

# **SEEDSUPPLY for Drug Discovery**

**Supply hit compounds and target proteins**

September, 2017

**SEEDSUPPLY Inc.**

CEO

Naoki Tarui

# Company Overview

**Established:** May 15, 2017 (Spin-out from Takeda Pharmaceutical Company)

**Location:** Japan (Fujisawa, Kanagawa)

**Business:** · Support for drug discovery  
· in-house drug discovery (Joint projects with pharma/academia)

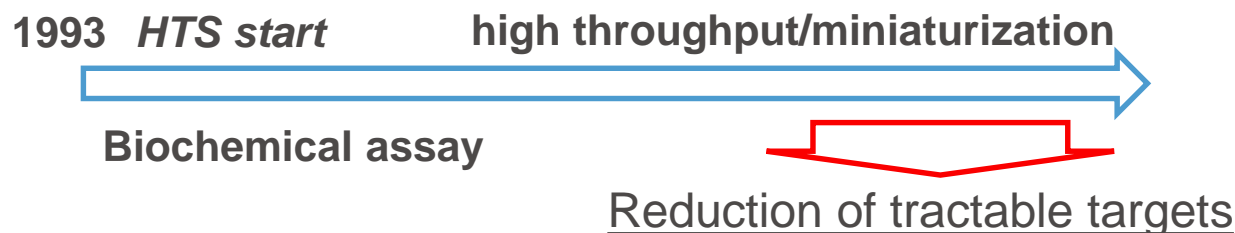
**Customers:** From big pharma to small biotech, worldwide

**Key expertise:** · Finding of binding compounds to a target  
· Identification of binding proteins to a compound  
(by using a unique binder selection technology)

**Ownership:** privately owned, TAKEDA<20%

**Employees:** 5

# New solution for drug discovery



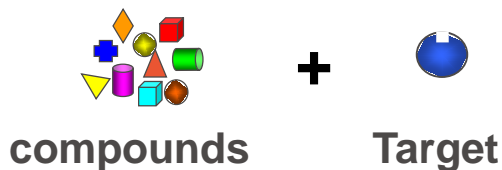
Increase of targets that cannot be handled by conventional HTS

Target deconvolution  
(Identification of proteins that bind to compounds from our protein library without labeling compounds/proteins)

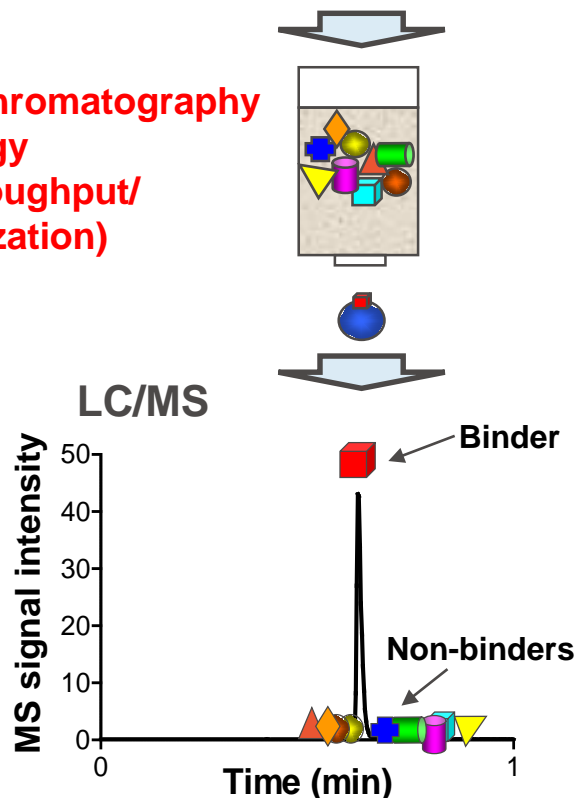
	Conventional HTS	Our HTS
Target	Target applicable to HTS	<b>Every target</b>
Assay method	Each method for each target	<b>One method</b>
Detection	Various detectors	<b>LCMS</b>

# Binder selection technology

## Binder selection technology



Unique chromatography  
technology  
(high throughput/  
miniaturization)



## Hit binder finding

### Target

Soluble protein  
Membrane fraction  
Microsomes  
Organelle  
DNA/RNA

- Enzyme
- GPCR
- Ion channel
- Transporter
- Transcription factor

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Takeda library compounds  
(400K)



### Hit binder

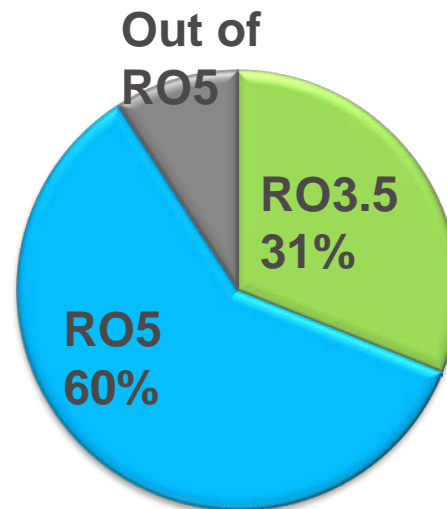
Inhibitor  
Activator  
Agonist  
Antagonist  
Modulator  
Stabilizer

- High capacity
- Low cost

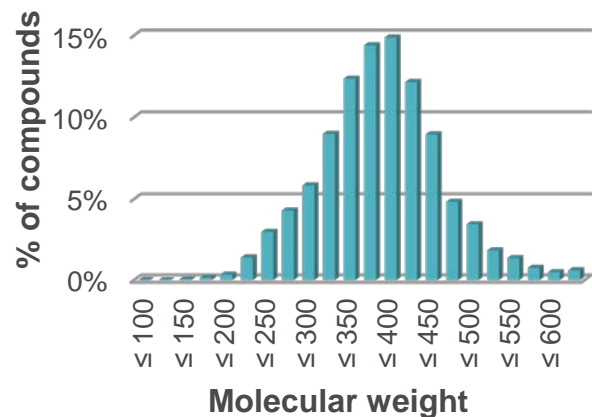
# Profile of library

Number of compounds: 400K

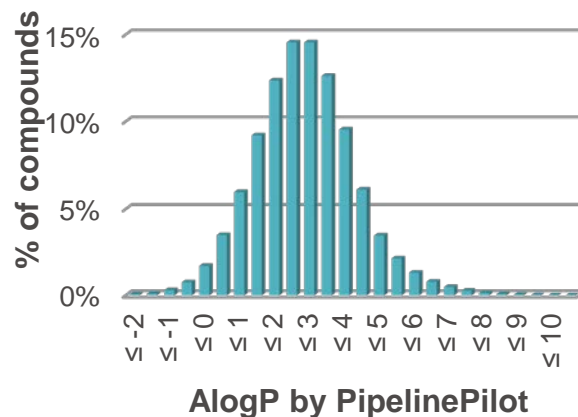
- ✓ Drug-like/lead-like compounds
- ✓ LC/MS-parameters confirmed
- ✓ Soluble at 30  $\mu$ M in buffer
- ✓ Cell-growth inhibition tested
- ✓ No reactive compounds



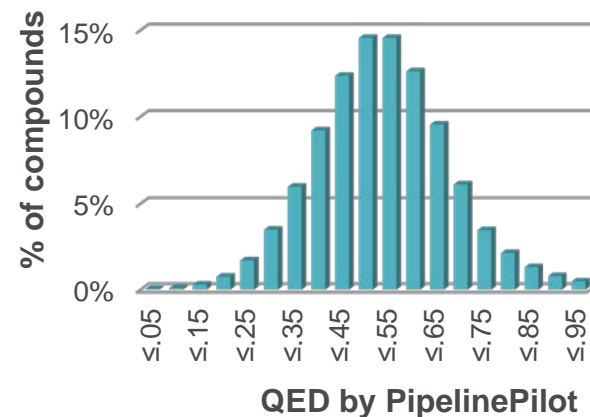
**Molecular Weight**  
Ave. 374.7



**logP**  
Ave. 2.60

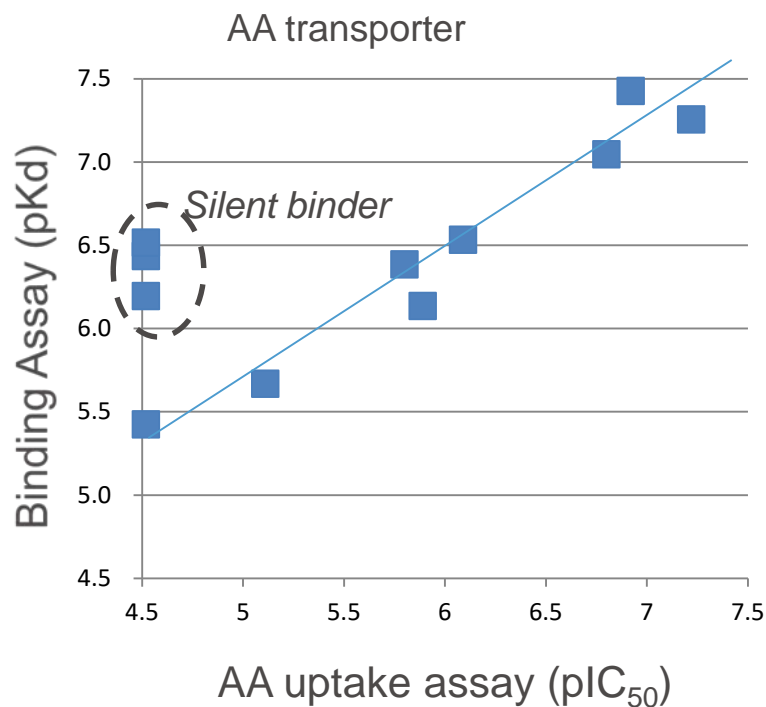


**QED**  
Ave. 0.70



# Hit binder finding

## Biochemical vs. binding



## Fkinase inhibitor

Hit binder	Binding Kd (nM)	IC <sub>50</sub>
SS-409	241	4.6E-06
SS-731	18	3.1E-09
SS-869	25	1.7E-09
SS-968	51	1.3E-08
SS-438	18	1.9E-09
SS-013	21	2.7E-09
SS-713	28	4.6E-09

## NR agonist

Hit binder	Binding Kd (nM)	EC <sub>50</sub>
SS-931	33	7.1E-09
SS-994	34	2.2E-08
SS-798	99	1.0E-08
SS-703	453	6.9E-08
SS-285	88	4.6E-09
SS-134	20	2.9E-08
SS-539	37	3.4E-07

# Target deconvolution (Binding protein finding )

