In Vivo Imaging for Tumor Biology at Aragen Bioscience

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Introduction
In vivo bioluminescence and fluorescence combined with X-ray imaging allows non-invasive monitoring of living mice longitudinally, offering real time insight into treatment efficacy, whole-body biodistribution, and target mechanisms. This poster demonstrates development and characterization of several xenograft and syngeneic models for preclinical study applications at Aragen Bioscience.

Creation of Customized, Client Specific Study Designs in Numerous Mouse Tumor Models

Bioluminescent Signals

- Syngenic and xenograft cell lines
- Generated at Aragen
- Purchased/licensed by Aragen
- Client provided
- Commercially available

Fluorescent Reagents

- Commercially available targeted and activatable fluorescent reagents
- Client provided generated at Aragen

Characterized Cell Lines Currently Available at Aragen

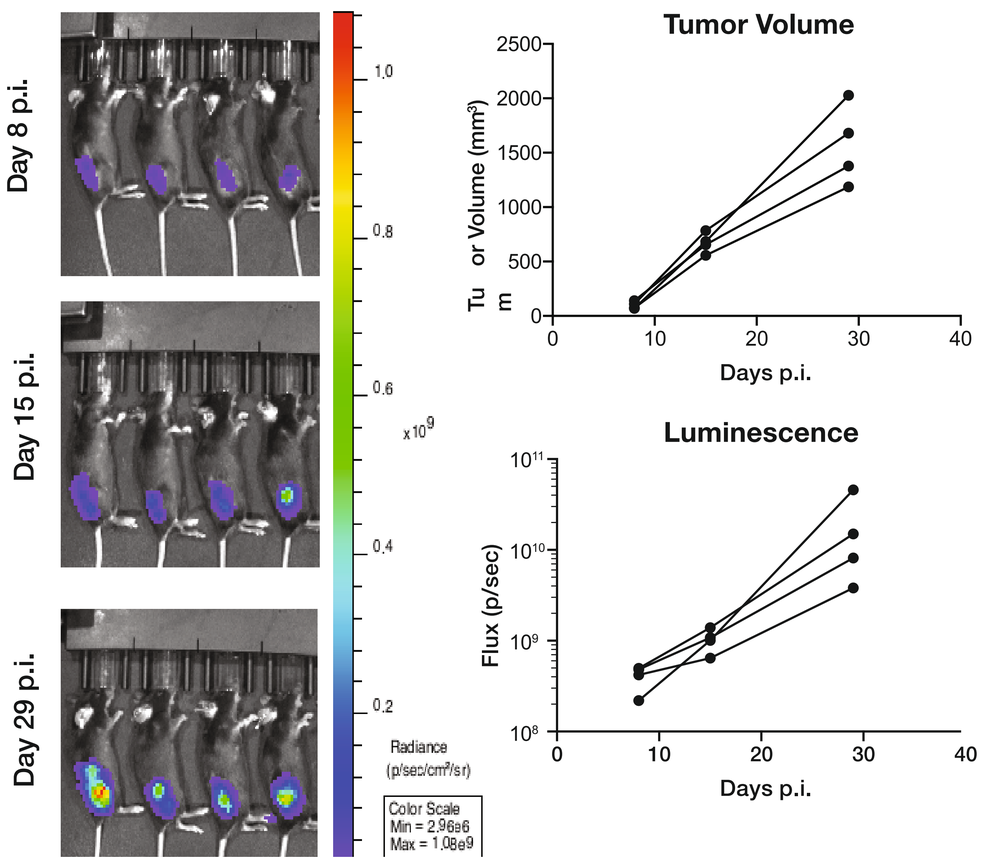
Murine Cell Line	Origin of Tumor
4T1-Luc-GFP	Breast
MC-38-Luc-GFP	Colon
CT-26-Luc-GFP	Colon

Human Cell Line	Origin of Tumor
A549-Luc-GFP	Lung (NSCLC)
MDA-MB-231-Luc	Breast
MCF-7 Luc	Breast
SKOV3-Luc	Ovarian cancer
BX PC-3-Luc-GFP	Pancreas
MKN-1-Luc	Gastric cancer
HCT 116-Luc-GFP	Colon adenocarcinoma
Raji-Luc-GFP	Burkitt's lymphoma

Syngenic Models

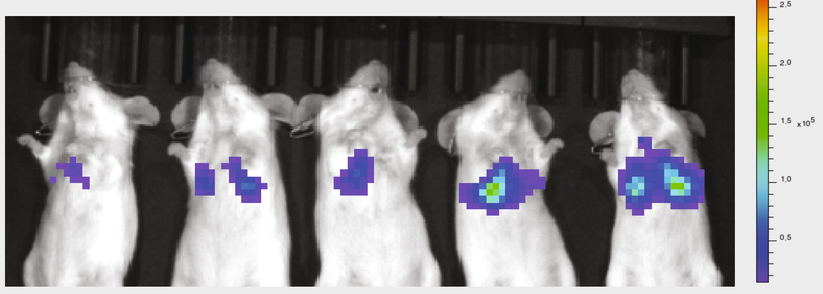
Imaging of MC38-Luc in C57BL6 Mice

- Implanted MC38-Luc cells subcutaneously into the right lower flank of C57BL/6 mice.
- Imaged on day 8, 15 and 29 p.i.
- Aragen has a license for the use of MC-38.



Lung Metastasis Model of Colon Cancer

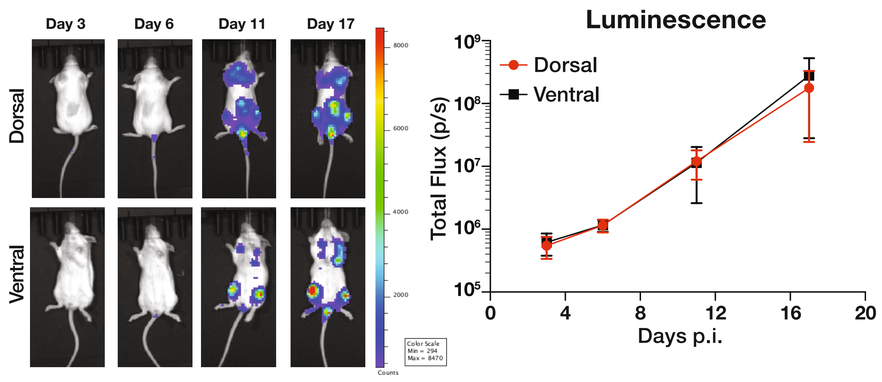
- Injected CT-26-Luc cells into tail vein of Balb/c mice.
- Imaged on day 7 p.i.



Xenograft Orthotopic Models

Imaging of Disseminated Raji-Luc Xenograft in SCID Mice.

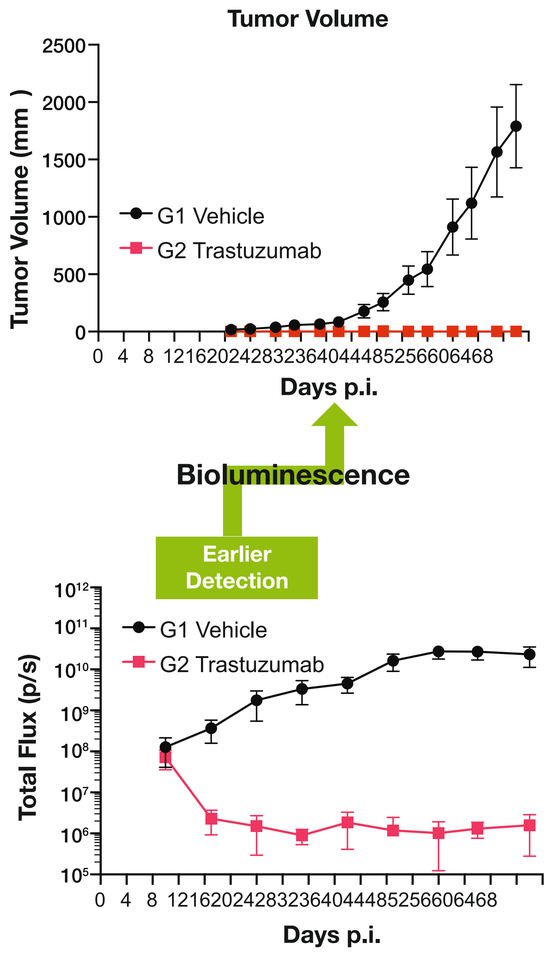
- Injected Raji-luc cells via tail vein into SCID mice.
- Imaged on days 3, 6, 11 and 17 p.i.

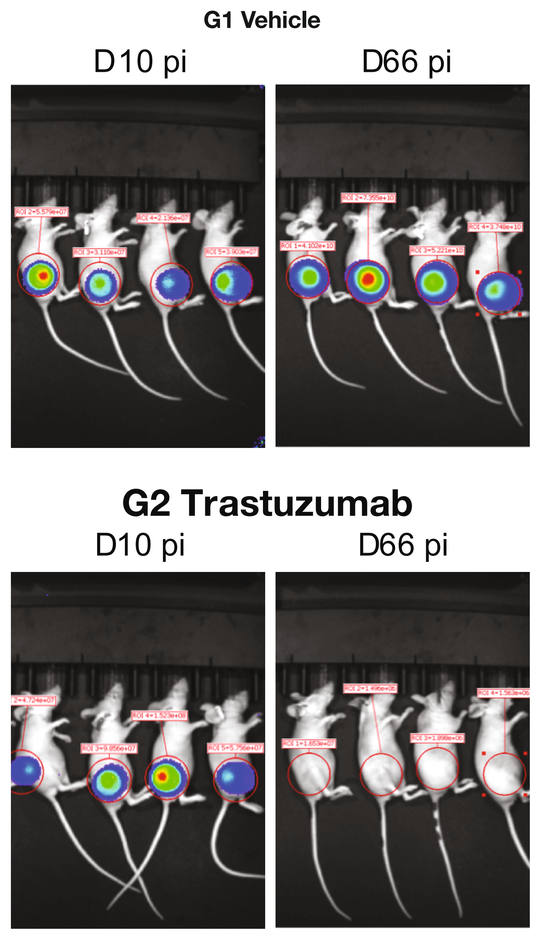


Case Study

Drug Efficacy in Subcutaneous Tumor Models

- Bioluminescent signal enabled detection of early tumor establishment.
- Treatment was initiated on day 10 p.i.

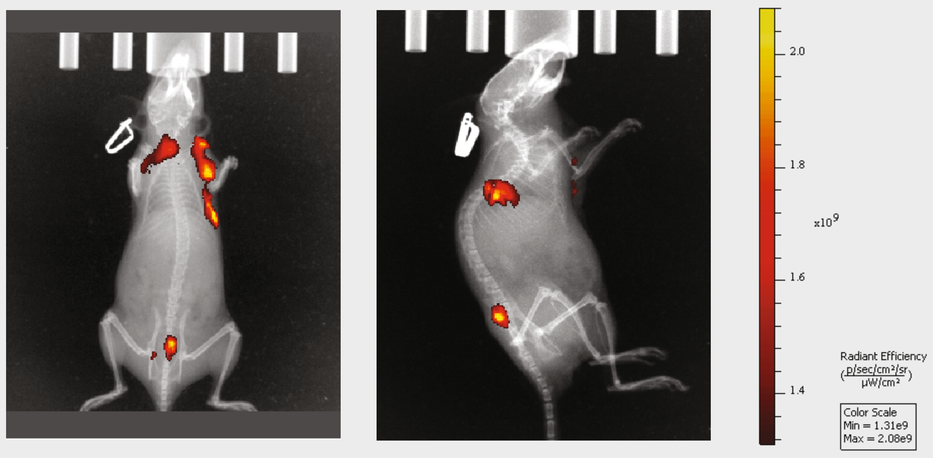




Utilization of Fluorescent Probes

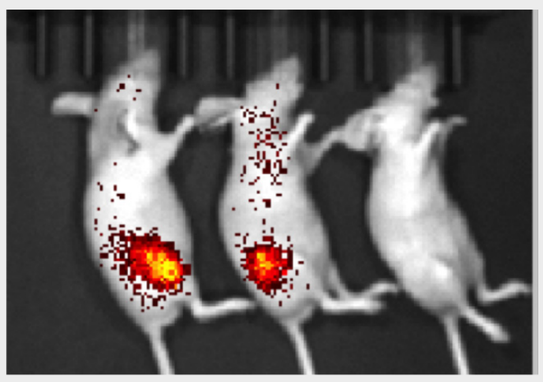
Detection of Metastasis

- Animal was implanted with 4T1 subcutaneously then tumor was extracted on day 17 p.i.
- On Day 52 p.i., animal was injected with MMPSense 750 FAST (Perkin Elmer) and imaged 48 hours after the injection.
- X-ray + MMPSense 750 FAST revealed areas of metastasis, most likely axillary and cervical lymph nodes.
- MMPSense 750FAST is a matrix metalloproteinase (MMP) activatable agent that is optically silent upon injection and produces fluorescent signal after cleavage by disease related MMP's.



Detection of Integrin avb3 in Tumors

- Animal was implanted with SKOV-3 cells.
- On Day 21 p.i., animal was injected with IntegriSense™645 (Perkin Elmer), and imaged 24 hours later.
- IntegriSense™ has been developed to enable *in vivo* visualization and quantification of integrin expressed in tumor cells as well as in neovasculature, to monitor tumor growth, tumor angiogenesis, and treatment efficacy.



At Aragen Bio, our experienced scientists and technical staff have extensive expertise in *in vivo* as well as *ex vivo* analyses in murine translational models in the following areas of oncology: Immune checkpoint inhibitors, Bispecific antibodies, Adoptive T cell transfer, Chimeric antigen receptor (CAR) T-cell therapy, Small molecule drugs, Biologics, Antibody treatment, Gene targeting therapeutics in addition to other more traditional therapeutic approaches. Using *in vivo* imaging, we have demonstrated several oncology models that can be powerful preclinical target validation tools that can advance your research. We would like to thank our clients for their support and their permission to present some of their data.

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