Preclinical Studies: IC-50 Testing

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

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ALTOGEN® 11200 Menchaca Road 203 • Austin • TX • 78748 • USA 512-433-6177
Optimized Development

• Cells are grown, trypsinized, and diluted to the ideal concentration for the specific cell line.

• The process is repeated and data is analyzed for a highly accurate result.

• Toxicology testing → IC-50 is a toxicological property that must be determined for a compound of interest.
Pre-Clinical Development

- **In vitro** and **in vivo** testing must characterize the pharmacological profile of an Investigational New Drug (IND) with respect to safety and effectiveness.

- A representative value of antagonist potency. Quantitatively, it is the midpoint in which a compound completely inhibits biochemical function. It is determined through dose-response study.
Purpose

- IC-50 (inhibitory concentration) curves show dose response curves. This data is used to calculate the drug concentration needed to decrease the amount of viable cells by a specific percentage in comparison to cells grown with no exposure to the specific drug. This directly shows drug effectiveness.

- The concentration must be specific because if it is too high or too low, it will have adverse affects such as being toxic to cells.
The Drug Development Process

Step 1
Discovery and Development

New technologies or new insights lead to identification of new candidates. The candidates’ benefits and biochemical mechanism of action are determined at this stage.

Step 2
IC-50 Studies
Preclinical Research

Both in vitro and in vivo experiments will detail the toxicological properties of the candidate drug. IC-50 studies are part of this process. The FDA requires researchers to use Good Laboratory Practices (GLP) in pre-clinical research.

Step 3
Clinical Research

This 3 phase stage will determine how effective and safe the drug is with human subjects.
The Drug Development Process

Dose-Response Curve

Atorvastatin (Lipitor)
IC-50 = 5µM

Adalimumab
IC-50 = 100pM

Ledipasvir
IC-50 = 141nM

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Provider of Global Contract Research Services  Accelerating Preclinical Research, Drug Discovery & Therapeutics
Dose-Response Studies

- Depending on the drug target (enzyme, cell, cellular receptor) the dose-response studies can vary.

- Since an antagonist inhibits the activity of its target, a common method for determining IC-50 would be by competitive binding assay.

- Measuring the effect of increasing concentrations of antagonist (candidate drug) with a constant concentration of agonist.

Example: Increasing concentration of agonist inhibitor (A) displaces fluor-labeled (F) agonistic substrate (S) that give a dose responsive fluorescent signal.
# Sample Cell Lines Available

<table>
<thead>
<tr>
<th>Disease / Tumor Type</th>
<th>Cell Line / ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Adenocarcinoma</td>
<td>SKBR3 (HTB30), MDA-MB (HTB26), MCF7 (HTB22)</td>
</tr>
<tr>
<td>Colon Carcinoma</td>
<td>Caco2 (HTB37), LS174T (CL188), SW480 (CCL228)</td>
</tr>
<tr>
<td>Kidney</td>
<td>MDCK (CCL34), Cos7 (CRL1651), HEK293 (CRL1573)</td>
</tr>
<tr>
<td>Neuroblastoma</td>
<td>SK-N-SH (HTB-11), Neuro-2a (CCL-131)</td>
</tr>
<tr>
<td>Prostate Carcinoma</td>
<td>LNCaP (CRL-1740), DU145 (HTB-81)</td>
</tr>
<tr>
<td>Leukemia</td>
<td>K-562 (CCL-243), CCRF-CEM (CCL-119)</td>
</tr>
<tr>
<td>Pancreatic Carcinoma</td>
<td>Capan-1 (HTB-79), MIA PaCa-2 (CRL-1420)</td>
</tr>
<tr>
<td>Melanoma</td>
<td>J774A.1 (TIB-67), SK-MEL-28 (HTB-72)</td>
</tr>
</tbody>
</table>

View our full catalog of cell lines available at [altogenlabs.com](http://altogenlabs.com)
Pre-Clinical Development

- Cancer cell lines are used as the *in vitro* model system for IC-50 studies.

- Altogen Labs has a broad catalog of cancer cell lines available for IC-50 studies.

- Altogen Labs can also use custom cell lines provided by the client for toxicology studies.
Contact Us

- Altogen Labs has a staff of scientists bringing years of knowledge and experience to any toxicology study.
- Altogen Labs meets and complies with all FDA standards and guidelines for Good Laboratory Practices (GLP), which are requisite for pre-clinical research.
- Altogen Labs pre-clinical services are versatile with respect to type of experiments and cell lines used.

Contact us to discuss details, timeline estimates, and price!