

A collage of three images: a healthcare worker in blue scrubs holding a patient's hand, a microscopic view of cells with purple and blue fluorescence, and a histological slide showing purple-stained tissue. These images are arranged in a triangular pattern on the left side of the slide.

Biopharma Services

Changing the view of cancer

Elephas overview

Elephas is committed to improving translatability through our technology enabling unique access to the tumor microenvironment delivering expedited decision making and de-risking of drug development.

Benefits of our Biopharma Services offering include:

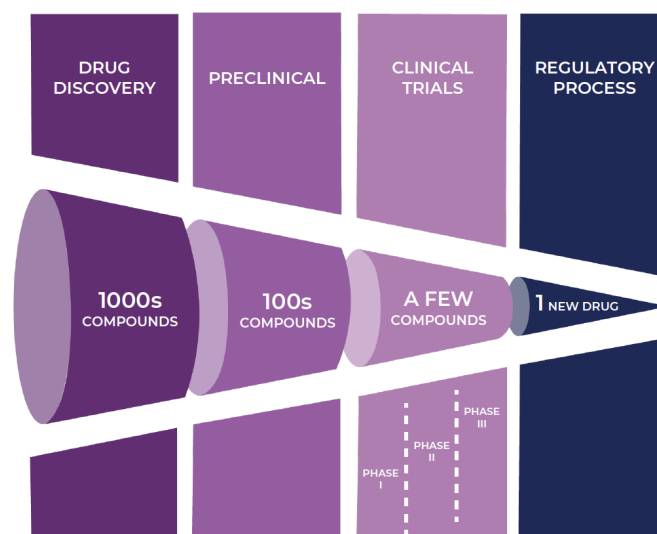
- Platform for analysis of oncology drugs using Live Tumor Fragments (LTFs)[™]
- Uniquely positioned to assess response to immunotherapies
- Multiomic assessment and spatial imaging
- Rapid turnaround and seamless data delivery

As growth in oncology drug development continues, challenges remain

ONCOLOGY DRUG DEVELOPMENT IS COSTLY, SLOW, AND OFTEN FAILS

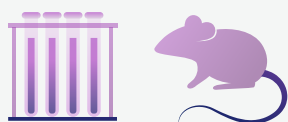
- \$2.8B median cost per approved drug
- Average time to market is 14 years
- Success rate for oncology drug development is <5%

Sources: Wong et al, *Biostatistics*, April 2019; Wouters et al, *JAMA*, March 2020.



THE ONCOLOGY DRUG DEVELOPMENT CONTINUUM TODAY:

PRECLINICAL TESTING & DEVELOPMENT



HUMAN CLINICAL TRIALS



OUTCOME

- >96% failure rate
- Lack of efficacy
- Unmanageable toxicity
- Poor drug-like properties



TRANSLATABILITY IS A CENTRAL ISSUE

Evaluation of drug induced immune response on primary, live tumor tissue in an ex vivo platform has been out of reach

The Cybrid™ platform allows us to produce LTFs™ that conserve the tumor microenvironment and architecture in a way that has never been accomplished before.



Live tumor fragments (LTFs)™

Multimic assessment and spatial imaging

Full data visibility <2 weeks

Conservation of native tumor microenvironment (TME) and architecture
➤ results in improved translatability, de-risking drug development

Human live tumor fragments (hLTFs)TM are generated from a single patient sample

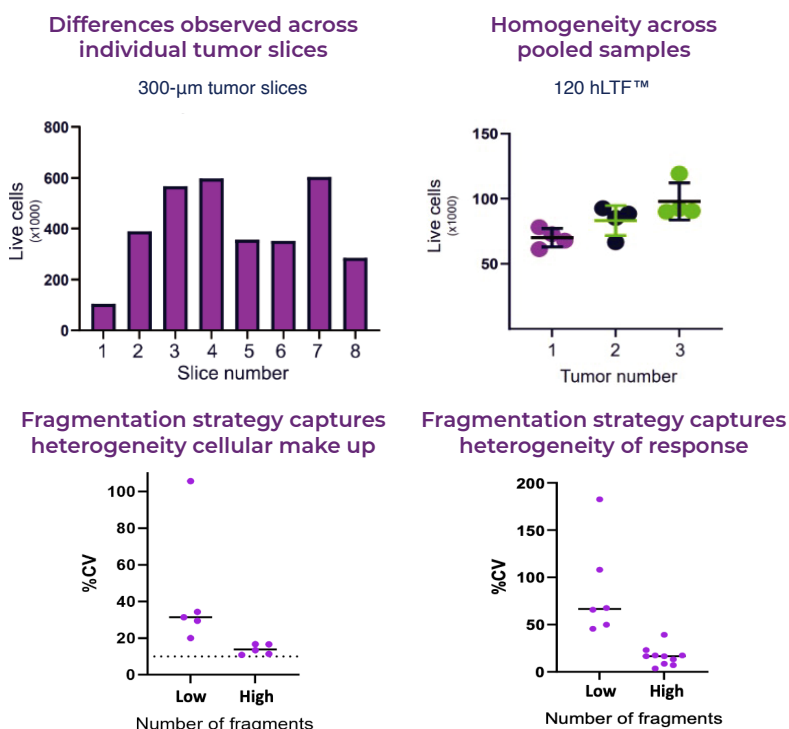
CybridTM's powerful fragmentation and processing technology captures the heterogeneity of tumor samples, while generating homogeneous pools of samples for analysis through proprietary sorting and randomization.



LTFsTM RESULT IN VIABLE, HOMOGENEOUS GROUPS WHILE CAPTURING HETEROGENEITY OF RESPONSE

Fragmenting and pooling strategy captures intratumor heterogeneity within a group while maintaining homogeneity between groups for comparison of response between treatments within a patient sample

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LTFs™ generated from different source tissue

CYBRID™ GENERATES LTFs™ FOR INTERROGATION ACROSS COMMONLY USED MODELS

HUMAN LTF™:
Human tumor



Humanized PDX LTF™:
Human tumor in mouse model with human immune cells



SOURCING NETWORK

ELEPHAS HAS ESTABLISHED PARTNERSHIPS WITH NETWORKS OF ONCOLOGY PROVIDERS FOR CONSENTED TUMOR SOURCING

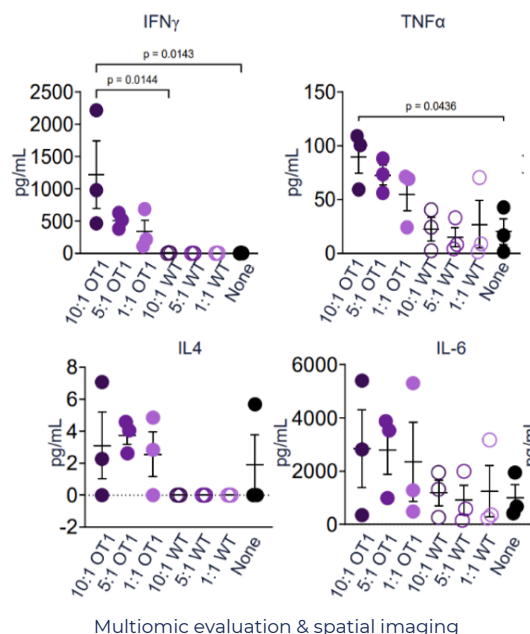
- Partnerships with networks of oncology providers for consented tumor sourcing
- De-identified information collected
 - Patient metadata
 - Treatment and follow-up response data

Orthogonal analysis performed against multiple treatment conditions on a single patient sample

SECRETOME PROFILING

- LTFs™ secretome profiling mimics in vivo results
- Utilizing Luminex® multiplex technology
- Standardized panel available, custom panels considered upon request

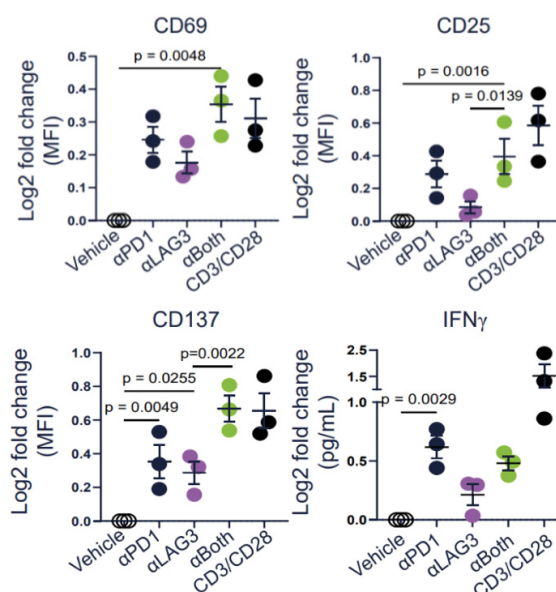
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CELLULAR MARKER ASSESSMENT

- Cellular markers in LTFs™ exhibit responses in line with known IO interventions
- Utilizes Cytex® Aurora spectral flow cytometer
- Broad based immunophenotyping panel of 18 markers focused on T-cells; custom panels considered upon request.

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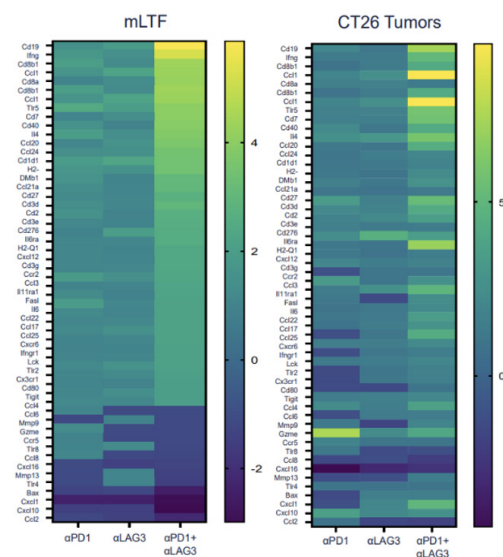
Changes in cell surface marker prevalence were observed in response to variable drug pressure including combinations. These results are in line with documented clinical results.

Orthogonal analysis performed against multiple treatment conditions on a single patient sample (cont'd)

TRANSCRIPTOME AND GENOME ANALYSIS

- Similarities between LTFs™ and in vivo gene expression observed in both direction and fold change in response to immune checkpoint blockade
- Nanostring nCounter® PanCancer IO 360™ Panel
- Additional panels available upon request

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In vivo tumors from treated CT26 were compared with treated mLTF fragments. Similar changes in direction and magnitude were observed.

SPATIAL IMAGING

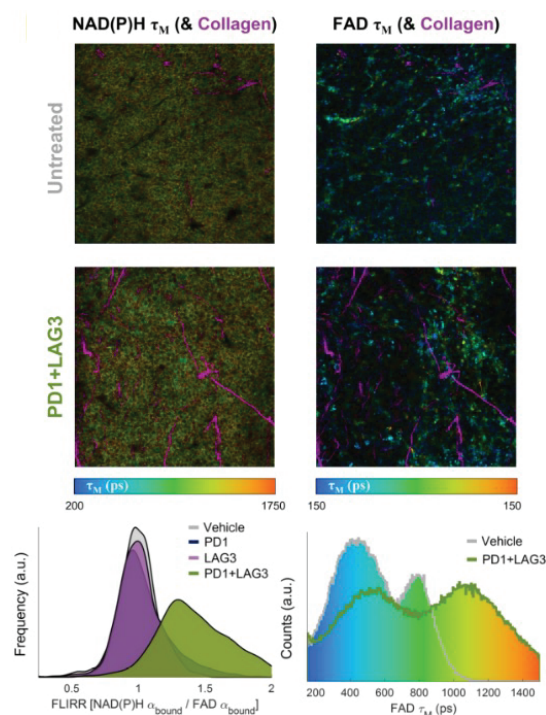
Elephas' spatial imaging techniques yield dynamic, 3D information regarding how cells organize and interact to influence the TME.

This allows for time course imaging of all cells in the tumor, label and label-free imaging, and spatial context for multiplexed assays. Imaging results are derived from multiphoton microscopy and second harmonic generation, fluorescence lifetime imaging, and optical coherence tomography.

Measured parameters:

- Metabolic state
- Live/dead analysis
- Real-time QC checks

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Frictionless exports of full data sets in under 2 weeks

A wealth of data from a variety of different treatment groups across a number of patient samples



- Data available in as little as two weeks
- Data compiled and delivered through a secure, cloud-enabled web application
- Seamless export of raw data sets



The power to accelerate every step of discovery and development

APPLICATIONS ACROSS THE DISCOVERY AND DEVELOPMENT CONTINUUM



BASIC RESEARCH

Explore pathways and mechanism of action across multiple patients and tumor types



DRUG DISCOVERY

Interrogate with multiple candidates, controls, and methods



PRECLINICAL

Head-to-head candidate and combination comparison within a patient sample



CLINICAL TRIALS

De-risk clinical trials & shape combination strategy



LABEL EXPANSION

Screen across multiple tumor types

Oncology drug development is growing more competitive by the day. Staying ahead demands solutions for today built with a vision for tomorrow. Elephas and the Cybrid platform are ready to help turn your vision into reality.

Discover more about Elephas Biopharma Services at www.elephas.com



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