Until now, assays of kinase activity have been performed using radioactive isotopes or highly specific antibodies. To address this, Molecular Devices introduced its proprietary IMAP® Technology, providing a non-radioactive, homogeneous assay applicable to a wide variety of kinases without regard for the substrate peptide sequences. The assay is a simple “mix-and-read” procedure that allows accurate determination of enzyme activity.

What is IMAP Technology?

IMAP Technology is based on the specific, covalent-coordinate, high-affinity interaction of trivalent metal containing nanoparticles with phosphogroups. These phosphogroups can be free, linked to serines, threonines or tyrosines, or other molecules which make the IMAP Platform a generic to assess kinase, phosphatase and phosphodiesterase activity. This basic principle has been used in the IMAP Binding System using both fluorescence polarization and TR-FRET (as a readout). In a microwell assay format, fluorescently-labeled peptides are phosphorylated in a kinase reaction. Addition of the IMAP Binding System stops the kinase reaction and specifically binds the phosphorylated substrates. Phosphorylation and subsequent binding of the substrate to the beads can be detected either by FP (Figure 1) or TR-FRET (Figure 2).
Complete solution

Strong signals
Assays using IMAP Technology deliver an intense fluorescent signal that produces high precision and robust results, even in the presence of interfering compounds.

Simple protocol
The IMAP Kinase Assay protocol is easy to use. The kinase reaction mixture is incubated with the binding reagent, then the microplate is read by Molecular Devices SpectraMax i3, SpectraMax Paradigm, or SpectraMax M5 Multi-Mode Microplate Readers.

IMAP Assay Kits
IMAP Assay Kits provide a turnkey solution to evaluate the IMAP Platform and smoothly transition into high-throughput screening. These all-inclusive assay kits are ready to use in assay validation or screening. They also provide the starting point for understanding the IMAP Platform and adapting it to new targets.

Alternate targets
IMAP Technology is designed to be easily adapted to any kinase of interest. With its ease of use, stable signal and inherent flexibility, it is ideal for the rigorous demands of high-throughput screening (HTS).

IMAP Screening Express
IMAP Screening Express consists of the proprietary IMAP beads and buffers for 8,000 data points in a standard 384-well format. This kit is designed for customers who have their own enzyme and substrate. With the IMAP Progressive Binding System, researchers can “fine-tune” the IMAP assay, i.e., adjust the parameters that affect ATP tolerance and background signal, to achieve optimal results according to their individual assay requirements.

IMAP Purchase Plan (IPP)
The IMAP Purchase Program (IPP) is a discount program targeted for users in high-throughput environments. IMAP Beads and Buffers can be purchased at preferential prices for a yearly subscription fee. This worldwide program covers all sites within a participating corporation.

Substrates for IMAP Assays
Substrates are optimized for each enzyme to ensure the finest performance when using the IMAP Platform. Substrates are sold in kits for testing 8,000 and 50,000 data points. Our R&D team is continuously adding to our inventory of pre-validated substrates for use with the IMAP Technology.
IMAP FP Substrate Finder

IMAP FP Substrate Finder plates accelerate the difficult task of finding new substrates for new or proprietary kinases. These kits provide a quick, sensitive, yet inexpensive method to screen dozens of substrates for new kinases of interest. IMAP binding conditions for substrates identified from these FP detection-based plates can be optimized using either FP or TR-FRET detection.

**FP vs. TR-FRET detection.** Akt inhibition with staurosporine: Comparison of IMAP TR-FRET (top) and IMAP FP (bottom) detection. Reaction conditions: Akt kinase (0.1U/mL, Upstate: 14-276), 300 nM, 1μM, 3μM FAM-Crosstide (5FAM-GRPRTSSFAEG-COOH, R7110), 10 μM ATP, Staurosporine as indicated. IMAP Binding Solution: 40% Binding Buffer A, 60% Binding Buffer B, Progressive Binding Reagent 1:400.

**IMAP Assay Kits**

**IMAP Screening Express (8,000 dp/kit)**
- Binding System, FP
- Binding System, TR-FRET

**IMAP Substrates**
- A wide range of validated fluorescently-labeled substrates

**IMAP FP Substrate Finder**
- Ser/Thr Kinase Plate 1 (CAMK/AGC)
- Ser/Thr Kinase Plate 2 (CMGC/CK1/STE/TKL)
- Tyrosine Kinase Plate

Please contact your Molecular Devices sales representative or Customer Service for a current list of IMAP products and details on quantities and bulk discounts.
Ordering information

<table>
<thead>
<tr>
<th>Reagent</th>
<th>Description</th>
<th>Part number</th>
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<tbody>
<tr>
<td>IMAP® FP Evaluation Kit, with Progressive Binding System</td>
<td>For kinase and phosphatase fluorescent polarization assays. Consists of the proprietary IMAP Binding Reagent and Binding Buffers for 800 data points in a standard 384 well format.</td>
<td>R8155</td>
</tr>
<tr>
<td>IMAP® TR-FRET Evaluation Kit with Progressive Binding System</td>
<td>For kinase and phosphatase TR-FRET assays. Consists of the proprietary IMAP Binding Reagent and Binding Buffers for 800 data points in a standard 384 well format.</td>
<td>R8161</td>
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<tr>
<td>IMAP® Phosphodiesterase FP Evaluation Kit</td>
<td>For Phosphodiesterase (PDE) fluorescent polarization assays. Consists of the proprietary IMAP Binding Reagent, cAMP and cGMP substrates, and Binding Buffers for 800 data points in a standard 384 well format.</td>
<td>R8175</td>
</tr>
<tr>
<td>IMAP® Phosphodiesterase TR-FRET Evaluation Kit</td>
<td>For Phosphodiesterase (PDE) TR-FRET assays. Consists of the proprietary IMAP Binding Reagent, cAMP and cGMP substrates, and Binding Buffers for 800 data points in a standard 384 well format.</td>
<td>R8176</td>
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<tr>
<td>IMAP® FP Screening Express Kit with Progressive Binding System</td>
<td>Fluorescence Polarization Screening Express Kit with Progressive Binding System. Consists of the proprietary IMAP Binding Reagent and Binding Buffers for 8000 data points in a standard 384 well format.</td>
<td>R8127</td>
</tr>
<tr>
<td>IMAP® TR-FRET Screening Express Kit with Progressive Binding System</td>
<td>TR-FRET Screening Express Kit with Progressive Binding System. Consists of the proprietary IMAP Binding Reagent and Binding Buffers for 8000 data points in a standard 384 well format.</td>
<td>R8160</td>
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</tbody>
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Compatible with these Molecular Devices systems

- **SpectraMax® i3/i3x Multi-Mode Microplate Reader**
- **SpectraMax® Paradigm® Multi-Mode Microplate Reader**
- **FlexStation® 3 Multi-Mode Microplate Reader**
- **SpectraMax® M Series Multi-Mode Microplate Readers**

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Check our website for a current listing of worldwide distributors.

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- **Europe**: 00800.665.32860  
- **China (Beijing)**: +86.10.6410.8669  
- **China (Shanghai)**: +86.21.3372.1088  
- **Hong Kong**: +852.3971.3530  
- **Japan**: +81.3.6362.9109  
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