

ONCOLOGY PHARMACOLOGY

Overview

Syngeneic Tumor Model/Tumor Immunology

- 30+ *In Vivo* Models (SC, IV, Orthotopic, Resection Settings)
- Efficacy Studies with Immunotherapy
- Combination Therapy Studies with Checkpoint Inhibitors and Chemotherapeutics
- *Ex Vivo* Analyses
 - Flow Cytometry
 - Immune Cell Functional Assays
 - IHC, Soluble Factors, Genetic Profiling

Patient-derived Xenograft

- Variety of models established and validated: >270 models
- Derived from both primary and metastatic lesions from patients
- Passaged only *in vivo*
- Resembles human disease pathologically
- Cell lines derived from some of the models
- 210+ models with whole genome/exosome sequencing and RNAseq data

Cell Line-derived Xenograft

- Variety of models established and validated: >250 models
- Standard of Care validated in CDX models: >82 SOCs
- Capabilities continue to expand
- Compatible with cancer cell panel screens Ample literature reference
- Mutation status available from public domain

Readouts

- *In Vitro* Drug-Sensitivity Studies
- Tumor Growth
- Imaging
- Pathology
- *Ex Vivo* Analyses

Syngeneic / CDX / PDX Models

- Subcutaneous Models
- Orthotopic Models
- Genetic Annotations
- PK/PD Studies

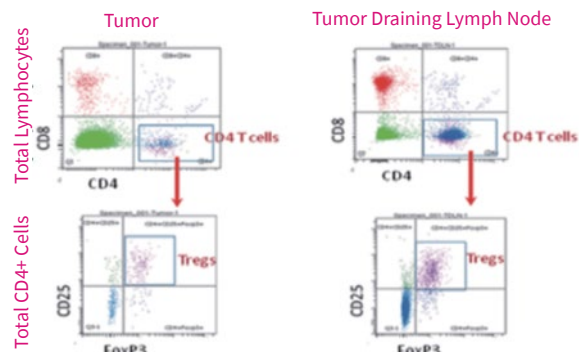
Syngeneic Models & Tumor Immunology

Models

- Breast cancer (3): 4T1, EMT6, JC
- Melanoma (4): B16-F10, B16-F1, B16-F0, Cloudman S91
- Lung cancer (2): LL/2, KLN205
- Colon cancer (3): CT26, MC-38, MC38-hPD-L1
- Pancreatic cancer (2): Pan02, KPC
- Prostate cancer (1): RM-1
- Renal cancer (1): RENCA
- Leukemia/myeloma (5): A20, L1210, P815, J558, WEHI-3
- Lymphoma (2): EL4, P388D1, EG7-OVA, MPC-11
- Liver cancer (2): Hepa 1-6, H22
- Fibrosarcoma (1): M7
- Reticulum cell sarcoma (1): J774A.1
- Bladder cancer (1): MBT-2

Cell-based Assays / *Ex Vivo* Analyses

- Primary Immune Assays
- Cell Surface / Intracellular Marker Expression by FACS
- Cytotoxicity Assay / ADCC
- ELISA, Luminex
- Gene Expression Profiling
- Immunohistology



PDX

Sample Bank

- Frozen tumor (Biomarker analysis)
- Serum/Plasma
- Corresponding Cell Lines
- Primary tumor model

Primary Tumor Cells

- Drug Sensitivity Assay
- Drug Combination Test

Mouse Strains

- BALB/c-nude
- Nu-nu mice
- SCID mice
- NOD/SCID
- NOG

Proprietary PDX-related Tumor Cell Lines

- 60+ primary cancer cell lines used in cell panel screening
- Cancer types: gastric, liver, pancreatic, CRC, lung
- Multiple publications in international journals and patents
- Related CDX model ready and validated with SOC
- Bridge between high throughput cell panel screening, CDX and highly relevant PDX models screening
- MOA study, labeling possible
- Characterizations including morphology and biomarker, chromosome and STR, growth kinetics, genetic characterization, tumorigenicity, etc
- Exosome sequencing and RNAseq for ~20 of the cell lines

CDX

Subcutaneous Models

- Breast cancer (14)
 - MDA-MB-231; MCF-7; ZR-75-1; HCC70; BT-474; MDA-MB-468; T-47D; MX-1; DU4475; MDA-MB-436; HCC1569; HCC1954; MCF-7-Her2; BT-474EEI
- Colorectal cancer (11)
 - HCT-116; SW620; HT-29; SW480; DLD-1; COLO 205; NCI-H716; RKO; SW948; Colo320DM; LOVO
- Gastric cancer (6)
 - HGC-27; MKN-45; AGS; NCI-N87; SNU-16; OCUM-1
- Glioblastoma (7)
 - U87MG; U87MG (nude Rat); U87MG-EGFR VIII, LN229; U251; AM-38; AM-38-Luc
- Kidney cancer (6)
 - Caki-1; A-498; 786-O; G-401; ACHN; OS-RC-2
- Lung cancer (63)
 - HDMS 153; DMS 53; DMS 79; NCI-H446; NCI-H2171; NCI-H841; SHP-77; NCI-H69; NCI-H1930; NCI-H209; NCI-H524; NCI-H1048; NCI-H2081; NCI-H1092; NCI-H146; NCI-H2029; NCI-H1417; NCI-H510A; NCI-H526; NCI-H1975; NCI-H358; NCI-H1770; PC-9; NCI-H1299; NCI-H522; NCI-H2030; NCI-H1703; NCI-H838; NCI-H2122; NCI-H1155; NCI-H1568; NCI-H1993; NCI-H647; HCC 15; NCI-H2228; CI-H1693; NCI-H2106; COR-L105; A549; NCI-H460; SPC-A-1; NCI-H292; NCI-H2009; Calu-3; Calu-6; NCI-H441; NCI-H727; HCC827; NCI-H661; ChaGo-K-1; NCI-H1650; NCI-H596; NCI-H1395; A-427; EBC-1; GCT; NCI-H226; NCI-H1373; RERF-LC-AI; SW 1573; HCC4006; LXF-289; HARA; SK-MES-1; (SCLC-19 and NSCLC-44)
- Liver cancer (3)
 - HEP 3B2.1-7; SK-HEP-1; HUH-7
- Melanoma (5)
 - A375; A2058; C32; IGR-1; WN266-4
- Mesothelioma (4)
 - MSTO211H; NCI-H28; NCI-H226; ACC-MESO-1
- Ovarian cancer (9)
 - OVCAR-3; A2780; A2780 (nude Rat); Caov-3; SKOV-3; OVIES; TOV21G; COV434; TOV112D, OVK18
- Pancreatic cancer (10)
 - MIA PaCa-2; Capan-1; PANC-1; AsPC-1; CFPAC-1; BxPC-3; KP4; Panc.08.13; HPAF-II; Panc.03.27
- Prostate cancer (4)
 - PC-3; LNCaP; DU145; 22RV1
- Leukemia (20)
 - K562; HL-60; MV-4-11; MOLT-4; Kasumi-1; KU812; THP-1; TF-1; HEL 92.1.7; SKM-1; NOMO-1; ARH-77; Kopn-8; MOLM-13; KG-1; OCI-AML-2 (nude Rat); OCI-AML-3 (nude Rat); OCI-AML-2(mice); RS4;11; EOL-1
- Lymphoma (23)
 - NAMALWA; Daudi; Raji; Mino; DB; Toledo; SU-DHL-6; MC116; OCILy19; WSU-DLCL2; Z-138; REC-1; Granta-519; RPMI 6666; Pfeiffer; Maver-1; Farage; SUDHL-5; xSU-DHL-5; JeKo-1; DoHH2; JVM-2; BJAB
- Myeloma (8)
 - RPMI 8226; MM.1S; NCI-H929; U266B1; OPM-2; LP-1; HuNS1; MM.1R
- Kidney cancer (6)
 - Caki-1; A-498; 786-O; G-401; ACHN; OS-RC-2
- Bladder cancer (4)
 - RT112; HT-1376; RT112 84; UM-UC-3
- Neuroblastoma (3)
 - BE(2)-C; SH-SY5Y; SK-N2D
- Epidermoid carcinoma (2)
 - A431; CAL-27
- Endometrium adenocarcinoma (2)
 - AN3CA; MFE-296
- Cervical adenocarcinoma (1)
 - Hela
- Medullary thyroid (1)
 - TT
- Epithelioid Sarcoma (1)
 - VA-ES-BJ

Subcutaneous Models

- Breast cancer (2)
 - MDA-MB-468; MDAMB-231
- Liver cancer (2)
 - Hep3B-Luc; SK-Hep-1-luc
- Glioblastoma (4)
 - U87MG (survival); U87 MGEGRVIII-Luc; U87MG-Luc; U251-Luc
- Ovarian (1)
 - OVCAR-3
- Lung cancer (1)
 - NCI-H1299-luc
- Human Multiple Myeloma (1)
 - » RPMI8226
- Prostate Cancer (2)
 - » PC-3-luc; LNCap-luc
- Pancreatic cancer (2)
 - Panc-1-luc

Systemic-Survival Models

- Leukemia (8)
 - HL-60; K562; MV-4-11; HEL92.1.7; KU812; THP-1; MOLM-13, RS4
- Lymphoma (4)
 - NAMALWA; Daudi; Raji; Raji-luc
- Myeloma (2)
 - » LP-1; KMS34
- Neuroblastoma (1)
 - » BE(2)-C
- Liver cancer (1)
 - HepG2-Luc

Metastatic Models

- Lung Cancer (2)
 - NCI-H1299-Luc (via brain); PC-9-luc (via brain)
- Melanoma (3)
 - A-375 (via brain); A375-luc (via intracardiac, brain)
- Prostate Cancer (2)
 - PC-3-Luc (via intracardiac, by orthotopic)
- Breast Cancer (2)
 - xBT-474-Luc (via brain, carotid arterie)