# PANCREATIC CANCER MOUSE MODEL

Pancreatic cancer is one of the deadliest forms of cancer, with a five-year survival rate of just 10%. Until today a treatment for this condition remains elusive, and therefore clinically relevant models for drug development are urgently needed. Our **orthotopic model** in mice closely mimics the biology of **human pancreatic cancer**, providing a powerful platform to study the progression of the disease, identify potential targets and validate the efficacy and safety of lead therapeutic agents.

## DISEASE PLATFORM

We are able to implement clinically relevant models of pancreatic cancer by using orthotopic transplantation of either **patient-derived** or **cell line-derived xenografts** expressing firefly luciferase. Through In vivo Bioluminescence Imaging (BLI) we can reliably monitor the progression of primary tumors as well as the spread of metastatic foci **(Figure 1A). Combining BLI and Computed Tomography (CT)** we can precisely determine the spatial location of the tumor **(Figure 1B)** and its invasiveness to other organs **(Figure 1C)**.

A wide spectrum of near-infrared fluorescent probes can be used in addition to BLI to study different biological aspects of the pancreatic tumor **(e.g. angiogenesis, apoptosis, metabolism and hypoxia)** with a high spatial and temporal resolution.

## EXPERIMENTAL OUTLINE

The number of cells adjusted to a total volume of 50uL of PBS + 50% Matrigel will be delivered into the pancreas **(Figure 1B)**. The tumor progression will be monitored in the same animal by in vivo BLI every week for a period of 15 weeks post-inoculation. However, the period can be extended up to 20 weeks for the study metastatic pancreatic tumors.

| SEGMENT MODEL SPECIFICS | |
|---|---|
| **Animals** | • 6-8 weeks old mice |
| **Cells** | • PDX/CDX cells expressing Red F-Luc (firefly luciferase) or GFP/RFP |
| **Tumour uptake** | • 5-10 days after transplantation. |
| **Treatment Initiation** | • Within 3-6 weeks after transplantation for primary tumors. We recommend a period of 8-15 weeks for metastasis. |
| **Duration of the study** | • 17-20 weeks. |
| **Type of monitoring** | • Quantitive 2D bioluminescence imaging.<br>• 3D imaging + CT scan for spatial identification of the tumour.<br>• Sampling of blood for ELISA and other analyses.<br>• Isolation of tumours and histology.<br>• Molecular analyses e.g, pathway analysis, FACS, and co-culture studies. |

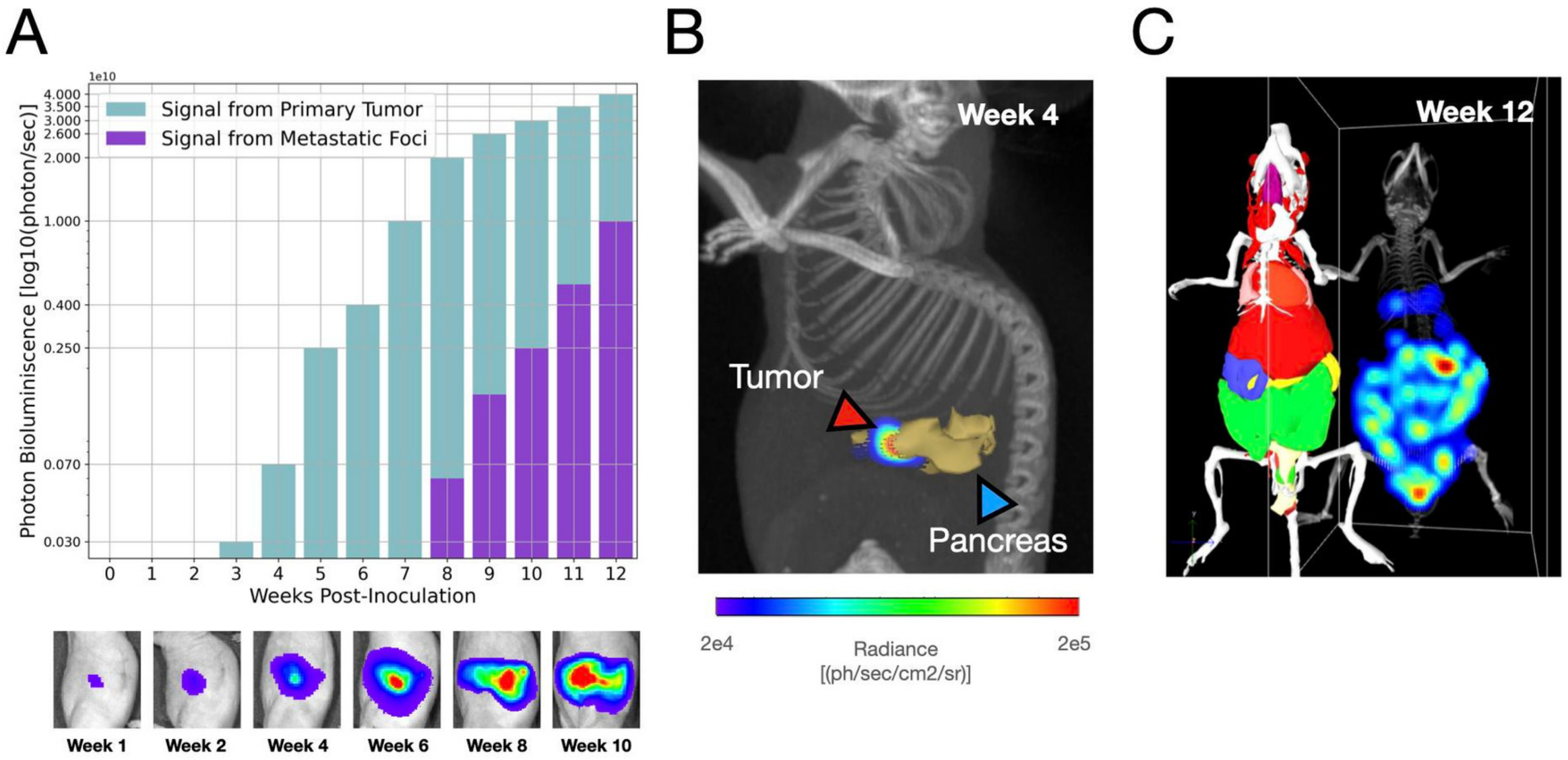


**Figure 1. Orthotopic Pancreatic Cancer Mouse Model.** The established in vivo model of pancreatic cancer is suitable for drug screening, diagnostic, and preclinical validation. **A.** In vivo monitoring of pancreatic tumor progression using BLI. Growth of the primary tumor (green bars) or the metastatic foci in the abdominal area (purple bars). Bottom panel: representative 2D BLI at specific time points (lateral view). **B.** 3D BLI overlapped with CT scan, 4 weeks after transplantation. Red arrowhead: pancreatic tumor. Blue arrowhead: location of the pancreas. **C.** Ventral view of a mouse showing different organs to which metastatic tumors can spread 12 weeks after transplantation.

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