cost Approach—Replacement Cost New Less Depreciation (RCNLD) Method
As of January 1, 2011

<table>
<thead>
<tr>
<th>Product Development Stages</th>
<th>Estimated Replacement Development Effort in Person Months [a]</th>
<th>Time to Develop Replacement (in Calendar Months) [b]</th>
<th>Indicated RCNLD Component [c] $000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial compound</td>
<td>4,531</td>
<td>29</td>
<td>66,100</td>
</tr>
<tr>
<td>Product compound</td>
<td>575</td>
<td>25</td>
<td>8,400</td>
</tr>
<tr>
<td>Initial stage product tests</td>
<td>3,304</td>
<td>16</td>
<td>48,200</td>
</tr>
<tr>
<td>Second stage product tests</td>
<td>1,229</td>
<td>5</td>
<td>17,900</td>
</tr>
<tr>
<td>Third stage product tests</td>
<td>1,807</td>
<td>41</td>
<td>26,400</td>
</tr>
<tr>
<td>Final FDA license process</td>
<td>325</td>
<td>12</td>
<td>4,700</td>
</tr>
<tr>
<td>Branding and marketing</td>
<td>85</td>
<td>9</td>
<td>1,200</td>
</tr>
<tr>
<td>Total direct and indirect costs</td>
<td>11,856</td>
<td>24</td>
<td>172,900</td>
</tr>
<tr>
<td>Plus developer’s profit [d]</td>
<td></td>
<td></td>
<td>10,500</td>
</tr>
<tr>
<td>Plus entrepreneurial incentive [e]</td>
<td></td>
<td></td>
<td>31,200</td>
</tr>
<tr>
<td>Equals: Total replacement cost new</td>
<td></td>
<td></td>
<td>214,600</td>
</tr>
<tr>
<td>Less: Depreciation and obsolescence [f]</td>
<td></td>
<td></td>
<td>13,300</td>
</tr>
<tr>
<td>Equals: Replacement cost new less depreciation</td>
<td></td>
<td></td>
<td>201,300</td>
</tr>
<tr>
<td>Fair market value of omega compound patent (rounded)</td>
<td></td>
<td></td>
<td>200,000</td>
</tr>
</tbody>
</table>
Cost Approach—RCNLD Method Example (cont.)

Notes:
[a] Based on Gamma Company employee time records and laboratory notebooks—related to this recently developed (and not yet commercialized) drug compound patent.
[b] Based on the actual elapsed development time for the omega product and for similar Gamma Company pharmaceutical products.
[c] Based on $14,585 per person-month—i.e., the actual weighted average full absorption cost of all Gamma Company employees who worked on the omega compound development project (stated in 1/1/11 dollars).
[d] Based on the total direct costs plus indirect costs times the typical profit margin for an independent laboratory/compound development firm.
[e] Expected lost profit (net cash flow) during the first 24 months (i.e., the elapsed replacement period) of the omega drug commercialization process.
[f] Based on the RCN of person-hours related to the development of unsuccessful compound features.
Defending the Value Conclusion

Defending the patent value, price, royalty rate, economic damages, exchange ratio, fairness conclusion

• explain the valuation (or price, royalty rate, etc.) assignment
• describe the subject patent and the subject bundle of legal rights
• explain the selection/rejection of all generally accepted valuation approaches and methods
• explain the selection and application of all specific analysis procedures
• describe the data gathering and due diligence procedures
• list all documents and data considered
• include copies of all documents specifically relied on
Defending the Value Conclusion (cont.)

Defending the patent value, price, royalty rate, economic damages, exchange ratio, fairness conclusion (cont.)

- summarize all of the qualitative analyses performed
- include schedules and exhibits of all quantitative analyses
- avoid any unexplained or unsourced variables/assumptions
- allow for the replicability of all analyses
- encourage the reader’s reliability of the written report
  - report should be clear, convincing, and cogent
  - report should be well-organized, well-written, and well-presented
  - report should be free of grammar, punctuation, spelling, and mathematical errors
Summary and Conclusion

- Understand the analyst’s assignment
- Understand the subject patent and the subject legal rights
- Collect sufficient owner/operator financial data
- Collect sufficient industry, market, competitive data
- Document the specific patent economic benefits
- Perform due diligence procedures on all available data
- Select and apply income, market, and cost approach valuation methods
- Reconcile all value (price, royalty rate, etc.) indications into a final conclusion
- Defend the analysis conclusion in a replicable and well-documented report