

The pharmaceutical and biotechnology sectors are faced with increasing pressure to keep a steady stream of novel compounds in the drug discovery 'pipeline' while at the same time controlling their research spending in connection with bringing new compounds to the marketplace. To make this a reality, companies are partnering with organizations that possess the knowledge and resources to accelerate the pace of their drug discovery programs. NovaScreen Biosciences develops, utilizes, and provides a comprehensive array of services and products to improve the productivity, accelerate the pace, and reduce the cost of your pharmaceutical research and development projects.

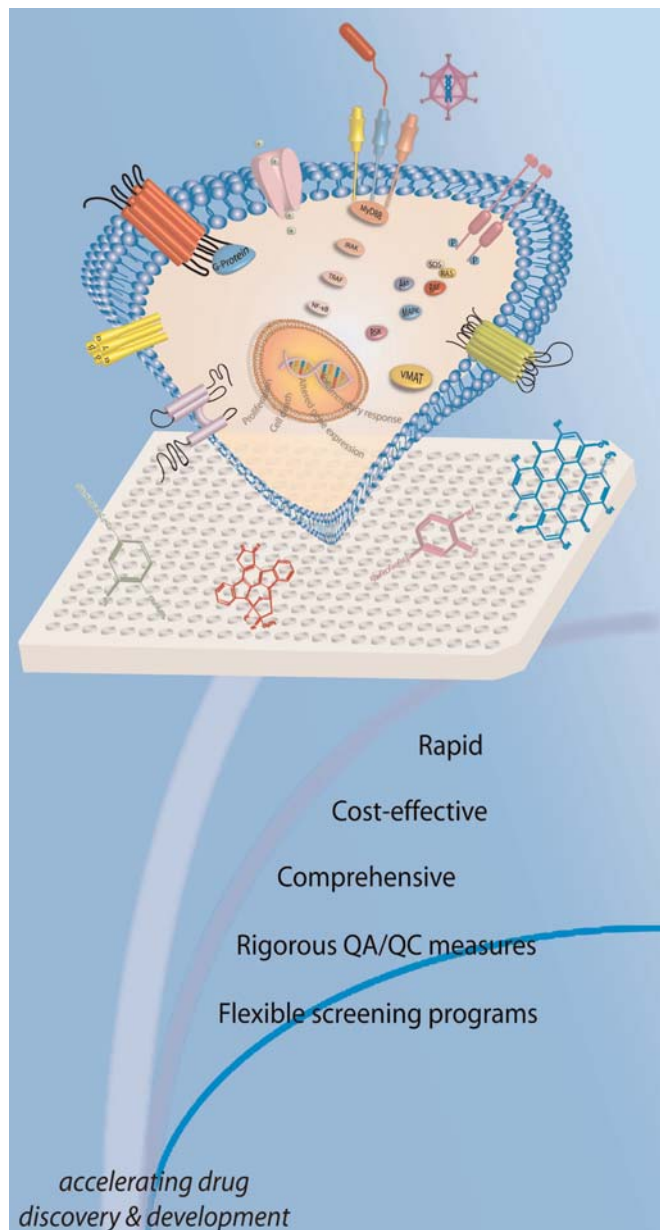
NovaScreen established PROFILE services over 18 years ago

- PROFILEing lead drug candidates through broad assay panels is now the industry standard for side effect & selectivity assessment
- NovaScreen offers many PROFILE programs to fit your drug discovery & development needs
  - Side Effect PROFILES
  - KinaseAdvisor Diversity PROFILE
  - GPCR PROFILE
  - Therapeutic PROFILES

In addition to our Standard PROFILE Services, NovaScreen offers:

- Over 650 standard assays relevant to the discovery & development of drug candidates
  - HTS
  - PROFILEing
  - Lead selectivity testing
  - Drug optimization
- Custom Services
  - Assay development
  - Cell/molecular biology
- Pharmacoinformatics database programs
- Membrane preparations for screening

Whether your outsourcing needs consist of 'one-off' projects or entire screening programs from HTS to PROFILEing to lead optimization, NovaScreen is ready to work with you as your drug discovery & development partner.





## KinaseAdvisor™ Diversity PROFILE

The KinaseAdvisor Diversity PROFILE consists of 48 protein kinase assays spanning the major groups of the human kinome. NovaScreen kinase assays are performed using the Caliper LabChip® 3000 technology platform which integrates microfluidic technology and electrophoretic charge separation, is antibody free, and allows for the direct measurement of enzyme product and substrate yielding high signal-to-noise ratios and Z' values.

Abl	EphA2	Lck	PKD1
Akt1 (PKB $\alpha$ )	FGFR3	Lyn	PIM2
Akt2 (PKB $\beta$ )	Flt3	MAPK1 (Erk2)	PKA
AMPK	Fyn	MAPK3 (Erk1)	PKC $\beta$ 2
AurA (Aur2)	GSK3 $\beta$	MAPK14 (p38 $\alpha$ )	PKC $\zeta$
BTK	IGF1R	MAPKAPK2	PKD2
CaMK2 $\alpha$	IKK $\beta$	MAPKAPK5 (PRAK)	cRAF (RAF1)
CaMK4	InsR	Met	ROCK2
CDK2/cyclinE	IRAK4	MSK1	RSK1 (p90RSK)
CHK1	Jnk2	MST2	SGK1
CHK2	KDR (VEGFR2, FLK1)	p70S6K	SRC
CK1 $\delta$	c-Kit	PAK2	Syk



## Customized Screening Programs & Assay Development

### Assay Development

NovaScreen develops more than 50 assays per year for our clients. We incorporate broad technology platforms and detection methods providing flexible assay development projects. Some of the technology platforms and detection methods available at NovaScreen include: Caliper LabChip® 3000, Luminex xMAP®, FACSArray™, EnVision™ and FlexStation.

- Radioactivity
  - Filtration-based
  - SPA
  - FlashPlate

- Fluorescence
  - FRET
  - TRF
  - FP

- ELISA
- RIA
- HPLC
- Luminescence
- UV-Vis Absorption

### Customized Screening Programs

In addition to drug profiling, NovaScreen offers a growing portfolio of over 650 assays that are available for your high-throughput screening, 'one-off' lead selectivity or lead optimization projects. Each of these assays has been fully validated in our laboratories and we employ rigorous QA/QC measures to ensure the data you receive is of the highest quality.

#### Ligand Binding assays

- GPCRs
- Voltage- & Ligand-gated Ion channels
- Nuclear receptors
- Transporters

#### Enzyme assays

- Anhydrases & Esterases
- Kinases (including protein & lipid)
- Miscellaneous (COMT, ChaT, GAD)
- Phosphatases
- Proteases (Caspase & Matrix-Metallo)
- Oxidases, Oxygenases & Reductases

#### In vitro antimicrobial assays

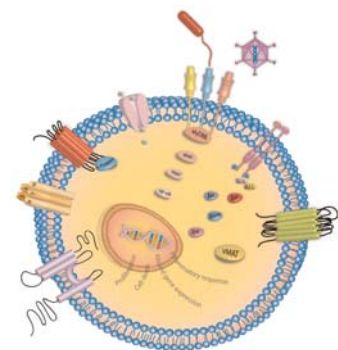
- Fungi
- Gram negative & positive bacteria

#### Cell-Based & Functional assays

- Transport
- Second messenger
- Cellular release of cytokines & chemokines using human cell lines & Toll-Like Receptors expressed in HEK293 cells
- Cell surface markers

#### In vitro ADME-TOX assays

- Apoptosis (enzyme inhibition & activation)
- Proliferation & Viability
- Cytotoxicity (mechanism-based: cellular respiration, metabolism & anabolism)
- Metabolism (Cytochrome P450, drug stability, drug half-life, mitochondrial electron transfer)



## Pharmacoinformatics- Side Effect Database (SED™) Program

NovaScreen offers a major addition to the PROFILE toolbox through the creation of our pharmacoinformatics program, the **Side Effect Database (SED)**. Our SED contains profile data for more than 2,300 compounds including marketed, failed, withdrawn, and OTC drugs as well as reference agents, agrochemicals and natural product compounds which have been screened through 65 ligand binding & enzyme assays. The result is a highly enriched, full-rank compound dataset of more than a half a million datapoints to assist in identifying and eliminating side effect and safety concerns for your drug candidates.

The SED is designed to help you query and determine patterns of chemical - molecular target interactions that are correlated with specific biological activities or clinical outcomes. With the SED, you can select lead compounds at an early stage with increased confidence and accuracy.

### Applications of the NovaScreen SED:

#### Full SED database

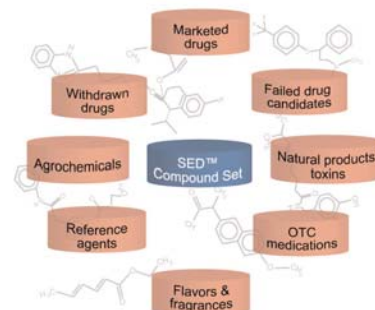
Access to the full database

#### SEDSelect™

Clients can select PROFILE data for specific compounds listed in the SED database

#### SED Comparative Pharmacology Services

Client compound(s) are profiled through the same SED assay set and the profile data are then compared with the compounds in the NovaScreen side effect database.



## Custom Services & Products

### Cell culture & molecular biology services

NovaScreen has extensive experience in culturing a wide range of mammalian cell lines (including primary), as well as using whole cells or harvested subcellular components for performing assay services. This service is now available for those companies that require assistance in improving or expanding their cell culture capabilities or lack the necessary resources in-house.



### Products

#### Membrane preparations for screening

Many of NovaScreen's assays utilize human cell line source material which we have made available to assist companies with their drug discovery & development programs. To ensure that researchers receive cell membrane preparations of the highest quality, each lot of NovaScreen's 'ready-to-use' preparations comes with a pharmacological evaluation including  $K_D/B_{max}$  values and graphical representations of reference curve(s) with  $K_i$  values.



**NOVASCREE**

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