AVENIO family of NGS oncology assays
ctDNA and Tumor Tissue Analysis Kits
Next-generation sequencing (NGS) has the ability to interrogate many different genes and detect multiple variants concurrently using a single assay.

The speed, efficiency and high-throughput capabilities of NGS is accelerating the pace of new discoveries in cancer genomics, enabling clinical researchers to make rapid advances towards personalized oncology.
The AVENIO family of NGS oncology assays provides comprehensive insights into the genomic complexities of cancer from tissue and plasma samples.
AVENIO ctDNA Analysis Kits
Three NGS liquid biopsy assays
Leverage a versatile solution for multiple research applications

Comprising three liquid biopsy assays and three corresponding tumor tissue assays with exactly matched panels, the AVENIO family of NGS oncology assays offers a uniquely versatile solution for tumor profiling, monitoring and concordance analysis.

Innovative panel design and workflow

The AVENIO family of assays comprises ctDNA (circulating tumor DNA) and Tumor Tissue Targeted, Expanded and Surveillance kits. The gene panel included in each kit contains biomarkers relevant to clinical cancer research over the course of disease evolution.

Targeted Kits

17 genes
81 kb
17 guideline-aligned biomarkers for comprehensive genomic profiling* of solid tumors

Expanded Kits

77 genes
192 kb
17 guideline-aligned and 60 emerging biomarkers investigated in clinical trials for expanded profiling of solid tumors

Surveillance Kits

197 genes
198 kb
17 guideline-aligned biomarkers plus 180 genes specially optimized for longitudinal monitoring of tumor burden and detection of minimal residual disease in lung and colorectal cancer

Analytical concordance

AVENIO kits are built for versatility, providing the ability to switch between tissue and plasma in order to support a variety of potential research applications. The analytical concordance feature in the AVENIO Oncology Analysis Software enables a simple, yet detailed comparison of results across any two samples.

* AVENIO comprehensive genomic profiling assays accurately and reliably identify alterations in genes known to be somatically altered in cancer. These genes are sequenced at great depth to identify the relevant somatic alterations, including SNVs, indels, CNVs and fusions.

Exactly-matched panels in corresponding ctDNA and tissue kits, as well as the inclusion of the same 17 guideline-aligned biomarkers in all AVENIO assays facilitate concordance analysis.
Potential research applications

**Example A**

**Targeted Kit**
Identify biomarkers in NCCN Guidelines

**Example B**

**Surveillance Kit**
Monitor tumor burden longitudinally in lung cancer and colorectal cancer

**Example C**

**Surveillance Kit**
Surveil post-surgery for minimal residual disease in lung cancer and colorectal cancer

---

* The Tumor Tissue Surveillance Kit may also be used if a tumor tissue sample is available.
Attain detailed insights into this complex disease

AVENIO assays detect all four mutation classes with exceptional sensitivity and specificity. These assays provide a comprehensive and dynamic picture of cancer, enabling a better understanding of this complex disease.

All four mutation classes from DNA

Unlike assays that require both DNA and RNA to detect all four mutation classes, AVENIO assays can accurately identify SNVs, indels, CNVs and fusions using a single DNA workflow.

SNV
Single Nucleotide Variant

Indel
Insertion or Deletion

Fusion

CNV
Copy Number Variant
Exceptional performance

Rigorously optimized using thousands of samples, AVENIO assays deliver the level of performance you expect from Roche, a world leader and trusted partner in oncology.

### AVENIO Tumor Tissue Analysis Kits

<table>
<thead>
<tr>
<th>Mutant Allele Frequency/ Copy Number</th>
<th>SNVs</th>
<th>Indels</th>
<th>Fusions</th>
<th>CNVs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sensitivity</td>
<td>PPV</td>
<td>Sensitivity</td>
<td>PPV</td>
</tr>
<tr>
<td>AVENIO Tumor Tissue Kit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Targeted</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Expanded</td>
<td>&gt;99%</td>
<td>&gt;98%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Surveillance</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
</tr>
</tbody>
</table>

Samples: 2x10 μm FFPE tissue curls/sections
DNA input: 20 ng of amplifiable DNA, total DNA amount for each sample determined by input QC

Sensitivity and Positive Predictive Value (PPV) metrics based on typical product performance. Sensitivity and PPV performance reported per variant. SNV performance is panel-wide. Indel, Fusion and CNV performance based on whitelist variants. Results above were tested at the stated mutant allele frequencies. AVENIO Tumor Tissue Analysis Kits also achieve >99.999% per base specificity across each of the panels. Stated performance requires at least 20 million reads per sample for Targeted, Expanded and Surveillance Kits. Sequencing performed on an Illumina NextSeq 500 instrument.

### AVENIO ctDNA Analysis Kits

<table>
<thead>
<tr>
<th>Mutant Allele Frequency/ Copy Number</th>
<th>SNVs</th>
<th>Indels</th>
<th>Fusions</th>
<th>CNVs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVENIO ctDNA Kit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Targeted</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Expanded</td>
<td>&gt;99%</td>
<td>&gt;98%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Surveillance</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
<td>&gt;99%</td>
</tr>
</tbody>
</table>

Performance samples - cell line mixes, ctDNA
10ng-50ng input

Sensitivity and Positive Predictive Value (PPV) metrics based on typical product performance. Sensitivity and PPV performance reported per variant. SNV performance data based on hotspot calls. CNV performance based on ERBB2, EGFR and MET genes. Results above were tested at the stated mutant allele frequencies. AVENIO ctDNA Analysis Kits also achieve >99.999% per base specificity across each of the panels. Stated performance requires at least 40 million reads per sample for Targeted Kit and 60 million reads per sample for Expanded and Surveillance Kits. Sequencing performed on an Illumina NextSeq 500 instrument.

For Research Use Only. Not for use in diagnostic procedures.
Empower your lab to bring NGS testing in-house

Ready-to-use AVENIO assays, which include reagents, analysis and reporting, empower labs to take control of their oncology tests and samples by bringing high-quality NGS liquid biopsy and tumor tissue testing in-house.

In-house testing enables labs to:
• Eliminate potential loss of samples during test send-out
• Obtain test results in only 5 days versus 10-14 days with test send-out
• Expand the lab’s testing menu

End-to-end workflow from extraction to reporting in five days

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolation</td>
<td>Library Generation</td>
<td>Target Enrichment</td>
<td>Sequencing</td>
<td>Analysis &amp; Report</td>
</tr>
</tbody>
</table>

AVENIO Tumor Tissue Analysis Kits

- AVENIO Tumor DNA Isolation & QC Kit
- AVENIO Tumor Library Prep Kit
- AVENIO Tumor Enrichment Kit
- AVENIO Tumor Sample Primers (Plate A or Plate B)
- AVENIO Tumor Cleanup & Capture beads
- AVENIO Tumor Panels
- AVENIO Post-Hybridization Kit

AVENIO ctDNA Analysis Kits

- AVENIO ctDNA Isolation Kit
- AVENIO ctDNA Library Prep Kit
- AVENIO ctDNA Enrichment Kit
- AVENIO ctDNA Panels
- AVENIO ctDNA Library Prep Kit
- AVENIO Post-Hybridization Kit

Illumina NextSeq 500/550 instrument

AVENIO Oncology Analysis Software

For Research Use Only. Not for use in diagnostic procedures.
Robust, intuitive analysis and reporting

With a focus on clarity and simplicity, the AVENIO Oncology Analysis Software helps minimize the complexity and effort required to generate extensive insights from tumor sequencing data. Data can be analyzed using preconfigured or customized workflows. The system provides analytical details and reports on variant calls and sequencing quality metrics.

In addition, labs can now easily run concordance analyses to compare results across sample types, and for samples taken at different time points.

**Variant Calling**
- Genes with identified variants
- Mutation class of detected variants (SNVs, Indels, Fusions, CNVs)
- Mutant allele frequency
- Number of mutant molecules per ml in plasma
- Per sample annotation from public databases
- Advanced search and filtering options

**Sequencing Quality Metrics**
- Sequencing depth
- Coverage uniformity
- On-target rate
- Number of read pairs
AVENIO family of NGS oncology assays

Specifications

<table>
<thead>
<tr>
<th>Panel size</th>
<th>Sample</th>
<th>Input quantity</th>
<th>Turn around time (Extraction to results)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVENIO ctDNA Targeted Kit</td>
<td>81 kb</td>
<td>4 ml plasma</td>
<td>10-50 ng</td>
</tr>
<tr>
<td>AVENIO ctDNA Expanded Kit</td>
<td>192 kb</td>
<td>4 ml plasma</td>
<td>10-50 ng</td>
</tr>
<tr>
<td>AVENIO ctDNA Surveillance Kit</td>
<td>198 kb</td>
<td>4 ml plasma</td>
<td>10-50 ng</td>
</tr>
<tr>
<td>AVENIO Tumor Tissue Targeted Kits</td>
<td>81 kb</td>
<td>2x10 μm FFPET curls/sections</td>
<td>20 ng of amplifiable DNA</td>
</tr>
<tr>
<td>AVENIO Tumor Tissue Expanded Kits</td>
<td>192 kb</td>
<td>2x10 μm FFPET curls/sections</td>
<td>20 ng of amplifiable DNA</td>
</tr>
<tr>
<td>AVENIO Tumor Tissue Surveillance Kits</td>
<td>198 kb</td>
<td>2x10 μm FFPET curls/sections</td>
<td>20 ng of amplifiable DNA</td>
</tr>
</tbody>
</table>

Ordering information

<table>
<thead>
<tr>
<th>Roche cat. no.</th>
<th>Description</th>
<th>Kit size</th>
</tr>
</thead>
<tbody>
<tr>
<td>08061068001</td>
<td>AVENIO ctDNA Targeted Kit</td>
<td>16 reactions</td>
</tr>
<tr>
<td>08061076001</td>
<td>AVENIO ctDNA Expanded Kit</td>
<td>16 reactions</td>
</tr>
<tr>
<td>08061084001</td>
<td>AVENIO ctDNA Surveillance Kit</td>
<td>16 reactions</td>
</tr>
<tr>
<td>08456372001</td>
<td>AVENIO Tumor Tissue Targeted Kit (Plate A)</td>
<td>24 reactions</td>
</tr>
<tr>
<td>08456348001</td>
<td>AVENIO Tumor Tissue Targeted Kit (Plate B)</td>
<td>24 reactions</td>
</tr>
<tr>
<td>08456321001</td>
<td>AVENIO Tumor Tissue Expanded Kit (Plate A)</td>
<td>24 reactions</td>
</tr>
<tr>
<td>08456356001</td>
<td>AVENIO Tumor Tissue Expanded Kit (Plate B)</td>
<td>24 reactions</td>
</tr>
<tr>
<td>08456330001</td>
<td>AVENIO Tumor Tissue Surveillance Kit (Plate A)</td>
<td>24 reactions</td>
</tr>
<tr>
<td>08456399001</td>
<td>AVENIO Tumor Tissue Surveillance Kit (Plate B)</td>
<td>24 reactions</td>
</tr>
</tbody>
</table>

Team up with Roche, your trusted partner in oncology.
Contact your Roche representative today.

For Research Use Only. Not for use in diagnostic procedures.


Published by:
Roche Sequencing Solutions, Inc.
4300 Hacienda Drive
Pleasanton, CA 94588

sequencing.roche.com/avenio

AVENIO is a trademark of Roche. All other product names and trademarks are the property of their respective owners.

© 2018 Roche Sequencing Solutions, Inc. All rights reserved.