



TSE Code : 4585

Supplementary Documents of Business Results for First Six Months of Fiscal Year 2018

July 31, 2018



Addressing Unmet Medical Needs
UMN Pharma Inc.

- Business Results for First Six Months of FY 2018
- On the Progress of the Business Policy in FY2018
 - Capital and Business Alliance with Shionogi & Co., Ltd.
 - Development of In-House Next-Generation Bio-Pharmaceuticals
 - Other Policy Related
- Major Action from the third quarter of FY2018
 - Research and Development
 - Convertible Bond Conversion

■ Business Results for First Six Months of FY 2018

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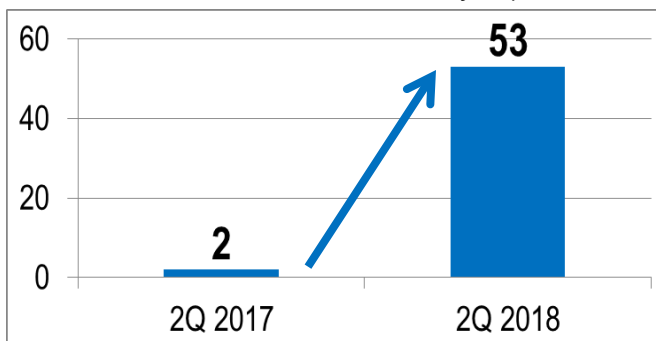
Summary of Financial Results for First Six Months of FY2018 (Non-consolidated)



- 2Q YTD Sales: Progressed as planned 2Q Net loss: Progressed within plan
- Net assets at the end of June: (28) mil. yen; Cash balance at the end of June: 1,312 mil. yen; both as planned

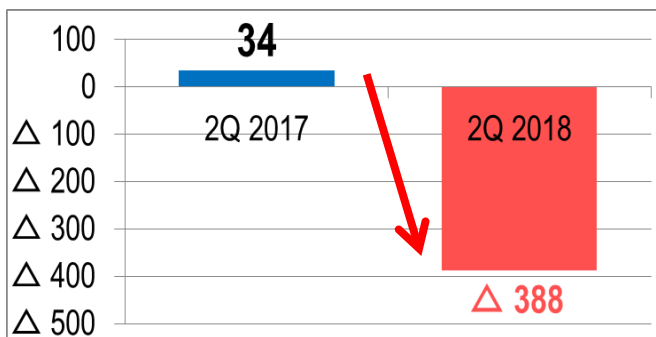
(Unit: Round down to less than one million yen)

2Q YTD Sales



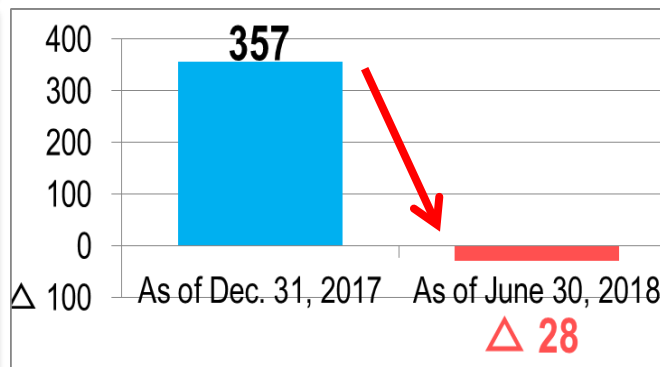
- 2Q YTD Sales progressed as planned
- Sales related to Alliance: The 1st milestone fee related to the alliance with Shionogi & Co., Ltd.
- Sales related to BCMO Business: Recorded contracted revenues related to future development candidates focused on Academia

2Q YTD Net Loss



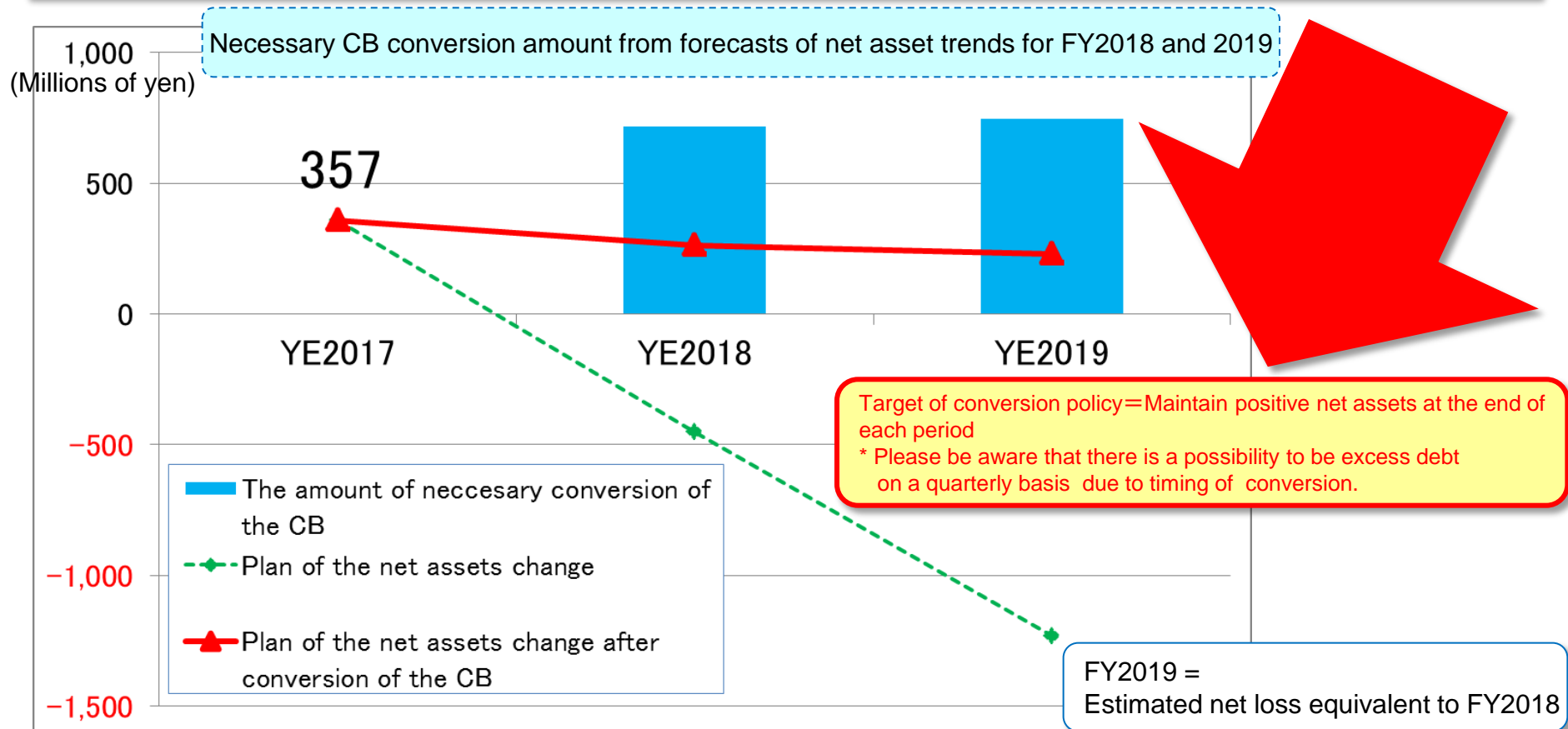
- 2Q YTD Net loss as progressed as planned by absorbed impact of impairment loss for land of Akita Plant
(Budget value of 2Q YTD net loss: 430mil.yen)
- Special factor in FY2017: Orphan grant subsidy of 336 mil. yen for UMN-0501 transferred to non-operating income

Net Asset at the end of 2Q



- Progressed as planned although net assets has become negative temporarily.
* It was described as a matter of note at P34 of the supplementary document at the end of FY2017 (see next page).
- Assume 4Q as the timing of CB conversion by capital and business alliance with Shionogi & Co., Ltd. (details P23)

- Shionogi decides conversion policy in consideration of 1st Phase progress, stock price trend, and forecasts of net asset value of FY2018 and 2019
- Consult with Shionogi on conversion policy and aim for steady CB conversion after FY2018, in order to prevent excessive debt situation



Non-consolidated Financial Results for 2Q in FY2018 vs Financial Forecast in FY2018



- Sales: Progressed as planned at 2Q, and anticipate achieving the plan for the full year
- Below operating income: Made progress within the plan, as the impact of impairment loss was absorbed at the stage of net loss

| (Million of yen) | Financial Forecast for FY2018 | 2Q YTD Results for FY 2018 | Progress Rate against Full-year Forecast | Remarks |
|--|-------------------------------|----------------------------|--|---|
| Net Sales | 102 | 53 | 52.1% | <ul style="list-style-type: none"> • Achieved as planned at 2Q • Anticipate achieving full-year plan by the 2nd milestone achievement |
| Cost of Sales | - | 1 | - | |
| R&D Expenses | 657 | 234 | 35.7% | <ul style="list-style-type: none"> • Progressed within the plan against 2Q budget of 342 M yen • Assume landing in the plan at the end of FY2018 |
| General and Administrative Expenses | 249 | 122 | 49.2% | <ul style="list-style-type: none"> • Progressed within the plan against 2Q budget of 137 M yen • Assume landing in the plan at the end of FY2018 |
| Operating Income(Loss) | (803) | (305) | 38.0% | • Assume landing in the plan at the end of FY2018 |
| Ordinary Income(Loss) | (809) | (307) | 38.0% | Same as above |
| Quarterly Net Income(Loss) | (810) | (388) | 47.9% | <ul style="list-style-type: none"> • Impact of impairment loss was absorbed by cost reduction • Assume landing as planned at the end of FY2018, according to the forecast of FY2018 as disclosed on 14 Feb., 2018 |
| Quarterly Net Income(Loss) per share (Yen) | (63.31) yen | (30.34)yen | | |

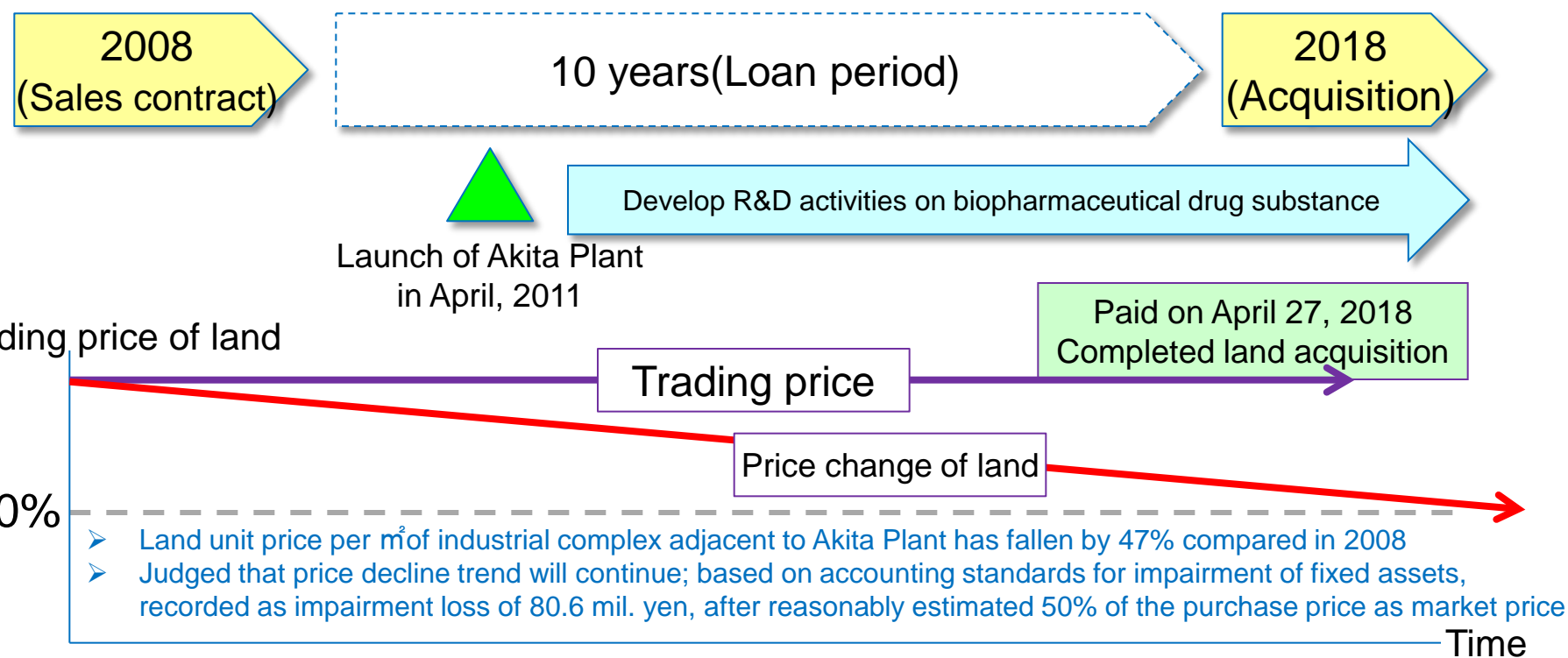
About Impairment Loss

- Paid the price and acquired the land of Akita Plant, based on sales contract signed in FY2008
- Recorded impairment loss, as neighboring land price has consistently declined since in 2008



【Sales contract scheme of the site of Akita Plant concluded with Akita prefecture on 30 April, 2008】

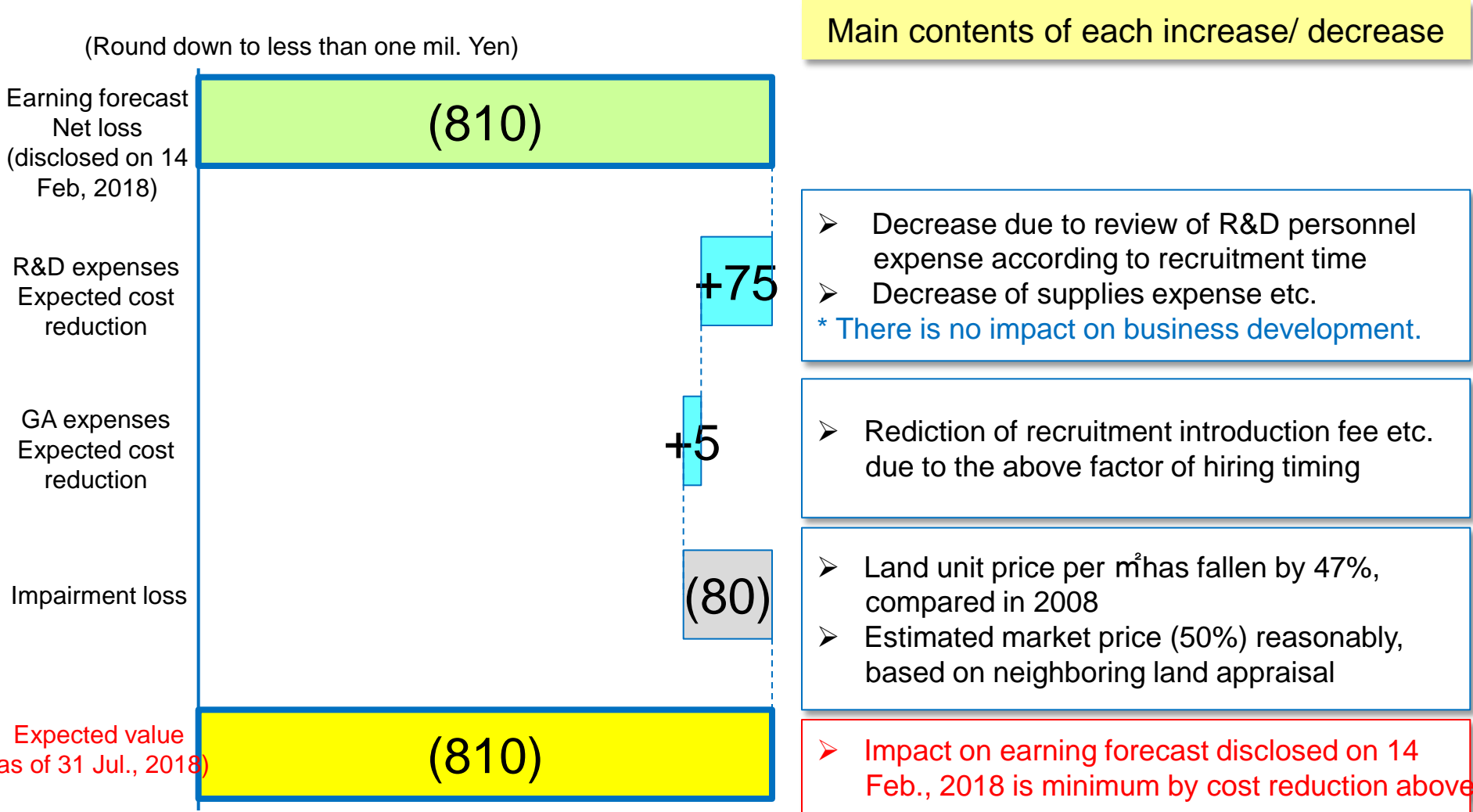
- Trading partner=Akita prefecture (Akita New City Industrial Complex, Yumoto area)
- Loan period=Maximum 10 years (until 30 April, 2018)
- Sales transaction=Obligation, by expiration date of loan period, to pay the price concluded by contract in 2008 and to acquire the land
- * There is a clause not to change trading price regardless of land price fluctuation in the contract.
- Trading price=161,212 thousand yen (appropriated by own fund)
Unit price of sales (12,340yen/m²)at the time of concluding sales contract x Land area(13,064.17m²)
- Lease fee in loan period=Calculated based on property tax related to the land





Analysis of impact on the full-year financial forecast at the ending December, 2018

- Expect to decrease 80 mil. yen of R&D and GA expenses for the full year
- Recorded impairment loss of land of 50%, however impact on earning forecast is minor by cost reduction above



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- Concentrate resources on development of core technologies and fundamental research on development candidates with Shionogi & Co., Ltd.
- Secure sales by steady achievement of milestones



Partnership 1st Phase with Shionogi & Co., Ltd.

- Steady achievement of development of core technologies along with milestone conditions (= realization of sales strategy)
- Improvement reliability of transition to 2nd Phase by promoting basic research on development candidates products
- Steady promotion of CB conversion policy

Development of In-House Pipeline of Next-Generation Bio-Pharmaceuticals

- Steady promotion of basic research on development candidates from existing in-house pipeline
- Expand the possibility of selecting development candidates through fundamental research on new candidates
- Active review and introduction of novel adjuvants and formation technology

Contract Manufacturing Business of Biopharmaceuticals etc.

- Avoid dispersal of management resources
- Accept contract business from only academia that can be candidates for future development pipeline

Enhancement of R&D Bases

- Maintenance of Yokohama laboratory and re-launch of Akita plant
- Enhancement of each site
- Strengthen R&D organization by active adoption of personnel for R&D and manufacturing

- Development of core technologies: Construction of new worldwide basic technologies
- Fundamental research on development candidates: Create optimal logical next generation vaccine for each infectious disease

development of core technologies

- Establish new technology platform for biopharmaceuticals including vaccine for preventing human infections
 - Create collaborative platform of new basic technologies that can be deployed worldwide

Fundamental research on development candidates

- Promote research, development, application, launch (product supply) of next generation logical vaccine, combined by adjuvant and drug/drug delivery technology based on established new fundamental technology
 - Development of next generation vaccines with higher efficacy and safety
 - UMN is mainly in charge of production, and Shionogi is in charge of development, application and sales.
- ※ Development candidates consists of part of existing in-house development pipelines and new development candidates targets

Partnership 1st Phase (This time)

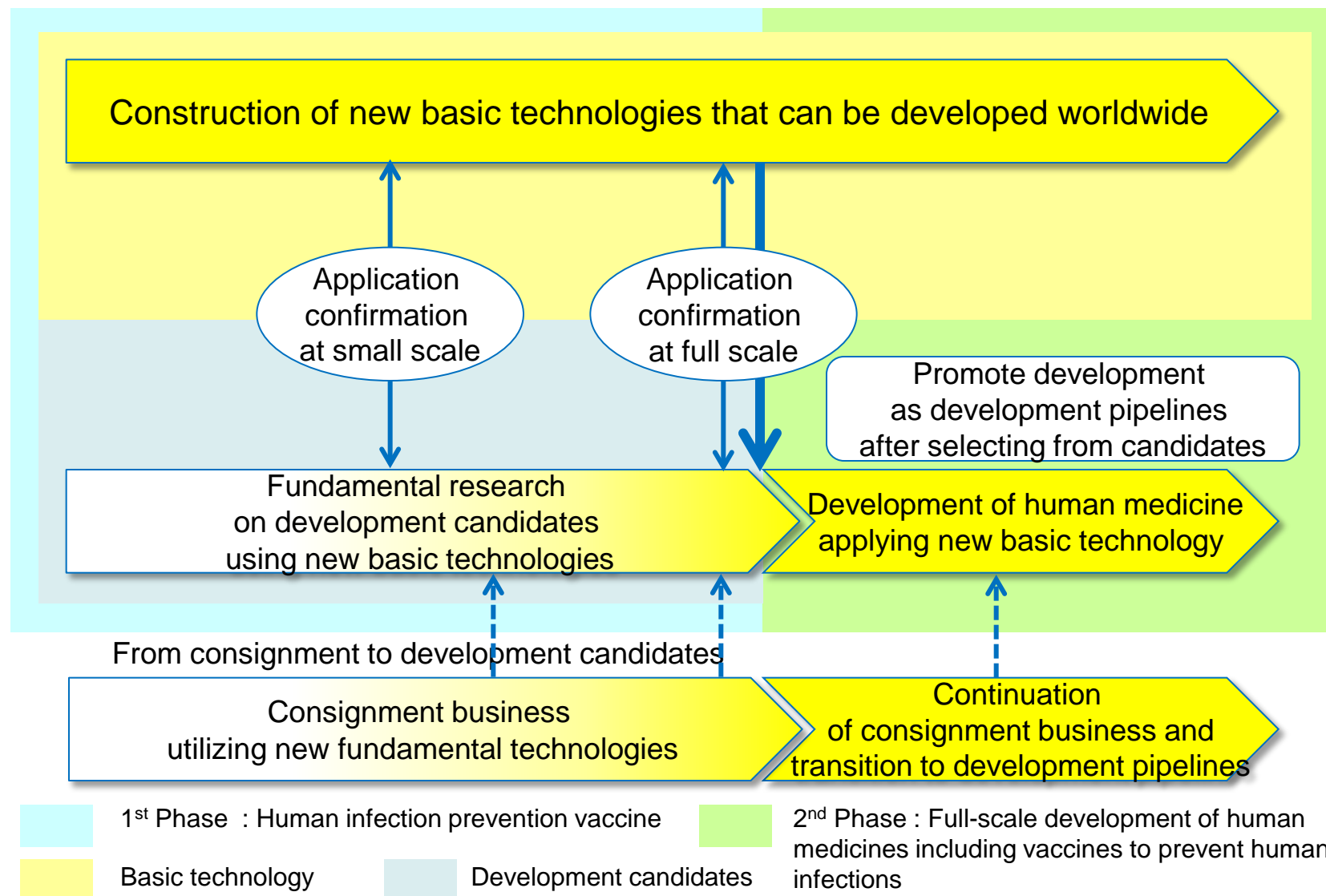
- Improvement of fundamental technologies related to vaccine drug production, and comprehensive construction including adjuvants and formulations
- In parallel promoting fundamental R&D candidates
- UMN has an obligation for establishment of basic technology
- Until 2019, accept certain milestones every six month according to the development progress
- Capital alliance (1.63 billion yen) aimed at supporting RD, capital investment, and working capital required during 1st Phase

※Secure business funds until December 2019

Partnership 2nd Phase(Schedule in FY2019)

- Select official development candidates and promote joint development, application and marketing after GLP exam
- Conclude an exclusive license agreement of official development of pipelines and marketing, and agreement of cooperation by other forms, when shifting to the 2nd phase
- Required development financing contribution scheme after the 2nd phase will be discussed later

- Development of core technologies: Construction of new worldwide basic technologies
- Fundamental research on development candidates: Create optimal logical next generation vaccine for each infectious disease



Progress status of capital and business alliance with Shionogi & Co., Ltd.at 2Q

- As scheduled, achieved 1st Milestone condition related to development of core technology on 27 May, 2018
- Basic research and selection examination of development candidates toward 2nd Phase have progressed steadily



2018

2019

After 2020

The First Phase

Development of fundamental core technology

Basic research of development candidates

Achieved

Sales
by achieving
milestones

Milestone conditions
set semiannually

The Second Phase

Examination of target product profile etc.
based on fundamental research results
of development candidates

Selection of pipeline
from development candidates,
and partnership talks on Phase 2
(Contract scheme,
and additional funding procurement scheme etc.)

**Target selected
development candidates
to full-scale development
as development pipeline**

- Development of core technologies: Construction of new worldwide basic technologies
- Fundamental research on development candidates: Create optimal logical next generation vaccine for each infectious disease

Development of Core Technologies

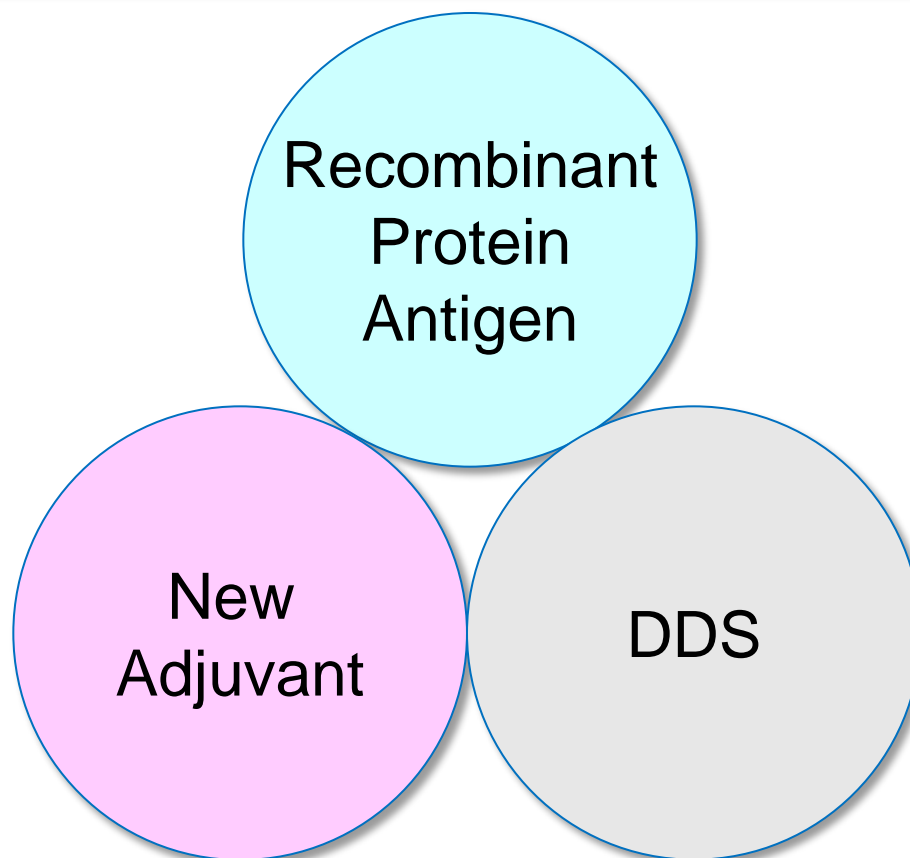
- Development of a set of core technologies required for development and supply of biopharmaceuticals including vaccines worldwide
 - Respond to regulations in each country for approval
 - Competitive with productivity and cost
- Development of our own core technology reflecting latest knowledge and technology
- Apply established fundamental technology to development candidates sequentially

Fundamental Research on Development Candidates

- Creation of logical vaccines
 - Create vaccines that induce optimal immune responses for each target infection by combining of adjuvant and drug delivery technology
- Create more effective next-generation vaccines
 - Universal Vaccine
 - Vaccines to prevent infection, that are not prevention of severity
- Includes novel vaccines for infectious diseases in which vaccine market has not been introduced

- Integrate new adjuvant and drug delivery system with recombinant protein antigen from our technology

Concept of Logical Vaccine



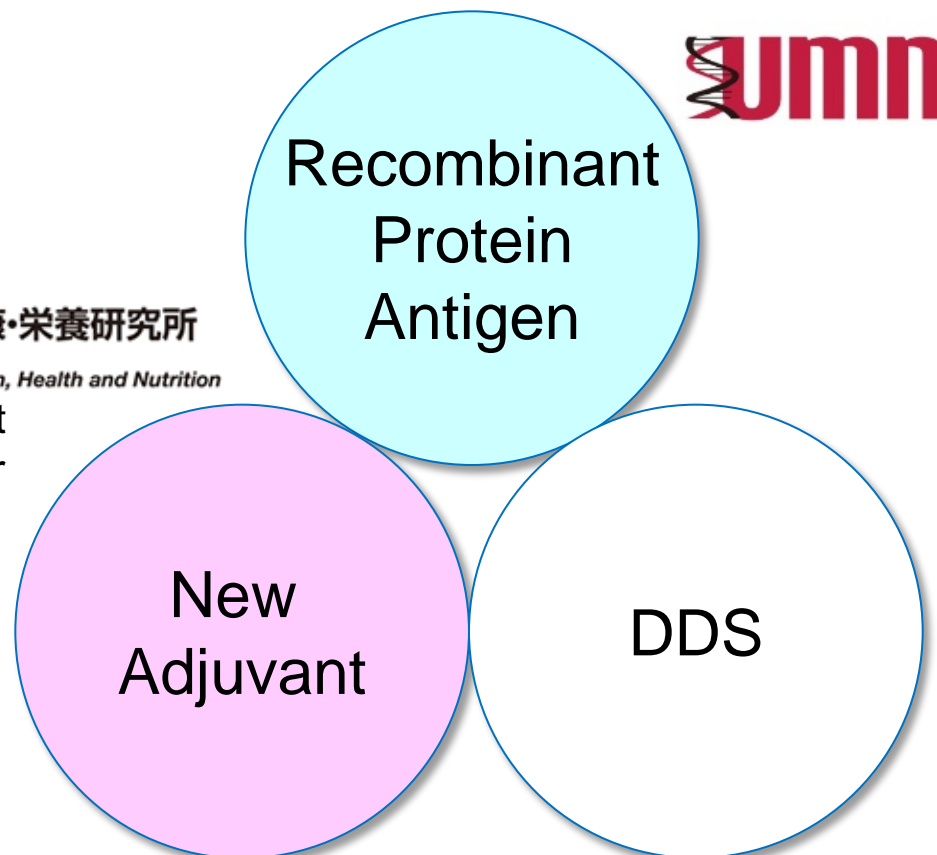
New vaccine with high efficacy and high productivity created due to integration of above technologies

【NIBIOHN】

- Provide new adjuvant seeds
- Evaluate the results of assay by UMN

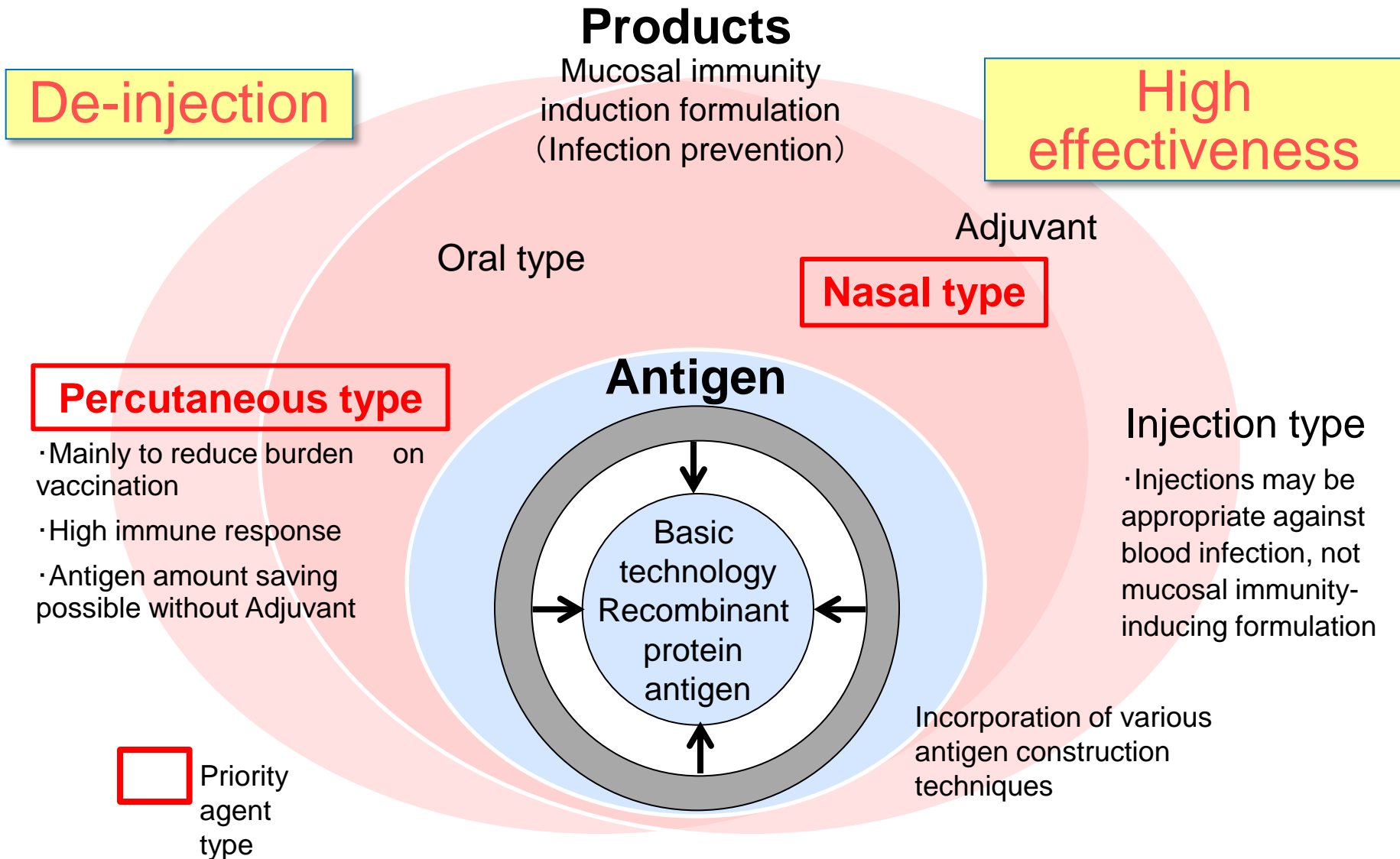
【UMN Pharma】

- Make recombinant vaccine with new adjuvants
 - Verify adjuvant effects for tests by animal
 - Hold exclusivity toward commercialization

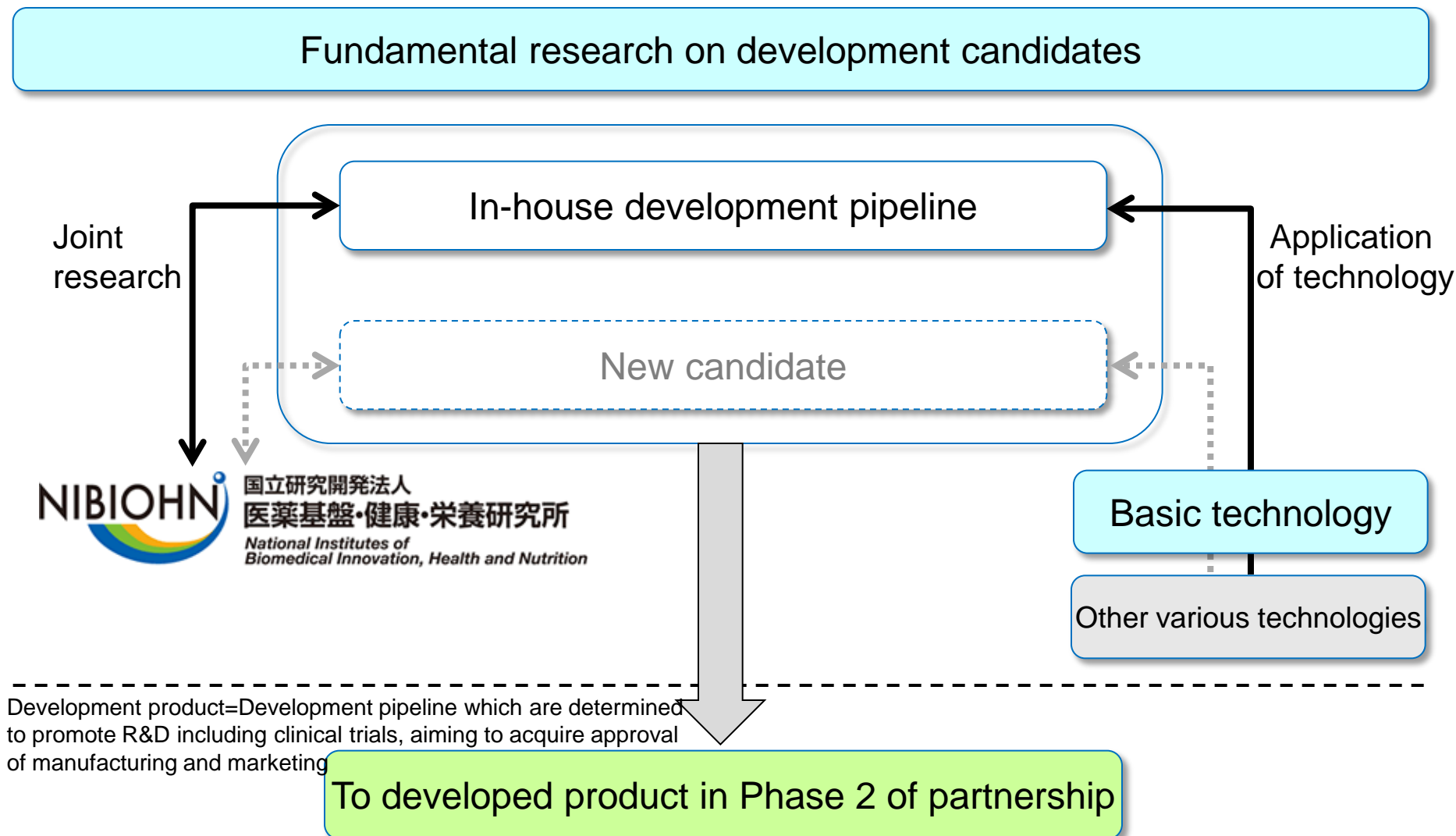


*Under review
various technology

Target of Next Generation Logical Vaccine



- Create by joint research with NIBIOHN and application of various technologies
- Examine multiple new candidates in addition to in-house development pipeline



- Certain results with multiple development pipelines - - > Transition to development candidate products
- Expansion of joint research with NIBIOHN, and discussion with Shionogi for development and commercialization



Fundamental research on development candidates

- Certain results in creating of next generation logical vaccine by multiple in-house development pipelines
 - Adjuvants and formations/ Realized high effectiveness and productivity with combination of drug delivery technology
- Implementing application of fundamental core technology to in-house developed pipelines sequentially
- Planning to develop multiple new candidates products
- Response in progress to intellectual property related assuming commercialization

Joint research with NIBIOHN

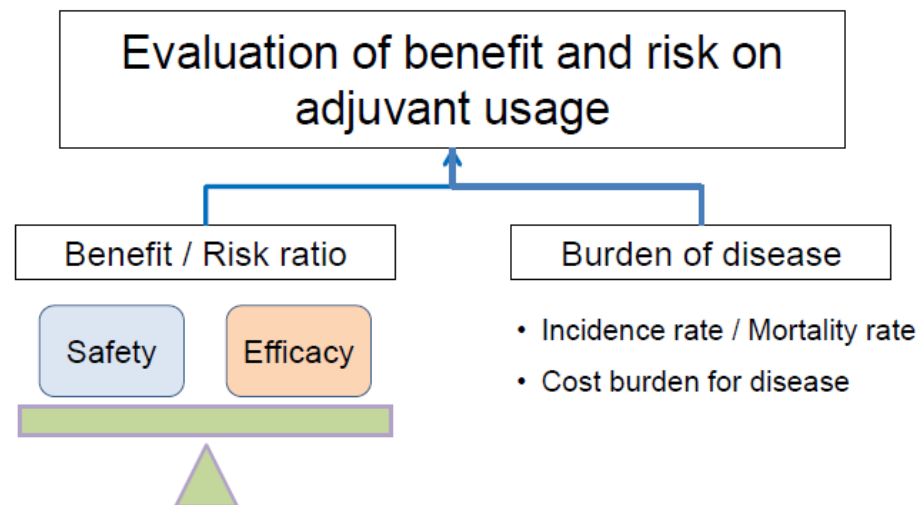
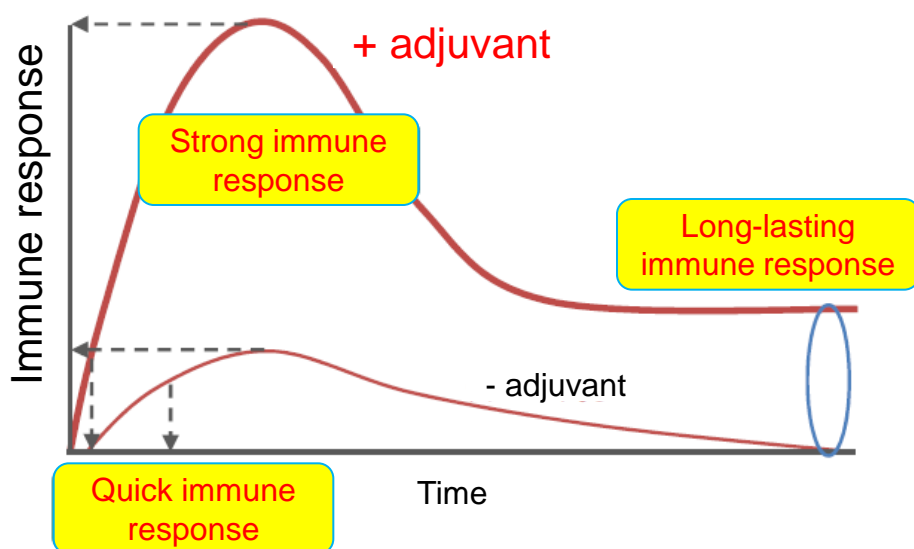
- Expanding of objects (antigen) of joint research dated 1 Dec., 2017, and extending of period dated June 22, 2018
- Applied new adjuvant of NIBIOHN to in-house developed pipeline, and acquired data on immune response
- Future plans
 - Expand scope of joint research when developing new candidates as development candidates
 - Examine jointly various efficacy and safety evaluation methods for development and commercialization of new vaccine

- Chemicals enhancing the effectiveness of vaccine
- As an origin, “adjuvare” in Latin meaning “help”

- How to choose optimal adjuvant is along a good path by more deeply understanding immune response
- Adding adjuvant is an important option to vaccines against emerging infectious diseases as well as vaccines against RNA virus with easy mutation
- Adjuvant is a key to research and development of vaccine beyond infectious diseases

Adjuvant as a key to create vaccine holding both high efficacy and high productivity

Effect of adjuvant



Progress status in strengthening functions at R&D sites

- Yokohama Lab.: Mainly focusing on basic research on development candidates for Phase 2
- Akita Plant: Completed re-launch to achieve consecutive milestones, and continue maintenance of GMP system

Reinforcement of R&D sites

Yokohama Lab.:
Maintenance
of experimental
environment

Akita Plant: Re-launch

- Completed maintenance to promote multiple projects at Yokohama Lab.
- Completed re-launch of equipment at Akita Plant

Enhancement
at each site

- Yokohama Lab. and Akita Lab.:
 - Promoting basic R&D of development candidates
- Akita Plant:
 - Promoting R&D related to fundamental core technology
 - Establishing structure for GMP operation
 - *Strengthening effective GMP system through supported by Shionogi

Strengthen
R&D organization
by positive adoption
of human resources
of R&D/Manufacturing

- At 2Q= Achieved reinforcement of R&D and production related
 - Total of 26 members, with an increase of 10

| Number of R&D personnel | Jan 2018 | Aug 2018 (Plan) | Difference |
|----------------------------|-----------|--------------------|------------|
| Yokohama Lab. | 3 | 6 | 3 |
| Akita Lab. | 4 | 4 | 0 |
| Akita Plant | 9 | 16 | 7 |
| TOTAL | 16 | 26 | 10 |

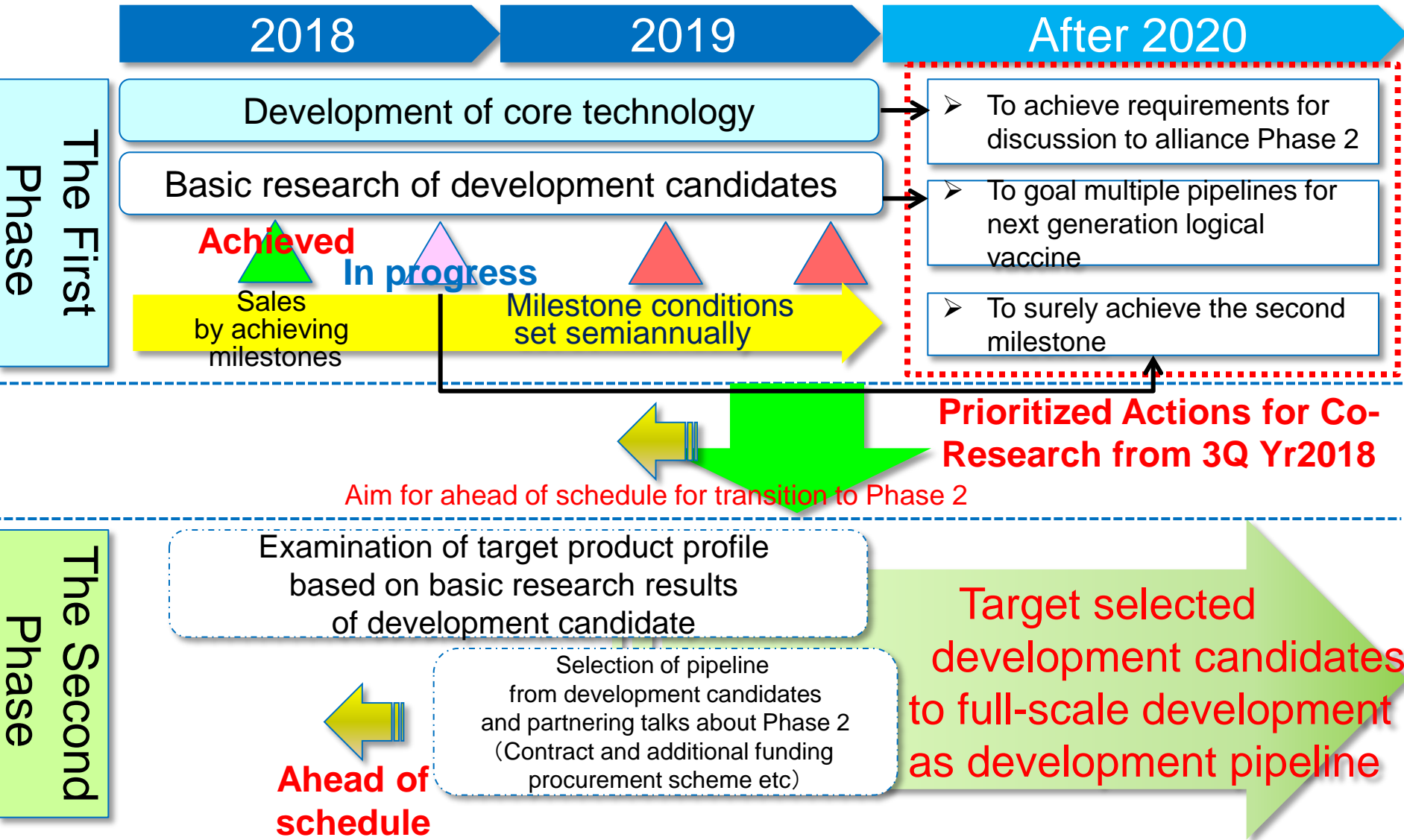
- Secure manufacturing-related core personnel at Akita Plant

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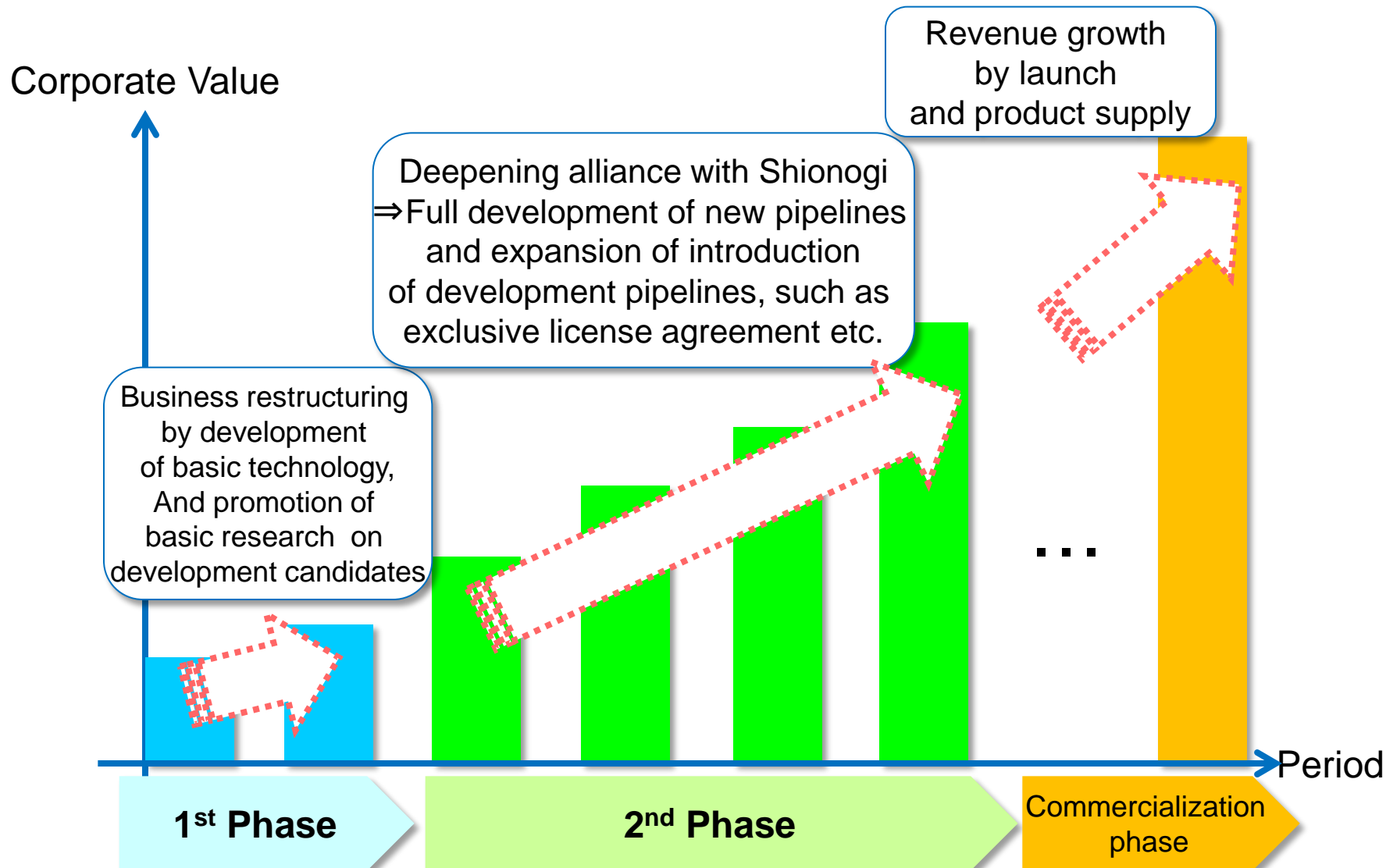
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Prospects of Phase 1 and transition to Phase 2

- Progressed as planned for the 2nd milestone achievement in the 1st phase
- Aim for ahead of schedule for transition to 2nd Phase with basic research on development candidates



- Aim for transition to 2nd Phase by focusing on alliance with Shionogi until FY2019
- Aim for improvement of corporate value through full-scale new development pipelines after FY2020



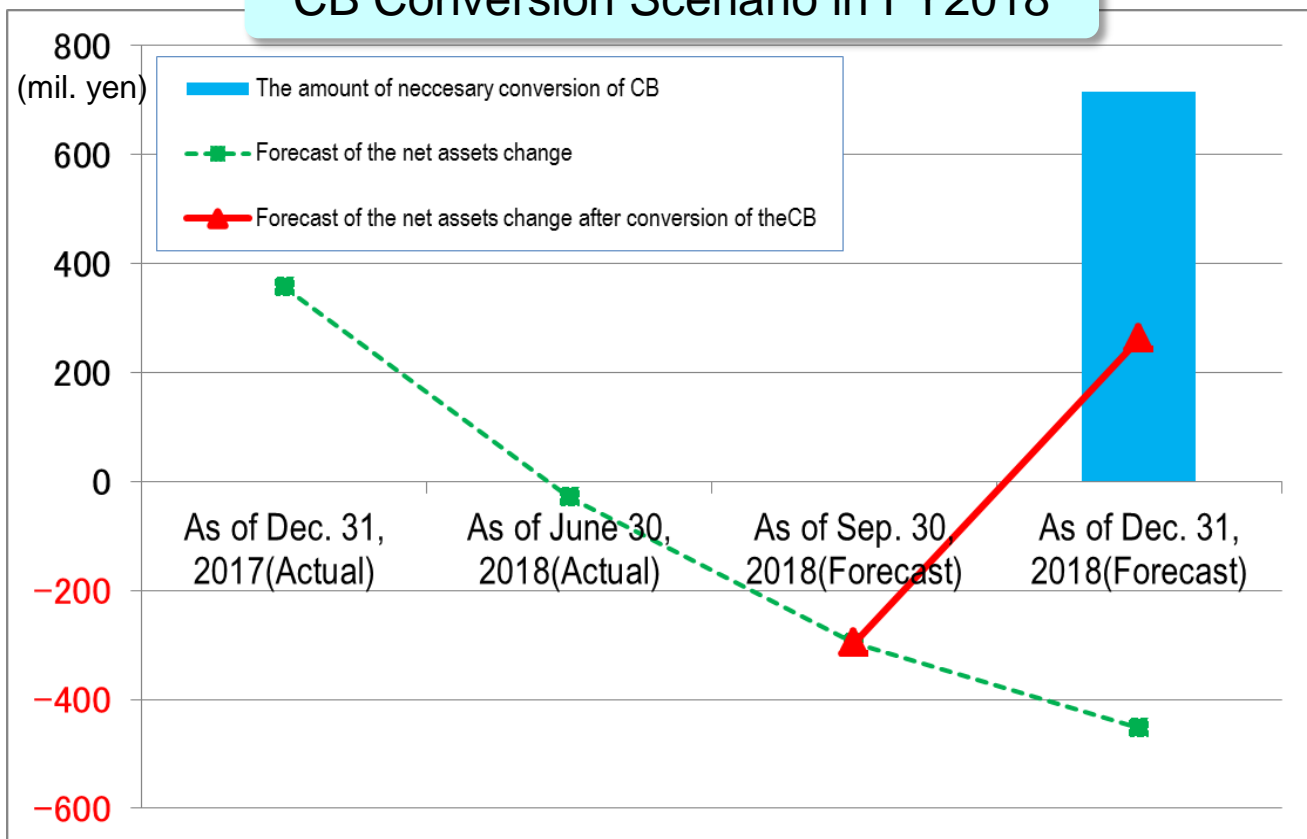
Major Actions for 3Q and beyond in FY2018, conversion of CB



- The 2nd milestone related R&D progress and stock price, 298 yen as conversion price are critical
- Assume 4Q as a timing of CB conversion

- Not assume CB conversion until the end of 3Q, since the timing of the confirming 2nd milestone achievement will be within 4Q
- Assume that negative net assets will continue even at the end of 3Q
- Expect that Shionogi will decide and implement conversion policy within 4Q

CB Conversion Scenario in FY2018



【Concerning assumed conversion scale】
There is no change, since it made progress within the range announced of February 14, 2018. (ref. to P5 of this document).

**As long as alliance with Shionogi & Co., Ltd. has been maintained, without prior consent of the Company, in accordance with the clause, Shionogi cannot transfer the acquired shares.

- Raised 1.639 billion yen by new shares and CB (Total 5,500K shares, Dilution ratio 31.08%)
- Appropriation for R&D, capital investment and operating capital until the end of 2019

New shares

Common stock : 600K shares
Issue price : 298 yen
Volume of issuance : 179 million yen

1st Unsecured Convertible Bond with Stock Acquisition Rights (CB)

Volume of issuance : 1.46 billion yen (Stock acquisition right part 4,900K shares)
Conversion price : 298 yen
Interest rate on corporate bonds : 0.22%
Maturity redemption date : November 15, 2021
(No advance redemption clause excluding grounds for delisting)

【Other major matters】

- Shionogi cannot transfer acquired shares without prior consent by alliance agreement.
- UMN cannot raise capital financing without prior consent of Shionogi.
- UMN will issue and allocate new CB to Shionogi under the most recent stock price condition when converting CB cannot be executed due to stock price on assumed timing.

Points on future CB conversion :

- Shionogi decides conversion policy based on the state of development progress in 1st Phase and the expected net asset status at the end of the FY.
- Important points in order to prevent the debt-excess situation again in FY:
1) Achievements from steady progress in development, 2) Stock price status

(The necessary CB conversion amount for FY2018 and FY2019 are described later)

Finally - We are re-challenging -



We hope to contribute to health of people around the world by bringing innovative biopharmaceuticals to the world.

We hope to reward stakeholders through the realization of commercialization, by making full use of our accumulated technologies, know-how, and past failures.



Re-challenge for commercialization of biopharmaceuticals with centering on partnership with Shionogi & Co., Ltd.

Management
resource policy

People: Already secured necessary personnel according to plan, focusing on improving the quality through education and training

Goods: Progressed on R&D as planned, making further efforts to bring it to the 2nd phase earlier than planned

Money: While using necessary funds, continues cost reduction to unnecessary

Appendix

Financial Results for First Six Months of FY2018

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Relevant materials
related to performance forecast of FY2018,
disclosed on 14 February, 2018

Summary of Financial Results for First Six Months (2Q) of FY2018 vs 2Q of FY2017

- Revenue: Significantly increased by the first milestone revenue
- Each profit and loss stage: Operating loss improved; below ordinary PL has influence of special factor in FY2017

| (Millions of Yen) | 2Q of FY2017 - Actual - | 2Q of FY2018 - Actual - | Year-to-year comparison (rounding off mil. Yen) | | Main factors of the year-to-year difference |
|---|----------------------------|----------------------------|--|----------|---|
| Net Sales | 2 | 53 | +50 | +1721.4% | Substantial increase by the first milestone from Shionogi & Co., Ltd. |
| Cost of Sales | 1 | 1 | (0) | — | |
| R & D expenses | 193 | 234 | +40 | +21.1% | Increase by co-operation-related R&D expense with Shionogi & Co., Ltd., Experiment environment maintenance at Yokohama Lab., re-setup expense at Akita Plant, and hiring recruitment etc. |
| Other SG&A expenses | 122 | 122 | +0 | +0% | Restrained to the same level as 2Q of FY2017 due to cost reduction |
| Operating Income (Loss) | (315) | (305) | +9 | — | Loss reduction at the stage of operating profit and loss |
| Ordinary Income (Loss) | 34 | (307) | (341) | — | Remained almost flat, excluding a transfer to non-operating income of UMN-0501 Orphan Grant 336 mil. of FY2017 |
| Quarterly Net Income (Loss) | 34 | (388) | (422) | — | Recognized impairment loss, (80.6) mil.yen, at 2Q |
| Quarterly net income (Loss) per share (yen) | 2.79 | (30.34) | | | |

Balance Sheets as of June 30, 2018 vs. Dec 31, 2017



- Assets: 1,312 mil of cash and deposits as planned
- Net Assets: Within the plan, although recorded negative net asset at 2Q

| (Round down to mil. yen) | Year ended As of Dec. 31, 2017 | Six months ended As of June 30, 2018 | Difference | Remarks |
|---------------------------------|-----------------------------------|---|------------|--|
| Cash and deposits | 1,734 | 1,312 | (421) | Cash flow balance within plan |
| Other current assets | 102 | 83 | (19) | |
| Total current assets | 1,836 | 1,396 | (440) | |
| Tangible fixed assets | - | 80 | +80 | Acquired land at Akita Plant |
| Other fixed assets | 54 | 24 | (29) | Reduced due to refund of land guarantee at Akita Plant |
| Total fixed assets | 54 | 105 | +50 | |
| Total assets | 1,891 | 1,501 | (390) | |
| Current liabilities | 46 | 42 | (4) | |
| Non-current liabilities | 1,487 | 1,487 | +0 | Allocated 1,460 mil. yen of CB to Shionogi & Co., Ltd. |
| Total liabilities | 1,533 | 1,529 | (4) | |
| Capital stock & capital surplus | 613 | 613 | - | |
| Retained earnings | (256) | (644) | (388) | |
| Others | (0) | 2 | +2 | 21 st stock acquisition right related to SO |
| Total net assets | 357 | (28) | (385) | Negative net assets at the end of 2Q,(as planned) |
| Total liabilities & net assets | 1,891 | 1,501 | (390) | |

Cash Flows for the First Six Months of FY2018

- Decreased 287 mil. yen from cash flows from operating activities
- Cash & cash equivalents decreased 421 mil. yen, comparing to the end of FY2017 (within the plan)



| (Round down to mil. yen) | Six months ended As of June 31, 2018 (Actual) | Remarks |
|--|---|--|
| Cash flows operating activities | | |
| Quarterly profit (loss) before income taxes | (387) | |
| Adjustment of non-cash items, etc. | 85 | Impairment loss etc. |
| Others | 17 | |
| Subtotal | (285) | |
| Income taxes paid | (1) | |
| Net cash provided by (used in) operating activities | (287) | |
| Net cash provided by (used in) investing activities | (133) | Expenditure on land acquisition at Akita Plant, etc. |
| Net cash provided by (used in) financing activities | (0) | |
| Net increase (decrease) in cash and cash equivalents | (421) | |
| Cash & cash equivalents at beginning of period of 2Q | 1,734 | |
| Cash & cash equivalents at end of period of 2Q | 1,312 | No change in the status that necessary business funds are secured by the end of 2019 |

Disclosed on February 14, 2018; Non-consolidated Financial Forecasts for FY2018 ending Dec. 31, 2018



- Sales plan: Conservatively recorded mainly on milestone revenues related to business alliance with Shionogi & Co., Ltd.
- Operating loss: Increase against YOY because of R&D expenses related development of core technologies and assessment of candidates

| (Millions of yen) | FY2017 Actual (Non-consolidated) | Forecasts for FY2018 (Non-consolidated) | Assumptions & conditions for Financial Forecasts of FY2018 |
|----------------------------|-------------------------------------|---|---|
| Net sales | 104 | 102 | Sales due to achievement of milestone related to 1 st Phase and contracted business from academia |
| Cost of sales | 3 | - | Record cost of sales related to contracted business as R&D expenses |
| R&D expenses | 380 | 657 | Estimate expenses for R&D for core technologies and basic research of development candidates, for test manufacturing at Akita plant from the second half of FY, and for personnel |
| Other SG&A expenses | 219 | 249 | Estimate increase mainly for IP and recruitment expenses |
| Operating Income(Loss) | (498) | (803) | Estimate loss expansion due to strengthening of R&D activities with Shionogi |
| Ordinary Income(Loss) | (158) | (809) | Record bond interest and CB conversion related expenses on non-operating expenses ※FY2017=Recorded 336 Mil. yen of UMN-0501 Orphan Grant on Non-operating income |
| Net Income(Loss) | (159) | (810) | CB conversion policy becomes an important point in order to maintain the net asset value positive at the end of Dec, 2018. (CB conversion scenario is described later) |
| Net Income(Loss) per share | (12.96) | (63.31) | |

- The above forecasted figures that are based on information currently acquired, that can be determined to be reasonable and based on certain assumptions, however that are not intended to promise realization.
- There is a possibility that forecasts may differ due to various uncertain factors.

- R&D expenses : Assume increase related to collaboration with Shionogi

- Other SG&A expenses : Assume increase related mainly to human resource recruitment

| Account items (Millions of yen) | FY 2015 Actual (consolidated) | FY 2016 Actual (consolidated) | FY 2016 Actual (non-consolidated) | FY 2017 Actual (non-consolidated) | FY 201 Forecasts (non-consolidated) |
|---|-------------------------------------|-------------------------------------|---|---|---|
| Cost of sales | 52 | 39 | 51 | 3 | - |
| R&D expenses | 2,933 | 3,151 | 279 | 380 | 657 |
| Other SG&A expenses | 424 | 444 | 273 | 219 | 249 |
| SG&A expenses | 3,357 | 3,596 | 553 | 599 | 906 |
| Depreciation expenses, within the above, | *1,524 | *1,578 | 25 | -* | -* |

*including 107 of lease fee

*including 107 of lease fee

* Fixed asset acquisition exp. are expensed by lump-sum depreciation.

| | Point | Details |
|---------------------|--|---|
| R&D expenses | Re-launch of Akita plant Related to R&D, manufacturing Active recruitment | <ul style="list-style-type: none"> ➤ Estimate increase including improvement of experimental environment at Yokohama lab. and maintenance and depreciation, utility exp. related to re-launch at Akita plant ➤ Active adoption for R&D and manufacturing related personnel to strengthen R&D organization ➤ Estimate to increase expenses related to cooperation with Shionogi |
| Other SG&A expenses | Increase expenses of IP related and recruitment | <ul style="list-style-type: none"> ➤ Implemented all necessary cost reduction by the end of Dec 2017 ➤ Plan to introduce expenses of intellectual property and recruitment |

- This material and information provided in this presentation include so-called “forward-looking statements”, based on assumptions with current expectations, projection and risks. It contains uncertainty that can lead to practically different results.

- These risks and uncertainties include general domestic and international economic conditions, such as general industry and market conditions and fluctuation of interest rate and currency exchange.

- Even if there are new information and events in the future, the Company is not obligated to update or modify “forward-looking statements” included in this announcement.