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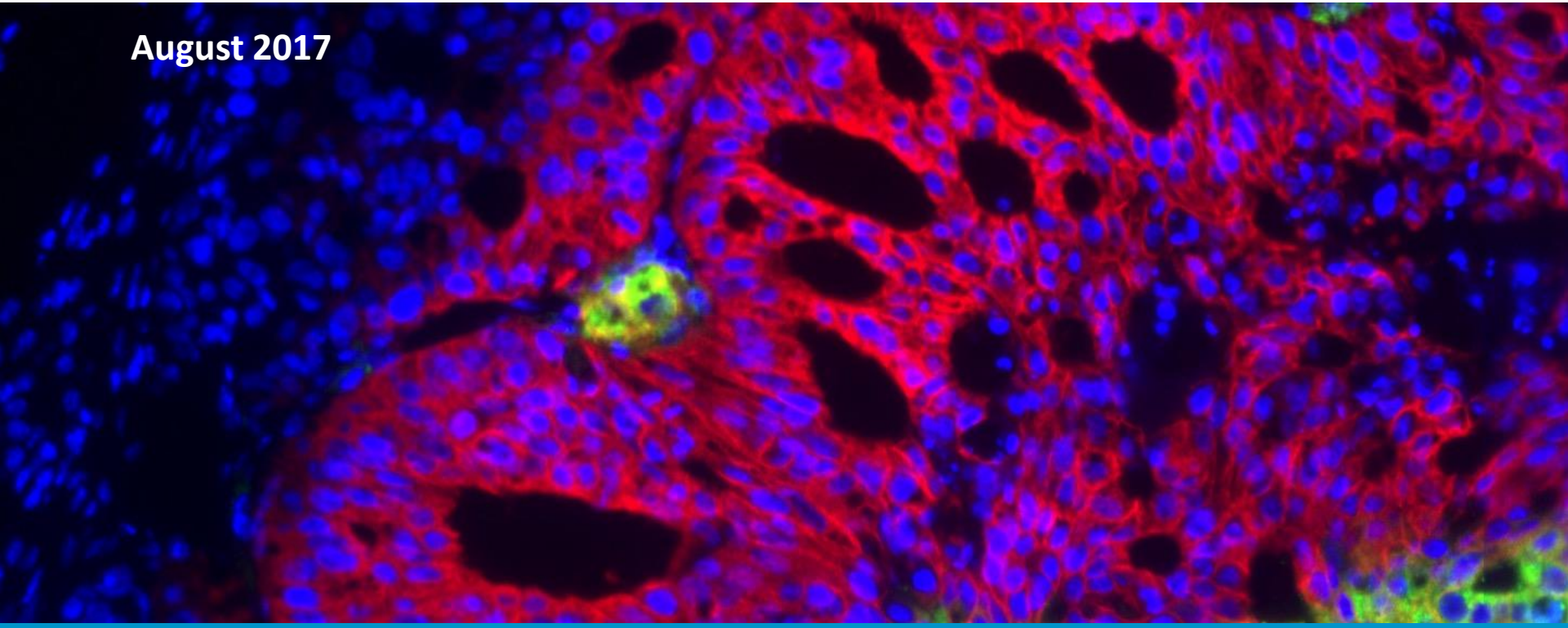
Clinical Development Overview

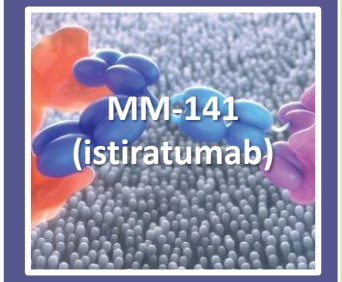
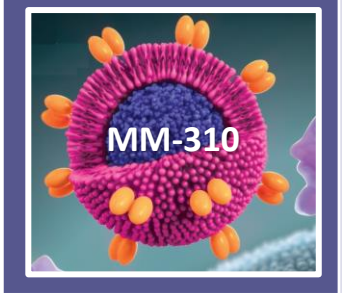


August 2017

FORWARD LOOKING STATEMENTS

To the extent that statements contained in this presentation are not descriptions of historical facts, they are forward-looking statements reflecting the current beliefs and expectations of management made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, as amended. Forward-looking statements include any statements about Merrimack's strategy, future operations, future financial position, future revenues and future expectations and plans and prospects for Merrimack, and any other statements containing the words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "target," "potential," "will," "would," "could," "should," "continue" and similar expressions. In this presentation, Merrimack's forward-looking statements include, among others, statements about the potential for Merrimack's product candidates to provide clinical benefit, the initiation of new clinical trials and the timing of availability of clinical trial data. Such forward-looking statements involve substantial risks and uncertainties that could cause Merrimack's clinical development programs, future results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, the uncertainties inherent in the initiation of future clinical trials, availability of data from ongoing clinical trials, expectations for regulatory approvals, development progress of Merrimack's companion diagnostics, availability of funding sufficient for Merrimack's foreseeable and unforeseeable operating expenses and capital expenditure requirements, and other matters that could affect the availability or commercial potential of Merrimack's product candidates or companion diagnostics. Merrimack undertakes no obligation to update or revise any forward-looking statements. Forward-looking statements should not be relied upon as representing Merrimack's views as of any date subsequent to the date hereof. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to Merrimack's business in general, see the "Risk Factors" section of Merrimack's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission (SEC) on August 9, 2017 and other reports Merrimack files with the SEC.

CLINICAL PIPELINE

CANDIDATE	DESIGN	TARGET	PC	PHASE 1	PHASE 2	PHASE 3	NEXT ANTICIPATED MILESTONE
	Monoclonal antibody	HER3 (ErbB3)	HRG+ 2-3L non-small cell lung cancer				Phase 2 randomized data in 2H 2018
			HRG+, HR+, HER2- 2-3L metastatic breast cancer				Initiate study in 2017
	Bispecific tetravalent monoclonal antibody	IGF-1R & HER3 (ErbB3)	IGF-1+ front-line metastatic pancreatic cancer				Phase 2 randomized data in 1H 2018
	EphA2 Ab-targeted liposomal docetaxel	Mitotic inhibition	Solid tumors				Phase 1 data in 2H 2018

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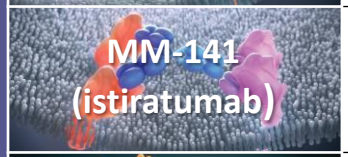
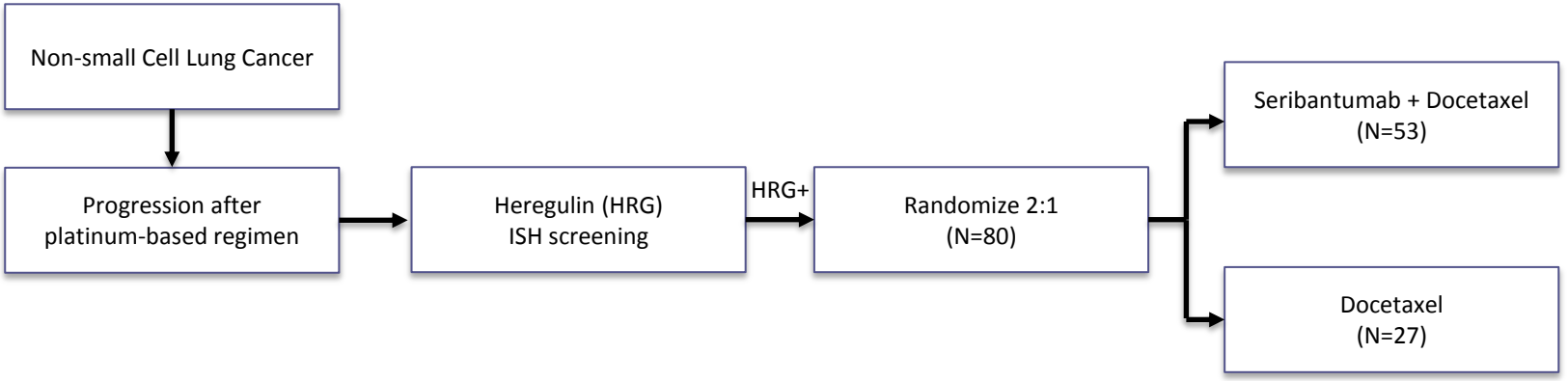
DEVELOPMENT PIPELINE: MECHANISMS OF ACTION

	CANDIDATE	MECHANISM
CLINICAL STAGE CANDIDATES		MM-121 (seribantumab) is a first-in-class fully human monoclonal antibody which, by preventing heregulin (HRG) from binding to the HER3 (ErbB3) receptor, blocks downstream signaling activation and impedes cancer cell survival
		MM-141 (istiratumab) is a bispecific tetravalent monoclonal antibody and a potent inhibitor of the PI3K/AKT/mTOR pathway that targets the IGF-1 and HER3 (ErbB3) receptors
		MM-310 is an antibody-directed nanotherapeutic (ADN) that contains a novel prodrug of docetaxel and targets the EphA2 receptor, which is highly expressed in most solid tumor types
LEAD PRECLINICAL CANDIDATES	MM-161	MM-161 is the first monoclonal antibody that antagonizes all FGFR IIIc-Isoforms with high specificity
	TRAIL	TRAIL is a TRAIL ligand fusion targeting the death receptors DR4 and DR5
	STIMULI™	Stabilized Immuno-Ligand (STIMULI) Platform is focused on multi-specific TNF receptor agonists and combines the superior activity of the natural trimeric TNF family ligands with the additional activity of a secondary antibody

MM-121 (seribantumab) SHERLOC STUDY IN NSCLC

PHASE II RANDOMIZED - ACCRUING PATIENTS



KEY INCLUSION/EXCLUSION CRITERIA:

- Adenocarcinoma only
- HRG+ from archived or fresh tissue according to RNA-ISH assay
- Received no more than 2 therapies:
    1. Must have received prior platinum-containing regimen
    2. Where available and clinically indicated, may have received nivolumab, pembrolizumab or other anti-PD-1 or anti-PD-L1 therapy
- No EGFR mutations or known ALK mutations

KEY STUDY DESIGN ASPECTS:

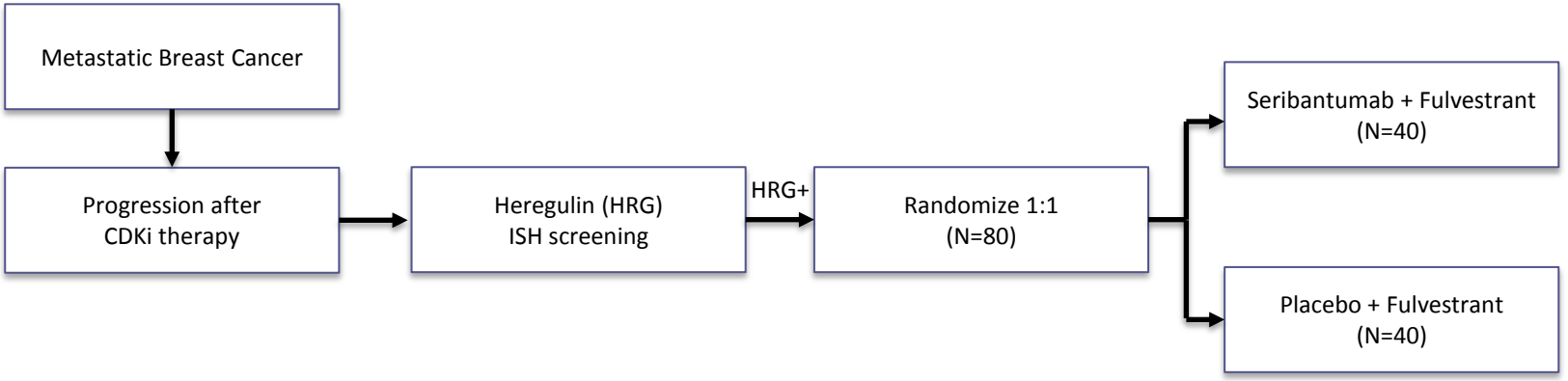
- **Primary Endpoint:** Progression-Free Survival
- **Key Secondary Endpoints:**
    - Objective Response Rate
    - Time to Progression
    - Overall Survival
- 85 sites anticipated in North America, EU and Asia

STATISTICS:

- **PFS Assumptions:** 5 months (treatment) vs. 3 months (control)
- 80% power, HR ≤ 0.60 assuming a 1-sided significance level of 0.15
- Top-line results anticipated in 2H 2018

MM-121 (seribantumab) SHERBOC STUDY IN BREAST CANCER

PHASE II RANDOMIZED - PLANNED



KEY INCLUSION/EXCLUSION CRITERIA:

- Post-menopausal women with HRG+, HR+, HER2- metastatic breast cancer
- HRG+ from archived or fresh tissue according to RNA-ISH assay
- Must have received prior CDKi
- Allow for up to 2 prior therapies
- No prior chemo or fulvestrant or other SERD
- Bone-only disease allowed
- No active CNS metastases or leptomeningeal Disease

KEY STUDY DESIGN ASPECTS:

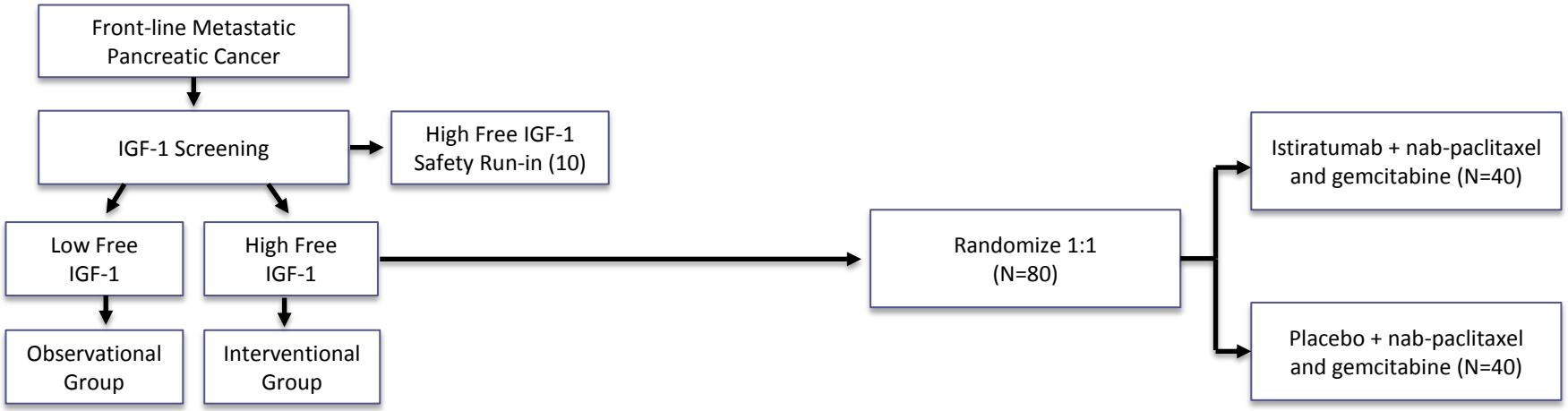
- **Primary Endpoint:** Progression-Free Survival
- **Key Secondary Endpoints:**
  - Objective Response Rate
  - Time to Progression
  - Overall Survival
- 80 sites anticipated in North America and EU

STATISTICS:

- **PFS Assumptions:** 7 months (treatment) vs. 4 months (control)
- FPI anticipated in 2017
- 80% power, HR ≤ 0.57 assuming a 1-sided significance level of 0.10

MM-141 CARRIE STUDY IN METASTATIC PANCREATIC CANCER

PHASE II RANDOMIZED – PATIENT ENROLLMENT COMPLETE



KEY INCLUSION/EXCLUSION CRITERIA:

- Metastatic adenocarcinoma of the pancreas
- High serum levels of free IGF-1
- Available recent tumor specimen or disease amenable to biopsy
- Prior systemic treatment in the adjuvant or neoadjuvant setting only allowed if administered ≥ 6 months prior to enrollment onto this study
- Measurable disease in accordance w/ RECIST v1.1
- No prior surgery, chemotherapy or investigational therapy for the treatment of metastatic disease
- No previous treatment with gemcitabine in combination with nab-paclitaxel
- No CNS malignancies

KEY STUDY DESIGN ASPECTS:

- **Primary Endpoint:** Progression-Free Survival, assessed in two patient populations:
  1. Patients with high serum levels of free IGF-1
  2. Patients with high serum levels of free IGF-1 and pre-treatment tissue samples positive for Heregulin
- **Key Secondary Endpoints:**
  - Disease Control Rate (CR+PR+SD) at 16 weeks
  - Objective Response Rate (CR+PR)
  - Duration of Response
  - Overall Survival
- 75 sites anticipated in US and EU

STATISTICS:

- **PFS Assumptions:** 8 months (treatment) vs. 5 months (control)
- 80% power, HR ≤ 0.63 assuming a 1-sided significance level of 0.15
- Top-line results anticipated in 1H 2018

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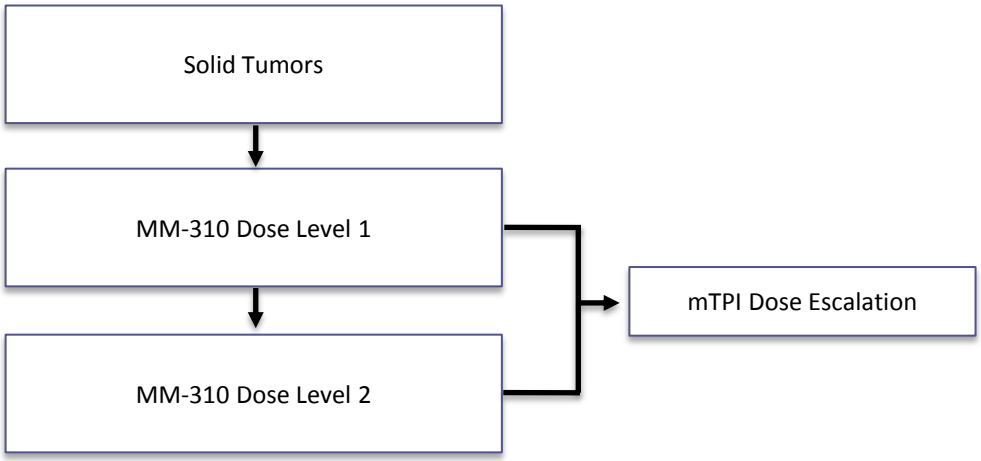
MM-310 STUDY IN SOLID TUMORS

PHASE I - ACCRUING PATIENTS



KEY INCLUSION/EXCLUSION CRITERIA:

- Patients with solid tumors for which the patient has received, or been intolerant to, therapies known to confer clinical benefit
- Availability of a cancerous lesion amenable to biopsy
- Adequate coagulation function, bone marrow reserve, hepatic and renal function
- No prior treatment with docetaxel within 6 months of study enrollment
- No known CNS metastasis
- No chronic use of corticosteroids more than 10 mg daily of a prednisone equivalent
- No peripheral neuropathy of grade 2 or higher

KEY STUDY DESIGN ASPECTS:

- **Primary Endpoint:** Determine the recommended Phase 2 dose (RP2D) and describe dose limiting toxicities (DLTs) of MM-310 monotherapy
- **Key Secondary Endpoints:**
    1. Pharmacokinetics of MM-310 monotherapy
    2. Adverse event profile
    3. Objective Response Rate
    4. Disease Control Rate
    5. Progression-Free Survival
- 5 sites anticipated in US

STATISTICS:

- Modified toxicity probability interval approach (mTPI) to determine the recommended Phase 2 dose (RP2D)
- Safety data and RP2D anticipated in 2H 2018