

DISCOVER

MOLECULAR INTERACTIONS

heliX[®]

Binding Kinetics
Conformational Changes

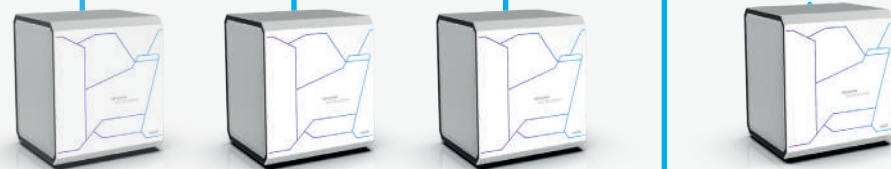
www.dynamic-biosensors.com



The heliOS network

Network of autonomous heliX® modules, simply plug-and-play.

Reliable and robust by built-in system redundancy for uninterrupted operation.



High PERFORMANCE sensing

switchSENSE® static and dynamic measurement modes for the analysis of binding kinetics and molecular conformations.



heliX®
single unit



4 signals, real-time

4 single-photon counters for highest fluorescence sensitivity. Data collection at 10 ms to resolve even the fastest kinetics in real-time.



Advanced microfluidics

Simplistic single-channel design, made from durable glass, withstanding highest flow rates and corrosive chemicals. Disposable, maintenance-free.



Automatic chip loader

5 chips, automatically exchangeable and NFC-tagged for seamless traceability.



Autosampler

384 and 96 well plates. Sample temperature 10 – 40°C, sample compartment 4 – 40°C.

Combine as many heliX® modules as you require to **scale-up throughput** to your needs.

Highly-automated THROUGHPUT



Ease-of-Use



Powerful software

For efficient planning and analysis of binding and conformation experiments.

Intuitive for the novice and configurable for the expert analysis of big data.



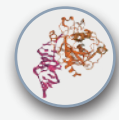
Control and monitor heliX® modules from **anywhere**.



For further information visit www.dynamic-biosensors.com/heliX
Contact info@dynamic-biosensors.com to speak to our application team about methodologies or to arrange a demonstration.

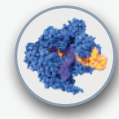
dynamic
BIOSENSORS

switchSENSE® – Comprehensive biophysical information, in one measurement



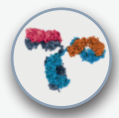
Binding Parameters

k_{ON} , k_{OFF} , K_D , avidity



DNA/RNA Binders & Enzymes

Transcription factors, helicases, polymerases (COVID-19), DNA repair, gene editing, ...



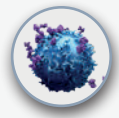
Multi-specific Binders

Antibodies for cancer immunotherapy, PROTACs, ...



Conformational Changes in Proteins

Structure-activity-relationships



Kinetics on Cells

Real-time binding analysis on living cells



Multi-parameter analysis with switchSENSE®

Affinity, dose response

K_D , IC_{50} , fM sensitivity

Kinetics

k_{ON} , k_{OFF}

Avidity, bispecifics

Two-color detection

Conformational changes & protein diameter

hydrodynamic friction change, folding/unfolding, agglomeration

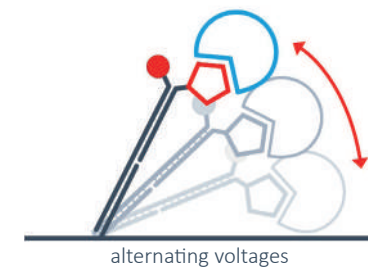
Thermodynamics

ΔH , ΔS , ΔG

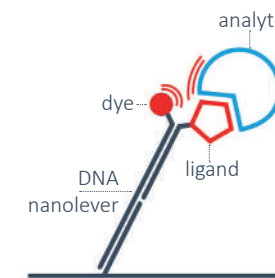
Nucleic and enzyme activity

k_{CAT} , K_M , k_{EXO}

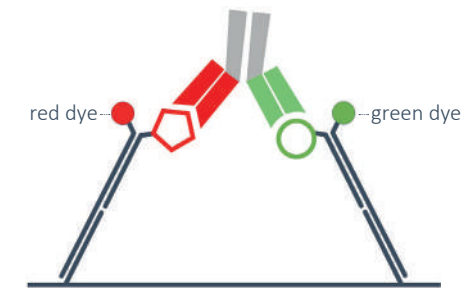
Multiple measurement modes



DYNAMIC mode
hydrodynamic friction



STATIC mode
fluorescence proximity sensing



TWO-COLOR detection
fluorescence & friction sensing

heliX[®] system comparison



heliX



heliX+



Double-heliX



4-heliX Bundle

	heliX	heliX+	Double-heliX	4-heliX Bundle
No. of chips, auto-exchangeable	1	5	10	20
No. of real-time signals	2	4	8	16
No. of well-plates / wells	1 / 96	1 / 384	2 / 768	4 / 1536
Fluorescence channels	One color	Two Colors		
Sampling rate	1 datapoint/s	100 datapoints/s		
Temperature	[1] $T_{\text{const.}} = 25^{\circ}\text{C}$ or 37°C	[1] any constant temperature from 10° to 40°C [2] variable temperature, ramp speed up to $10^{\circ}\text{C}/\text{min}$		
Measurement modes	[1] Molecular Dynamics [2] Fluor. Proximity Sens.	[1] Molecular Dynamics (molecular friction) [2] Fluorescence Proximity Sensing (FPS) [3] Fluorescence resonance energy transfer (FRET)		
Kinetics	$k_a = 10^3 \dots >10^7 \text{ M}^{-1}\text{s}^{-1}$ $k_d = 10^{-6} \dots 0.2 \text{ s}^{-1}$ $K_D = 0.1 \text{ pM} - 1 \text{ mM}$	$k_a = 10^3 \dots >10^8 \text{ M}^{-1}\text{s}^{-1}$ $k_d = 10^{-6} \dots 30 \text{ s}^{-1}$ $K_D = 50 \text{ fM} - 1 \text{ mM}$		