TEMPUS | LIFE SCIENCES

CASE STUDY

Sequencing and Data Collaboration Case Studies

Discover, design, and deliver the right drug for the right patient. Tempus provides integrated solutions to help meet your needs from early discovery through commercialization.

As one of the leaders pioneering real-world data, Tempus' robust clinico-genomic database can be used in tandem with clinical trial sequencing to provide useful information about a potential clinical trial. Tempus' sequencing offering covers DNA tumor/normal, RNA transcriptome, and key immunotherapy metrics, allowing for a more holistic view to stratify likely responders and refine clinical biomarkers.

By merging biomarker discovery with our clinical trial assays and companion diagnostic (CDx) development, you can streamline commercialization with immediate access to Tempus' growing network of clinicians. Between our sequencing and data collection, we're connected to between our sequencing and data collection, we're connected to in some way to 40% of oncologists in the US and we have established relationships with more than half of all Academic Medical Centers in the US.

Supporting End-to-End Therapy Development

Pairing sequencing, analytics and data licensing with Tempus allows you to uncover new insights across the research and development spectrum:

- Generate data to identify subpopulations and develop more targeted therapies
- Compare trials data to real-world data
- Compare outcomes to on-market therapies
- Target Discovery: Leverage real-world multimodal data to identify disease subtypes and power discovery approaches that can lead to novel therapeutic opportunities
- Biomarker Development: Understand the relationship between biomarker expression patterns and clinical outcomes to on-market therapies to guide clinical development

01
Analyzing data to discover novel antigens and screen patients (using RNA sequencing)

SITUATION

A biopharma company was interested in working with a single partner for their sequencing, companion diagnostic (CDx) and data licensing needs. They engaged in a strategic collaboration with Tempus focused on two goals: 1) driving antigen discovery and validation, initially targeted to HPV genes, using Tempus multimodal data and 2) integrating RNA-Seq into their Clinical Trial Assay (CTA) screening workflow with Tempus xT to reduce time and costs associated with IHC-based screening.

SOLUTION

- Tempus delivered 250 HNSCC HPV positive multimodal records (with DNA, RNA, and clinical information) to the biopharma partner. The RNA data was used to confirm their antigen selection, and are now evaluating Tempus' clinical data more broadly to confirm their hypothesis in additional cohorts.
- Tempus has provided xT (DNA and RNA) sequencing services with a 92% success rate to date. RNA-Seq gene expression data is being used to determine the viability of switching to Tempus RNA-Seq for their CTA and eventual CDx development. DNA-Seq is being used to detect HPV.

RESULTS

Tempus provided a holistic, end-to-end solution for the biopharma partner, supporting early biomarker discovery using our database, clinical development using our broad panel xT and RNA sequencing assay, as well as CDx development capabilities.

02
Combining multiple data modalities through sequencing and data licensing to identify subpopulations and advance the development targeted therapies

SITUATION

A large pharma company was looking to find a strategic research partner to be a single source for next-generation sequencing (NGS) services and multimodal data (both molecular and clinical) across all clinical trial assets in multiple cancer indications. Their goal was to enhance their analytical capabilities at scale by including real-world data with their trial analyses.

SOLUTION

Tempus supplemented the company's sequencing data with multimodal data records, including molecular, clinical and imaging data for over 400 patients across more than 900 longitudinal samples, providing the partner with a more robust data set for their biomarker research.

The partner chose to pursue multiple NGS initiatives simultaneously—utilizing not one, but three Tempus assays:

- Tempus xE: whole exome assay with full-transcriptome RNA-Seq
- Tempus xF: 105-gene liquid biopsy panel
- Tempus xT: 648-gene solid tumor panel with full-transcriptome RNA-Seq

The partner received analysis from Tempus' Pathology and Operations teams to provide insight into tissue sample quality and flag high-risk samples early to reduce sequencing failure rates and ensure timely data delivery.

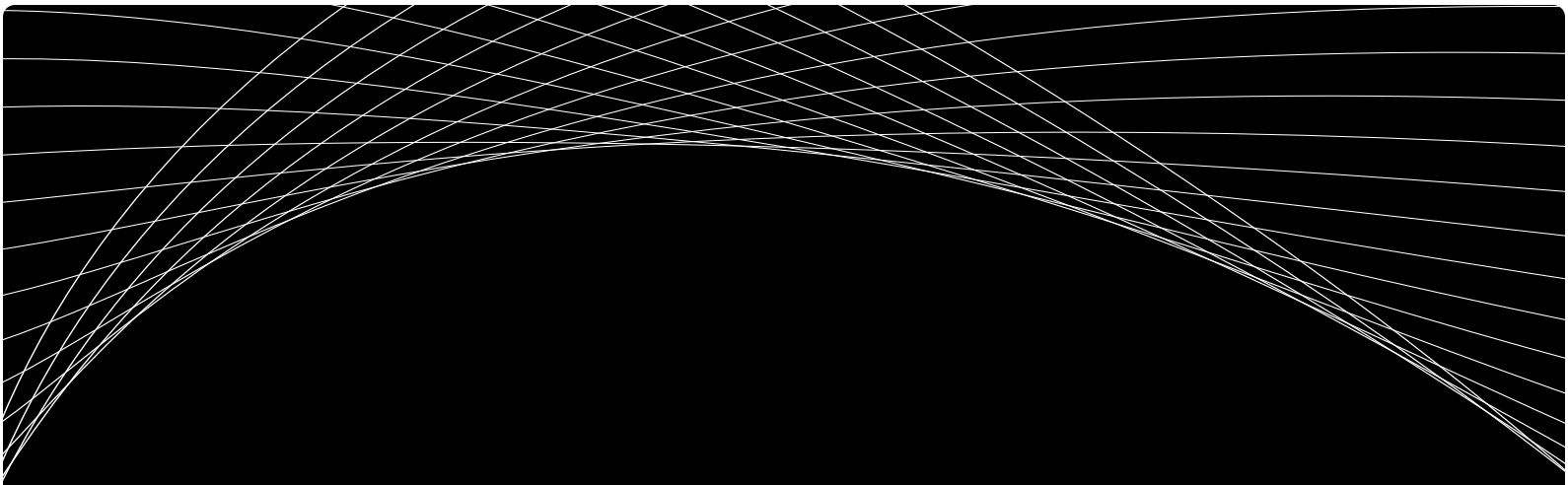
Through the joint research and project management team structure, Tempus provided comprehensive, efficient communication across all Tempus Sequencing services and quick average turnaround times (TAT) across our assays:

- 10 day TAT for xT solid tumor assay
- 7 day TAT for xF solid tumor assay
- 14 day TAT for xE whole exome assay

RESULTS

The collaborative analysis between the pharma partner and Tempus team identified a number of select subtype-specific surfaceome gene targets that were highly expressed in pancreatic cancer samples, but lowly expressed in normal tissue (GTEx) for further assessment. Several hundred potential targets for drug discovery were identified.

These targets are currently being assessed in collaborative analyses by researchers from Tempus and the pharma partner, using antibody databases, cell-type analyses, immune infiltration, and biological mechanisms and pathways as guiding principles. Validated targets may then become candidate genes for future drug development



They are currently enrolling via IHC, but are interested in switching to RNA-based methods (across several genes including MAGE-A4, PRAME and NY-ESO-1) for enrollment if concordance is demonstrated. Tempus' RNA Sequencing (RNA-Seq) capabilities can be used to agnostically screen patients for expression of every gene so that only patients likely to be positive are tested with a clinically-validated IHC. Where IHC and RNA-Seq are highly concordant, RNA-Seq can potentially replace IHC upon validation.