THE FUTURE OF VACCINES

JUNE 2015
This presentation includes "forward-looking statements" that involve risks, uncertainties and other factors, many of which are outside of our control, that could cause actual results to differ materially from the results discussed in the forward-looking statements. Forward-looking statements include statements concerning our plans, objectives, goals, future events, performance and/or other information that is not historical information. We undertake no obligation to publicly update or revise forward-looking statements to reflect subsequent events or circumstances after the date made, except as required by law.
A FOUNDATION OF VALUE CREATING ASSETS

1 approved product
7 active programs

2 Phase 3 products and near term value drivers

Trial supply to commercial product

>$1bn from US government in past 10 years; $187m Janssen, Bristol Myers collaboration potential of ~$975m

Validated Productive Platforms

Broad Pipeline & Late-Stage Candidates

Flexible GMP Manufacturing Facility

Track Record of Collaboration & Development Funding
RECENT HIGHLIGHTS

PROSTVAC
- Global commercialization agreement with Bristol-Myers Squibb
  $60M upfront with potential of ~$975M total in option and milestone payments
- Clinical collaboration also planned combining PROSTVAC and BMS immuno-oncology candidates
- Updated long-term survival data from combination study of PROSTVAC and ipilimumab warrants further studies

IMVAMUNE
- Completed deliveries to the U.S. Strategic National Stockpile
- Phase 3 lot consistency study of liquid-frozen IMVAMUNE reported
- Pivotal Phase 2 study of freeze-dried IMVAMUNE finalized
- Manufacturing preparations for freeze-dried version on track
- Completed deliveries to the Public Health Agency of Canada

Janssen/Ebola partnership
- Initiated deliveries of MVA-BN Filo to Janssen
- Preliminary Phase 1 results presented
- Additional Phase 1 studies ongoing in US and Africa
- Next step in the planning
## CLINICAL PIPELINE

<table>
<thead>
<tr>
<th>Product</th>
<th>Indication</th>
<th>Partner</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMVANEX/ IMVAMUNE ¹-⁴</td>
<td>Smallpox</td>
<td>BARDA</td>
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<tr>
<td>IMVAMUNE freeze-dried ¹</td>
<td>Smallpox</td>
<td>BARDA</td>
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<tr>
<td>PROSTVAC</td>
<td>Prostate Cancer</td>
<td>Bristol-Myers Squibb</td>
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<tr>
<td>PROSTVAC + enzalutamide</td>
<td>Prostate Cancer</td>
<td>NCI</td>
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<tr>
<td>PROSTVAC + ipilimumab</td>
<td>Prostate Cancer</td>
<td>NCI</td>
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<tr>
<td>CV-301 Bladder Combo ¹</td>
<td>Bladder Cancer</td>
<td>NCI</td>
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<tr>
<td>MVA-BN Brachyury ¹</td>
<td>Metastatic Tumors</td>
<td>NCI</td>
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<tr>
<td>MVA-BN Filo + AdVac® ¹</td>
<td>Ebola/Marburg</td>
<td>Janssen, NIH</td>
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<td>In 2015</td>
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<tr>
<td>MVA-BN RSV</td>
<td>RSV</td>
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1) Externally funded programs
2) Sold to government stockpiles
3) Approved in the European Union under the trade name IMVANEX® and in Canada under the trade name IMVAMUNE®
4) Phase 3 registration studies are ongoing in the United States
5 KEY INDEPENDENT VALUE DRIVERS

IMVAMUNE

Janssen Collaboration

VISION 2020

PROSTVAC

Commercial Vaccines

Additional Government Programs
MANUFACTURING CAPABILITIES

Fully Approved Manufacturing Facility

• Over 28mm doses of IMVAMUNE delivered, to date
• Production of 2mm doses of MVA-BN Filo underway
  • 400,000 doses already produced and delivered to Janssen

Multipurpose Facility:

• Highly scalable, fully integrated, reduces dependency on sub-contractors
• Fill/Finish established to support commercial launch of PROSTVAC
• Production of all clinical trial materials, IMVAMUNE, PROSTVAC, etc.

Expertise in poxvirus manufacturing

• Commercial partnerships in place with Janssen & BMS
  • All manufacturing retained by Bavarian Nordic.
• Modern vaccine facility meets or exceeds EU and US regulatory guidelines
• Company has developed IP and extensive know-how in the production of live poxvirus based vaccines.
SUCCESSFUL PARTNERSHIP WITH THE U.S. GOVERNMENT
CONTRACTS AWARDED TO-DATE EXCEED US$ 1BN

Developing, producing, supplying liquid-frozen IMVAMUNE®

- **RFP Freeze Dried**
  - IMVAMUNE Smallpox Vaccine
  - US$ 40m
  - BARDA

- **Expanding MVA-BN® platform**
  - **MVA-BN**
    - Ebola/Marburg
    - Early research
    - US$ 18m
    - NIH
  - **MVA-BN**
    - Marburg Vaccine
    - US$ 1m
    - NIH
  - **MVA-BN**
    - Foot-and-mouth disease
      - US$ 500k
      - DHS
  - **MVA-BN**
    - Burkholderia
    - US$ 500k
    - DOD DTRA

- **RFP Freeze Dried Expansion**
  - US$ 55m
  - BARDA

- **RFP-1**
  - IMVAMUNE Smallpox Vaccine
    - US$ 14m
    - NIH

- **RFP-2**
  - IMVAMUNE Smallpox Vaccine
    - US$ 100m
    - NIH

- **RFP-3**
  - IMVAMUNE Smallpox Vaccine
    - US$ 500m
    - BARDA

- **RFP-2 Expansion**
  - IMVAMUNE Smallpox Vaccine
    - US$ 16m
    - NIH

- **RFP-3 Expansions**
  - IMVAMUNE Smallpox Vaccine
    - US$ 49m
    - BARDA

- **Delivery contract**
  - IMVAMUNE Smallpox Vaccine
    - US$ 228m
    - BARDA
IMVAMUNE FREEZE-DRIED & LIQUID FROZEN FORMULATIONS INDUCE EQUIVALENT IMMUNE RESPONSES

Pivotal Phase II randomized, double-blind in 650 healthy vaccinia-naïve volunteers

Antibody responses induced by freeze-dried and liquid frozen formulations were equivalent

Similar data have also been generated in the various animal efficacy models

Transfer of manufacturing process to a higher capacity line will be completed in 2015
Supply of Ebola vaccine - potential expansion of agreement

License agreement - USD 45m
- Janssen obtains full commercialization rights
- BN could receive royalties outside GAVI countries

Supply agreement - USD 99m
- BN to manufacture and supply of >2 million vaccine doses

Equity investment - USD 43m
- JNJ now ~5% shareholder of BN

Additional diseases targets being explored
- MVA-BN is being evaluated in three undisclosed infectious disease targets
FIRST IN HUMAN DATA FOR THE BAVARIAN NORDIC/JANSSEN EBOLA PRIME-BOOST VACCINE

• 72 healthy volunteers randomized into four groups receiving prime-boost vaccine regimen or placebo at intervals of 28 or 56 days

• An open label arm with 15 healthy volunteers is also investigating a shorter prime-boost interval of 14 days for Ad26.ZEBOV prime and MVA-BN Filo boost

• Substantial boost of responses in both regimens

Phase 2 & 3 clinical studies planned for Q2 & Q3 2015
PROSTVAC
PRIME/BOOST PSA TARGETED CANCER VACCINE

Heterologous prime/boost regimen

Vaccinia or MVA + Fowlpox

Subcutaneous administration

PSA
CEA, MUC-1
HER-2
Brachyury
Tumor antigens with epitopes enhanced for HLA binding
Prostate, lung, head&neck, bladder, colorectal, breast, ovarian and renal cancers

TRICOM (TRIpod of COstimulatory Molecules)
Enhance T cell activation in synergistic manner
Strengthen the anticancer immune response

Safe and well tolerated (11 clinical trials)
Injection site reactions and flu-like symptoms
PROSTVAC
PHASE 3 FULLY ENROLLED DECEMBER 2014

- Primary endpoint is overall survival
- Either one of the treatment arms must be superior to placebo
- Each comparison requires 534 deaths for the final analysis
- Interim analysis plan
  - Pre-specified interim data analyses will evaluate whether the trial should continue as planned or potentially be stopped early for efficacy or futility

PROSPECT
A Randomized, Double-blind, Global Phase 3 Efficacy Trial of PROSTVAC in Metastatic Castration-Resistant Prostate Cancer

1,298 patients
Enrolled at 214 sites in 15 countries
Australia, Belgium, Canada, Denmark, Estonia, France, Germany, Iceland, Israel, Netherlands, Poland, Russia, Spain, UK & US

3 study arms
- PROSTVAC + GM-CSF
- PROSTVAC
- Placebo

Phase 2 results:
Demonstrated hazard ratio 0.56 = 44% reduction in risk of death

SPA terms for Phase 3:
Required hazard ratio 0.82 or less = 18% reduction in risk of death
Global commercialization agreement on PROSTVAC

License and option agreement
• Up to USD 975 million in upfront and milestone payments

Supply contract
• Bavarian Nordic to manufacture PROSTVAC

Clinical collaboration agreement
• Explore combinations of PROSTVAC and BMS’ oncology assets
COMBINATION RATIONALE
POXVIRUS-BASED IMMUNOTHERAPY

BN Poxvirus-Based Immunotherapy

Other Anti-cancer Therapy

Targeted Therapies

Immune Checkpoint Inhibitors

Radiation Therapy

Combination Benefits

- Enhance tumor immunogenicity
- Significant synergy of therapeutic benefit
- Accelerate timing to anticancer immune response
- Long duration of anticancer response post-therapy
- Minimal-to-no added side effects from immunotherapy
- Potential for dose reduction of systemic anticancer therapy
PROSTVAC PLUS IPILIMUMAB COMBINATION: IMPACT ON MEDIAN OVERALL SURVIVAL

PROSTVAC Phase 2 Study

PROSTVAC + Ipilimumab NCI Phase 1 Study

Patients in 10mg/kg dose cohort (N=15) reported 37.2 months median overall survival

~20% of 10mg/kg patients remain alive at 80 months


Gulley J, NCI.
## OTHER ONGOING PROSTVAC STUDIES

### NCI-SPONSORED

<table>
<thead>
<tr>
<th>Indication</th>
<th>Study design</th>
<th>Key endpoints</th>
<th>ClinicalTrials.gov ID</th>
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<tbody>
<tr>
<td><strong>PROSTVAC</strong></td>
<td></td>
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<tr>
<td>Phase 2 N=34</td>
<td>Non-metastatic castration sensitive prostate cancer</td>
<td>PROSTVAC + enzalutamide vs enzalutamide alone</td>
<td>NCT01875250</td>
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<td></td>
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<td>Decrease in tumor re-growth rate (PSA kinetics) after 3 months of enzalutamide</td>
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<tr>
<td><strong>PROSTVAC</strong></td>
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<tr>
<td>Phase 2 N=76</td>
<td>Metastatic castration sensitive prostate cancer</td>
<td>PROSTVAC + enzalutamide vs enzalutamide alone</td>
<td>NCT01867333</td>
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<tr>
<td></td>
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<td>Time to progression</td>
<td></td>
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<tr>
<td><strong>PROSTVAC</strong></td>
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<tr>
<td>Phase 2 N=27</td>
<td>Patients undergoing treatment with radical prostatectomy</td>
<td>PROSTVAC as neoadjuvant therapy</td>
<td>NCT02153918</td>
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<td>Effect on immune cells (measured by CD4 and CD8 cell infiltrate response) in the prostate</td>
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<tr>
<td><strong>PROSTVAC</strong></td>
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<tr>
<td>Phase N=62</td>
<td>Non-metastatic prostate cancer</td>
<td>PROSTVAC + flutamide vs flutamide alone</td>
<td>NCT00450463</td>
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<tr>
<td></td>
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<td>Time to treatment failure</td>
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</table>
CV-301

Tricom (TRIad of COstimulatory Molecules)

- Enhance T cell activation in synergistic manner
- Strengthen the anticancer immune response

Vaccinia or MVA + Fowlpox

Heterologous prime/boost regimen

Subcutaneous administration

PSA, CEA, MUC-1, HER-2, Brachyury

Tumor antigens with epitopes enhanced for HLA binding

Prostate, lung, head & neck, bladder, colorectal, breast, ovarian and renal cancers

Safe and well tolerated (6 clinical trials)

Injection site reactions and flu-like symptoms

Injection site reactions
PD-L1 EXPRESSION IS PROGNOSTIC FOR OUTCOME FOLLOWING ANTI-PD1 THERAPY OF NSCLC


![Chart showing prevalence and response rate by PD-L1 proportion score quartiles.]

Prevalence of PD-L1 positivity and objective response rate by quartiles of PD-L1 proportion score in patients whose samples were evaluable, regardless of the interval between cutting and staining. The prevalence and ORR in treated patients are calculated in those who had measurable disease per RECIST v1.1 by central review at baseline. The error bars for ORR represent the 95% CIs.
T CELL INFILTRATION & UPREGULATION OF PD-L1

- PD-L1
- CD3

Control

MVA-BN-HER2

Tissue harvest: day 16

1E7 Inf. U MVA-BN-HER2 s.c. on day 1 and 15
CV-301
IMMUNOTHERAPY CANDIDATE FOR MULTIPLE CANCERS

High unmet need remains for patients with PD-L1 low/negative tumors

- Scientific rationale for CV-301 combination:
  - Inducing antigen-specific tumor-infiltrating CD8 T cells provoke up regulation of tumor PD-L1 expression in patients
  - Combination CV-301 + PD blockade therapy more likely to achieve efficacy in patients with PD-L1 low/negative tumors
  - CV-301 is believed to convert non-expressing PD-L1 tumors in immune-responsive tumors by inducing PD-L1 expression, potentially resulting in a higher overall therapeutic response
    - Poxvirus-based immunotherapy induces high IFNγ-producing CD8 TILs
    - PD-L1 tumor expression is up-regulated in response to CD8 TILs and IFNγ
COMMERCIAL VACCINES: RSV
LARGE UNMET MEDICAL NEED: CHILDREN & ELDERLY

RSV: Respiratory Syncytial Virus
• Major cause of upper & lower respiratory tract infections in adults and children
• No approved vaccine; high unmet medical need
• Recurrent infections are common, particularly in individuals with respiratory & circulatory diseases

MVA-BN RSV vaccine candidate
• Creates a strong immune response
• Protection against both RSV subtypes (A&B) in preclinical models
• Received NIH funding (preclinical efficacy)

DEVELOPMENT STRATEGY

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
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<tbody>
<tr>
<td>Elderly + Adults at risk</td>
<td>Phase 1- Initiate Mid-Summer</td>
</tr>
<tr>
<td>Children &gt;5yrs</td>
<td>Phase 2- Initiate H2</td>
</tr>
<tr>
<td>Phase 1/2</td>
<td></td>
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</tbody>
</table>
# MVA-BN BRACHYURY
**NOVEL IMMUNOTHERAPY CANDIDATE WITH BROAD POTENTIAL**

## MVA-BN® Brachyury

<table>
<thead>
<tr>
<th>Indications</th>
<th>Development Strategy</th>
</tr>
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<tbody>
<tr>
<td>• Chordoma (ultra-orphan disease)</td>
<td>• NCI Phase 1 and Phase 2 studies</td>
</tr>
<tr>
<td>• Triple negative breast cancer</td>
<td>• NCI Phase 2 chemotherapy combination study(s)</td>
</tr>
<tr>
<td>• NSCLC</td>
<td>• NCI erlotinib combination study(s)</td>
</tr>
<tr>
<td>• Multiple solid tumors</td>
<td>• NCI and BN immune checkpoint inhibitor combinations</td>
</tr>
</tbody>
</table>

### Rationale
- Brachyury highly expressed and mechanistic in chordoma
- Responses observed with yeast brachyury vaccine
- Synergism with brachyury vaccines and chemo/radiation and checkpoint inhibitors

**Brachyury a driver of TNBC biology in genomic studies**

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**Fernando…Palena. J Clin Invest. 2010; 120:533-44.**

**Ben-Hamo R et al. Bioinformatics 2014;30:2399-2405**
VISION 2020

**PROSTVAC**
- Target enrollment reached, data maturing, partnership in place, BLA/manufacturing prep begins
- Approved & partnered Data on checkpoint inhibitors & anti-androgen combinations

**IMVAMUNE**
- IMVANEX approved EU/Canada
- IMVAMUNE/LF US Phase 3
- IMVAMUNE/FD Phase 2 completed
- IMVAMUNE/IMVANEX Approved in US/EU/Canada
- FD acquisitions in US

**Janssen Collaboration**
- Clinical trials initiating w/Janssen 2m doses of Ebola vaccine in 2015
- MVA-BN Filo approved Expansion of collaboration in 3 commercial targets

**Commercial Vaccines**
- Preparing RSV Phase 1 initiation H1 2015
- RSV in Phase III (Phase 2 POC) CV-301 + PD1 combination Phase 2 POC (lung + 2 add. indications)
- 2nd ID candidate in Phase II

**Additional Government Programs**
- Ongoing funded collaboration with NIH, BARDA, DOD, DHS, NCI
- Brachyury Phase 2 data
- Continued expansion of platform opportunities
## FINANCIAL OUTLOOK

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
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<tbody>
<tr>
<td>Revenue</td>
<td>DKK 1,000m</td>
</tr>
<tr>
<td>EBIT</td>
<td>DKK 0m</td>
</tr>
<tr>
<td>Cash preparedness at year-end</td>
<td>DKK 1,450m *</td>
</tr>
</tbody>
</table>

* Upgraded from DKK 1,100m after EIB loan in May 2015

### Assumptions:

Deliver and revenue recognize bulk material totaling approximately 2 million doses of MVA-BN Filo to Janssen and 0.3 million doses of IMVAMUNE to the U.S. and Canada.

Total **R&D costs of DKK 600 million**, which include approximately DKK 100 million in contract expenses (stated under production costs in the P&L statement) as well as DKK 25 million capitalized in the balance sheet.

All numbers are approximate.
Manufacture and deliver **MVA-BN Filo** (Ebola/Marburg) vaccine; targeting 2 million doses (2015)

Initiate Phase 2 study of **MVA-BN Filo + AdVac®** (Ebola)

Potential expanded collaboration with **Janssen** on additional infectious disease targets

Investigational New Drug submission for **MVA-BN RSV** followed by initiation of Phase 1 study (H1, 2015)

Advance clinical studies exploring the therapeutic potential of **PROSTVAC** with checkpoint inhibitors in collaboration with **BMS**

Secure **IMVANEX/IMVAMUNE** orders from rest of world

Interim analyses of **PROSTVAC**
THE FUTURE OF VACCINES

JUNE 2015