Forward looking statements

• This presentation material may contain information which is forward-looking and involves risks and uncertainties that could cause actual results to differ materially from those reflected in the forward-looking statements. One can identify these forward-looking statements by use of words such as "strategy," "expects," "plans," "anticipates," "believes," "will," "continues," "estimates," "intends," "projects," "goals," "targets" and other words of similar meaning. These risks and uncertainties include, without limitation, risks associated with the inherent uncertainty of pharmaceutical research, product development, clinical research, seeking regulatory approval and product commercialization, as well as the impact of competitive products, patents, product liability and third-party reimbursement risks associated with the pharmaceutical industry, and the other risks and uncertainties.

• Product development involves a high degree of risk. Only a small number of research and development programs result in the commercialization of a product. Success in preclinical and early clinical trials does not ensure that later stage or large scale clinical trials will be successful. Many important factors affect Oncolys BioPharma’s ability to successfully develop and commercialize drugs, including the ability to secure necessary funding, to obtain and maintain necessary patents and licenses, to demonstrate safety and/or efficacy of drug candidates at each stage of the clinical trial process, to overcome technical hurdles that may arise, to meet applicable regulatory standards, to receive required regulatory approvals, to be capable of producing drug candidates in commercial quantities at reasonable costs, to compete successfully against other products and to market products successfully. There can be no assurance Oncolys BioPharma will be successful in its efforts to develop and commercialize new products.

• No guarantee is made as to the accuracy, completeness or timeliness of any information, projections or opinions contained in this presentation material or upon which any such projections or opinions have been based. The information contained in this presentation material is compiled for information purpose only and does not constitute an offer or solicitation to purchase or sell any of the securities in this presentation material.

• This presentation material is a summary translation of the original published in Japanese. In case of any discrepancy, the Japanese original shall prevail.
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1. Financial results and future outlook
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3. TelomeScan
4. OBP-AI-004
5. Zika vaccine
Our pipeline: oncolytic virotherapy platform

Early detection

Regional treatment

Prognosis follow-up

Systemic treatment

Oncolytic virotherapy platform

OBP-702

OBP-405

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### Financial year ending December 2017 full year forecast

<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
<th>OP</th>
<th>CP</th>
<th>NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forecast FY 2017</td>
<td>200</td>
<td>△1,400</td>
<td>△1,400</td>
<td>△1,400</td>
</tr>
<tr>
<td>Results FY 2016</td>
<td>178</td>
<td>△861</td>
<td>△864</td>
<td>△931</td>
</tr>
</tbody>
</table>

- **Sales**: License fee and sales of virus
- **Loss**: Investment in R&D and increase in patent-related costs (JPY 0.9bn) foreign currency fluctuation risk (1 USD=JPY112)
### First half of FY2017: earnings results

<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
<th>OP</th>
<th>CP</th>
<th>NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2017 First Half</td>
<td>19</td>
<td>△509</td>
<td>△517</td>
<td>△518</td>
</tr>
<tr>
<td>FY2016 First Half</td>
<td>44</td>
<td>△410</td>
<td>△416</td>
<td>△417</td>
</tr>
<tr>
<td>(ref.) FY 2016 full year</td>
<td>178</td>
<td>△861</td>
<td>△864</td>
<td>△931</td>
</tr>
</tbody>
</table>

**Sales**
1. License fee for TelomeScan from Wonik Cube
2. Sales of TelomeScan to Deciphera

**OP**
1. Cost reduction efforts
2. Delay in R&D activities

**Cash and equivalents**  JPY 3 bn (JPY 450 million increase yoy)

**R&D costs**  JPY 208 million (JPY 80 million increase yoy)
### First half of FY2017: achievements/status

#### Telomelysin®
**OBP-301**

1. Melanoma P2 FPI
2. Esophageal cancer P1 FPI
3. HCC P1/2 Multiple administration (Cohort 5) started
4. Solid tumors, with PD-1 P1/2 CTN submitted and a kick-off meeting held

#### TelomeScan®

**Cancer Diagnosis**

1. PTC: PMDA consultation underway for gastric/pancreatic cancer application
2. CTC: working on a project for process automatization while clinical testing services are temporary halted
3. Juntendo University’s paper on lung cancer published in journal
4. 7 conference presentations

#### OBP-801

**Epigenetic cancer treatment**

1. Solid tumor Phase 1 Cohort 3 in progress
2. Explorative study with Kyoto Prefectural University of Medicine extending the application into ophthalmologic field

#### AI-004

**Novel HBV drug**

1. Compound screening at Kagoshima University in progress

#### Others

1. Strategic investment in Washington University biotech venture specialized in development of vaccines for Zika and other emerging infectious diseases
2. Oncolys USA operations kicking-off

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MSCB financing announced in December 2016 is almost complete. About 91% executed and the total amount raised is JPY 1.3 bn (as of 31 July 2017)
<1H results vs. FY2017 full year forecasts>

SA&G
- 520 (33% of 1,600)

R&D
- 700 (29% of 1,600)

Patent Related
- 200 (17% of 1,176)

<Main factors>
- Delayed Telomelysin GMP acceptance inspection
- Delayed melanoma trial due to additional documentations for NIH
- Reduced NG Telomelysin-related patent cost
- Postponed TelomeScan-related collaboration cost
- R&D/patent cost reduction as a result of revision of strategic alliance with Medigen

<Action>
Assigning key personnel in Oncolys USA

Comparison: budget and actual expenses FY2017 (JPY in million)
1. Realizing oncolytic virotherapy
2. Developing treatments for intractable diseases

For “Good” medicine
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Telomelysin: oncolytic virotherapy

Normal cell
(Telomerase activity –)
No replication
No cytophathy

Cancer cell
(Telomerase activity +)
Replication of Telomelysin
Induced cell death and diffusion of Telomelysin

Colorectal cancer
(15 days after administration)
Control group
Telomelysin

Lung cancer
Day 0
Day 14
Day 28
Control group
Telomelysin

Ref.) The Lancet Oncology Vol. 3 Jan. 2002
Melanoma: FPI in the US

- FPI achieved in Atlantic Cancer Center on 28 July
- Oncolys pushing ahead to speed up the enrollment of patients in 5 sites

<table>
<thead>
<tr>
<th>Investigators</th>
<th>Clinical trial sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Eric Whitman</td>
<td>Atlantic Health Systems</td>
</tr>
<tr>
<td>Dr. Robert Andtbacka</td>
<td>Huntsman Cancer Institute</td>
</tr>
<tr>
<td>Dr. Mohammed Milhem</td>
<td>University of Iowa</td>
</tr>
<tr>
<td>Dr. Sanjiv Agarwala</td>
<td>St. Luke's University Health Network Inc.</td>
</tr>
<tr>
<td>Dr. Sunil Reddy</td>
<td>Stanford University</td>
</tr>
</tbody>
</table>

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Esophageal cancer: Investigator-led clinical research

6 CR in 10 cases: interim data presented at JSGCT 2017 and JSMO 2017

Radiation therapy
5 times/week (Mon- Fri) x 6 weeks

Day 1  Day 4  Day 18  Day 32

Telomelysin®

Toshiyoshi Fujiwara, M.D., Ph.D.
Professor & Chairman
Department of Gastroenterological Surgery, Okayama University Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences

JSGCT: Japan Society of Gene and Cell Therapy
JSMO: Japanese Society of Medical Oncology

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1. FPI in Okayama University Hospital (7 July)

2. Kick-off meeting with key investigators (15 July)

Interim data from clinical research by Okayama University

<table>
<thead>
<tr>
<th>Dose</th>
<th>Case</th>
<th>Age</th>
<th>Stage</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>1x10^{10} vp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>001</td>
<td>82</td>
<td>cStage I</td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>85</td>
<td>cStage I</td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>92</td>
<td>cStage II</td>
<td>PR</td>
<td></td>
</tr>
<tr>
<td>004</td>
<td>68</td>
<td>cStage Iva</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>005*</td>
<td>79</td>
<td>cStage III</td>
<td>PD</td>
<td></td>
</tr>
<tr>
<td>006</td>
<td>88</td>
<td>cStage I</td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td>007</td>
<td>53</td>
<td>cStage II</td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td>Level 2</td>
<td>1x10^{11} vp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>001</td>
<td>89</td>
<td>cStage I</td>
<td>PR</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>75</td>
<td>cStage II</td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>85</td>
<td>cStage I</td>
<td>CR</td>
<td></td>
</tr>
</tbody>
</table>

(* Level 1 005 dropped out as the enrollment was cancelled)
1. Cohort 4 administration completed
2. Cohort 5 multiple administration ($2 \times 10^{12} \text{vp} \times 3$) started

Areas for injection are monitored by use of sonogram.

Directly injected to cancer cells
## Telomelysin: Development status

<table>
<thead>
<tr>
<th>Disease</th>
<th>Clinical Research</th>
<th>Phase 1</th>
<th>Phase 2a</th>
<th>Phase 2b</th>
<th>Phase 1/2</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esophageal cancer</td>
<td>Investigator-led clinical trial</td>
<td></td>
<td></td>
<td></td>
<td>C5 started</td>
<td></td>
</tr>
<tr>
<td>Melanoma</td>
<td></td>
<td>FPI</td>
<td></td>
<td></td>
<td>CPI combination in preparation</td>
<td></td>
</tr>
<tr>
<td>HCC</td>
<td></td>
<td>With radiation</td>
<td>10 patients enrolled (C3 started)</td>
<td></td>
<td>CPI combination under consideration</td>
<td></td>
</tr>
</tbody>
</table>
Jiangsu Hengrui Medicine (江蘇恒瑞医药股份有限公司)
Sales: approx. JPY180 Bn Employees: approx. 13,000 (as of 2016)

<table>
<thead>
<tr>
<th>Major pipelines related to cancer treatment</th>
<th>indications</th>
<th>Development Stage*</th>
</tr>
</thead>
<tbody>
<tr>
<td>YN-968-D1 (Apatinib) VEGFR2 inhibitor</td>
<td>Gastric cancer</td>
<td>Launched</td>
</tr>
<tr>
<td>SHR-1210 Anti-PD-1 antibody</td>
<td>Lung cancer, esophageal cancer, NPC</td>
<td>Phase 3</td>
</tr>
<tr>
<td>SHR-1258 (Pyrotinib) RTK inhibitor</td>
<td>HER2 +ve metastatic breast cancer</td>
<td>Phase 3</td>
</tr>
<tr>
<td>SHR-1020 (Famitinib) RTK inhibitor</td>
<td>CRC, lung cancer</td>
<td>Phase 3</td>
</tr>
<tr>
<td>HTI-1403 RTK inhibitor</td>
<td>RTK +ve cancer</td>
<td>IND</td>
</tr>
<tr>
<td>HTI-1316 Anti-PD-L1 antibody</td>
<td>PD-L1 +ve advanced tumor</td>
<td>IND</td>
</tr>
</tbody>
</table>

*The most advanced development stage regardless of therapy type (mono, combination etc.) for each drug candidate is shown in this table.

Ref. ClinicalTrials.gov and other public data as of July 2017
Revised strategic alliance agreement with Medigen

Constant cost saving on Telomelysin-related R&D expenses

Listed on Taiwan Stock Exchange (3176)
HQ: Taipei, Taiwan
Representative: Stanley Chang, CEO
Number of patients: approx. 31,000 in 2014
Estimated incidence: approx. 22,000 between 2015 - 2019
(Incidence worldwide: approx. 456,000 in 2012)

Application for Sakigake Designation Scheme
Operation/chemotherapy inapplicable patients
Stage I · II
Telomelysin® + Radiation

Operation applicable
Stage I · II · III

Post-operative CPI

Telomelysin®

+ Pre-operative chemotherapy/radiation

Next Generation Telomelysin: concept (1)

- Regionally administrable/ abscopal effect
- Good tolerability
- Established GMP/QC

Next Generation Telomelysin

- Further immunity enhancing effect
- Intravenously injectable
- Stable at 4°C

<Next Generation candidates examples>

<table>
<thead>
<tr>
<th></th>
<th>Enhancer</th>
<th>New fiber</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBP-170X</td>
<td>D</td>
<td>OX-40L</td>
</tr>
<tr>
<td>OBP-170Y</td>
<td>D</td>
<td>GITRL</td>
</tr>
<tr>
<td>OBP-170Z</td>
<td>D</td>
<td>4-1BBL</td>
</tr>
</tbody>
</table>
1. A specific gene inserted in NG Telomelysin is delivered to a tumor cell.
2. Target molecule is expressed on the tumor cell surface.
3. Replication of NG Telomelysin and an adjunctively used tumor antibody induce stronger anti-tumor activities.

<table>
<thead>
<tr>
<th>Targets</th>
<th>OX40</th>
<th>GSK Pfizer AZ Roche Incyte etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GITR</td>
<td>Novartis AZ MSD Incyte etc.</td>
<td></td>
</tr>
</tbody>
</table>
Next generation Telomelysin: concept (3)

Tumor Infiltrating lymphocytes (TIL)

T-cell’s tumor killing capability gets enhanced

Infect/replicate/kill tumor cells

Primary cancer cells

Metastatic cancer cells

OX-40L

4-1BBL

Next G. Telomelysin

OX-40L

4-1BBL

4-1BB

Primary cancer cells

Metastatic cancer cells

Tumor Infiltrating lymphocytes (TIL)

OX-40

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TelomeScan is a gene-modified adenovirus which replicates and express GFP when infected to telomerase activity-positive tumor cells.
Possible application for liquid biopsies

**PTC** *gastric & pancreatic cancer*

Osaka University
Okayama University

**CTC** *Lung & prostate cancer*

Juntendo University
Application for companion diagnostics
Pancreatic cancer peritoneal washing cytology (PWC)

Pancreatic cancer case

PWC

(+) TelomeScan

(+) Peritoneal and liver metastases possibility

(-) Regional recurrence possibility

⇒ Intraperitoneal chemotherapy
Business development outlook

N. America in 2015

Korea in 2014

Europe and China

Corporate businesses & academic institutions

License agreement

BD activities in progress
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Hepatitis B (HBV)

- HBV is a member of the small DNA virus.
- Its DNA considered to activate tumor DNA within infected liver cells

Transmission → Chronic Hepatitis B → Cirrhosis → HCC

10% of HBV transmission leads to HCC

In the world, 350 million patients have persistent HBV infection
- Of which 70% are in Asia Pacific region
- 1.5 million patients in Japan

Ref.) Articles on “Nikkei Biotech”, Nikkei BP, 17032014, etc.
The Japan Society of Hepatology’s official guidelines for Hepatitis B treatment sets the elimination of HBs antigen (HBsAg) as a long-term goal.

- Chronic hepatic failure has an obvious risk factor associated with HCC incidence.
  - Persistent HBV infection
- HBV treatment may eliminate the risk factor and thereby reduce the cancer risk.

**No treatment available for recurring HBV after the existing drug administration**

(Ref.: Guidelines for Hepatitis B Treatment, Ver. 2.2., The Japan Society of Hepatology; PMDA HP)
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Investment in Washington University biotech venture

Investment agreement with Precision Virologics signed in March 2017, to enhance OBP’s infectious disease pipeline and for broader business opportunity.

- Modified adenovirus
- Camelid antibodies
- Zika DNA

Emerging infectious diseases
- Zika
- Chikungunya
- Dengue
- West Nile
- Ebola
- TB

First Refusal Right in Asia
Board member USD 500,000

Dr. David T. Curiel
Founder & CSO
Potential Market for Zika Virus Vaccines

Zika virus transmission has been identified in 84 countries and regions in total so far.*1

Women of reproductive age needs vaccination

3.38 Billion
(Total population of Zika-affected countries)

520 Million
(Population of women in their 20s-30s)

*1 World Health Organization

Ref) Yellow fever vaccine price: JPY10,000 (Japan), JPY2,500 (Thailand)
Thank you!