A biopharmaceutical company developing monoclonal antibody products through use of a proprietary human antibody technology
Morphotek Overview

• Antibody-focused biopharmaceutical company
  - founded in 2000, based on a genome evolution technology called *morphogenics*
  - developing fully human antibodies through unique process patents
  - applying validated technology to internal pipeline and partnerships

• Company focus and value creation
  - clinical validation of therapeutic antibody pipeline
  - leveraging antibody technology in development partnerships with leading research institutes studying cancer, inflammation and infectious diseases

• Strong scientific and clinical expertise in biologics and oncology
  - 2 clinical-stage compounds (MORAb-003 and MORAb-009)
  - multiple preclinical compounds positioned for new Investigational New Drugs (IND)

• Strong IP position on technology and products
  - 8 issued patents, >50 under active prosecution
  - significant barrier to entry - many patents extend past 2020
Morphotek Business
leverage technology with collaborations for product development

lead clinical products
MORAb-003-ovarian cancer
- other cancers: lung, breast, colon cancer
- Ph1-Memorial Sloan Kettering
- Ph2- multi-centered
MORAb-009-pancreatic cancer
- other cancers: lung, mesothelioma
- Johns Hopkins, Fox Chase, National Cancer Inst

targets accessed from collaborations

product pipeline
- MORAb-004-neovascular disease
- MORAb-022-inflammatory disease
- MORAb-028-metastatic melanoma
- MORAb-047-infectious disease
- MORAb-048-infectious disease

technology for discovery/products
human antibody discovery technology

immunize with disease antigen
human B-cell
morphogenics
antibody/cell line optimization
high-affinity MAbs
high-titer cell lines
Proprietary Antibody Technology

Integration of technology to support product development

- Gene discovery
- Morphotek collaborators
- In-licensed targets
- Whole cell discovery
- mAb libraries for target discovery & rapid mAb development
- Human antibody libraries
- Oncology
- Infectious disease
- Inflammatory disease
- Neurological disease
- Patient analysis
- Support company wide clinical trials
- Clinical development
- Product development

Diagnostic reagents & Therapeutic leads
MORPHODOMA® Technology
optimizing human antibodies and production lines via whole genome evolution (morphogenics)

DISCOVERY

antibody producing cell

derived from: patient lymphocytes immunized B-cells

OPTIMIZATION

antibody/cell line optimization

morphogenics

whole genome evolution

FINAL PRODUCT

-GMP manufacturing-high-titer cell lines

-therapeutic efficacy-high-affinity antibodies
MORPHODOMA® Derived Products

Robust pipeline…

<table>
<thead>
<tr>
<th>Antibody</th>
<th>1st Indication</th>
<th>Other indications</th>
<th>Description</th>
<th>Collaborator</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MORAb-003</td>
<td>Ovarian cancer</td>
<td>Breast, CRC, NSCLC, Renal</td>
<td>antigen on &gt;90% ovarian tumors</td>
<td>Memorial Sloan Kettering</td>
<td>PH1/PH2</td>
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<td>MORAb-009</td>
<td>Pancreatic &amp; lung cancer</td>
<td>CRC, Ovarian</td>
<td>antigen on 100% pancreatic tumors</td>
<td>Johns Hopkins/NCI</td>
<td>PH1</td>
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<tr>
<td>MORAb-004</td>
<td>Neovascular disease</td>
<td>Cancer, ADM, DR</td>
<td>antigen on 100% tumor endothelia</td>
<td>Johns Hopkins/John Wayne</td>
<td>PC</td>
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<td>MORAb-022</td>
<td>Rheumatoid arthritis</td>
<td>Asthma, MS, Psoriasis</td>
<td>cytokine involved in RA in mouse models</td>
<td>Ludwig</td>
<td>PC</td>
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<td>MORAb-028</td>
<td>Metastatic melanoma</td>
<td>Brain, SCLC</td>
<td>Human mAb with clinical activity melanoma</td>
<td>John Wayne Cancer Institute</td>
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<td>MORAb-047</td>
<td>Infectious disease</td>
<td>Biodefense</td>
<td>Antigen produced by pathogenic microbes</td>
<td>USAMRIID</td>
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<td>MORAb-048</td>
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<td>Biodefense</td>
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<td>USAMRIID</td>
<td>PC</td>
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</tbody>
</table>
global biologics efforts to develop disease-specific drugs

Global discovery capability
Product development expertise
Commercialization engine & Marketing muscle

Novel targets
Proprietary antibody technologies
Biologics development know-how

Therapeutic antibodies and proteins
to specifically treat root cause of human diseases

global reach of new biologic therapies