Altogen Labs

Provider of Preclinical Research Services (GLP/non-GLP) for Drug Discovery
Efficacy and Pharm/Tox IND contract research studies (clients worldwide)
100+ Xenograft Models (validated in-house) and IND-enabling Toxicology studies
100% IP belongs to client, experienced IACUC-regulated barrier facility

Patient-Derived Tumor Xenografting Services

Background

- Altogen Labs is a GLP-certified biotechnology laboratory that provides research services for pharmaceutical, biotechnological, and academic institutions worldwide.

- The laboratory provides a variety of both *in vivo* and *in vitro* services.

- It was founded in 2008 and it is headquartered in Austin, Texas.

Contact us: **info@altogenlabs.com** | Read more at **AltogenLabs.com**
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Services

Altogen Labs offers human-in-mouse xenograft services for drug development of anticancer therapeutics.

PDTX (patient derived tumor xenograft models) are a solution to a common problem in the oncology field: a lack of preclinical models that have strong predictive power in clinical trials.

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Xenografting

- **Xenografting** is the transplantation of tissue from one species into another.
- It has been established as a benchmark study in pre-clinical cancer research.
- Typically, immunodeficient mice serve as hosts for a wide variety of human tumors, effectively serving as models for human subjects.
- Xenografting is a complete and accurate study of tumor growth and the activity of drug administration.

Xenografting tumor cells into mice has advanced pre-clinical cancer research significantly
www.acris-antibodies.com

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How does it work?

PDTX are able to establish predictive power by directing engrafting patient tumors in immunocompromised mice.

Because they are able to mimic patient heterogeneity, it gives them a far higher predictive ability than traditional methods.

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PDTX Models

It is important for cancer-specific PDTX model to retain:

- Stability
- Principle histological tumor features
- Pathogenesis
- Global gene expression
- Therapeutic response

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Potential Inaccuracies of typical PDX models

Although preclinical models are at the foundation of cancer therapeutics, they may fail to recapitulate the key aspects of human malignancies and thus do not accurately predict drug effects in the clinic.

Although curated xenografts have shown high effectiveness in predicting response to targeted agents, they do not replicate tumor micro environment and interactions within the immune system.

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What does this mean?

Accuracy of predicted response is highly important, so this means there is a need for improved and more clinically predictive models for human cancer.

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Most effective model

PDX models are created through the implantation of primary human tumor materials directly into an immuno-compromised host (laboratory rats/mice) to prevent transplant rejection.

Several types of hosts are used, such as nude mice or SCID mice. The NOD-SCID mouse Is considered more immuno-deficient than the nude mouse because they lack natural killer cells, thus they are more commonly used.
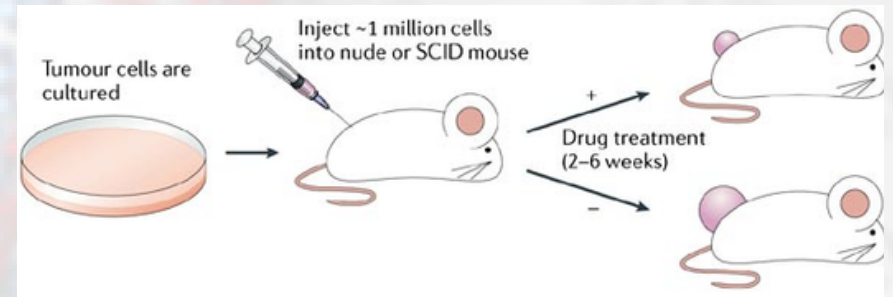
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Model advantage

These models have an advantage over cell line xenografts because the tumor retains a more natural architecture and are more reflective of heterogeneity and histology seen in primary tumors.

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- In patient-derived timor xenografting, primary tumor cells from the patient are transplanted into immunocompromised mice.
- Its advantages over traditional xenograft studies:
  - Retains histological profile of parent tumor
  - Pathogenesis
  - Global gene expression
  - Therapeutic response

Patient-derived Xenografts represent a more accurate predictive model of clinical success

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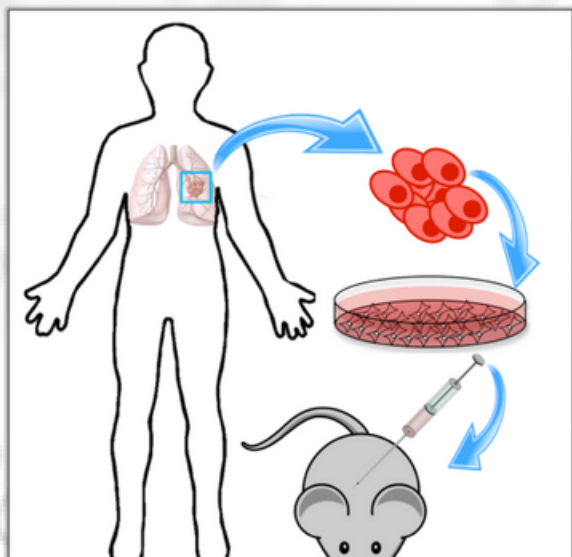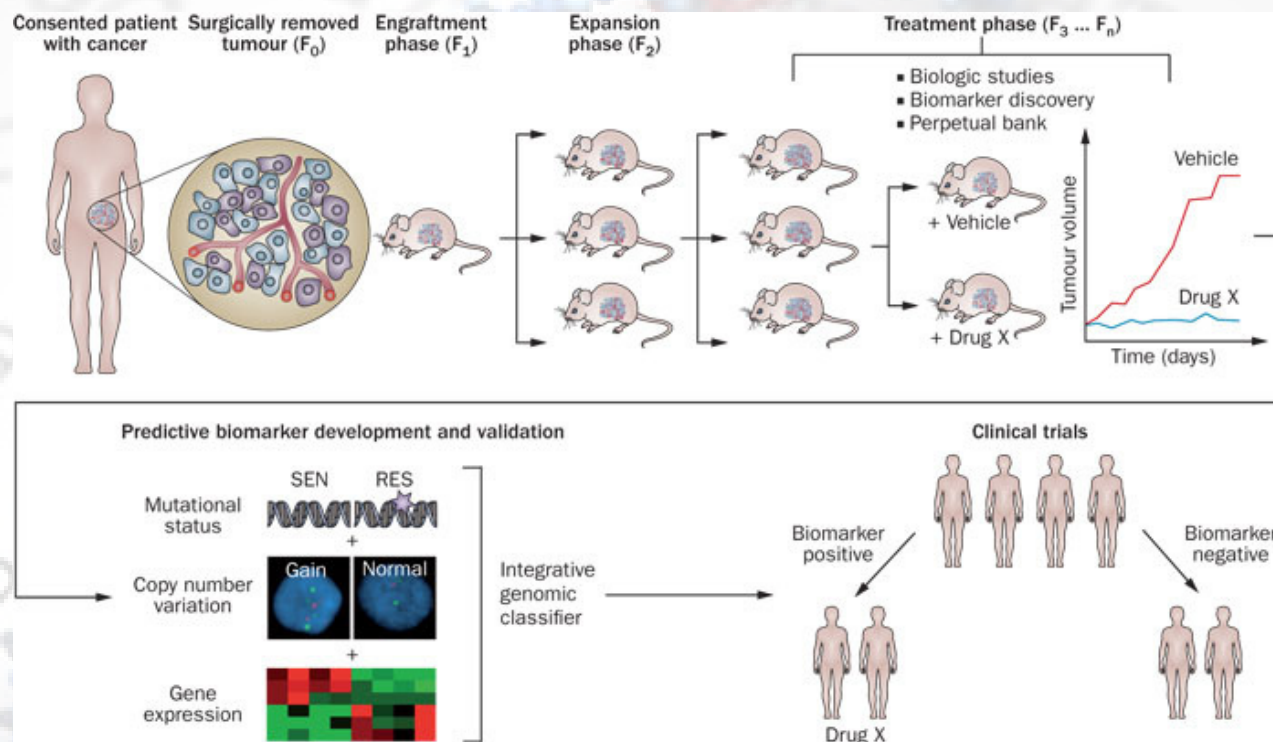
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- The relative scarcity of success in oncologic drug development is credited to the shortage of pre-clinical experiment systems that can accurately predict clinical trial success
  - Patient-Derived Tumor Xenograft (PDX) models have narrowed this research gap
  - PDX studies' roles in pre-clinical research will expand in the future as personalized medicine begins to take prominence

Establishment of patient-derived xenograft (PDX) models with fresh

↓

Primary tumor tissue gene expression profiling.

↓

Protein expression profiling.

↓

Biomarker discovery and validation.

↓

Target validation with primary human cells and tumo

↓

Early Phase Clinical Trials
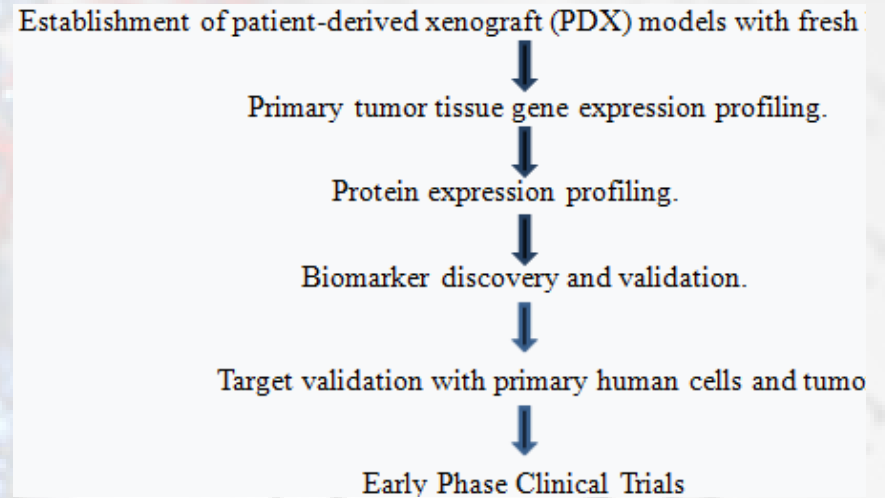
Patient-derived Xenografting has advanced significantly pre-clinical cancer research

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Advantages of PDX

Patient-derived Xenografts will play a crucial role in personalized medicine

- Evaluate the efficacy and toxicity of potential therapeutic agents
- Develop new therapeutic agents quickly, efficiently and cost-effectively
- Evaluate target compound activity using in vivo system (human cells)
- Predict cytotoxicity of cancer drugs

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Number	Character ties	Cell line in vitro	Cell line xenograft	PDX	Patient
1.	Heterogeneity	Nil	Limited	Higher intra tumor heterogeneity	High intra tumor heterogeneity
2.	Molecular sub types	Modest diversity	Modest diversity	Diverse range of molecular subtypes	Full range of molecular subtypes
3.	Stroma	Nil	Murine stroma/no human stroma	Mixed murine & human stroma	Human stroma

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PDX Studies

PDX studies allow for biomarker identification that can be leveraged for the development of novel targeted therapies

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PDX Models Established at Altogen Labs

PDX Models are established by obtaining fresh patient tumors from surgery into single cell suspensions, which are then injected (either heterotopically or orthotopically) into immunocompromised mice. The following PDX models have been established at Altogen Labs:

- Pancreatic
- Prostate
- Colorectal
- Breast
- Lung

Contact Us

- PDX models are at the cutting edge of pre-clinical oncology research, and our team of scientists has a documented track record of establishing and performing these studies.
- Altogen Labs is compliant as a Good Laboratory Practices (GLP) environment.

PDX studies can present a clear picture of clinical trial success.
Photo credit: wisegeek.com

Contact us to discuss <u>details</u>, <u>timeline estimates</u>, and <u>price!</u>

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