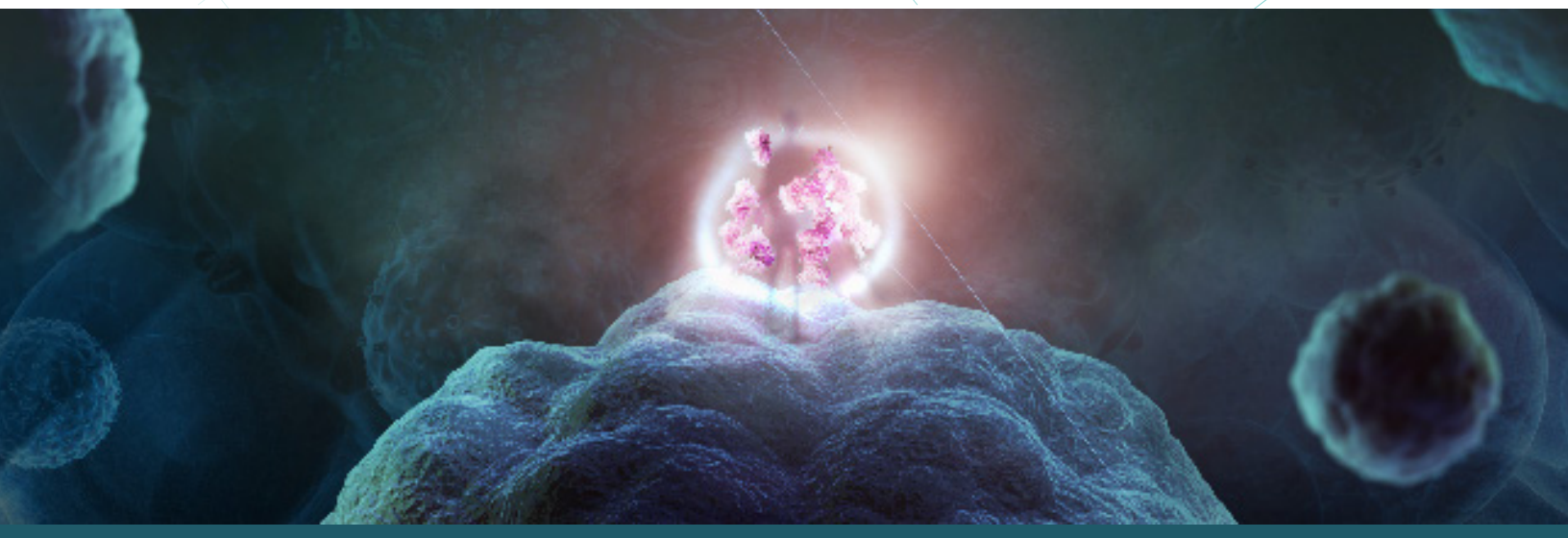
YOUR LINK TO EFFICACY

nexus pharma

A GENESIS DRUG DISCOVERY & DEVELOPMENT COMPANY

OVERVIEW OF SERVICES



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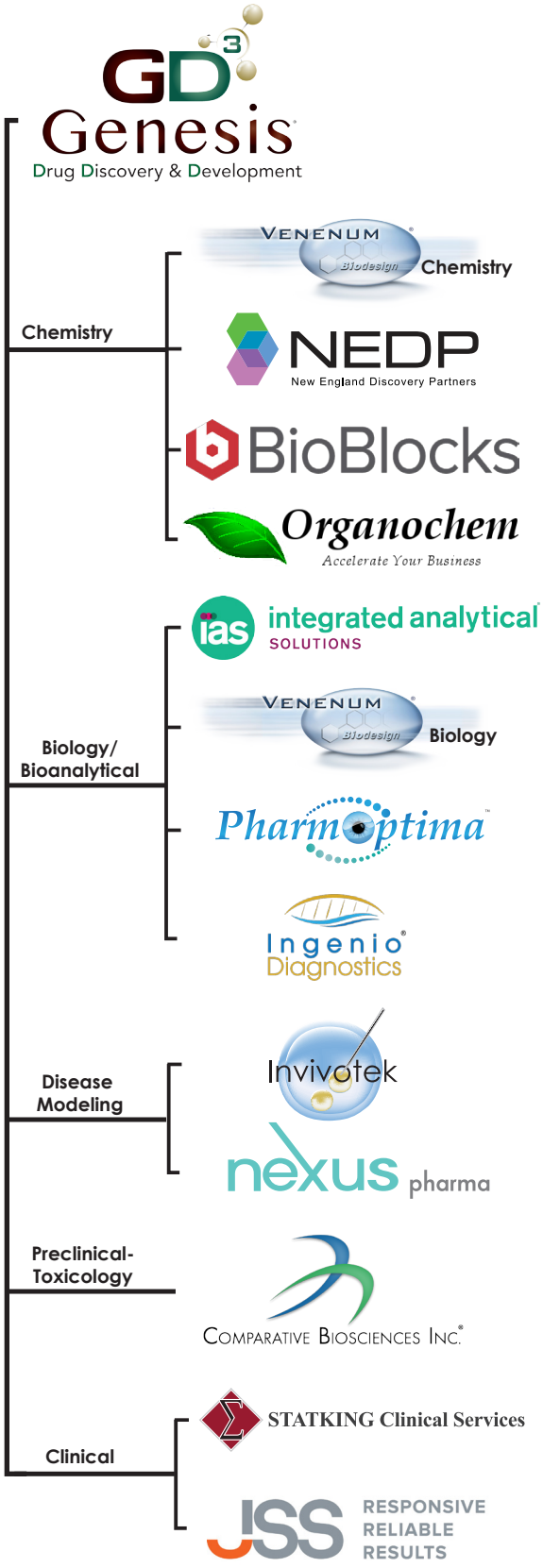
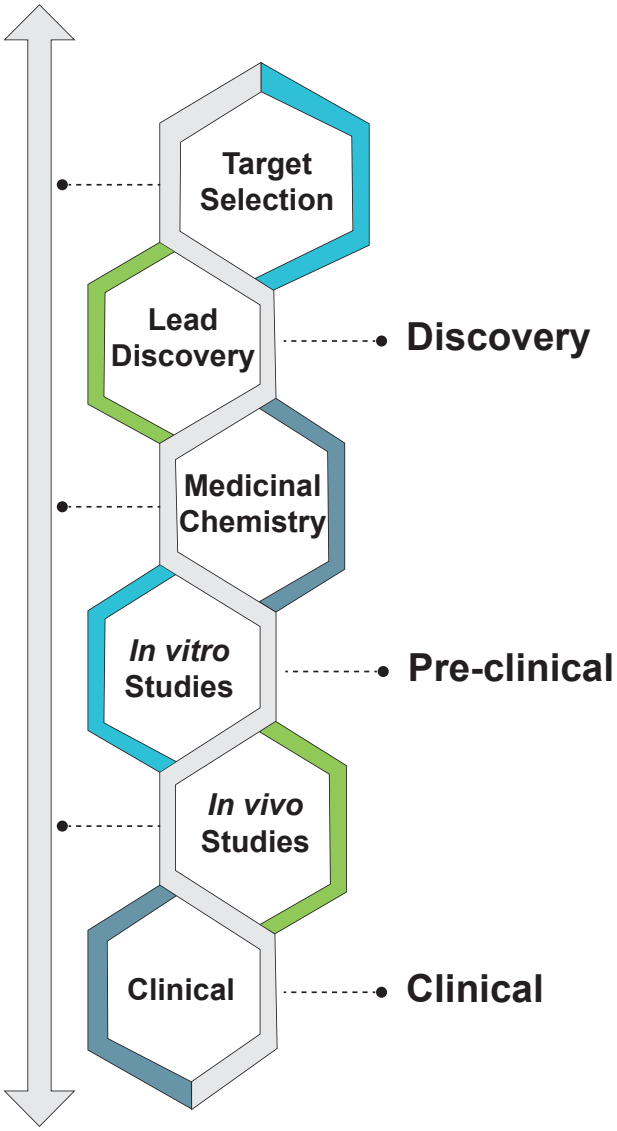


Genesis Drug Discovery & Development (GD³) is is a fully integrated CRO providing services to support drug discovery programs of our clients from target discovery through IND filing and managing Phase I-IV clinical trials. GD³ portfolio includes services for HTS and assay development, synthetic organic and medicinal chemistry, DMPK/in-vivo pharmacology and safety pharmacology, toxicology as well as clinical trial services for the regulatory approval of novel drug and medical device products.



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NexusPharma

Cancer is the second leading cause of death in the United States, and there is a continuing need to provide new, safer cancer drugs to patients. We at NexusPharma are actively pursuing this unmet need to provide effective discovery tools to select novel therapeutics with fewer side effects for cancer patients. Together with Fox Chase Cancer Center, a co-founder of the company, we are dedicated to developing patient-derived tumor disease models to advance the discovery of effective drugs.

What began in 2005 in the research and clinical laboratories of Fox Chase Cancer Center to support better patient treatment has resulted in a panel of patient-derived xenograft (PDX) models to validate the biological activity of cancer treatment compounds.

These technologies have become the cornerstone for creating a pipeline of novel PDX models as more predictive drug discovery tools. NexusPharma characterizes its PDX models by genomic analysis, such as mRNA sequencing to unravel critical cancer signaling networks. In addition, genetic profile sequencing is validated using orthogonal quantitative methods.

NexusPharma is developing a database of compounds and their activities in various PDX or PDX derived cell lines. Together, using information about tumor model genetics, we are building a predictive correlation between biological targets and compound efficacy.

Services

NexusPharma specializes in the preclinical evaluation of novel anti-tumor agents.

We provide expertise in:

- Patient-derived xenograft (PDX) models
- Cell line-derived xenograft (CDX) syngenic models
- Ex vivo models

In collaboration with Fox Chase Cancer Center, we have initiated a program focused on developing PDX models in various cancer indications. These indications include, but are not limited to:

- pancreatic
- renal,
- esophageal
- gastric,
- colon
- rectal
- breast
- lung carcinomas
- lymphoma
- and many others.

The following information is available for all our established models; patient information, including stage/grade, age, gender, race, and tumor growth curves. For most of these tumor models, we also have information on adjuvant and neo-adjuvant treatments and patients responses. All initial specimens in our model collection have been developed predominantly from patients of Caucasian ethnicity.

The majority of models are accompanied by Whole Exome Sequence and RNA Seq data, oncogene panel sequences, microarray analysis of gene expression, as well as some limited information on xeno-trials in mice. We are more than happy to discuss the possibility of sharing with you our models on a non-exclusive basis. In addition, our broad IRB protocol with Fox Chase Cancer Center allows us to implant any type of tumor. We would be happy to implant models that are of particular interest to you.

Procedure

BRF identifies and consents the patient prior to surgery

BRF delivers a slip and transport vial

Freshly obtained tumor sample placed in media

PATHOLOGY

- BRF number assigned
- If not placed in the OR, a sterile 1cm³ tumor sample within 20 minutes in cold transport media
- Pathologist releases the BRF sample if deemed "residual" from clinical care

BIOSAMPLE REPOSITORY

Provides sample for PDX Implantation

Tumor tissue Processed

- Paraffin fixed
- Frozen
- Tumor and blood DNA

Clinical Information

Patient-derived Xenograft (PDX) Models

Models Available by Anatomic Site:

Head & Neck
- Thyroid
- Tongue Squamous Cell Carcinoma
- Oropharynx/Tonsil Squamous Cell Carcinoma
- Mouth Squamous Cell Carcinoma

Lymph Nodes
- Follicular Lymphoma
- Diffuse Large B-cell Lymphoma
- Mantle Cell Lymphoma
- Burkitt Lymphoma

Esophagus
- Esophageal Carcinoma

Lung
- Non-Small Cell Lung Cancer (NSCLC)
  - Non- Small Cell Carcinoma
- Small Cell Lung Cancer (SCLC)
  - Small Cell Carcinoma
- Mesothelioma
  - Epithelioid Pleural Mesothelioma

Breast
- HER2 Positive Breast Carcinoma
- Triple Negative Breast Carcinoma

Liver
- Hepatocellular
- Bile Duct

Stomach
- Gastric Carcinoma

Pancreas
- Pancreatic Ductal Adenocarcinoma

Kidneys
- Sarcomatoid Renal Cell Carcinoma
- Clear Cell Renal Carcinoma

Colon
- Colon Carcinoma

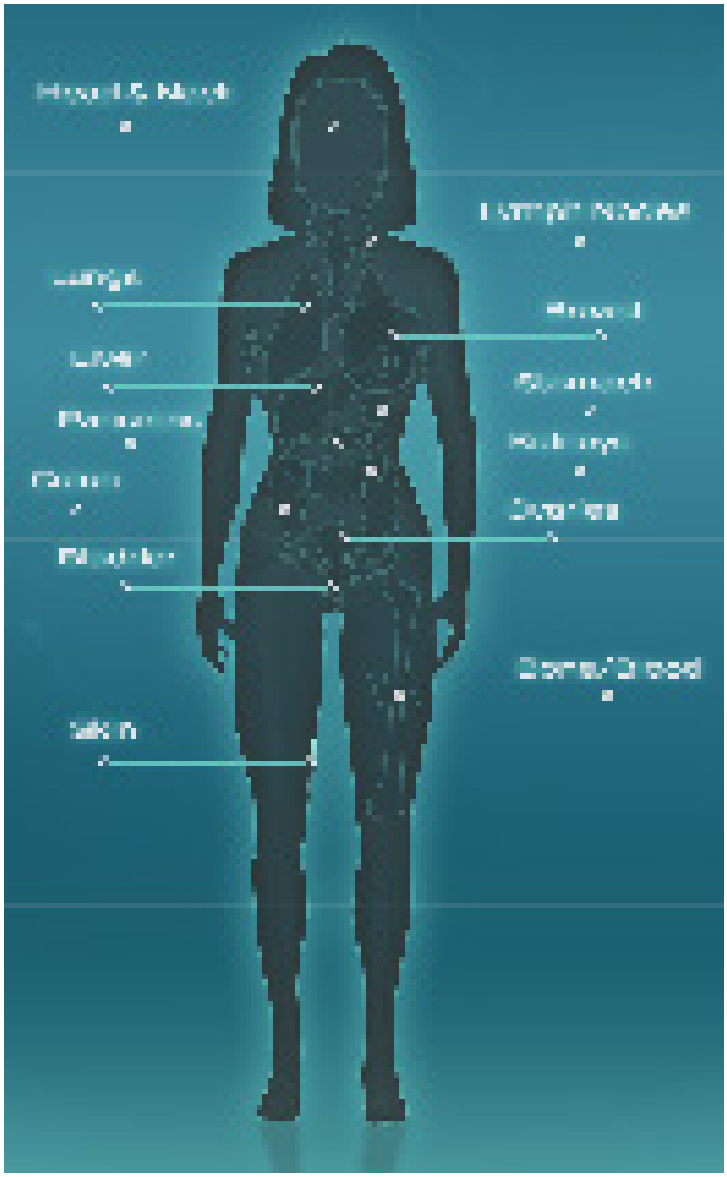
Anus
- Rectal Carcinoma

Ovaries
- Ovarian Carcinoma

Uterus
- Endometrial Carcinoma

Bladder
- Ureter Bladder Carcinoma

Skin
- Basal Cell Carcinoma
- Merkel Cell Carcinoma (Nasal)
- Melanoma



Database

Our cutting-edge website gives our clients access to a catalog of well-characterized preclinical cancer models through a single portal. This easy-to-use online database allows you to browse for suitable models to fit your research needs and maximize your program's success.

- Quick and easy model searching by:
  - Primary site
  - Model type
  - Cancer subtype
  - Gene mutation

Curated by our team of highly experienced professionals, our models provide a predictive, clinically relevant set of cancer drug discovery services for preclinical, translational, and clinical oncology research.

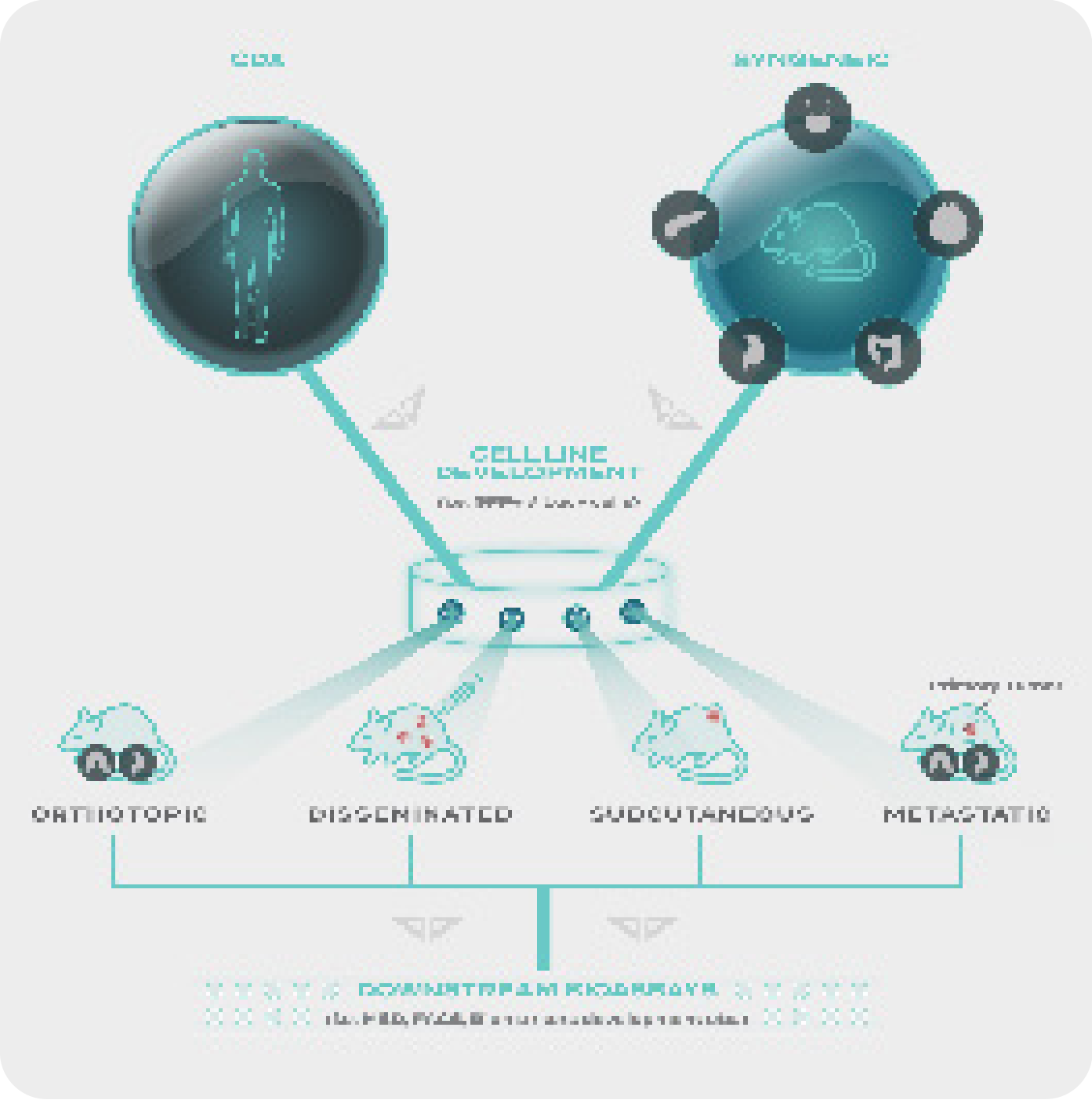
- A comprehensive set of models that reflect variability and oncogenic mutations
- Includes a complete record of tumors including treatment naïve, first presentation, and recurrent models
- Molecular profiling information on mutations and chromosomal aberrations such as duplication, deletion, and translocation

Custom Models

NexusPharma creates PDX models based on the specific client's request. These models might be developed on an exclusive or nonexclusive basis from primary and metastatic lesions with regard to patient ethnicity, medical history, and treatment protocols

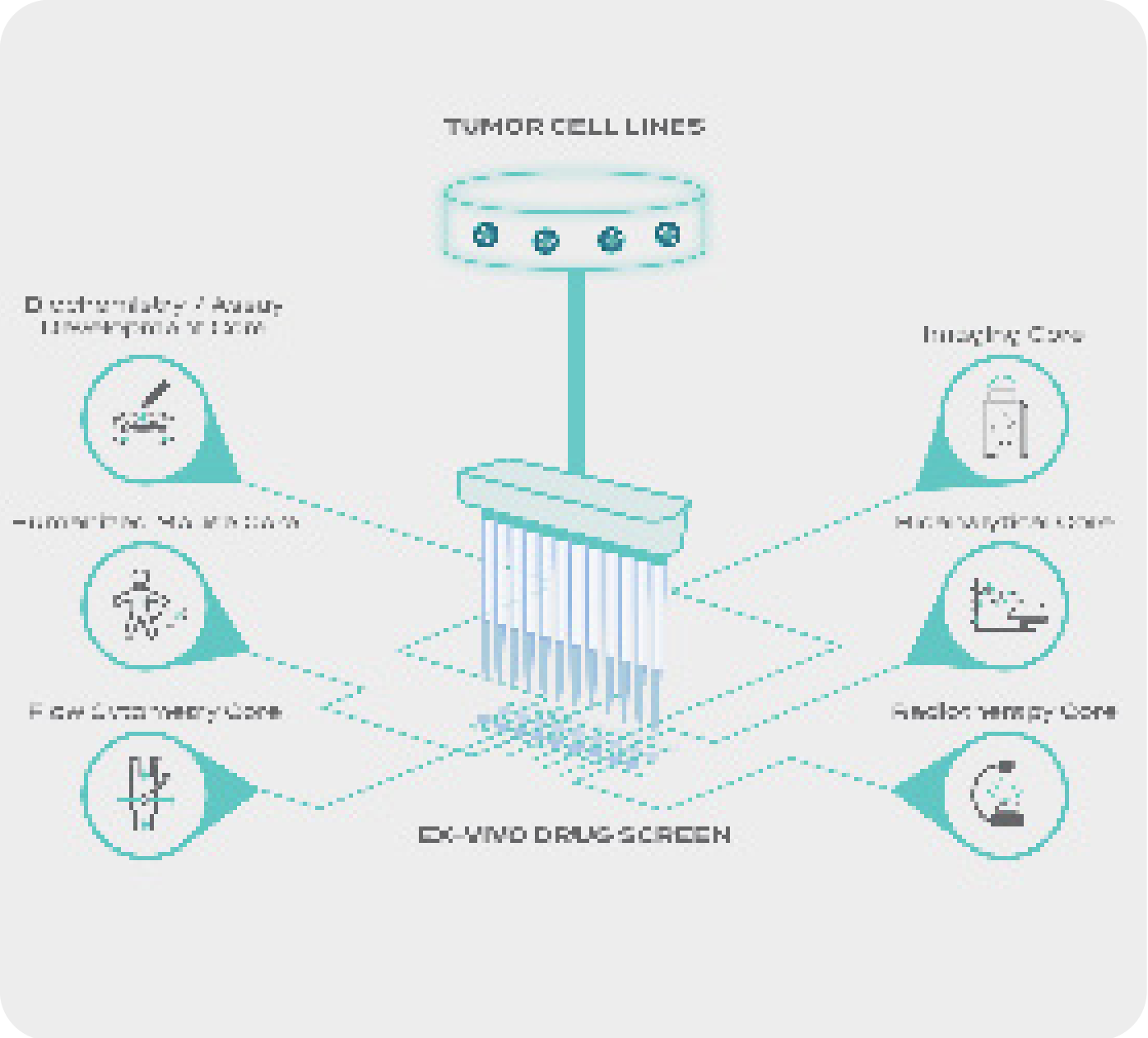
Cell-derived Xenograft (CDX) Models

NexusPharma, in collaboration with its sister company, Invivotek, has a growing biobank of syngeneic and cell line derived models. These cell lines can be implanted either as orthotopic, subcutaneous, metastatic, or disseminated models.



Ex Vivo Models

NexusPharma, in collaboration with its sister companies PharmOptima and Invivotek, offers a wide range of 2D and 3D cell culture systems, including ex-vivo co-culture assays to mimic the tumor microenvironment ex-vivo. These platforms are supported by our core services that offer a wide range of assays, including FACS, MSD, and novel biomarker development.



Vladimir Khazak
Head of Oncology

Dr. Vladimir Khazak is an experienced biologist with more than 20 years of working in multiple biopharmaceutical companies. He is the co-founder and Chief Scientific Officer of NexusPharma, heading biology research and development. He received an M.S. and Ph.D. from Chemical-Technical University, Moscow Institute for Genetics and Selection of Microorganisms, in Moscow, Russia. He completed his postdoctoral research at Fox Chase Cancer Center in Philadelphia, PA in the relationship between basic transcriptional apparatus and stress. Particular areas of expertise include genetics and molecular oncology with a particular emphasis on protein-protein interaction, gene regulation/ expression and signal transduction.

Collaborators

We are supported by a highly regarded international network of scientific collaborators, development experts, and other expert advisors, enabling a "virtual" development framework with:

- Specific biological expertise at universities and institutions such as the University of North Carolina at Chapel Hill, the University of California at Los Angeles, the University of Pennsylvania, as well as the University of Munich, Germany
- Collaborations on animal models and further drug development through the National Cancer Institute
- Animal pharmacokinetic and pharmacodynamics studies, and custom medicinal chemistry, through contract research organizations (CROs)

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