Bridging the Gap in Deal Valuation

Speakers:
- Clare Fisher, Vice President, Interim Head of Transactions, Shire
- Greg Miller, MBA, MPH, Vice President of Business Development & Strategic Planning, Visterra, Inc.
- Henry Rath, MBA, Vice President of Business Development, Seres Therapeutics Inc.
- Mark Stencik, MBA, Director, BD&L Transactions, Merck Boston Innovation Hub

Moderators:
- Troy Norris, MBA, Executive Director, Parthenon-EY, Ernst & Young LLP
- William Pittock, MBA, Executive Director, Valuation & Business Modeling, Transaction Advisory Services, Ernst & Young LLP
Bridging the gap in deal valuation

MassBio Forum
Business development and finance

April 12, 2017
### Bridging the gap in deal valuation

#### Panelists

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Bridging the gap in deal valuation

Topics for discussion

► Revenue forecasting and scenario analysis
► Valuation and deal terms analysis
► Evaluating risk to structure robust deals
Revenue forecasting and scenario analysis

Multi-stakeholder insights are quantitatively linked with price benchmarks and market constraints to forecast a product’s price and uptake potential.

- **Market Model**
  - Project market size and market growth based on:
    - Disease epidemiology
    - Drug-treated population
    - Reimbursement trends and patent expiries
    - Secondary research and analysis of prescription databases

- **Integrated Price and Share Model**
  - Determine achievable price levels and expected patient share based on:
    - Price benchmarking and restrictions on use
    - Stakeholder value analysis for patients, payer, providers
    - Analysis of market access barriers and evidence requirements

- **Adoption Model**
  - Predict expected patient adoption rate, duration of therapy, and treatment adherence
    - Primary research on stakeholder needs and product perceptions
    - Secondary research of published literature and/or medical claims databases

- **Forecast Model**
  - Forecast expected product revenues using integrated model accounting for market dynamics, achievable price, patient share and adoption rate, and treatment duration

- **Scenario Analysis**
  - Model discrete scenarios based on findings from primary and secondary research to assess revenue potential across a range of scenarios
Revenue forecasting
within a short timeframe under uncertainty requires in-depth market and
customer analysis focused on the key value drivers

Secondary market research
➤ Market
➤ Epidemiology
➤ Competition
➤ Treatment path
➤ Pricing and reimbursement

Market analysis
➤ Segmentation
➤ Market size
➤ Growth
➤ Competitive intensity

Market model

Sensitivity Analysis
➤ Market
➤ Competition
➤ Clinical results
➤ Reimbursement

Primary market research
➤ Patient flow and referral patterns
➤ Unmet needs
➤ Evidence thresholds
➤ Product perceptions
➤ Pricing and reimbursement
➤ Expected adoption

Adoption analysis
➤ Adoption rate
➤ Therapy duration
➤ Adherence
➤ Relative share
➤ Price sensitivity

Revenue model

Product Share and Life Cycle for New Product
Confidential
Life Cycle Events
Curve Name New Indication
Save Current Settings to Curve
Launch Date 1/1/2008
Retrive Curve
Peak Share Date 1/1/2013
Peak Share 56.0%
Event One
Active
Event Name New Indication
Date 3/16/2014
Floor Percent 68%
Rate Percent to Floor 100%
Share Change Type Drift
Event Two
Active
Event Name New Product Entrant
Date 3/16/2016
Floor Percent 40%
Rate Percent to Floor 40%
Share Change Type Drift
Event Three
Active
Event Name Patent Expiration
Date 4/3/2019
Floor Percent 0%
Rate Percent to Floor 15%
Share Change Type Drop
Event Four
Inactive
Event Name Fourth
Date 4/3/2018
Floor Percent 6%
Rate Percent to Floor 15%
Share Change Type Drift
Set Dates for Chart Display
Start 2/13/2008
End 5/5/2021
CV_25: New Indication
CV_12: My New Curve
Asset valuation and partnership terms analysis
Portfolios of development programs are typically valued using a risk-adjusted net present value approach that feeds into a deal model

- Model market, price/share model and adoption

- Forecast investment and profitability:
  - Development time and costs
  - Manufacturing and COGS estimates
  - Launch and commercialization costs

- Forecast free cash flow incorporating:
  - Change in working capital
  - Taxes, including NOLs

- Discount future cash flows discounted for time value of money based on cost of capital
  - Apply R&D probabilities of success to estimate risk-adjusted expected net present value

- Sensitivity analyses, scenarios, simulation
  - Value step-up analyses

- Analyze deal terms to assess value-sharing between partners under alternative structures
  - Base case share of cash flows
  - Synergy sharing
Partnership vs. Acquisition valuation
A portfolio of individual products can be valued individually and summed to company value

- **Revenue build**
  - Alternative methodologies:
    - Penetration to peak sales
    - Patient flow
    - Direct inputs

- **Product P&Ls and valuation**
  - Product P&Ls
    - Product-specific costs
    - Risk adjustments across portfolio
    - Cash flow and valuation

- **Partnership analysis**
  - Partnership cash flows and value
    - Upfront, milestones, royalties
    - Cost and profit-sharing
    - Partner synergies

- **Corporate P&L and valuation**
  - Corporate adjustments
    - Non-allocable corporate OH
    - Tax effects and NOLs
    - Portfolio value summary

- **Acquisition analysis**
  - Acquisition analysis
    - Acquirer/target P&L’s
    - Financing structure and terms
    - Cost and revenue synergies
    - Accretion/dilution
## Evaluating risks and uncertainties
The three “S”s of risk assessment

<table>
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<tr>
<th>Risk assessment</th>
<th>Pros</th>
<th>Cons</th>
<th>When to use</th>
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| **Sensitivity** | ► Focus attention on high risk variables | ► May not capture key inter-relationships between variables | ► Searching for high impact variables (cost of capital, peak adoption)  
► Conducting break-even analysis focused on individual variables |
| **Scenario**    | ► Reflects dynamic inter-relationship between variables | ► May overstate downside risk and upside potential | ► To reflect outcomes for a combination of variables  
► Modeling demand variability |
| **Simulation**  | ► Reflects full range and probability distribution of outcomes | ► Only as good as underlying assumptions on variable ranges | ► Modeling high impact variables with significant interrelationships  
► Portfolio of inter-related value streams, such as multiple indications |
Structuring deals to manage uncertainty
Using valuations to structure transactions that mitigate and share risks

► **Share development and commercial costs and risks**
  ► Typically aligned with value-sharing
  ► Governance bodies to jointly guide investment

► **Contingent consideration tied to milestones**
  ► Milestones in alliances ranging from regulatory to reimbursement and revenue
  ► Structured deals with contingent payouts, whether contractual or contingent value rights (CVRs)

► **Increasing use of options in alliances and M&A**
  ► Option-based product licensing deals
  ► Equity options on early stage companies

► **Co-investment in early stage assets by corporate VC**
Structuring deals to manage uncertainty
Structured transactions with contingent payments provide acquisition control with partnership risk-sharing economics

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<th>Investment models</th>
<th>Variations</th>
<th>Advantages</th>
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<td><strong>Straight acquisitions</strong></td>
<td>► Acquisition of all company assets, liabilities, people and know-how</td>
<td>► Complete control</td>
</tr>
<tr>
<td></td>
<td>► Carve-out acquisitions of select assets and capabilities</td>
<td>► Ability to integrate fully</td>
</tr>
<tr>
<td></td>
<td>► Complete control</td>
<td>► Ability to quickly extract cost synergies</td>
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<td><strong>Acquisition with contingent payouts</strong></td>
<td>► Clinical milestones</td>
<td>► Seller can lock in some near-term value while retaining a share of upside</td>
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<td>► Revenue-based lump-sum payments</td>
<td>► Buyer controls asset and decision-making with minimal ongoing relationship management</td>
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<td>► Unique situational payment triggers</td>
<td>► Only pay for success and often capture majority of downstream value</td>
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<td><strong>Traditional partnerships</strong></td>
<td>► Partnerships with event-based milestones</td>
<td>► Exclusive rights</td>
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<tr>
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<td>► Straight licenses</td>
<td>► Actively involved in program decision-making</td>
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<td>► Collaboratively share development capabilities</td>
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## Structuring deals to manage uncertainty

Option-based deals are a hybrid of traditional venture and partnership models, providing strategic and financial upside with limited upfront investment.

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                          | ► Straight licenses                                                      | ► Exclusive rights  
                          |                                                                          | ► Actively involved in program decision-making  
                          |                                                                          | ► Collaboratively share development capabilities |
| **Proof-of-concept options** | ► Arms-length options to products, programs or technologies  
                          | ► Partnerships with milestones at partner discretion                      | ► Exclusive option exercisable upon proof of concept  
                          |                                                                          | ► Early development performed by partner |
| **PoC options with equity** | ► Proof-of-concept options with substantial equity investment               | ► Balanced alignment of interests across company and optioned product    |
| **Venture option models** | ► Venture option funds  
                          | ► Direct investment  
                          | ► Strategic LP                                                      | ► Equity investment tied to future product rights  
                          |                                                                          | ► Funds directed toward programs of interest |
| **Venture investments**  | ► Direct investment                                                      | ► Limited need to provide R&D capabilities  
                          | ► Venture co-investment funds                                             | ► Potential equity upside |
Bridging the gap in deal valuation
Topics for discussion

Deal Valuation Methodology
► Revenue forecasting and scenario analysis
► Valuation analysis
► Deal terms and comparables analysis

Applying Valuation in a Deal
► Managing valuation within a deal process
► Leveraging valuation and deal comps in negotiations

Guiding Principles for Applying Valuation
► Tailoring approach to each situation
► Staying focused on the fundamentals
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Thank You!

QUESTIONS?
Upcoming MassBio Forums

April 27: Perfecting Your Pitch; EU

May 4: Successful Partnering Strategies in Developing Novel Medicines: Models for Academia - Pharma Alliances; DD & Nonprofit

May 24: Biosafety 101 Workshop; SEF
THE CONVERGENCE OF MEDICAL DEVICES & DRUGS: The Future of Combination Products

Presented By:

MassBio

May 12, 2017; 12:00pm – 6:00pm
The Westin - Waltham, MA

Registration is now open