Agenda Item 2

New Initiatives and Start-Up Deals through UM Ventures
TOPIC: New Initiatives and Start-Up Deals through UM Ventures (information item)

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: March 12, 2015

SUMMARY: The Committee will be briefed on new initiatives and start-up deals through UM Ventures. UM Ventures has seen a strong increase in technology transfer results in FY 2014. Invention disclosures grew by 39% to 366; licenses executed grew by 24% to 51; and licensing revenues grew by 33% to $2.3 million.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: This item is for information purposes.

CHANCELLOR’S RECOMMENDATION: This item is for information purposes.

COMMITTEE RECOMMENDATION: DATE:

BOARD ACTION: DATE:

SUBMITTED BY: Joseph F. Vivona (301) 445-2783
New Initiatives and Start-Up Deals Through UM Ventures

March 12, 2015
Phil Robilotto
UM Ventures

- UM Ventures Baltimore
- Recent UMB Start Up Highlights
- New Startup Initiative
UM Ventures Baltimore
protecting and commercializing UMB Intellectual Property

Intellectual Property

➢ Disclosures
  - IP Attorneys
    3 PhD/JD (Molecular Bio/Biochem/Physics)
  - Intake/Reporting/Accounting Functions

Licensing

➢ Licenses
  - Licensing Team One
    Software, Medical Devices, Antibodies, Research Tools
  - Licensing Team Two
    Therapeutics, Vaccines, Diagnostics Chemistry

Ventures

➢ Start-ups
  - Director New Ventures
    Rana Quraishi
  - Ventures Analyst
    Mark Lafferty
  - Medical Device/Dx
    Entrepreneur-In-Residence
    (Exxon/Vapotherm/VIC)
  - Therapeutics/Biosimilars
    Entrepreneur-In-Residence
    (JHU/Nora Therapeutics)
  - Finance/Valuation
    Consultant
    (DuPont/Wyeth/Pfizer)
  - Therapeutics/Vaccines
    Entrepreneur-In-Residence
    (Merck/Novavax/Takeda)
Tech Transfer Results

Disclosures

93% increase in three years

Licenses

114% increase in three years
UM Ventures Baltimore
protecting and commercializing UMB Intellectual Property

**Intellectual Property**

- **Disclosures**
  - IP Attorneys
    - 3 PhD/JD (Molecular Bio/Biochem/Physics)
  - Intake/Reporting/Accounting Functions

**Licensing**

- **Licenses**
  - Licensing Team One
    - Software, Medical Devices, Antibodies, Research Tools
  - Licensing Team Two
    - Therapeutics, Vaccines, Diagnostics Chemistry

**Ventures**

- **Start-ups**
  - Director New Ventures
    - Rana Quraishi
  - Ventures Analyst
    - Mark Lafferty

- Medical Device/Dx
  - Entrepreneur-In-Residence
    - Exxon/Vapotherm/VIG
- Therapeutics/Biosimilars
  - Entrepreneur-In-Residence
    - JHU/Nora Therapeutics
- Finance/Valuation
  - Consultant
    - DuPont/Wyeth/Pfizer
- Therapeutics/Vaccines
  - Entrepreneur-In-Residence
    - Merck/Novavax/Takeda
In 2014, approximately 233,000 new cases of prostate cancer, with 29,000 deaths in US.

**Tokai Solution:**
Galeterone, an oral drug candidate to treat prostate cancer resistant to other treatments

**UMB Inventors:** Angela Brodie, PhD, and Vincent Njar, PhD, SOM, Pharmacology
6.8 Million suffer from **Mitral Valve Regurgitation** in U.S.

**Challenge:** Current treatment requires open heart surgery
- Large 6-8” incision
- Sternotomy
- Heart bypass
- Arrested heart
- 1-2% stroke risk
- 3-6 hour procedure
- 4-7 day hospital recovery
- Return to work > 1 month

- Over 100,000 MV operations per year
- Only 20% of patients who could benefit get open heart surgery
**Harpoon Solution:** Minimally invasive surgery device

- 1-2” incision
- No sternotomy. No bypass.
- Beating heart
- Negligible stroke risk
- 45-60 minute procedure
- 1-2 day hospital recovery
- Return to work in 5-7 days

**UMB Inventor:**
James Gammie, MD
SOM, Surgery

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2014: Raised $3.6 Million*
2015: Clinical Trial

*UM Ventures Investment
235,000 Non-Cancer **Lung Deaths** in the U.S. per year

**Challenge:** Current Treatment requires Mechanical Ventilator & Wind Pipe Tube
- ICU & bed restrained
- High failure to wean
- Injurious to lung
- Prone to infection
- Poor survival
- EXPENSIVE: $10,000/day
Breethe Solution: Artificial Lung

- For temporary or permanent use
- Wearable, Portable
- Reduced risk of blood clotting
- Eliminates large doses of blood thinners
- Reduced risk of bleeding
- Reduced Cost

UMB Inventors
Bartley Griffith, MD and John Woo, PhD, SOM, Surgery

*UM Ventures Investment
Challenge:
Clinical departments face:
- Information overload
- Multiple IT Systems.
- Cost pressures
- Home-grown solutions are proliferating, but not efficient

AI Solution:
- Aggregates data from array of IT Systems
- Consortium of leading health centers
- App Store

UMB Inventor: Chris Meenan, SOM, Diagnostic Radiology
Biochemistry
Biomedical Engineering
Banking/Finance*
Corporate/Business Development*
Chemistry
Chemical Engineering
Immunology/Molecular Biology
Management/Operations *
Medicine
Molecular Genetics
Microbiology
Neuroscience
Physiology

*Ventures Group
### StartUp Candidate

<table>
<thead>
<tr>
<th>StartUp Candidate</th>
<th>Conflict of Interest</th>
<th>Early Leadership</th>
<th>Access To Funding</th>
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<tbody>
<tr>
<td>Vaccine (Infectious Disease)</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Antibody Glycosylation Platform</td>
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<tr>
<td>Medical Device (Laposcopic Surgery)</td>
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<tr>
<td>Breast Cancer Oral Therapeutic</td>
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<tr>
<td>Infectious Disease Diagnostic Platform</td>
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<tr>
<td>Alzheimers Disease Antibody</td>
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<tr>
<td>Pain Oral Therapeutic</td>
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*X = StartUp Need*

2014 - Equity Investment Policy Critical to Support of High Profile UMB Startups

2015 – *Proposal forthcoming to develop Affiliated Entity established by University/UM Ventures to support early UMB StartUps with initial MGMT/BD team*